AN ANALYSIS OF
FOREIGN MIGRATION DESTINATION CHOICE AND
REMITTANCE INDUCED CONSUMPTION EXPENDITURE
OF NEPALESE RURAL HOUSEHOLDS

A THESIS
SUBMITTED TO
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DECLARATION

This thesis entitled, "AN ANALYSIS OF FOREIGN MIGRATION DESTINA-TION CHOICE AND REMITTANCE INDUCED CONSUMPTION EXPENDIT-URE OF NEPALESE RURAL HOUSEHOLDS". I declare that the information reported in this thesis is the result of my own work, except where due reference has been made. The thesis proposal has not been accepted for any degree nor has been concurrently submitted to for candidature in other degree granting programs.

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LETTER OF RECOMMENDATION

This thesis entitled, "AN ANALYSIS OF FOREIGN MIGRATION DESTINA-
TION CHOICE AND REMITTANCE INDUCED CONSUMPTION EXPENDIT-
URE OF NEPALESE RURAL HOUSEHOLDS", is submitted by Mr. Tilak Ksh-
etri for partial fulfillment of the requirements for the degree of MASTER OF
PHILOSOPHY *in* ECONOMICS. We forward it with a recommendation for ap-
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APPROVAL LETTER

We certify that this thesis entitled, "AN ANALYSIS OF FOREIGN MIGRATION DESTINATION CHOICE AND REMITTANCE INDUCED CONSUMPTION EXPENDITURE OF NEPALESE RURAL HOUSEHOLDS" submitted by Mr. Tilak Kshetri to the Central Department of Economics, Faculty of Humanities and Social Sciences, Tribhuvan University, in the partial fulfillment of the requirement for the MASTER OF PHILOSOPHY *in* ECONOMICS has been found satisfactory in scope and quality. Therefore, we accept this thesis as a part of the said degree.

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ABSTRACT

This thesis examines the factors affecting an individual's decision to select a migration destination and the impact of remittance sent by foreign migrants on consumption in rural Nepalese households. The study uses Nepal Household Risk and Vulnerability Survey (NHRVS) panel data spanning from 2016 to 2018, produced by the World Bank. We estimate the multinomial logistic regression model to identify the effect of household assets on the choice of migration destinations among India, OECD, Gulf, and Asia. We conclude that household asset accumulation is one of the key determinants of the destination choice of individuals in rural households. Specifically, households with higher asset endowments are more likely to choose OECD countries, followed by the Gulf region, Asia, and India. Moreover, through the use of 2SLS, the study highlights the importance of remittances as a driving force behind enhancing household consumption, welfare, and human capital accumulation within rural households.

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LIST OF ABBREVIATIONS

CBS   Central Bureau of Statistics

Cmty   Community

GDP   Gross Domestic Product

GCC   Gulf Cooperation Council

HH   Household

Log   logarithm

MFES   Ministry of Labour, Employment and Social Security

GoN   Government of Nepal

MoF   Ministry of Finance

NRB   Nepal Rashtra Bank

OECD   Organisation for Economic Co-operation and Development

OLS   Ordinary Least Square

PSU   Primary Sampling Unit

UAE   United Arab Emirates

WB   World Bank

CHAPTER I

INTRODUCTION

This chapter's content presents the study's background, statement of the problem, research question, and thesis objectives. In addition, it highlights the significance and limitations of the study.

1.1 Background of the study

Over the years, there has been a notable rise in global economic migration. In 2000, international migration was at 173 million, representing 2.8 percent of the global population, which raised to 281 million by 2020, equivalent to 3.6 percent of the global population. Among these migrants, males accounted for 52% (IOM, 2022). Furthermore, OECD and Gulf countries are the major destinations for international migrants as shown by World Bank (2023b) where OECD countries cover about 40 % of total global economic migration, followed by lower-middle-income countries and the Gulf. With the flow of migrants towards high-income countries, global remittance has increased over time, reaching a record 831 billion USD in 2022, a 4.81 % year-to-year change. As expected, the bulk of global remittance, valued at 647 billion USD, flows to low and middle-income countries. For most countries, excluding China, the international flow of labour and remittance has played a deciding role in their economic development. It is also one of the significant sources of foreign exchange. In the global context, the South Asian region remains a considerable remittance recipient of the world, receiving 21.17 % of the global remittance and growing by 10.79 % year on year (World Bank, 2023a).

Nepal's remittance to GDP ratio is the world's ninth largest (World Bank, 2023a). The ratio was, on average, at 23 percent in the 2010s (NRB/GoN, 2022). Remittances sent by migrants covered 56.6 percent of the trade deficit in 2022, which is integral of Nepal's Balance of Payment (NRB/GoN, 2022). Most of the flow of remittance is linked with most Nepalese migrating formally towards Gulf and Oceanic countries, namely Qatar, UAE, Saudi Arabia, Kuwait, and Malaysia, which also comprise 88 percent of the total migrant workers. The phenomenon of labour migration in Nepal is predominantly male, including over 90 % and contributing to the increase in the number of female-headed households (MFES/GoN, 2022). This lack of destination diversity creates a vulnerability for Nepalese mi-

grants to macroeconomic shocks in the GCC or Malaysia. For informal migration, India was an essential destination in the 1990s (Dixit, 1997) and remains the same in the 2010s due to the open border and low cost of migration.

Remittance has a significant micro-economic impact as Nepalese households finance their health, education and other consumption expenditures through the remittance income. Lokshin et al. (2010), Shrestha (2017) and Wagle and Devkota (2018) identified that remittance is instrumental in poverty eradication. Shrestha (2017) that estimates migration to the Gulf and Malaysia alone contributed to a 40 % decline in poverty between 2001 and 2011. Similarly, Bansak and Chezum (2009) and Bansak et al. (2015)'s comprehensive analysis showed that the remittance recipient households improved their education performance, thereby increasing the human capital accumulation, and the result is also aligned with Raut and Tanaka (2018). Similarly, benefited left-behind women (Maharjan et al., 2012) improved household health care use (Kapri & Jha, 2020), reshaped household (Mishra et al., 2022).

The macroeconomics analysis of remittance showed that remittance is a crucial source of development and growth for developing countries (World Bank, 2023a) as the remittance induces investment through increasing the investment and consumption of the economy. Thapa-Parajuli (2013) analyze both positive and negative macroeconomic channel of remittance, and the author's empirical study indicates that the remittance income increase household consumption but has an inverse impact on investment. Additionally, the large size of the remittance has been pernicious, inducing the Dutch-disease effect and policy laxity amongst decision makers to improve the investment climate (Sapkota, 2013). Thus, migration has scale and quality that cannot be ignored.

Though the remittance income is primarily determined by migration, Lewis (1954) points out that labour migration occurs as a result of productivity differences between host and destination; the rural economy has relatively lower productivity compared to the destination(urban). The migration decision of the family can be understood as a part of households' strategies to raise income and obtain funds for new investments and insurance against income and production risk. At the macro scale, remittance sets in motion development dynamics by increasing the investment and production frontiers of developing countries (Stark & Taylor, 1991). One of the explanations of why labour migration happens is described by Harris and Todaro (1970), whose two-sector model explains that the expected income on migration is a significant determinant of labour migration from the rural to urban sectors. The model assumes that workers choose migration when the expected real wage is greater than the existing income from the

agriculture sectors; this leads to an increased expected utility of rural migrants. The corollary of such an assumption is increasing rural income leads to reduced labour mobility.

Since migration requires financial resources, the constraint imposed by it arises naturally. If the household income allows to finance the migration cost, then the household meets the affordability condition of migration. In Mexican data, Angelucci (2015) finds an increased migration among families facing a positive income shock up to a certain level. Similarly, Abramitzky et al. (2013) find, historically, poorer people were more likely to migrate searching for new opportunities by utilizing Norwegian data.

Further, existing migration networks affect migration decision-making (Boyd, 1989). Munshi (2003) identifies job networks among Mexican migrants in the US and finds that an individual is more likely to be employed and hold a higher-paying job if his/her network is larger. Network effects arise mostly because of search costs. Households don't know everything about their potential destinations, i.e., they have a piece of partial information. In such an incomplete information setting, households can access more information about the destination with existing networks vis-á-vis destinations without linkage. Search costs can be expensive, either legally or financially. As a result, households are reduced to reduce with partial information, and they choose destination nodes which they are linked with.

Another aspect of migration is natural calamities and conflicts. Shrestha (2017) find conflict to be one of the push factors of Nepalese international migration. Such shocks can deplete the existing households' wealth stocks to zero. Households with no or little wealth stock face smaller opportunity costs of moving, especially if they have suffered physical and emotional trauma during the shock. Further, the household may not be able to maintain the prior level of income, and relocation may be one of the ways to access better economic opportunities. At the same time, the household may not be able to finance the migration. Thus, shocks affect in both directions: they make households more mobile and reduce resources available to move. As a result, victims of the shocks might choose labour destinations that are cheaper and with fewer legal barriers, Indian cities for Nepalese rural households.

The interaction between international labour migration, remittance, and development is controversial (Taylor, 1999) as it has both positive and inverse consequences on households and the economy as a whole. The first argument on labour migration is called the new economics of labour migration, which presumes that labour migration is the family strategy to send labour to the international market to increase household wealth and income, which relief the household from resource

constraints under given risk as the households are risks and returns optimization (Abreu, 2012), ultimately, it has the positive impact on the socio-economic status of developing and under developing countries. By contrast, the Reichert (1981) claims that the income from labour migration(remittance) induces the labour migration from the origin country to the destination country (migrant syndrome), which increases dependency on the international labour market and it restrains the structural transformation. On the other hand, remittance has a crowding out effects on investment and production of trade-able goods due to the incensing disposable income of remittance recipients' households refers to Dutch Disease (Acosta et al., 2009; Hien et al., 2020; Loser et al., 2006).

1.2 Statement of the problem

International migration has a crucial socio-economic implication for the Nepalese economy. Several factors determine the decision of migrants, such as the minimum level of income to cover the cost of migration, household characteristics, shocks, etc. For example, the income and assets of the migrants are a key determinant of the migration choice of household as the households faced the migration cost. It means the household meets the affordability condition if they can finance their migration cost. Similarly, the migration network is another major determinant of migration as the intensity of the network and the household has more information about the destination. In addition, incomes from international migrants have played an important role in the expenditure decisions of migrant households. Identifying how remittance recipient households allocate their remittance income into the different consumption headings is essential, as remittance is one of the vital sources of income for rural households.

Therefore, migration's size and quality are essential issues for Nepal. Hence, the study focuses on how Nepalese households decide their migration destination and what they do with the returns(remittance) from migration. Understanding the economic mechanisms behind these two sets of decisions is vital to Nepalese policymakers.

1.3 Research questions

To study the economic mechanisms behind migration decision and the use of the migration earnings, the research question for this study as:

(i) What are the factors determining foreign migration destination selection for Nepalese rural household ?

(ii) How do remittance receipts influence household consumption (Food, noon-food, health. education and others) in rural Nepal?

1.4 Objectives of the study

The main objective of this study is to analyze the economic forces behind the migration decision of the household and the use of remittance earnings of migrant households. In accomplishing this general objective, the study has set two specific objectives:

(i) To examine the factors affecting migration destination selection decision of Nepalese rural migrants.

(ii) To analyze the relationship between remittance income and household consumption expenditure (Total, Food, No-food, Education, Health, Rituals, and Temptation goods).

1.5 Significance of the study

Foreign migration and remittance stand as crucial economic issues in the Nepalese economy. The literature is replete with studies delving into Nepal's migration challenges, with many of them leaning heavily on the Nepal Living Standard Surveys (NLSS), and its cross-sectional nature limits it. This constraint becomes evident in studies like the one undertaken by Shrestha (2017), wherein multiple surveys are employed.

The present study capitalizes on the panel characteristics provided by the World Bank's Nepal Household Risk and Vulnerability Survey (2016-18), a source that furnishes comprehensive information about rural households. By utilizing established econometric tools, this thesis aims to fulfil its objectives. Consequently, this study can assist policymakers and stakeholders in formulating pertinent macroeconomic policies concerning foreign migration and remittances in Nepal.

1.6 Scope and limitations of the study

The focus of this study is limited, as this study concentrates solely on one of the primary factors influencing the choice of migration destination. Prior research has extensively examined various factors that influence this decision, classifying them into two main groups: push and pull factors. Given this specific focus, our study's outcomes will be confined to a handful of crucial facets related to migration, leaving out consideration of other equally important factors. It's important to note that even though this restriction doesn't invalidate the research findings, it does constrain the breadth of the study's coverage. Furthermore, it should be noted that the data at our disposal pertains exclusively to rural households, implying that any conclusions drawn from this study may not be applicable to urban settings.

1.7 Organization of the report

The following chapter provides an overview of the literature, encompassing theoretical and empirical reviews and addressing the existing research gaps. Moving on to Chapter 3, the research plan is delved into, encompassing aspects such as research design, philosophical considerations, variable operationalization, conceptual framework, empirical model, and data sources. Likewise, Chapter Four is dedicated to the presentation of data analysis and subsequent discussions. Concluding the report, the final chapter outlines the conclusions drawn, recommendations, and potential avenues for future extensions.

CHAPTER II
REVIEW OF LITERATURE

This chapter reviews empirical and theoretical literature, encompassing theoretical issues and empirical evidence. The scientific literature available in credible sources and references is examined. Such as the Journals and Google Scholar.

For attaining the first objective concerning theoretical reviews, the progression begins with Neoclassical theories and extends to the advanced version known as the New Economics of Labor. Following this, the network theory of migration is examined, accompanied by presenting empirical evidence corresponding to these theories. Similarly, theoretical and empirical literature are reviewed in pursuit of the second objective.

2.1 Destination selection

The Neo-classical theory of labour migration has long been centred on the individual viewpoint of the labour movement. Within this framework, Neoclassicists have identified both pull and push factors that influence migration. According to the Pull-Push theory of migration(one of the fundamental theories on labour migration under the Neoclassical school) proposed by Lee (1966), crucial elements influencing the migration decisions of individuals include the costs and benefits associated with migration, as well as the distance to the intended destination. The emphasis lies on the individual's rational assessment of these factors. Taking a different perspective, the historical-structural approach to labour migration advocates for a more comprehensive examination of the phenomenon, emphasizing the importance of considering structural changes as significant determinants of labour migration (Abreu, 2012). This approach views labour migration within the broader context of societal transformations.

An extension of the Neoclassical theory is the New Economics of Labor Migration (NELM), which posits that labour migration is essentially a household decision aimed at optimizing the risk and returns associated with migration. In this view, households strategically send labour migrants to maximize their overall wealth and household utility (Taylor, 1999). The focus shifts from the individual to the collective decision-making within households.

Harris and Todaro ([1970](#)) analyzed trends of migration from rural to urban areas in developing countries, especially in tropical Africa. They observed that the flow of labour is increasing continuously towards urban areas despite having positive marginal product in agriculture in rural areas and rising unemployment in urban areas. It is hard to provide a rational behaviour explanation for the growing unemployment in urban areas using conventional economic models that justify full employment equilibrium through appropriate wage and price adjustment. They developed a model that explains the migration of workers from rural to urban areas is explained by the difference in their expected earnings. The minimum urban wage is substantially higher than agricultural earnings, and in expectation of higher earnings, workers generally migrate from their place of residence to more urbanized societies.

Similarly, mass migration of unskilled workers flows from developing countries to developed nations to meet the rising labour demand. Developed economies have higher capital formation and technical progress, which raise the share of profits in the national income. It then increases the savings in the economy, and they are further reinvested in capital generation activities, giving them further returns. However, the capitalist sector cannot expand in these ways indefinitely as capital growth can easily exceed population growth, leading to a shortage of labour, which in turn increases the wage rate. Such an increase in cost can only be compensated if more labour is brought inside the economy or capital is exported. Such countries experience mass immigration from labour surplus countries for the search of jobs and better earnings (Lewis, [1954](#)), an established theory called the unlimited supply of labour.

The New Economics of Migration Stark and Bloom ([1985](#)) elaborate the role of relative position in society plays a significant role in household migration decision. A person may decide whether to migrate or not depending on the relative deprivation. Theory states that if a person is relatively more deprived, he or she can have more incentive to choose migrants compared to a person who is relatively deprived. Not only can the migration behaviour of individuals be expected to differ in accordance with their perceived relative deprivation, it can also be expected to differ according to their skill levels.

Tilly ([1991](#)) simply said networks shift while categories remain the same and new networks produce new categories. The majority of the time, groups of people connected by friendship, kinship, or employment experience rather than individuals or households served as the effective units of migration. These groups somehow included travel to the United States in their consideration of mobility options when they reached pivotal junctures in their individual or group lives.

Long-distance relocation comes with a number of dangers, including those to one's physical safety, comfort, money, and ability to maintain fulfilling social connections. Where relatives, friends, neighbours, and coworkers have established relationships with potential destinations, dependence on established interpersonal networks for information minimizes and spreads the risks. Implicitly recognizing those advantages, the vast majority of potential long-distance migrants anywhere in the world draw their chief information for migration decisions (including the decision to stay put) from members of their interpersonal networks and rely on those networks for assistance both in moving and settling at the destination. Their activity then reproduces and extends the networks, especially to the extent that by migrating, they acquire the possibility and the obligation to supply information and help to other potential migrants. Constrained by personal networks, potential migrants fail to consider many theoretically available destinations and concentrate on those few localities with which their place of origin has strong links. The higher the risk and the greater the cost of returning, the more intense the reliance on previously established ties.

Vertovec (2002) Social networks play a critical role in assisting migrants with job and housing searches, exchanging goods and services, as well as offering psychological support and access to up-to-date social and economic information. Additionally, these networks often provide guidance to migrants, helping them navigate specific locations and professions. As a result, local labour markets can become interconnected through the interpersonal and organizational connections established by migrants.

Abramitzky et al. (2013) studied how parental wealth influences the choice to migrate domestically or internationally during the age of mass migration (1850-1913) when there was no restriction placed by the US government in migration for European immigrants. The study used novel data of 50,000 Norwegian men collected from the digitized Norwegian Censuses of 1865 and 1900, as well as a dataset from the genealogy website Ancestry.com that includes the entire population of Norwegian ancestry living in the US in 1900. The study then proceeds to determine the probability of migrating using a probit model based on variation in parental wealth while controlling for inheritance by birth order, gender composition of siblings and region. The result shows that men with assets are less likely to move outside of their birthplace, and restrictions on migration are lifted in the present context if poor individuals are highly likely to migrate.

In addition to wealth, weather shock could also increase migration towards urbanized areas. Marchiori et al. (2012) studied the impact of weather anomalies on migration in sub-Saharan Africa. The study uses a cross-country panel dataset

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of 39 sub-Saharan countries from 1960-2000. The dataset contains variables representing migration, weather, economic and demographic factors and country-specific characteristics. The result shows that between 1960 and 2000, temperature and rainfall precipitation anomalies resulted in a net displacement of 5 million people or at least 128,000 individuals per year. By the end of the twenty-first century, it shows that future weather anomalies would result in an extra yearly displacement of 11.8 million people, based on medium UN population forecasts and IPCC climate change predictions. Weather anomalies could lead to loss of agricultural output or make the area inhospitable to live in, which triggers out-migration.

Angelucci (2015) study revealed that the provision of an exogenous, temporary, yet assured income source to impoverished households leads to an escalation in Mexican migration to the United States. However, the majority of this income tends to be utilized for consumption purposes. Certain households employ this income source entitlement as collateral to facilitate their migration financing. These newly initiated migration flows stem from previously constrained individuals and households, thereby accentuating migrant skill deficits. In essence, financial limitations serve as significant obstacles to international migration for financially disadvantaged Mexicans, a portion of whom express a desire to migrate but lack the means to do so. As economic growth, anti-poverty measures, and microfinance programs alleviate financial constraints for the impoverished, the likelihood of low-skilled Mexican migration to the United States is expected to increase.

Docquier et al. (2014) focused on comprehensive analysis of international migration, employing cross-country bilateral data to examine the dual-step process of migration and its aggregate determinants. The study first investigates the country-specific factors influencing the likelihood that individuals become potential (aspiring) migrants. Subsequently, it explores the bilateral and destination country factors that impact the transformation of potential migrants into actual migrants. Leveraging data from World Gallup surveys for potential migrants and national censuses for actual migrants, spanning 138 origin countries and 30 major destinations during the period of 2000 to 2010, this research dissects the economic, policy, cultural, and network determinants at each stage. Key findings reveal that the size of the network of previous migrants and the per capita income at the destination play pivotal roles in shaping the pool of potential migrants. Furthermore, economic growth within the destination country emerges as the primary economic driver of migration opportunities for a given pool of potential migrants. Additionally, the study uncovers that individuals with college education exhibit higher actual emigration rates, primarily due to improved prospects for realizing their immigration potential rather than solely driven by a greater willingness to

migrate.

Bazzi (2017) studied whether income shocks affect international migration flows from poor countries. The authors analyzed the impact of agriculture income shocks on Indonesian household migration decisions by applying data from the SUSENASS, a nationally representative household survey, which was gathered in the middle of 2006 from around 10,000 families in 670 communities. The authors find there is a positive impact of positive agriculture income shock on the migration of the poor rural household, by contrast, decreased migration from rural regions with the most established agriculture, where the opportunity costs were conceivably the biggest using a conditional fixed effects Logit.

Becker et al. (2005) using monthly data for the years 1995 to 1999, this study investigated the factors influencing migration from Kazakhstan to Russia for various age groups and according to urban/rural residency. These monthly statistics, which include reconciled migration data and comparable macroeconomic data collection for the two nations, allow us to examine various groups' responses to different economic events. Authors discovered that practically all categories of people migrate from Kazakhstan to Russia in response to traditional economic indicators. Furthermore, the time of responses also exhibits realistic patterns; responses are sped up by signals that are loud and well-communicated. Pull factors are responsible for the changing migration from host to destination.

Shrestha (2017) investigated the choice for migrating in the context of financial restrictions and different migration costs. In this research, the authors propose a straightforward theoretical framework for analyzing migratory responses to both push and pull variables in such environments. According to this concept, a shock to the origin's push factors causes migration to different destinations to respond to shocks differently since they influence different portions of the income distribution. Using a panel of 452 villages observed at three different times in the 2000s, the ramifications of this framework are examined in the context of international migration from Nepal. The research utilizes increases in industry and building in the destination nations as "pull" shocks and shocks related to rainfall and conflict-related mortality as "push" shocks. The results demonstrate that an increase in household income of $100 due to rain causes a 54 percent increase in migration to India but has no impact on migration elsewhere. Conflict intensifies, impairing the spending and comfort of the wealthy, further increasing migration overseas, particularly from metropolitan regions. There are significant repercussions on migration to those destinations from an increase in demand from the destination countries, particularly the Gulf countries and Malaysia.

2.2 Remittance and household consumption

The theoretical realm surrounding remittances is subject to debate within both microeconomics and macroeconomics. The Pure Altruism theory, initially formulated by Lucas and Stark (1985), posits that the utility of migrants is maximized by enhancing the well-being of household members of said migrants. This theory hinges on the household's consumption, suggesting that individuals remit money back home to support household expenditure and elevate the household's overall living standards. Furthermore, another theory termed the Pure Self-Interest theory, proposes that migrants send remittances to accumulate assets as they plan to return home eventually.

The macroeconomic perspective of remittances has been analyzed by Loser et al. (2006) through the IS-LM-BP framework. As remittances increase, expenditures also increase, and the exchange rate mechanism leads to an inverse impact on the recipient country. This impact can occur directly through heightened demand for "tradable" goods like exports and imports or via shifts in relative prices. In simpler terms, as the purchasing power of remittances bolsters domestic demand, local prices and wages are prone to ascend, consequently resulting in a real appreciation of the local currency. Eventually, it poses pressure on both the external and internal sectors of the economy.

Similarly, empirical evidence such as De and Ratha (2012) examined the impact of remittances on household aspects such as income, assets, and human capital using comprehensive cross-sectional datasets from Sri Lanka. To conduct this empirical analysis, the authors employed a fixed-effect OLS model. The research is structured in two main segments. Initially, the authors demonstrate that remittance income predominantly benefits families situated in the lower quintiles of the income distribution, aiding them in advancing along the income scale. In the subsequent section, the study reveals that remittance income yields positive and substantial effects on children's health and education but does not appear to influence conspicuous consumption or asset accumulation. The argument posited is that remittance income is more precisely targeted and not as interchangeable as other types of transfer income, largely due to the close monitoring by the senders. To address potential issues of self-selection, bias-corrected matching estimators are employed.

Raihan et al. (2022) examined how overseas remittances affected Bangladeshi households' spending patterns. Seven categories—education, health, food, consumables and durable goods, housing and land, investment, and "other consumption"—were used to classify all family expenditures. The authors used the propensity score matching method to address the self-selection bias. Additionally, we used the

Working-Leser (WL) model to assess the effect of remittances on marginal spending behaviour. The study's conclusions showed that, except for education and investment, remittances positively and substantially influenced the amount spent in practically all spending categories. Households receiving remittances spend less on investments and food as a percentage of their overall spending than other households. The authors also found remittances have a favourable and considerable influence on the budget shares for housing, land, and health. Still, they have little to no impact on the budget shares for education, consumables, and durable goods.

Siddique et al. (2012) investigated macroeconomic prospective of remittance. The authors examined the causal link between remittances and economic growth in three South Asian countries: Bangladesh, India, and Sri Lanka. The study employs the Granger causality test within a Vector Autoregression (VAR) framework. Utilizing time series data spanning 25 years, the analysis reveals distinct patterns of causality in these nations. Specifically, it is observed that remittance growth plays a pivotal role in driving economic growth in Bangladesh. In contrast, the study does not identify a clear causal relationship between remittance growth and economic growth in India. Remarkably, in Sri Lanka, a two-way directional causality is discerned, indicating that economic growth influences remittances' growth; conversely, remittances also affect economic growth. The article concludes by discussing various policy implications stemming from the causality results.

Bansak and Chezum (2009) studied the impact of remittance on human capital formation in Nepal using the NLSS-I produced by CBS. Using the 2SLS Model, the authors found that increases in net remittance have positively affected children's school attainment probability. However, the female child is relatively less benefited than the male child but suffers less harm from household disruption when examining the impact on human capital collection. Similarly, authors found that the absentees have negatively associated with hardly significant levels. Besides this, a similar study was conducted by Bansak et al. (2015) using the new data sets, i.e., NLSS-III produced by the same source as (Bansak & Chezum, 2009) by using the IV model. Researchers identified that labour migration and remittance have a positive impact on education expenses or investment in human capital and improve the quality of education

Migration abroad helps to generate remittance, which could be an important source of household income. Money sent home by migrants increases the quality of life of household members through increased consumption. Mishra et al. (2022) studied the impact of remittance on household expenditure. The study categorized overall expenditure in eight headings they are food, alcohol and tobacco, clothing,

ceremonies, healthcare, education, home improvement, agriculture and livestock. They analyzed 5987 households using Nepal Living Standard Survey Round III, 2010/11 (NLSS III) using district migration rate as an instrument to determine the impact of remittance income in the expenditure as mentioned earlier categories. They found that Nepalese households utilize remittance income for both consumption and investment purposes. In particular, they show that an increase in remittance increases household food and education expenditure but has a negative impact on alcohol and tobacco. They also concluded no significant relationship exists between remittance and expenditure on clothing and personal care, ceremonies, healthcare, home improvement, agriculture and livestock. It shows that remittance has a long-term impact on human capital development through improvement in education, which increases the skill set of the future labour force.

Similarly, Raut and Tanaka (2018) studied the impact of remittance and parental absence on the educational investment of children. The study also finds that there is a positive relationship between remittance and education attainment. However, in the case of families with parental absence, there is a negative impact on children's education. Economically, the family will be better off and is able to invest in the human capital of their children, but parental absence can generate a labor gap in the household that needs to be fulfilled by their children hampering their education. The study also shows that in the case of educated mothers, parental absence in the household has no impact on the child's education. Migration could help improve human capital in the long run, but the current societal paradigm might hinder its growth.

2.3 Research gap

Theoretical literature suggests that labour migration is influenced by a variety of factors, including natural shocks, wage disparities between host and destination countries, and the financial situation of migrants in terms of income and assets. However, there has been limited research conducted in Nepal that has examined this issue using both cross-sectional and panel datasets from the 2000s

Several studies have examined the impact of income from remittances on different aspects of household consumption expenditure. The existing literature is primarily based on survey data, such as the Nepal Living Standard Survey -III and II. However, it is essential to acknowledge that social preferences are changing over time, which is a dynamic that has not been adequately addressed in the existing literature.

Therefore, this study employed multinomial logit analysis to fill the gap in the existing literature concerning the selection of destinations by Nepalese households. This approach distinguishes itself from prior research carried out in the

Nepalese context due to disparities in methodology and data utilization. Similarly, to bridge the gap concerning data and methods in examining remittance income and consumption preferences among Nepalese households, the study adopted the instrumental variable (IV) method. The study also used recently available panel data from household surveys conducted between 2016 and 2018, produced by the World Bank and encompassing comprehensive information about Nepalese households.

CHAPTER III
RESEARCH METHODOLOGY

In this chapter, the philosophical issue and research planning are being traced in the subsequent section. Additionally, a conceptual framework encompassing both objectives is being presented. The data source employed to address the research question is detailed. Furthermore, the succeeding section provides an outline of the empirical model corresponding to both objectives.

3.1 Philosophical issues

The research paradigm of this study is influenced by radical structuralism paradigm, since this study assume that the labor migration and remittance driven consumption is objectively determined through household assets and income from the remittance respectively. The ontological position is objectivism. As a part of economics research, this study is objective and value-free with aim of producing a true explanatory and positive knowledge about reality. The study's epistemological position is positivism, as it emphasizes on use of empirical methods and data to develop and test theories of migration and remittance. The axiological position of the study is to conduct the study in a value free manner. The researcher tries the best and not to be influenced by or influence the subject or results of this study. The study is influenced by the philosophical tradition of Neo-classical framework.

3.2 Research design

The research is based on a descriptive and analytical research design. To answer the first research question, the migration decision is applied as the dependent variable, while the household's assets and other control variables (i.e., education and other household characteristics) are utilized as independent variables. For the second question, household expenditure is used as the dependent variable, and households' remittance income serves as the independent variable. Household assets are employed as a proxy for income, and household and district-level fixed effects are employed as control variables for unobserved characteristics. The required information is obtained from a secondary source (The World Bank). In order to scrutinize the empirical relationship among the dependent and independent variables, the multi-nominal regression model will be fitted for the first

objective. For the second objective, the 2SLS regression model is estimated.

3.3 Conceptual framework

The conceptual framework for the first objective is shown in Figure figure 3.1 on the following page. In this Figure, we present the migration destination as dependent variables, which are categorised into four groups India, Asia, GULF and OECD; the classification of destination is listed in the following Table B.1. Household assets, education of migrant heads, migrations network and other controls as independent variables. Similarly, data for these variables are collected from the secondary source, i.e. Nepal Households Risks and Vulnerability survey households level panel data, which is produced by the World Bank. Using data sets, we estimate the multinomial regression model considering India as a base category.

Similarly, Figure figure 3.2 on page 19 represents the conceptual framework for the second objective of the thesis. The Figure shows that household consumption expenditure is as dependent variable. The household expenditures are classified into total consumption(food and non-food), education, health, and ritual expenses. Meanwhile, remittance is considered the main explanatory variable. We used both year control and time-invariant controls such as districts. Furthermore, we used the migration network as an instrument for the remittance. We used the secondary data sets, i.e. Nepal Households Risks and Vulnerability Survey panel data, which was produced by the World Bank. We estimate the consumption expenditure-wise 2SLS model to address the first research question.

3.3.1 Destination selection

Since migration has a cost, a household choosing to send its member away must make a trade-off. Suppose the total wealth of the household is w. Then the ability to invest for migration, say $F(.)$, is the increasing function of w. The current wage l_0 of the household member planning to migrate is the opportunity cost faced by the household. The wage l_0 may not be the whole story since family members may engage in other non-market valued work for the household so that the real cost l_0' will be greater than l_0. Even when the migrant is unemployed in the labour force, the services provided to the household welfare ensure that $l_0' > l_0 \geq 0$. Then, the wage faced by the migrant in the new labour market l_1 at the destination must sufficiently cover the real cost l_0' along with the opportunity cost of investing $F(w)$. For a period of the horizon, say of t length with a market discount rate of r for that period, we get

$$t \cdot l_1 \geq t \cdot l_0' + r \cdot F(w) \tag{3.1}$$

$$t \cdot (l_1 - l_0') \geq r \cdot F(w), \tag{3.2}$$

i.e., returns from migration must be larger than opportunity cost of migration. The probability to migrate $P(.)$ to each destination becomes

$$P(t \cdot (l_1 - l'_0) \geq r \cdot F(w)). \tag{3.3}$$

Consider a case of choosing between n migration destinations. By construction sum of probabilities of selecting each destination and probability of no migration must equal to one, i.e.,

$$\sum_{i=1}^{n} P(l_i, l'_0, r, F(w)) + P(\text{no migration}) = 1. \tag{3.4}$$

This theoretical framework allows us to model equation equation (3.4) as a multi-nominal probabilistic choice model.
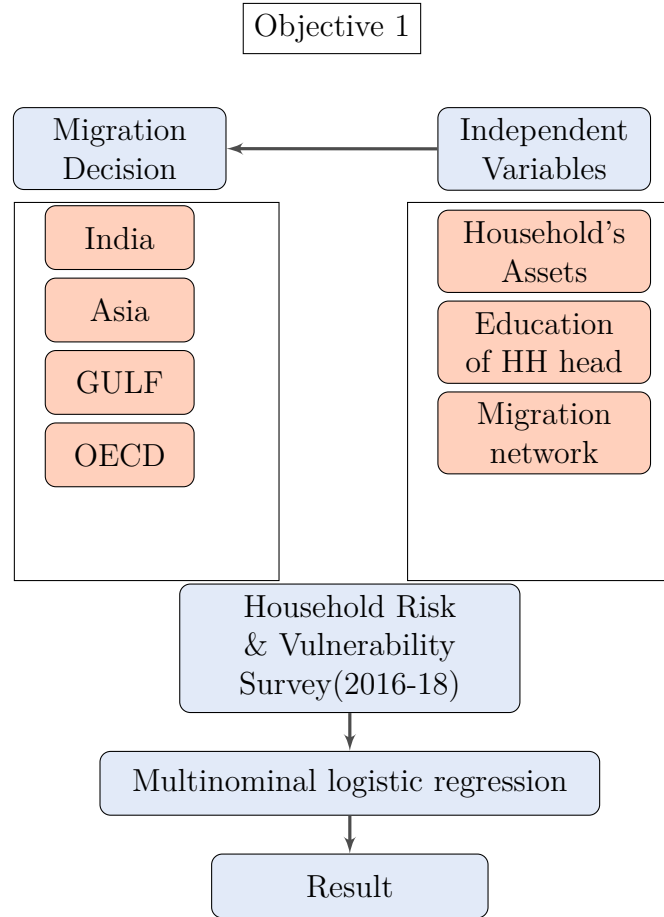
Figure 3.1: Schematic of objective one.

3.3.2 Remittance and household consumption expenditure

Remittance is one of the key sources of household income. Change in household income alters the consumption decision of the household. The framework is

explained in Figure figure 3.2. This figure is explained in detail in the conceptual framework section 3.2.
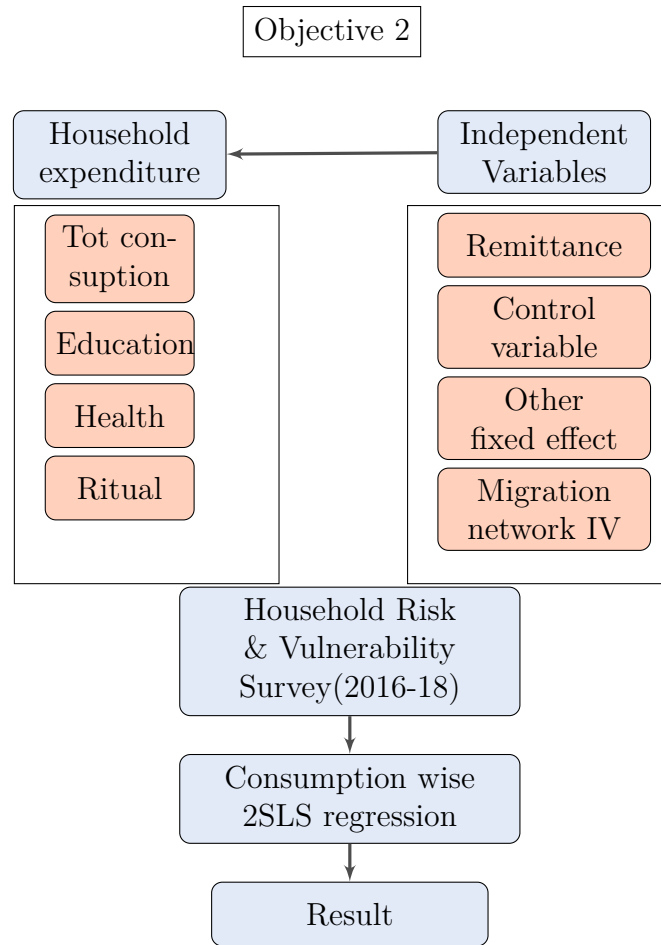
Figure 3.2: Schematic of objective two.

3.4 Sources of data

In this section, the data sources are described, followed by an explanation of how the variables were constructed in the subsequent section.

3.4.1 Description of data sets

In this study, the author uses the Nepal Household Risk and Vulnerability Survey, Full Panel 2016-2018, produced by the World Bank. It is a nationally representative survey, which consists of 6000 households from rural and peri-urban areas. For the questionnaire see World Bank (2016)

Census 2011 is used as the sampling frame for the survey by excluding all urban areas. The country was stratified into 11 analytical regions based on geographical classifications. Sampling was limited to 50 out of 75 districts, see figure 3.3 on the following page. Primary Sampling Units (PSUs) were selected with probability proportional to size from the list of wards in selected districts. A total
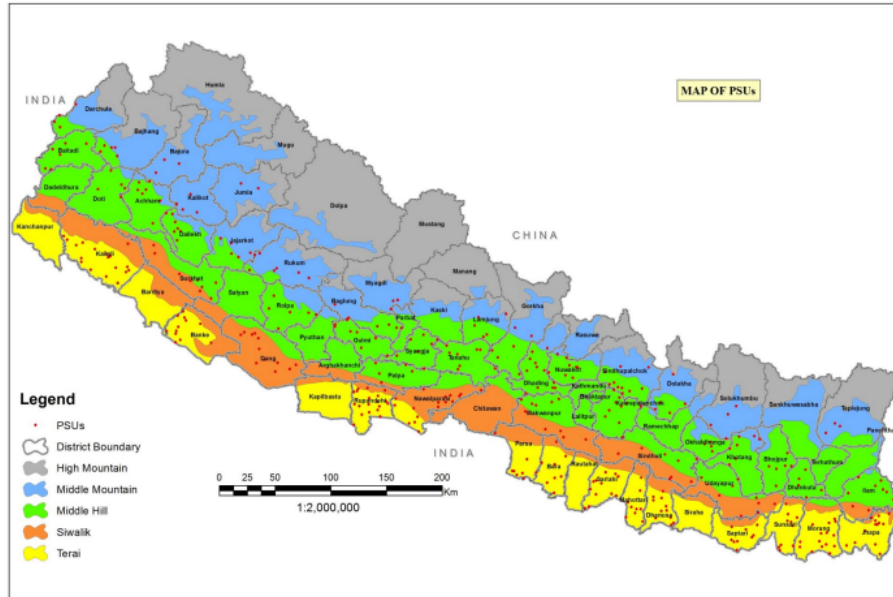
Figure 3.3: Map of 50 survey districts and the PSU distribution

of 400 PSUs were identified for sampling. A total of 15 households were selected as samples at random per PSU to form a total of 6000 households.

To find both objectives, the researcher used section one for household rosters, section two for education-related information, section three for housing, section five for Food expenses and home production, Section six for non-food expenditure and inventory of durable goods, section eight for labour income, section nine for farm income, section eleven for the migration etc. Similarly, for the community migration trend, the authors employ the community level data of the survey.

In addition to this, the national census of 2011 was employed to construct the migration network by matching the DDC and VDC of the 2011 census with the survey data. Furthermore, to account for the regional variation of the variables caused by regional inflation, the relevant variables were constructed in real terms by adjusting for inflation using the consumer price index produced by Nepal Rastra Bank at both the regional and national levels.

3.4.2 Operationalization of variable and explanation

For the first model (3.5), we construct the destination of migration as dependent variables, which we classify into four groups, i.e. India, OECD, GULF, and Asia; for more details, see Table B.1. Household consumption expense is considered as an outcome variable for the second model (3.6). We consider India as a base category because India is the lowest destination due to the open border and nearest distance; it is also one of the lower middle-income countries compared to other international destinations, etc., so it is better to compare the other destination international destinations with India.

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Similarly, the consumption, income, assets and expenditure, as well as the remittance, are reported in real terms, which is adjusted by the annual Consumer Price Index (CPI) of the respective survey period. Migration network as IV, which is constructed using the 2011 census. Measurement and operationalization of variables are given following Table 3.1.

Table 3.1: Definition of variables

Variables	Construct	Source
Destination of nation	All countries group into India, OECD, GULF, and Asia. code: 0 = India,1 = Asia, 2= Gulf and OECD = 3	NHRVS: section(11)
Total consumption	Tt is sum of food and non-food, education , alcohol and tobacco consumption	NHRVS: section(2-6)
Education expense	Total expenses on education	NHRVS: section(2)
Health expense	Total expenses on health serves	NHRVS: section(3)
Alcohol-tobacco	Total consumption of alcohol and tobacco	NHRVS: section(6)
Household assets	It is sum of Financial assets that includes value of stocks, deposits and net lending, Physical assets it consists of HH inventory, value house, agriculture assets which comprises value of livestock and Agri. inventory, and business assets	NHRVS: section(4,6,9,12)
Remittance income	Total income received by household during from international migration in a year	NHRVS: section(11)
Size of land	Total size of land in hector	NHRVS: section(9)
Wage income	Total income in cash and kind received by households	NHRVS: section(8)
Cmty. migration trend	Trend of international migration dummy	NHRVS: community
HH migration network	Migrated member of households	NHRVS: section(11)
Household size	Size of family member	NHRVS: section(1)
HH size aged ≥ 70	Ratio of total hh member with age 70 and more to total HH size	NHRVS: section(1)
Male	Male = 1 and Female = 0	
Education of migrants	Literate = 1, illiterate = 0	
Education	Education status (illiterate, below primary ,Primary, tenth grade, secondary, bachelor, masters, and above code: 0, 1, 2, 3, 4, 5, and 6 respectively)	NHRVS: section(1)
Caste group	Khas, AdhibasiJanajati, Madhesi, Dalit, and Others, code: 0, 1, 2, 3, 4, respectively	NHRVS: section(1)
Religion of HH	Religion of households	NHRVS: section(1)
Services access	School, road, market (in hours)	NHRVS: section(4)
Access of road	Number of month road access	
Owns house	Owns house = 1, otherwise = 0	
Presence of shocks	Presence = 1, otherwise = 0	
Marital status	Married, and unmarried, divorce/separate/widow , code: 0, 1, 2, respectively	
Shocks	Households shocks that includes death of family members, fire, disease of HH members etc.	NHRVS: section(15)
CPI	We used regional and national CPI of 2015, 2016 and 2017 to correct the regional variation due to inflation	NRB: data sets
Migration Network	Ratio of migration size to HH size, it is constructed using the national census of 2011	Census 2011: absentees

Note: expenses and income of HH are measure during a year

NHRVS: Nepal Household Risk and Vulnerability survey 2016-2018

NRB: Nepal Rastra Bank

3.5 Technique of data analysis

Two distinct methods were utilized for the independent analysis of the first and second objectives. For the first objective, the multinomial logit model was

employed, while the second objective was addressed by using an IV model. The techniques for data analysis are elaborated upon in the following sub-sections.

3.5.1 Destination selection

The destination selection is modelled using a multinomial logistic regression. If the decision is made by the individual to select country $Y_i = k$ out of K possible choices (i.e., India, Asia, Gulf, and OECD), the estimation of destination selection can be empirically performed using the following regression setup,

$$Pr(Y_i = k) = \frac{e^{\phi_{k,i}}}{1 + \sum_{j=1}^{K-1} e^{\phi_{j,i}}} \tag{3.5}$$

Where,

$$\phi_{j,i} = \beta_0 + \beta_h H + \beta_m M + \epsilon$$

H is set of households' characteristics (i.e. wealth, year of schooling of head etc.) that determine the ability of the household to invest in migration, M migration network. $\phi_{j,i}$ is destination j select by i individual. The conceptual framework is presented in Figure figure 3.1 on page 18. To estimate the coefficient of the model, this study applied the multinomial logistic model. The coefficient are reported in terms of relative risk ratio considering India as the reference category.

3.5.2 Remittance and household consumption

Effect remittance on household consumption expenditure is modeled using following regression,

$$\ln(E_{i,t,h}) = \beta_0 + \delta R_{i,t} + X_{i,t}\beta + Z_i\lambda + T_t\delta_t + \epsilon \tag{3.6}$$

where, $E_{i,t,h}$ is expenditure of ith household in h heading in t year, $R_{i,t}$ is total remittance received, T is year control variable, $X_{i,t}$ is household control variables which includes HH size, households assets , land size, people age 70 and more, education of head, access to services and $Z_{i,t}$ represents control for time invariant fixed effect such as district and $\beta_0, \delta, \beta, \lambda, \theta, \delta_t$ are the parameter of the model.

3.6 Endogeneity and identification strategy

If the regressor is correlated with the error term, then we have the problem of endogeneity, which leads to biased estimators. In this case, remittance is correlated with the unobserved variable, such as the decision of a household to send their member to the international labour market, which alters the remittance received by the households. So, if we estimate the equation (3.6) without correcting for endogeneity, we get the biased estimators.

To address this issue, the Instrument Variables (IV) approach is utilized (Ullah et al., 2021). The IV must adhere to two conditions. First, the IV should not exhibit a correlation with the error terms of the model (exclusion restriction), and second, there should exist a correlation between exogenous variables and instrumental variables, but these should not be correlated with the outcome variables. An appropriate selection of instrumental variables for a similar model has been discussed in several literature sources, including railroad (Adams & Cuecuecha, 2010; Woodruff & Zenteno, 2007) and past literacy rate (Bansak & Chezum, 2009).

However, in the context of Nepal, railroad connectivity is absent and past literacy rate is not available in our dataset. Similarly, war and political unrest can also be another possible instrument, but it occurred from 1996 to 2006, which does not meet the time frame of the study. Therefore, the study used the migration network as an instrument by following used in recent literature by (Mansuri, 2006; Mishra et al., 2022).

The IV is constructed using the National Census of 2011. Both conditions of instrument validity are anticipated to be satisfied by the instrument. Given that the migration network is not directly affected by household consumption expenditure (our outcome variable), an increase in the migration network is expected to result in increased migration and, consequently, household remittances (Massey & Espinosa, 1997).

In accordance with the equation demoted as (3.5), We applied the multinational logistic model. Similarly, for the test independence of the outcome variable, which is the main assumption of the model, this study utilized the Hausman tests of IIA proposed by Hausman and McFadden (1984).

The summary of the results from the regression equation specified in equation (3.5), which was estimated using the multinomial logit, and equation (3.6), estimated using the 2SLS method, is presented in the subsequent chapter.

CHAPTER IV
RESULTS AND DISCUSSION

This chapter shows the results obtained by using the methodology described in the previous section. It also provides evidence and explanation of affecting factors of migration destination selection and how the rural household reshapes consumption due to remittance income.

4.1 Descriptive statistics

This study utilised panel data from the years 2016, 2017, and 2018. The sample encompasses 940 individuals who migrated between 2016-2017 and 2017-2018. The study utilises the household characteristics and other information from 2016 and 2017, which is more suitable for identifying the destination selection of newly migrant individuals during these two economic years. Table 4.1 presents the household characteristics, assets of migrant individuals, destination countries'

Table 4.1: Variables used to estimate destination choice model

		2016-2017	2017-2018
Total assets (in 000s)		1127.87(1749.92)	1165.26(1593.1)
Land size (*ha*)		0.4(0.42)	0.4(0.71)
Household migration network		0.51(0.81)	0.71(1.02)
Community migration trend (%)		83.3	72.2
Household size of Migrants		5.82(2.33)	4.93(2)
Number of children aged ≤ 12		1.41(1.26)	1.08(1.17)
Years of Schooling of HH head		4.17(4.42)	3.7(4.31)
Market time(in hours)		1.01(1.23)	1.14(2.04)
Caste (in %)	Khas	35.7	35.4
	AdhibasiJanajati	30.4	32.1
	Madhesi	14.7	12.0
	Dalit	14.7	16.7
	Others	4.5	3.8
Male Migrants (%)		90.1	88.7
Literate migrants (%)		96.1	90.8
Destination (%)	India	38.8	39.4
	Asia	16.5	15.1
	Gulf	39.7	37.3
	OECD	5.0	8.3
Sample size		516	424

Note: Reported amount are inflation adjusted and parenthesis indicating standard deviation
Source: Author's Calculation,

Table 4.2: Variables used to estimate consumption expenditure

		2016	2017	2018
Total consumption(in 000s)		169.09(98.09)	171.87(166.11)	168.32(108.43)
Food consumption(in 000s)		107.9(56.95)	103.73(54.65)	105.29(50.99)
Non-food consumption(in 000s)		46.16(45.65)	53.62(140.07)	48.93(52.04)
Education expenses(in 000s)		15.03(27.58)	14.52(27.38)	14.1(58.57)
Alcohol-Tobacco consumption(in 000s)		8.73(21.07)	7.74(17.8)	6.53(12.01)
Expenses on ritual activities(in 000s)		19.42(45.86)	27.87(94.32)	27.09(64.37)
Health expenses(in 000s)		9.42(32.62)	14.77(44.94)	12.04(50.59)
Wage income (in 000s)		61.18(164.74)	71.06(150.78)	81.08(158.18)
Total assets(in 000s)		1229.46(2555.78)	1367.28(1857.39)	1474.1(2506.4)
Foreign remittance (in 000s)		53.89(154.5)	58.64(160.72)	60.02(162.2)
Household size		4.88(1.99)	4.48(1.91)	4.46(1.93)
Number of people aged ≥ 70		0.17(0.44)	0.18(0.46)	0.21(0.48)
Years of schooling of head		4.65(4.83)	4.62(4.84)	4.57(4.81)
Time to secondary school (hrs)		0.52(0.59)	0.51(0.58)	0.52(1.00)
Time to bank (hrs)		1.79(3.52)	1.66(4.14)	1.55(2.71)
Time to health post (hrs)		0.67(1.39)	0.72(4.28)	0.70(4.10)
Time to market (hrs)		1.17(3.76)	1.10(5.36)	1.09(5.36)
Migration network		0.07(0.04)	0.07(0.04)	0.07(0.04)
Land size (*ha*)		0.45(0.64)	0.45(0.62)	0.46(0.63)
Ethnicity(%)	Khas	34.7	34.7	34.7
	Adhibasi Janajati	37.3	37.3	37.3
	Madhesi	11.4	11.4	11.4
	Dalit	12.6	12.6	12.6
	Others	3.9	3.9	3.9
Marital status of head (%)	married	88.8	88.1	87.0
	unmarried	0.5	0.5	0.4
	seperate divorce wid.	10.7	11.5	12.6
		16.1	25.1	13.1
House ownership %		97.8	99.2	98.8
Sex of HH head(%)		81.2	77.2	76.0
Observation		5648	5648	5648

Note: Reported amount are inflation adjusted, and parenthesis indicating standard deviation

Source: Author's Calculation

income, and other pertinent information. Average household assets have demonstrated an increase over the years. In 2016, the assets were valued at 1135.77 thousand, rising to 1265.58 in 2017. Alongside this, 72 percent of communities have had a historical migration over the two years. Among the international migrants, the Khas ethnicity is dominant and flowed by the Adhibasi janajati, Madhesi and Dalit. Out of total migration, the males have the dominant figure; among them, the largest number of migrants are headed toward India, followed by the Gulf, Asia, and OECD

Similarly, to examine the influence of remittances on household consumption. This investigation utilizes secondary panel data sets from 2016, 2017, and 2018, covering 5,648 rural households in Nepal for each year. Table 4.2 presents the summary statistics, indicating the average household total consumption in 2016 was 169 thousand, which increased to 171 thousand in 2017 and decreased in 2018, but food consumption, asset acquisition, and wage income are flowing upward

trend. Furthermore, except for ritual expenses, the expenditures on education, non-food items, alcohol, and tobacco have the same trend as the total consumption. Notably, the average annual remittances from international migration grew from 61 thousand in 2018, demonstrating an increasing pattern throughout the study period.

In addition, the characteristics of households, especially factors such as house ownership and the sex of the head of the household, have been undergoing changes over the years. For example, in the survey year of 2016, the percentage of male household heads was 19 %, but this increased to 24 % in 2018. Meanwhile, the average years of schooling for household heads remain relatively low at four years, as the study only covers rural households in Nepal. When examining the ethnicity of Nepalese households, the dominant group is the Khas, comprising one-third of the total households, followed by the Janajati.

4.2 Household strategy of destination selection

The multinomial logistic regression model has been employed to address the primary objective of this research. The relationship between the outcome variable (destinations) and their determinants is presented in Table 4.3. The coefficients have been presented as relative risk ratios, which gauge the relative probability of event occurrence in comparison to the reference categories. Within this analysis, India is taken as the reference category for destinations. First, the log odds are estimated, and the relative risk ratios are obtained by exponentiating the multinomial logit coefficients. The estimated log odds are presented in appendix Table A.1.

Table 4.3 illustrates that household assets are pivotal in selecting rural household destinations. The coefficient associated with household assets for the Asian region is 1.416, and it exhibits statistical significance at the one percent level. This suggests that as household assets increase, the likelihood of choosing an Asian destination becomes 1.416 times higher compared to India. Likewise, with an increase in household assets, the probability of opting for a Gulf destination rises by a factor of 1.648 relative to India. Additionally, the likelihood of selecting an OECD destination is notably higher compared to other destinations as household assets increase. The outcomes of the analysis reveal that economically disadvantaged households are inclined towards choosing India as their destination in contrast to other options. Furthermore, land size emerges as another significant factor influencing migration destination selection. The coefficient associated with land size indicates that migrants with larger land holdings are more likely to choose Asian and OECD destinations over India.

Similarly, the migration network serves as another determinant of destination

Table 4.3: Destination selection of rural migrants

	Dependent variable:		
	Asia	Gulf	OECD
	(1)	(2)	(3)
HH assets	1.416***	1.648***	3.023***
	(0.115)	(0.089)	(0.182)
Land size *ha*	1.835***	1.127	1.525*
	(0.207)	(0.196)	(0.246)
Household migration network	0.606***	0.734***	1.445***
	(0.141)	(0.095)	(0.136)
Community migration status	0.367***	0.638**	0.386***
	(0.234)	(0.199)	(0.345)
Sex of HH head	1.113	0.679*	0.713
	(0.289)	(0.202)	(0.413)
Year of schooling of head	0.992	1.041**	1.140***
	(0.025)	(0.019)	(0.034)
Time to daily market	0.841*	0.980	0.949
	(0.094)	(0.046)	(0.153)
Akaike Inf. Crit.	2,108.052	2,108.052	2,108.052

Note: * p<0.1; ** p<0.05; *** p<0.01; SE in parenthesis

Coefficient are reported in terms of RRR

Source: Author's Calculation

selection for Nepalese rural households. The coefficient of the household migration network holds high significance. Households exhibiting a trend of international migration demonstrate a relatively lower likelihood of opting for Asian and Gulf destinations compared to India. This indicates that households with migration trends are more inclined to choose India over Asia while showing a higher likelihood of selecting OECD destinations. Specifically, the coefficient for OECD is 1.445, signifying that households with migration trends have a 1.445 times higher probability of choosing OECD destinations than India. This suggests that rural households with migration trends prefer India over Asia and the Gulf, yet their likelihood of selecting OECD destinations increases. Additionally, the migration history with the community significantly influences the choice of migration destination for rural households, as depicted in Table 4.3. Furthermore, the household head's education level is a significant factor in migration destination selection. As

illustrated in the table, an increase in years of schooling for the household head results in a 1.40 times higher probability of choosing OECD destinations compared to India.

Table 4.4: Hausman tests of IIA assumption

Destination	χ^2	df	$P > \chi^2$
India	3.818	16	0.999
Asia	8.815	16	0.921
Gulf	23.338	16	0.105
OECD	1.650	15	1.000

H_0 Odds(Outcome-J vs Outcome-K) are
independent of other alternatives
Source: Author's Calculation

In Table 4.4, we check the robustness of the result by applying the Hausman tests of e Independence of Irrelevant Alternatives (IIA). The test measures the independence of the outcomes variable. In the table, the P value is greater than χ^2 for each outcome category. This means the test does not reject the null hypotheses of independence. It indicates that the outcome variables of the model are independent.

4.3 Remittance and household consumption preferences

To examine the impact of foreign remittances on rural household welfare, our research applied the 2SLS model, incorporating a community-level migration network as an instrument. The validity of this instrument is demonstrated in the Table 4.5. The F-test coefficient stands at 668.23, surpassing the critical values of the Andrews and Stock (2005) weak ID test (16.38), indicating a robust positive correlation between foreign remittances and the migration network. Furthermore, the under-identification test yields a significant result with a very low p-value (0.00000), suggesting that the structural model is precisely identified. Therefore, the instrument passes both tests for validity.

Table 4.5: Validity test of instrument

Test statistics : Model:	Weak identification test (Cragg-Donald Wald F statistic)	Underidentification test (Anderson canon. corr. LM statistic)
Total consumption model	668.237***	642.956 ***
Food model	668.237***	642.956***
All model	668.237***	642.956***

Code : *** Model pass both test
Source: Author's Calculation

However, it's worth noting that we cannot test the exclusion restriction since

Table 4.6: Total consumption and remittance

Variables:	Total consumption					
	(1)	(2)	(3)	(4)	(5)	(6)
Foreign remittance	0.0531***	0.0532***	0.0613***	0.0604***	0.0560***	0.0458***
	(0.0112)	(0.0111)	(0.0130)	(0.0127)	(0.0124)	(0.0158)
HH size	0.1202***	0.1205***	0.1115***	0.1122***	0.1116***	0.1238***
	(0.0040)	(0.0040)	(0.0039)	(0.0039)	(0.0038)	(0.0029)
Land size (ha)	0.0935***	0.0934***	0.0881***	0.0851***	0.0849***	0.0610***
	(0.0105)	(0.0105)	(0.0105)	(0.0101)	(0.0098)	(0.0081)
HH size aged ≥ 70	0.0529	0.0514	0.0105	-0.0173	-0.0317	-0.1226***
	(0.0547)	(0.0551)	(0.0518)	(0.0477)	(0.0462)	(0.0401)
Wage income	0.0081***	0.0080***	0.0076***	0.0072***	0.0067***	0.0069***
	(0.0024)	(0.0024)	(0.0024)	(0.0023)	(0.0022)	(0.0026)
HH assets	0.1459***	0.1453***	0.1421***	0.1413***	0.1461***	0.1520***
	(0.0099)	(0.0098)	(0.0103)	(0.0102)	(0.0101)	(0.0076)
Head education	0.0269***	0.0270***	0.0245***	0.0261***	0.0253***	0.0225***
	(0.0024)	(0.0024)	(0.0021)	(0.0023)	(0.0023)	(0.0025)
Mthly road access	-0.0061**	-0.0061**	-0.0055*	-0.0056*	-0.0053*	0.0081***
	(0.0030)	(0.0030)	(0.0031)	(0.0030)	(0.0030)	(0.0021)
D. to market (hrs)	0.0007	0.0007	0.0007	0.0006	0.0004	-0.0009*
	(0.0013)	(0.0013)	(0.0013)	(0.0013)	(0.0013)	(0.0005)
D. to bank (hrs)	0.0051**	0.0051**	0.0060**	0.0060**	0.0056**	-0.0017
	(0.0024)	(0.0024)	(0.0027)	(0.0027)	(0.0026)	(0.0014)
D. to school (hrs)	0.0261*	0.0259*	0.0249	0.0244	0.0221	-0.0103
	(0.0153)	(0.0154)	(0.0154)	(0.0150)	(0.0144)	(0.0071)
D. to Health Post	-0.0020*	-0.0020*	-0.0017	-0.0018	-0.0016	-0.0022***
	(0.0011)	(0.0011)	(0.0011)	(0.0012)	(0.0011)	(0.0006)
Fixed-effects						
Year		Yes	Yes	Yes	Yes	Yes
Male HH head			Yes	Yes	Yes	Yes
Marital status of head				Yes	Yes	Yes
Household shock					Yes	Yes
District						Yes
Fit statistics						
Observations	16,944	16,944	16,944	16,944	16,944	16,944
R^2	0.10751	0.10690	0.03901	0.05473	0.10912	0.31951
Within R^2	0.10751	0.10637	0.01131	0.02216	0.07336	0.20832

Clustered (cluster) standard-errors in parentheses

Signif. Codes: ***: 0.01, **: 0.05, *: 0.1

Note: Assets, income, and consumption are taken in *Log* forms, and D. represents distance.

Source: Author's Calculation

it's precisely identified. Nonetheless, we constructed the instrument using the 2011 census data. If it aligns with the same datasets, it could serve as a destined instrument, considering the potential reverse relationship between remittances and the instrument, which may be correlated with unobserved variables. The instrument captures various information, including household decisions and destination-related details.

Table 4.7: Food consumption and remittance

Variables:	Food consumption					
	(1)	(2)	(3)	(4)	(5)	(6)
Foreign remittance	0.0555***	0.0259**	0.0257**	0.0336**	0.0336**	0.0329**
	(0.0111)	(0.0106)	(0.0105)	(0.0133)	(0.0133)	(0.0128)
HH size	0.1249***	0.1309***	0.1308***	0.1252***	0.1248***	0.1249***
	(0.0040)	(0.0028)	(0.0028)	(0.0027)	(0.0027)	(0.0027)
Land size(ha)	0.0790***	0.0507***	0.0504***	0.0475***	0.0475***	0.0470***
	(0.0122)	(0.0065)	(0.0064)	(0.0064)	(0.0063)	(0.0062)
HH size aged ≥ 70	0.1219**	-0.0599	-0.0631	-0.0817**	-0.0858**	-0.0938***
	(0.0527)	(0.0432)	(0.0435)	(0.0408)	(0.0409)	(0.0357)
Wage income	0.0082***	0.0046**	0.0045**	0.0048**	0.0048**	0.0046**
	(0.0024)	(0.0021)	(0.0022)	(0.0023)	(0.0023)	(0.0022)
HH assets	0.1009***	0.1185***	0.1188***	0.1172***	0.1183***	0.1178***
	(0.0086)	(0.0056)	(0.0054)	(0.0058)	(0.0057)	(0.0058)
Head education	0.0213***	0.0144***	0.0144***	0.0131***	0.0131***	0.0136***
	(0.0023)	(0.0020)	(0.0019)	(0.0017)	(0.0017)	(0.0020)
Mthly road access	-0.0083***	0.0060***	0.0060***	0.0068***	0.0067***	0.0067***
	(0.0027)	(0.0018)	(0.0018)	(0.0020)	(0.0020)	(0.0019)
D. to market (hra)	0.0011	-0.0005	-0.0005	-0.0005	-0.0005	-0.0006
	(0.0011)	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0004)
D. to bank (hrs)	0.0055**	-0.0018	-0.0017	-0.0015	-0.0014	-0.0014
	(0.0024)	(0.0015)	(0.0015)	(0.0014)	(0.0014)	(0.0014)
D. to school(har)	0.0299**	-0.0090	-0.0092	-0.0096	-0.0097	-0.0096
	(0.0147)	(0.0069)	(0.0068)	(0.0070)	(0.0070)	(0.0070)
D to Health Post	-0.0014	-0.0015***	-0.0015***	-0.0013***	-0.0012***	-0.0013***
	(0.0010)	(0.0005)	(0.0005)	(0.0005)	(0.0005)	(0.0004)
Fixed-effects						
District		Yes	Yes	Yes	Yes	Yes
Year			Yes	Yes	Yes	Yes
Male HH head				Yes	Yes	Yes
Household shock					Yes	Yes
Marital status of head						Yes
Fit statistics						
Observations	16,944	16,944	16,944	16,944	16,944	16,944
R^2	0.01224	0.37830	0.38069	0.34540	0.35098	0.35618
Within R^2	0.01224	0.30939	0.31041	0.24784	0.25011	0.25206

Clustered (cluster) standard-errors in parentheses

Signif. Codes: ***: 0.01, **: 0.05, *: 0.1

Note: Assets, income, and consumption are taken in *Log* forms, and D. represents distance.

Source: Author's Calculation

Table 4.6 presents the total consumption model, encompassing food, non-food items, education, alcohol and tobacco consumption. Without fixed effects, the coefficient of foreign remittances on total consumption is positive and statistically significant. This effect remains consistent when fixed effects are introduced. For instance, controlling for the year in the model doesn't alter the remittance coefficient, while introducing controls for marital status, male household head, and household shocks results in a slight change. Moreover, accounting for district-

Table 4.8: Non-food consumption and remittance

Variables:	Non-food consumption					
	(1)	(2)	(3)	(4)	(5)	(6)
Foreign remittance	0.0438***	0.0448***	0.0569***	0.0561***	0.0513***	0.0437**
	(0.0126)	(0.0126)	(0.0145)	(0.0142)	(0.0140)	(0.0200)
HH size	0.0822***	0.0853***	0.0720***	0.0724***	0.0718***	0.0870***
	(0.0044)	(0.0045)	(0.0042)	(0.0041)	(0.0041)	(0.0033)
Land size(ha)	0.1308***	0.1306***	0.1227***	0.1199***	0.1197***	0.0890***
	(0.0136)	(0.0137)	(0.0138)	(0.0136)	(0.0134)	(0.0129)
HH size aged ≥ 70	0.0332	0.0257	-0.0355	-0.0626	-0.0779	-0.1630***
	(0.0704)	(0.0709)	(0.0654)	(0.0609)	(0.0599)	(0.0546)
Wage income	0.0130***	0.0126***	0.0121***	0.0117***	0.0111***	0.0116***
	(0.0028)	(0.0028)	(0.0027)	(0.0026)	(0.0026)	(0.0033)
HH assets	0.2061***	0.1991***	0.1944***	0.1933***	0.1985***	0.1921***
	(0.0128)	(0.0130)	(0.0134)	(0.0134)	(0.0133)	(0.0103)
Head Education	0.0253***	0.0259***	0.0222***	0.0239***	0.0230***	0.0220***
	(0.0027)	(0.0027)	(0.0024)	(0.0027)	(0.0026)	(0.0031)
Mthly road access	-0.0061	-0.0060	-0.0052	-0.0053	-0.0049	0.0059**
	(0.0044)	(0.0044)	(0.0044)	(0.0044)	(0.0044)	(0.0029)
D. to market	6.2×10^{-5}	5.3×10^{-5}	3.76×10^{-5}	-5.39×10^{-5}	-0.0003	-0.0022*
	(0.0021)	(0.0022)	(0.0022)	(0.0021)	(0.0021)	(0.0011)
D. to bank	0.0044	0.0045	0.0057*	0.0058*	0.0053	-0.0032
	(0.0032)	(0.0032)	(0.0034)	(0.0034)	(0.0033)	(0.0021)
D. to school	0.0282	0.0268	0.0253	0.0250	0.0226	-0.0119**
	(0.0216)	(0.0215)	(0.0213)	(0.0211)	(0.0205)	(0.0059)
D. to Health Post	-0.0018	-0.0019	-0.0014	-0.0015	-0.0013	-0.0016*
	(0.0013)	(0.0013)	(0.0014)	(0.0015)	(0.0014)	(0.0009)
Fixed-effects						
Year		Yes	Yes	Yes	Yes	Yes
Male HH head			Yes	Yes	Yes	Yes
Marital status of head				Yes	Yes	Yes
Household shock					Yes	Yes
District						Yes
Fit statistics						
Observations	16,944	16,944	16,944	16,944	16,944	16,944
R^2	0.11952	0.11948	0.07890	0.08800	0.11898	0.25782
Within R^2	0.11952	0.11107	0.03662	0.04331	0.07356	0.12204

Clustered (cluster) standard-errors in parentheses

Signif. Codes: ***: 0.01, **: 0.05, *: 0.1

Note: Assets, income, and consumption are taken in *Log* forms, and D. represents distance.

Source: Author's Calculation

level variations leads to a slight decrease in the remittance coefficient; however, the sign remains unchanged, and the significance persists even after this control. This implies that remittances independently contribute to explaining household consumption patterns. Notably, the other coefficients in the model remain stable despite the introduction of various controls.

Table 4.7 presents the IV model specification for food consumption. The model demonstrates that without fixed effects, foreign remittances exert a significant influence on food consumption. With a one percentage increase in remittances, food consumption sees an average increase of 0.05 percentage points, while other

Table 4.9: Education expense and remittance

Variable:	Education expense					
	(1)	(2)	(3)	(4)	(5)	(6)
Foreign remittance	0.1991**	0.2019**	0.1408	0.1437*	0.1440*	0.3887***
	(0.0789)	(0.0787)	(0.0860)	(0.0845)	(0.0846)	(0.1459)
HH size	0.9317***	0.9401***	1.007***	1.001***	1.001***	1.027***
	(0.0354)	(0.0357)	(0.0384)	(0.0379)	(0.0380)	(0.0390)
Land size (ha)	-0.4373***	-0.4376***	-0.3977***	-0.3840***	-0.3840***	-0.4040***
	(0.0946)	(0.0947)	(0.0897)	(0.0887)	(0.0887)	(0.0937)
HH size aged ≥ 70	-3.407***	-3.422***	-3.114***	-3.023***	-3.021***	-2.679***
	(0.3787)	(0.3822)	(0.3339)	(0.3113)	(0.3121)	(0.3945)
Wage income	-0.0213	-0.0220	-0.0190	-0.0176	-0.0176	0.0210
	(0.0168)	(0.0170)	(0.0160)	(0.0154)	(0.0155)	(0.0241)
HH assets	0.2141***	0.1951***	0.2189***	0.2170***	0.2166***	0.1578**
	(0.0582)	(0.0584)	(0.0567)	(0.0571)	(0.0572)	(0.0627)
Head education	0.1696***	0.1713***	0.1896***	0.1875***	0.1876***	0.2173***
	(0.0179)	(0.0178)	(0.0147)	(0.0164)	(0.0164)	(0.0240)
Mthly road access	0.0108	0.0110	0.0066	0.0066	0.0066	0.0313
	(0.0173)	(0.0174)	(0.0164)	(0.0165)	(0.0165)	(0.0198)
D. to market(hrs)	0.0128*	0.0128*	0.0129*	0.0131*	0.0132*	0.0099
	(0.0071)	(0.0072)	(0.0073)	(0.0073)	(0.0073)	(0.0065)
D. to bank(hrs)	0.0056	0.0057	-0.0007	-0.0006	-0.0005	-0.0160
	(0.0173)	(0.0175)	(0.0154)	(0.0157)	(0.0157)	(0.0134)
D. to school(hrs)	-0.0171	-0.0204	-0.0127	-0.0071	-0.0069	-0.0427
	(0.0622)	(0.0626)	(0.0588)	(0.0566)	(0.0568)	(0.0792)
D. to Health Post	-0.0065	-0.0069	-0.0096	-0.0095	-0.0095	-0.0173
	(0.0120)	(0.0120)	(0.0115)	(0.0111)	(0.0111)	(0.0122)
Fixed-effects						
Year		Yes	Yes	Yes	Yes	Yes
Male HH head			Yes	Yes	Yes	Yes
Marital status of head				Yes	Yes	Yes
Household shock					Yes	Yes
District						Yes
Fit statistics						
Observations	16,944	16,944	16,944	16,944	16,944	16,944
R^2	0.15631	0.15594	0.19876	0.19884	0.19870	0.06160
Within R^2	0.15631	0.15585	0.19511	0.18465	0.18450	0.01989

Clustered (cluster) standard-errors in parentheses

Signif. Codes: ***: 0.01, **: 0.05, *: 0.1

Note: Assets, income, and consumption are taken in *Log* forms, and D. represents distance.

Source: Author's Calculation

factors remain constant. Likewise, households with assets and income from employment also positively impact consumption. When accounting for district-level variations and controlling for their intensity, the impact slightly diminishes, yet the coefficient remains positive and statistically significant. Furthermore, upon introducing fixed effects such as year, sex of the household head, household shocks, and marital status of the head, the coefficient remains stable and significant. This suggests that remittances independently contribute to the household's food con-

sumption patterns.

Similarly, Table 4.8 illustrates the IV model specification for non-food consumption. In the absence of fixed effects, remittances have a noteworthy and statistically significant effect on household non-food consumption. On average, a one-percentage increase in foreign remittances corresponds to a 0.043 percentage point increase in household non-food consumption while keeping other factors constant. Household assets and characteristics such as family size, wage income, and the education level of the household head also exhibit a significantly positive impact on non-food consumption. The model with fixed effects yields consistent results, indicating the robustness and generalizability of the estimated coefficients.

Table4.9 presents the education model and its specifications. Without additional controls, remittances' impact on education reveals a positive and significant relationship with education expenses within rural households. On average, a one-percentage change in received remittances corresponds to a 0.19 percentage-point increase in education expenses while holding other factors constant. However, upon introducing controls such as the year, the coefficient of remittances experiences a slight alteration. When controlling for households with male heads, the significance and direction of the foreign remittance coefficient change, rendering it insignificant. Interestingly, even with the introduction of district-level variance controls, the impact of remittances on education remains positive and significant.

In the models with specified controls, the R^2 value increases as we introduce more controls. However, in the education model, the R^2 improves while also changing significance, albeit with a minor alteration in the coefficient value as we include additional controls. For instance, in the food consumption model Table 4.7, without controls, the R^2 value is 0.0122. But when we incorporate district-level controls, the R^2 value increases to 0.37 without changing the coefficient sign; however, this adjustment decreases the coefficient value due to a reduction in degrees of freedom. A similar trend is observed in the non-food model, where the R^2 value increases with added controls without altering the sign but slightly affecting the magnitude of the coefficient. This pattern holds true for the other specified models as well. It indicates the inferences are robust and generalizable.

The model in Table 4.10 presents the comprehensive specification model with all conceivable controls. Model 1 in the table represents the total consumption model, incorporating total food and non-food consumption, total education expenses, as well as alcohol and tobacco consumption. The received foreign remittance exhibits a positive and significant association with total household consumption. On average, a one-unit increase in received foreign remittance corresponds to a 0.045 percentage point increase in total consumption, all else being equal.

Table 4.10: Full specification model of various consumption headings

Dependent Variables:	Total	Food	Non-food	Education	Health	Ritual	Alco-tobacco
Model:	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Variables							
Foreign remittance	0.0458***	0.0329**	0.0437**	0.3887***	0.1184*	0.0204	0.0768
	(0.0158)	(0.0128)	(0.0200)	(0.1459)	(0.0700)	(0.0462)	(0.1288)
HH size	0.1238***	0.1249***	0.0870***	1.027***	0.2505***	0.0583***	0.1554***
	(0.0029)	(0.0027)	(0.0033)	(0.0390)	(0.0182)	(0.0069)	(0.0217)
Land size (*ha*)	0.0610***	0.0470***	0.0890***	-0.4040***	0.0917*	0.1063***	0.0290
	(0.0081)	(0.0062)	(0.0129)	(0.0937)	(0.0517)	(0.0227)	(0.0756)
HH size aged $\geq$ 70	-0.1226***	-0.0938***	-0.1630***	-2.679***	1.618***	-0.2271*	-1.052***
	(0.0401)	(0.0357)	(0.0546)	(0.3945)	(0.2456)	(0.1366)	(0.3697)
Wage income	0.0069***	0.0046**	0.0116***	0.0210	0.0203*	0.0084	0.0603***
	(0.0026)	(0.0022)	(0.0033)	(0.0241)	(0.0123)	(0.0077)	(0.0219)
HH assets	0.1520***	0.1178***	0.1921***	0.1578**	0.1445***	0.2412***	-0.1814***
	(0.0076)	(0.0058)	(0.0103)	(0.0627)	(0.0392)	(0.0221)	(0.0577)
Head's education	0.0225***	0.0136***	0.0220***	0.2173***	0.0024	0.0165**	-0.1442***
	(0.0025)	(0.0020)	(0.0031)	(0.0240)	(0.0118)	(0.0071)	(0.0197)
Mthly road access	0.0081***	0.0067***	0.0059**	0.0313	0.0238**	-0.0159*	-0.0639***
	(0.0021)	(0.0019)	(0.0029)	(0.0198)	(0.0114)	(0.0094)	(0.0232)
D. to market (hrs)	-0.0009*	-0.0006	-0.0022*	0.0099	0.0037	-0.0034***	-0.0125
	(0.0005)	(0.0004)	(0.0011)	(0.0065)	(0.0029)	(0.0010)	(0.0097)
D. to bank (hrs)	-0.0017	-0.0014	-0.0032	-0.0160	-0.0014	0.0013	0.0233
	(0.0014)	(0.0014)	(0.0021)	(0.0134)	(0.0086)	(0.0030)	(0.0144)
D. to school (hrs)	-0.0103	-0.0096	-0.0119**	-0.0427	0.0167	-0.0308*	0.1328
	(0.0071)	(0.0070)	(0.0059)	(0.0792)	(0.0365)	(0.0172)	(0.1015)
D. to Health Post	-0.0022***	-0.0013***	-0.0016*	-0.0173	-0.0022	-0.0014	0.0017
	(0.0006)	(0.0004)	(0.0009)	(0.0122)	(0.0029)	(0.0013)	(0.0082)
Fixed-effects							
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Male HH head	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Marital status of head	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Household shock	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fit statistics							
Observations	16,944	16,944	16,944	16,944	16,944	16,944	16,944
R^2	0.31951	0.35618	0.25782	0.06160	0.30608	0.15352	0.15907
Within R^2	0.20832	0.25206	0.12204	0.01989	0.00114	0.03716	0.04013

Clustered (cluster) standard-errors in parentheses

Signif. Codes: ***: 0.01, **: 0.05, *: 0.1

Note: Assets, income, and consumption are taken in *Log* forms, and D. represents distance.

Source: Author's Calculation

Likewise, household assets and land size stand out as significant determinants of consumption. The coefficient for household assets shows a notably high level of significance. Furthermore, household size plays a pivotal role in determining total household consumption expenditure. However, the coefficient for household members aged greater than 70 exhibits a negative and significant impact on household consumption. Specifically, a one-percentage increase in the proportion of household members aged over seventy years and more results in an average reduction of total consumption by 12 percentage points. Moreover, the years of schooling of the household head and road access display a positive association with total consumption, while time to market and proximity to a health post has an inverse impact on total consumption.

Similarly, Table 4.10 model 2 represents the food consumption model. The received foreign remittance has a positive and significant impact on household food consumption. For instance, on average, a one-percentage increase in received remittances leads to a 0.032 percentage-point increase in food consumption. The effects of other variables, such as household size, years of schooling of the head, wage income, and household assets, are consistent with their impacts on total consumption, influencing food consumption in the same manner.

Model 3 in Table 4.10 depicts the non-food consumption model. The model demonstrates that received foreign remittances have a positive and significant impact on household non-food consumption. For instance, on average, a one-percentage increase in received remittances results in a 0.043 percentage-point increase in non-food consumption. Similarly, household assets, wage income, family size, education level of the head, and road access also serve as positive and significant determinants of household non-food consumption.

The education model (4) in Table 4.10 highlights a positive and significant relationship between the education expenses of rural households and received foreign remittances. The coefficient of remittances received is notably high and highly significant. This signifies that for every one-percentage increase in received remittances, the education expenses of the household increase by 0.3887 percentage points. Similarly, the education level of the household head and household size are other significant positive determinants of education expenses. However, the model also indicates an inverse impact of land size on household education expenses. This phenomenon could be attributed to larger land-owning households potentially discouraging school attendance, or it might be reflective of the relatively low education expenses in rural areas.

In Table 4.10, model 5 reveals that a one-percentage increase in received foreign remittances leads to a 0.11 percentage point increase in household health expenses. However, the coefficient for received remittances is hardly statistically significant. Conversely, the proportion of household members aged over 70 emerges as a prominent and positive determinant of health expenses. However, the education of the head and wage income are not significant, and it is as expected.

Ritual expense model (6) in Table 4.10 shows there is no relationship between remittance received and ritual expenses of rural households. Although household assets, household size, education level of the head, and access to markets emerge as positive and significant determinants of ritual expenses among rural households.

Model 7 in Table 4.10 presents the alcohol and tobacco consumption model. The influence of foreign remittances on alcohol and tobacco consumption does not achieve statistical significance. However, household size and wage income positively

and significantly impact alcohol and tobacco consumption. On the other hand, the education level of the household head, household assets, and road access have a negative impact on alcohol and tobacco consumption within rural households.

4.4 Discussion

Based on the findings from the destination selection model (Table 4.3), it determined that household assets stand out as a critical determinant influencing migration destination choices among rural households. The model reveals a noteworthy trend: as household assets increase, the likelihood of selecting Asian, Gulf, and OECD destinations experiences a significant rise. This suggests that elevated household assets provide economically disadvantaged households with the means to finance their migration expenses, thus mitigating financial constraints. This observation aligns with the conclusions drawn by Angelucci (2015) and is also consistent with the theoretical setup of Shrestha (2017) as it explains assets as a threshold of affordability of migration. However, these results diverge from the findings of Abramitzky et al. (2013), which were based on a distinct socio-economic context focusing on migration decisions among Norwegian individuals. The study indicated that individuals with higher assets were less likely to migrate.

Another significant dimension of the findings of this thesis pertains to the impact of migration networks. The results strongly indicate that individuals living in communities with a history of international migration are more inclined to select OECD destinations over India. This insight further highlights the pivotal role played by migration networks in ameliorating the information constraints experienced by rural individuals. These networks actively facilitate the dissemination of destination-related information and crucial details, thereby empowering individuals to make well-informed decisions. Furthermore, within the rural community context, these migration networks extend their influence by providing financial support to households, thereby adding another layer of significance, as also elucidated by Munshi (2003) and Vertovec (2002). Additionally, our findings align with the theoretical framework presented by Tilly (1991). In addition, the result shows household with a higher year of schooling increases the probability of selecting the destination of OECD and Gulf compared to India and Asia. It means educated head send their member to the OECD and Gulf as the rural areas with higher years of schooling have more information about the destination compared to lower ones.

From the second model Table 4.10, it becomes evident that foreign remittances wield a significant impact on the welfare of Nepalese rural households, as they positively influence various dimensions of consumption, such as food, non-food, and education expenses. The research findings are noteworthy because re-

mittances constitute a major income source for rural households, particularly in Nepal, where the country ranks tenth in the world in terms of foreign remittance to GDP ratio (World Bank, 2023a). According to the results, rural households allocate their remittance income predominantly towards enhancing human capital, followed by non-food and food consumption, with higher elasticity observed in the respective dimensions. This observation aligns with the findings of Mishra et al. (2022), who similarly establishes that remittances significantly and positively impact education and food consumption among Nepalese households. A similar conclusion is drawn by Bansak et al. (2015) and Raut and Tanaka (2018), who highlight the positive impact of remittances on child education within Nepalese households. Remittances also serve as a source of financing for rural household health expenses; however, their statistical significance is limited, possibly due to their transient nature.

Additionally, the influence of remittance income on ritual expenditures is not evident, with these expenses being better explained by household assets and other characteristics like family size. Similarly, the effect of remittances on household alcohol and tobacco consumption does not significantly deviate from zero, likely due to the habitual nature of these products. However, households with higher years of schooling discourage alcohol and tobacco consumption.

CHAPTER V
SUMMARY, CONCLUSION AND RECOMMENDATIONS

In this chapter, the summary of the study is presented in the first section. The conclusion, recommendations, and potential extensions are shown in the subsequent section.

5.1 Summary of the thesis

The examination of factors affecting an individual's choice of a migration destination and the impact of remittances sent by foreign migrants on consumption in rural Nepalese households is the focus of this thesis. The Nepal Household Risk and Vulnerability Survey (NHRVS) panel data spanning from 2016 to 2018, produced by the World Bank, are used in this study. The effect of household assets on the selection of migration destinations among India, OECD, Gulf, and Asia is identified through the estimation of the multinomial logistic regression model. This study found that household characteristics such as assets, year of schooling of the head, and migration network are the key determinants of the international destination choice of rural households. Furthermore, the importance of remittances as a driving force in enhancing household consumption, welfare, and human capital accumulation within rural households is highlighted through the use of 2SLS.

5.2 Conclusion

The research examines the impact of household assets on migration destination selection by rural households and the impact of remittance income on household consumption headings (i.e. Food, Non-food, etc.). Enhancing household wealth has a transformative effect on household migration decision preferences, as our findings indicate a positive correlation between higher household wealth and the likelihood of selecting advanced country destinations, as determined through multinomial logistic regression modelling. Increasing household assets empowers households to manage migration costs, influencing their destination preferences. Moreover, migration networks play an influential role in encouraging rural individuals to opt for advanced countries over India as their migration destination.

Similarly, foreign remittances play a pivotal role in enhancing rural households' economic and social welfare. Consumers allocate their remittance income

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towards various dimensions, including education, health, food, and non-food consumption, collectively improving social welfare among rural households. The results underscore that families strategically invest their remittance income in human capital and consumption endeavours, effectively fostering an environment of improved well-being.

5.3 Recommendation

Household characteristics play a crucial role in determining foreign migration. The research findings indicate that affluent households enhance their quality of life by taking advantage of opportunities presented by the international labour market. This dynamic contributes to societal inequality between the affluent and less privileged members when domestic job opportunities are unavailable. To address this, it would benefit the government to ensure improved prospects within the domestic economy.

Additionally, the study has revealed that remittances play a crucial role in enhancing the living standards of rural households in Nepal, primarily through increased consumption and human capital accumulation. This suggests that remittances could play a vital role in boosting both consumption and savings in the economy, stimulating domestic demand and providing investment financing. Therefore, it would be advisable for the government to implement appropriate policies to promote private-sector investment, which can contribute to long-term economic growth and create employment opportunities within the domestic economy.

Furthermore, since remittance income is exogenous to the nation, an increased reliance on the international labour market may foster an exchange-based economy in developing countries. Therefore, it would be better if the government and stakeholders took appropriate actions to reduce the dependency on international labour markets.

5.4 Possible extension

Due to time and resource constraints, the focus was solely placed on examining the push factors of international labour migration. There is potential for this version to be expanded by incorporating the pull factors of migration into the initial model.

Similarly, this study estimates the foreign remittance impacts on household consumption. However, the researcher is unable to estimate the destination country-wise impact of remittance on the household consumption title separately as we applied the IV model in which there is no possibility of interaction of remittance with the destination group. Might extend this work by applying the

appropriate method. Additionally, We are unable to estimate the DID model for comparison between recipient and non-recipient due to resource and time limitations. It is possible to extend this version by estimating the DID model.

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ANNEX A
APPENDIX ON ANALYSIS

A.1 Destination selection model

Table A.1: Destination selection model

	Dependent variable:		
	Asia	Gulf	OECD
	(1)	(2)	(3)
HH assets	0.348***	0.500***	1.106***
	(0.115)	(0.089)	(0.182)
Land size *ha*	0.607***	0.120	0.422*
	(0.207)	(0.196)	(0.246)
HH migration network	−0.501***	−0.309***	0.368***
	(0.141)	(0.095)	(0.136)
Community migration status	−1.004***	−0.449**	−0.952***
	(0.234)	(0.199)	(0.345)
Sex of HH head	0.107	−0.387*	−0.338
	(0.289)	(0.202)	(0.413)
year of schooling of head	−0.008	0.040**	0.131***
	(0.025)	(0.019)	(0.034)
timi to dailly market	−0.174*	−0.021	−0.052
	(0.094)	(0.046)	(0.153)
Constant	−4.629***	−5.995***	−17.084***
	(1.568)	(1.201)	(2.568)
Akaike Inf. Crit.	2,108.052	2,108.052	2,108.052

Note: *p<0.1; **p<0.05; ***p<0.01; SE in paranthesis

ANNEX B
APPENDIX ON DESTINATION

Table B.1: Destination classification

Code	Group	Country name	Characteristics
0	India	India	Nearest, does not require Visa, low cost to migrate, similar socio-economic characteristics
1	Asia	Maldives, Bhutan, China, Bangladesh, Hongkong, Malayasia, Kyrgyzstan, Afghanistan,Philippines, Kazakhstan, Macau, Iraq	Low middle income countries, required visa and work permit.
2	GULF	Saudi Arabia ,United Arab Emirates, Kuwait, Bahrain, Oman	Similar soci-economic characteristics among them, and similar wage paying
3	OECD	United Kingdom, United States, South Korea, Australia, Israel, Ireland, Canada, Netherlands, Denmark, Portugal, New Zealand, Switzerland, Germany, Norway, Turkey ,Poland, Japan	High income, high wage paying countries, high cost countries and required visa and work permit.

Source: Nepal Household Risk and Vulnerability survey 2016-2018

ANNEX C

APPENDIX ON PROGRAM

C.1 Asset estimation

```r
if(!is.null(dev.list())) dev.off()
rm(list=ls())
setwd(dirname(rstudioapi::getSourceEditorContext()$path))
cat("\014")
library("tidyverse")
library("dplyr")
library("tidyr")
#dplyr summaries warning remove
options(dplyr.summarise.inform = FALSE)

housing<-haven::read_dta("../../data/wave_first_hh/
    Section_4.dta")%>%
mutate(owns_house            = if_else(s04q03 == 1, 1,
    0),
hh_id   =  paste0(hhid, "-", psu),
valueOf_house       = if_else(owns_house == 1, s04q19, 0))
    %>%
select("hh_id", "valueOf_house")

#### Inventory ######

hh_inventoryof_durable_goods <-haven::read_dta("../../
    data/wave_first_hh/Section_6c.dta") %>%
mutate(hh_id                       = paste0(hhid, "-",
    psu),
inventory_id          = inventoryid,
value_commun_inventry  = case_when(inventoryid%in%c
    (501,510,512,
516,502) ~ s06q03b, TRUE ~ 0),
value_twowheeler_vehical  = case_when(inventoryid%in%c
    (503,504) ~ s06q03b,
TRUE ~ 0),
value_four_wheeler_vehical= case_when(inventoryid%in%c
    (505) ~ s06q03b,
TRUE ~ 0),
value_home_app_ware  = case_when(inventoryid%in%c
```

```r
          (506,507,508,
509,511,514,513) ~ s06q03b,
TRUE ~ 0),
value_jewalary   = case_when(inventoryid%in%c(515)~
    s06q03b,
TRUE      ~ 0))%>%
mutate(phisical_assests =(value_commun_inventry+value_
    twowheeler_vehical+value_four_wheeler_vehical+
value_home_app_ware+ value_jewalary)) %>%
group_by(hh_id) %>%
summarise(value_commun_inventry =sum(value_commun_
    inventry),
value_twowheeler_vehical = sum(value_twowheeler_vehical),
value_four_wheeler_vehical = sum(value_four_wheeler_
    vehical),
value_home_app_ware = sum(value_home_app_ware),
value_jewalary = sum(value_jewalary),
phisical_assests =sum(phisical_assests))

####### land holding ##############

hh_land_holding<-haven::read_dta("../../data/wave_first_
    hh/Section_9a1.dta")%>%

mutate_at(c("s09q08a","s09q08b","s09q12a", "s09q05", "
    s09q12b" ), ~ replace_na(.,0)) %>%
mutate(hh_id = paste0(hhid, "-", psu),
area_squr = area_sqm,
value_land = case_when(s09q03a%in%c(1,2) ~ s09q06),
low_land = if_else(s09q05 == 2, 1, 0)) %>%
group_by(hh_id) %>%
summarise(land_area_squr = sum(area_squr),
value_land = sum(value_land))

#### real_estate_assets #########

real_estate_asset<-housing %>%
left_join(hh_land_holding, by = c("hh_id" = "hh_id")) %>%
mutate(value_land = if_else(!is.na(value_land), value_
    land, 0),
real_estate_assets = value_land +valueOf_house)

############# value of livestocks and revelue from it
    sold ############
hh_value_livestock<-haven::read_dta("../../data/wave_
    first_hh/Section_9d.dta") %>%
mutate_at(c("s09q57a","s09q57b","s09q60a","s09q61b" ), ~
```

```r
          replace_na(.,0))%>%
    mutate(hh_id = paste0(hhid, "-", psu)) %>%
    group_by(hh_id) %>%
    summarise(value_livestock = sum(s09q57b),
    rev_livestock_sold = sum(s09q60a),
    exp_livestock_buy = sum(s09q61b))


    ############# farming assets and ites values
        #############

    hh_farming_aseets<-haven::read_dta("../../data/wave_first
        _hh/Section_9f.dta") %>%
    mutate_at(c("s09q66","s09q68"), ~ replace_na(.,0))%>%
    mutate(hh_id= paste0(hhid, "-", psu)) %>%
    group_by(hh_id) %>%
    summarise(value_farming_assets = sum(s09q66),
    value_seles_assets   = sum(s09q68))


    ########### non_agriculture #############
    hh_business_exp_rev<-haven::read_dta("../../data/wave_
        first_hh/Section_10.dta") %>%
    mutate_at(c("s10q04","s10q05", "s10q06","s10q07","s10q08"
        ,"s10q09", "s10q10"), ~ replace_na(.,0))%>%
    mutate(hh_id = paste0(hhid, "-", psu),
    regular_expense = select(., s10q05:s10q08)%>%rowSums(.))
        %>%
    group_by(hh_id) %>%
    summarise(buss_gross_revenue = sum(s10q04 ),
    buss_regular_expense  = sum(regular_expense),
    buss_exp_assets = sum(s10q09),
    buss_income_seles_assets = sum(s10q10))


    ######Financial Assets and liabilities ######

    hh_borrowing<-haven::read_dta("../../data/wave_first_hh/
        Section_12a.dta") %>%
    mutate(hh_id = paste0(hhid, "-", psu),
    borrowing  = (s12q06-s12q11),
    repay_loan = if_else(is.na(s12q11),0,s12q11),
    borrowing_p = if_else(borrowing < 0, 0, borrowing)) %>%
    group_by(hh_id) %>%
    summarise(borrowing = sum(borrowing_p, na.rm = T),
    repay_loan = sum(repay_loan))


    hh_lending<-haven::read_dta("../../data/wave_first_hh/
        Section_12b.dta")%>%
    mutate(hh_id = paste0(hhid, "-", psu),
```

```r
lending = s12q17-s12q21,
lending_p = if_else(lending < 0, 0, lending)) %>%
group_by(hh_id) %>%
summarise(hh_lending = sum(lending_p))


hh_bank_deposit_assets<-haven::read_dta("../../data/wave_
    first_hh/Section_12c.dta")%>%
mutate(hh_id = paste0(hhid,"-", psu),
saving = case_when(assetid%in%c(1,2,4,5) ~ s12q23),
stocks_value = case_when(assetid == 3 ~ s12q23),
income_from_deposite_share= case_when(assetid%in%c
    (1,2,3,4,5) ~ s12q24 ),
income_from_deposite_share_ = if_else(income_from_
    deposite_share == 998, 0, income_from_deposite_share)
    ) %>%
group_by(hh_id) %>%
summarise(hh_saving = sum(saving, na.rm = T),
hh_stocks_value = sum(stocks_value, na.rm = T),
hh_income_repi_finAssets = sum(income_from_deposite_share
    _, na.rm = T))

#####  financial_assets #########
financial_asset<-housing %>%
left_join(hh_bank_deposit_assets, by = c("hh_id" = "hh_id
    ")) %>%
left_join(hh_borrowing, by = c("hh_id" = "hh_id")) %>%
left_join(hh_lending, by = c("hh_id" = "hh_id")) %>%
left_join(hh_value_livestock, by = c("hh_id" = "hh_id"))
    %>%
left_join(hh_farming_aseets, by = c("hh_id" = "hh_id"))
    %>%
left_join(hh_inventoryof_durable_goods, by = c("hh_id" =
    "hh_id")) %>%
left_join(hh_business_exp_rev, by = c("hh_id" = "hh_id"))
     %>%
mutate(saving = if_else(!is.na(hh_saving), hh_saving, 0),
stocks = if_else(!is.na(hh_stocks_value), hh_stocks_value
    , 0),
lending = if_else(!is.na(hh_lending), hh_lending, 0),
borrowing = if_else(!is.na(borrowing), borrowing, 0),
firming_assets = if_else(!is.na(value_farming_assets),
    value_farming_assets, 0),
livestocks_assets = if_else(!is.na(value_livestock),
    value_livestock, 0),
physical_assets = if_else(!is.na(phisical_assests),
    phisical_assests, 0),
```

```r
            business_assets = if_else(!is.na(buss_exp_assets), buss_
                exp_assets, 0),
            financial_assets = (saving +stocks+lending)-borrowing,
            agriculture_assets =firming_assets+ livestocks_assets,
            net_lending = lending-borrowing,
            borrow_dummy = if_else(net_lending<0,1,0),
            repay_loan = if_else(is.na(repay_loan),0,repay_loan)) %>%
            select("hh_id", "financial_assets", "agriculture_assets",
                "physical_assets",
            "business_assets","repay_loan", "borrow_dummy","borrowing
                " ,"net_lending")

        sdat<-housing %>%
        left_join(financial_asset, by = c("hh_id" = "hh_id")) %>%
        left_join(real_estate_asset, by = c("hh_id" = "hh_id"))
            %>%
        select("hh_id", "financial_assets", "agriculture_assets",
            "real_estate_assets",
        "value_land", "physical_assets", "business_assets","
            borrowing","repay_loan", "borrow_dummy", "net_lending
            ")

        write_rds(sdat, file = "../../data/analysis_data/assets_
            2016.Rds",
        compress = "gz",
        compression = 2L)
```

C.2 Income estimation

```r
if(!is.null(dev.list())) dev.off()
rm(list=ls())
setwd(dirname(rstudioapi::getSourceEditorContext()$path))
cat("\014")
library("tidyverse")
library("dplyr")
library("tidyr")
#dplyr summaries warning remove
options(dplyr.summarise.inform = FALSE)


##### housing information, Income and Exp on basic hh services
    ###########

housing<-haven::read_dta("../../data/wave_first_hh/Section_4.dta"
    )%>%
mutate(hh_id = paste0(hhid, "-", psu),
house_rent_income      = if_else(!is.na(s04q04b), s04q04b, 0))%>%
select("hh_id","house_rent_income")
```

```r
worktime<-haven::read_dta("../../data/wave_first_hh/Section_7.dta
    ") %>%
mutate(hh_id = paste0(hhid,"-", psu),
uj_id = paste0(member_id, "-", jobid)) %>%
select("hh_id", "uj_id", everything()) %>%
mutate(across(c(s07q03_3:s07q03_14), ~replace_na(.,0))) %>%
mutate(across(c(s07q04_3:s07q04_14), ~replace_na(.,0))) %>%
mutate(tot_work_months = select(., s07q03_3:s07q03_14)%>%
    rowSums(.),
tot_work_day_year = select(., s07q04_3:s07q04_14)%>%rowSums(.),
work_hour_inday = s07q05)%>%
select("hh_id","uj_id","tot_work_months", "tot_work_day_year", "
    work_hour_inday" )


########## wage income ##########

hh_wage_jobs<-haven::read_dta("../../data/wave_first_hh/Section_
    8.dta") %>%
mutate(uj_id = paste0(member_id, "-", wagejobid)) %>%
left_join(worktime, by = "uj_id", "hh_id") %>%
mutate(across(c(s08q12a:s08q12e), ~replace_na(.,0))) %>%
mutate_at(c("s08q06","s08q08", "s08q10","s08q11b","s08q13"), ~
    replace_na(.,0)) %>%
mutate(wage_recp_month = select(., s08q12a:s08q12b)%>%rowSums
    (.),
allown_recp_year = select(., s08q12c:s08q12e)%>%rowSums(.),
day_wage = s08q06,
year_cashkind_recp_age =s08q10+s08q11b)%>%
mutate(day_year_cashkind_recp = case_when(s08q05 == 1 ~ day_wage*
    tot_work_day_year+s08q08),
yearly_cashkind_recp_age = case_when(s08q05 == 2 & s08q09 == 1 ~
    year_cashkind_recp_age),
yearly_caskind_recp_nonage = case_when(s08q05 == 2 & s08q09 == 2
    ~ (wage_recp_month * tot_work_months+allown_recp_year)),
year_cashkind_contract = case_when(s08q05== 3 ~ s08q13)) %>%
mutate_at(c("day_year_cashkind_recp", "yearly_cashkind_recp_age",
    "yearly_caskind_recp_nonage", "year_cashkind_contract"), ~
    replace_na(.,0)) %>%
mutate(year_total_wage_income = (day_year_cashkind_recp + yearly_
    cashkind_recp_age+ yearly_caskind_recp_nonage+
year_cashkind_contract)) %>%
group_by(hh_id) %>%
summarise(day_year_cashkind_recp =sum(day_year_cashkind_recp),
yearly_cashkind_recp_age = sum(yearly_cashkind_recp_age),
yearly_caskind_recp_nonage = sum(yearly_caskind_recp_nonage),
```

```r
year_cashkind_contract = sum(year_cashkind_contract),
total_wage_income = sum(year_total_wage_income),
number_wage_earners = n())


###### land income ###########

hh_land_holding<-haven::read_dta("../../data/wave_first_hh/
    Section_9a1.dta")%>%
mutate_at(c("s09q08a","s09q08b","s09q12a", "s09q05", "s09q12b" ),
      ~ replace_na(.,0))%>%
mutate(hh_id = paste0(hhid, "-", psu),
rent_from_land_wet = case_when(s09q07%in%c(2,3,6) ~ (s09q08a+
    s09q08b),
TRUE ~ 0),
rent_from_land_dry = case_when(s09q11%in%c(2,3,6) ~ (s09q12a+
    s09q12b),
TRUE ~ 0)) %>%
group_by(hh_id) %>%
summarise(land_area_squr = sum(area_sqm),
tot_land_rent_recp = sum(rent_from_land_wet+rent_from_land_dry))

rent_paid<-haven::read_dta("../../data/wave_first_hh/Section_9a2.
    dta")%>%
mutate(hh_id = paste0(hhid, "-", psu),
rent_paid_landloard = if_else(!is.na(s09q18), s09q18, 0)) %>%
group_by(hh_id) %>%
summarise(rent_paid_landloard = sum(rent_paid_landloard))

hh_owns_prod_consum_durable_goods <-haven::read_dta("../../data/
    wave_first_hh/Section_6d.dta") %>%
mutate(hh_id                        = paste0(hhid, "-", psu),
value_owns_house_production_durable_goods  = if_else(!is.na(
    s06q04c), s06q04c, 0)) %>%
select("hh_id", "value_owns_house_production_durable_goods" ) %>%
group_by(hh_id) %>%
summarise(value_owns_house_production_durable_goods = sum(value_
    owns_house_production_durable_goods))

############  land sell income #########
hh_land_buy_sell<-haven::read_dta("../../data/wave_first_hh/
    Section_9a3.dta") %>%
mutate(hh_id = paste0(hhid,"-", psu),
value_land_sel = case_when(s09q26%in%c(1,3)~s09q28a)) %>%
mutate_at(c("value_land_sel"), ~ replace_na(.,0)) %>%
select("hh_id","value_land_sel") %>%
group_by(hh_id) %>%
summarise(value_land_sel =sum(value_land_sel))
```

```r
#################### crop income in dry season
    #################

crop_sales_income_dry<-haven::read_dta("../../data/wave_first_hh/
    Section_9b2.dta")%>%
mutate(hh_id = paste0(hhid, "-", psu),
income_crp_sel_dry = if_else(s09q50e>0, s09q50e*s09q51, 0)) %>%
group_by(hh_id) %>%
summarise(income_crp_sel_dry = sum(income_crp_sel_dry))


hh_crop_sales_income<-haven::read_dta("../../data/wave_first_hh/
    Section_9b1.dta")%>%
mutate(hh_id = paste0(hhid, "-", psu),
income_crp_sel = if_else(s09q41e>0, s09q41e*s09q42, 0)) %>%
group_by(hh_id) %>%
summarise(income_crp_sel = sum(income_crp_sel))


############## age rental income and expenses on renting and
    maintenance   ###########

hh_income_exp_age<-haven::read_dta("../../data/wave_first_hh/
    Section_9c.dta") %>%
mutate_at(c("s09q54b", "s09q54d","s09q54f","s09q55b","s09q55d", "
    s09q55f", "s09q55h",
"s09q55j", "s09q55l","s09q55n", "s09q55p","s09q55r" ), ~ replace_
    na(.,0)) %>%
mutate(hh_id = paste0(hhid, "-", psu)) %>%
group_by(hh_id) %>%
summarise(rental_income_age_assets = sum(s09q54b +s09q54d+s09q54f
    ),
exp_rent_ment_cost = sum(s09q55b+s09q55d+s09q55f+s09q55h+s09q55j+
s09q55l+s09q55n+s09q55p+s09q55r),
net_rental_income  = sum(rental_income_age_assets-exp_rent_ment_
    cost))



############ revelue from it sold ############

hh_value_livestock<-haven::read_dta("../../data/wave_first_hh/
    Section_9d.dta") %>%
mutate_at(c("s09q57a","s09q57b","s09q60b","s09q61b" ), ~ replace_
    na(.,0))%>%
mutate(hh_id = paste0(hhid, "-", psu)) %>%
group_by(hh_id) %>%
summarise(net_revenue_livestocks =sum(s09q60b- s09q61b ),
livestocks_sales = sum(s09q60b),
```

```r
livestocks_purchese = sum(s09q60b))


############ livestock income #############

hh_income_from_exp_livestock<-haven::read_dta("../../data/wave_
    first_hh/Section_9e.dta") %>%
mutate_at(c("s09q62a", "s09q62b","s09q62c","s09q62d","s09q62e", "
    s09q62f", "s09q62g",
"s09q62h", "s09q62i","s09q63a", "s09q63b","s09q63c" ,"s09q63d"),
    ~ replace_na(.,0))%>%
mutate(hh_id = paste0(hhid, "-", psu),
incomeFrom_livestock_items = select(., s09q62a:s09q62i)%>%rowSums
    (.),
expenses_livestock_items = select(., s09q63a:s09q63d)%>%rowSums
    (.))%>%
group_by(hh_id) %>%
summarise(net_incomeFrom_livestock_items = sum(incomeFrom_
    livestock_items-expenses_livestock_items))

###########agriculture Expenses #############

hh_cost_agri_production<-haven::read_dta("../../data/wave_first_
    hh/Section_9c.dta") %>%
mutate_at(c("s09q52b", "s09q52d","s09q52f","s09q52j","s09q53b", "
    s09q52h", "s09q53d",
"s09q53f", "s09q53h","s09q53j" ), ~ replace_na(.,0)) %>%
mutate(hh_id = paste0(hhid, "-", psu),
seed       =  s09q52b + s09q53b,
fertilizer = s09q52d + s09q53d,
insecticite = s09q52f + s09q53f,
equipment = s09q52h + s09q53h,
labour = s09q52j + s09q53j) %>%
mutate_at(c("seed", "fertilizer","insecticite","equipment","
    labour"), ~ replace_na(.,0)) %>%
select("hh_id", "seed", "fertilizer", "insecticite", "equipment",
    "labour") %>%
mutate(tot_input_exp = select(., seed:labour)%>%rowSums(.)) %>%
group_by(hh_id) %>%
summarise(seed = sum(seed),
fertilizer = sum(fertilizer),
insecticite = sum(insecticite),
equipment = sum(equipment),
labour = sum(labour),
tot_input_exp = sum(tot_input_exp))

########### non_agriculture ############
```

```r
hh_business_exp_rev<-haven::read_dta("../../data/wave_first_hh/
    Section_10.dta") %>%
mutate_at(c("s10q04","s10q05", "s10q06","s10q07","s10q08","s10q09
    ", "s10q10"), ~ replace_na(.,0))%>%
mutate(hh_id = paste0(hhid, "-", psu),
regular_expense = select(., s10q05:s10q08)%>%rowSums(.)) %>%
group_by(hh_id) %>%
summarise(buss_gross_revenue = sum(s10q04 ),
buss_regular_expense  = sum(regular_expense),
net_income = sum(buss_gross_revenue-buss_regular_expense))


############ household remitance receiped #########
migration<-haven::read_dta("../../data/wave_first_hh/Section_11.
    dta") %>%
filter(s11q01d>=10) %>%
filter(hhid != 3119) %>%
mutate(hh_id = paste0(hhid, "-", psu)) %>%
mutate(domestic_remit = if_else(s11q02 == 1 & s11q07a==1, s11q07c
    , 0 ),
foreign_remit = if_else(s11q02 == 2 & s11q07a==1, s11q07c, 0 ))
    %>%
group_by(hh_id) %>%
summarise(domestic_remit = sum(domestic_remit, na.rm = T),
foreign_remit = sum(foreign_remit, na.rm = T))


############ income from fin assets ##########
hh_bank_deposit_assets<-haven::read_dta("../../data/wave_first_hh
    /Section_12c.dta")%>%
mutate(hh_id = paste0(hhid,"-", psu),
income_from_deposite_share= case_when(assetid%in%c(1,2,3,4,5) ~
    s12q24 ),
income_from_deposite_share_ = if_else(income_from_deposite_share
    == 998, 0, income_from_deposite_share)) %>%
group_by(hh_id) %>%
summarise(hh_income_repi_finAssets = sum(income_from_deposite_
    share_, na.rm = T))


hh_lending_interest<-haven::read_dta("../../data/wave_first_hh/
    Section_12b.dta")%>%
mutate(hh_id = paste0(hhid,"-", psu),
interest_hh_lending = (s12q17*s12q19)/100) %>%
group_by(hh_id) %>%
summarise(interest_hh_lending = sum(interest_hh_lending))


hh_borrowing<-haven::read_dta("../../data/wave_first_hh/Section_
    12a.dta") %>%
```

```r
mutate(hh_id = paste0(hhid,"-", psu),
interest_hh_borrowing = (s12q06*s12q09)/100) %>%
group_by(hh_id) %>%
summarise(interest_hh_borrowing = sum(interest_hh_borrowing))
########## transfer income ############

hh_pension<-haven::read_dta("../../data/wave_first_hh/Section_12d
    .dta")%>%
mutate(hh_id = paste0(hhid, "-", psu),
pension_recp = s12q27)%>%
group_by(hh_id) %>%
summarise(hh_pension_recp = sum(pension_recp, na.rm = T))

#####fin_gift receive##

hh_receiveMoney_givenFormOther<-haven::read_dta("../../data/wave_
    first_hh/Section_13b.dta") %>%
mutate(hh_id = paste0(hhid, "-", psu),
income_reciep = s13q16a+s13q16b) %>%
group_by(hh_id) %>%
summarise(hh_receiveMoney_givenFormOther = sum(income_reciep, na.
    rm = T))

#####fin_gift receive From NGOs##

hh_receiveMoney_givenFormNGOS<-haven::read_dta("../../data/wave_
    first_hh/Section_13c.dta") %>%
mutate(hh_id = paste0(hhid, "-", psu),
income_reciep_ngos = s13q19c) %>%
group_by(hh_id) %>%
summarise(hh_receiveMoney_givenFormNGOs = sum(income_reciep_ngos,
    na.rm = T))

########## public assistennce ########

hh_government_transfer_assistence_cash<-haven::read_dta("../../
    data/wave_first_hh/Section_14a.dta") %>%
mutate(hh_id = paste0(hhid, "-", psu),
income_received_cash = case_when(pubcashid%in%c(1, 2, 3) ~
    s14q04b ),
emergency_assistence = case_when(pubcashid%in%c(9,10) ~ s14q04b))
    %>%
group_by(hh_id) %>%
summarise(income_received_cash = sum(income_received_cash, na.rm
    = T),
emergency_assistence_cash =sum(emergency_assistence, na.rm = T))
```

```r
hh_government_transfer_assistent_kind<-haven::read_dta("../../
    data/wave_first_hh/Section_14b.dta") %>%
mutate(hh_id = paste0(hhid, "-", psu),
income_received_inkind = case_when(pubkindid%in%c(1, 2, 3, 4) ~
    s14q13b_q )) %>%
group_by(hh_id) %>%
summarise(income_received_inkind = sum(income_received_inkind, na
    .rm = T))


######### public work and income ####
bhh_public_work_income<-haven::read_dta("../../data/wave_first_hh
    /Section_14c.dta")%>%
mutate(hh_id = paste0(hhid,"-", psu),
income_recp = case_when(publicworkid%in%c(1,2,3,4,5) ~ s14q22a*
    s14q19)) %>%
group_by(hh_id) %>%
summarise(income_recp_publicWork = sum(income_recp, na.rm = T))


sdat2016<-housing %>%
left_join(., hh_wage_jobs, by = c("hh_id")) %>%
left_join(hh_land_holding, by = c("hh_id"= "hh_id")) %>%
left_join(hh_land_buy_sell, by = c("hh_id"= "hh_id")) %>%
left_join(hh_crop_sales_income, by = c("hh_id"= "hh_id")) %>%
left_join(hh_income_exp_age, by = c("hh_id"= "hh_id")) %>%
left_join(hh_income_from_exp_livestock, by = c("hh_id"= "hh_id"))
     %>%
left_join(hh_business_exp_rev, by = c("hh_id"= "hh_id")) %>%
left_join(hh_bank_deposit_assets, by = c("hh_id"= "hh_id")) %>%
left_join(hh_receiveMoney_givenFormOther, by = c("hh_id"= "hh_id"
    )) %>%
left_join(hh_receiveMoney_givenFormNGOS, by = c("hh_id"= "hh_id")
    ) %>%
left_join(hh_government_transfer_assistence_cash, by = c("hh_id"=
     "hh_id")) %>%
left_join(hh_government_transfer_assistent_kind, by = c("hh_id"=
    "hh_id")) %>%
left_join(bhh_public_work_income, by = c("hh_id"= "hh_id")) %>%
left_join(crop_sales_income_dry, by = c("hh_id" = "hh_id")) %>%
left_join(rent_paid, by = c("hh_id" = "hh_id")) %>%
left_join(hh_cost_agri_production, by = c("hh_id" = "hh_id")) %>%
left_join(hh_value_livestock, by = c("hh_id" = "hh_id")) %>%
left_join(hh_owns_prod_consum_durable_goods, by = c("hh_id" = "hh
    _id")) %>%
left_join(hh_pension, by = c("hh_id" = "hh_id")) %>%
left_join(hh_lending_interest, by = c("hh_id" = "hh_id")) %>%
left_join(hh_borrowing, by = c("hh_id" = "hh_id")) %>%
left_join(migration, by = c("hh_id" = "hh_id"))
```

```r
write_rds(sdat2016, file = "../../data/analysis_data/income_2016.
    Rds",
compress = "gz",
compression = 2L)
```

C.3 Household data arrangement

```r
if(!is.null(dev.list())) dev.off()
rm(list=ls())
setwd(dirname(rstudioapi::getSourceEditorContext()$path))
cat("\014")
library("tidyverse")
library("dplyr")
library("tidyr")
#dplyr summaries warning remove
options(dplyr.summarise.inform = FALSE)

na_check <- function(dat){
  return(sapply(dat, function(x){length(which(is.na(x)))} )
  )
}



hh_char <- readRDS("../../data/analysis_data/hhData_2016.Rds")
#indiv <- readRDS("../../data/analysis_data/indiv2016.Rds")

cpi <- readRDS(file = "../../data/complete_data/ready_cpi.Rds")
    %>%
  left_join(hh_char, ., by  = c("year", "district_code", "
      district_name")) %>%
  select(c("hhid", "national_cpi", "regional_cpi","food_cpi","
      nonfood_cpi"))

assets <- readRDS("../../data/analysis_data/assets_2016.Rds") %>%
  mutate_at(vars(financial_assets:business_assets), ~ replace_na
      (.,0)) %>%
  mutate(hhid = as.numeric(sapply(strsplit(hh_id, "-"), "[[", 1))
      )

noCrop_income <- readRDS("../../data/analysis_data/income_2016.
    Rds")%>%
  mutate_at(vars(house_rent_income:foreign_remit), ~ replace_na
      (.,0))%>%
  mutate(hhid = as.numeric(sapply(strsplit(hh_id, "-"), "[[", 1))
      )
```

```r
expense <- readRDS("../../data/analysis_data/expenses_2016.Rds")
    %>%
  mutate_at(vars(tot_food_exp:agriAsset_purchase), ~ replace_na
      (.,0))%>%
  mutate(hhid = as.numeric(sapply(strsplit(hh_id, "-"), "[[", 1))
      )




###### Joining Crop in income ######
wet_listed <- readRDS("../../data/analysis_data/2016_wet_
    listedCrop.Rds") %>%
  rename(wet_listed_crop = listed_crop)
wet_unlisted <- readRDS("../../data/analysis_data/2016_wet_
    unlistedCrop.Rds") %>%
  rename(wet_unlisted_crop = nonlisted_crop)
dry_listed <- readRDS("../../data/analysis_data/2016_dry_
    listedCrop.Rds") %>%
  rename(dry_listed_crop = listed_crop_dry)
dry_unlisted <- readRDS("../../data/analysis_data/2016_dry_
    unlistedCrop.Rds") %>%
  rename(dry_unlisted_crop = nonlisted_crop)

######Income######
income <- noCrop_income %>%
  left_join(., wet_listed, by = c("hh_id")) %>%
  left_join(., wet_unlisted, by = c("hh_id")) %>%
  left_join(., dry_listed, by = c("hh_id")) %>%
  left_join(., dry_unlisted, by = c("hh_id")) %>%
  replace(is.na(.), 0) %>%
  mutate(income_add = wet_listed_crop + wet_unlisted_crop + dry_
      listed_crop + dry_unlisted_crop +
            rental_income_age_assets + net_incomeFrom_livestock_
                items + net_revenue_livestocks +
            value_owns_house_production_durable_goods + total_wage
                _income + net_income +
            tot_land_rent_recp + house_rent_income + hh_pension_
                recp + hh_income_repi_finAssets +
            income_recp_publicWork + hh_receiveMoney_givenFormNGOs
                 + hh_receiveMoney_givenFormOther +
            income_received_cash + income_received_inkind +
                emergency_assistence_cash + interest_hh_lending,
         income_substract = tot_input_exp + rent_paid_landloard +
             interest_hh_borrowing ) %>%
  mutate(income_wo_rem = income_add - income_substract,
         wage_income = total_wage_income,
         agri_income = wet_listed_crop + wet_unlisted_crop + dry_
```

```r
                    listed_crop + dry_unlisted_crop +
                rental_income_age_assets + net_incomeFrom_livestock_
                    items +
                net_revenue_livestocks  - tot_input_exp,
            fRemit = foreign_remit,
            dRemit = domestic_remit,
            income_wth_rem = income_wo_rem + fRemit + dRemit) %>%
    select(c("hhid", "income_wo_rem", "wage_income", "agri_income",
            "fRemit", "dRemit", "income_wth_rem", "number_wage_
                earners")) %>%
    left_join(., cpi, by = c("hhid")) %>%
    mutate(across(.cols = c(income_wo_rem:income_wth_rem), ~./
        regional_cpi*100)) %>%
    select(-c(ends_with("_cpi", ignore.case = FALSE)))


######Assets######
asset <- assets %>%
    mutate(tot_asset = financial_assets + agriculture_assets + real
        _estate_assets +
            physical_assets + business_assets,
            asset_wo_fin = agriculture_assets + real_estate_assets +
            physical_assets + business_assets,
            asset_wo_real_state = tot_asset -value_land  -financial_
                assets) %>%
    select(c("hhid", "tot_asset","repay_loan","borrowing", "asset_
        wo_real_state", "asset_wo_fin")) %>%
    left_join(., cpi, by = c("hhid")) %>%
    mutate(across(.cols = c(tot_asset:asset_wo_fin, "asset_wo_real_
        state",
                            "repay_loan", "borrowing",), ~./
                                regional_cpi*100)) %>%
    select(-c(ends_with("_cpi", ignore.case = FALSE)))

#######Expenses######
expenses <- expense %>%
    replace(is.na(.), 0) %>%
    left_join(., cpi, by = c("hhid")) %>%
    mutate(across(.cols = c(buss_regular_expense:value_buying_land,
        "agriAsset_purchase"),
                ~./regional_cpi*100),
            across(.cols = c("tot_food_exp",), ~./food_cpi*100),
            across(.cols = c(tot_alco_tobaco_exp:year_tot_eduexp,
                            "health_expense"), ~./nonfood_cpi*100))
                                %>%
    select(-c(ends_with("_cpi", ignore.case = FALSE))) %>%
    mutate(food_exp = tot_food_exp,
```

```r
            non_food_exp = non_food_regular_frequent_expe + durable_
                goods_expense + tot_alco_tobaco_exp ,
            edu_exp = year_tot_eduexp,
            consumption_exp = food_exp + non_food_exp + edu_exp,
            agri_exp = expesnse_on_agri_maintenance + expenseOn_
                livestock_fodderm,
            asset_pur_exp = house_improvement_expense +agriAsset_
                purchase + value_buying_land + buss_exp_assets,
            ritual_exp = retual_exp,
            alc_tobacco_exp = tot_alco_tobaco_exp,
            health_exp = health_expense)  %>%
    select(c("hhid", "food_exp", "non_food_exp", "edu_exp", "
        consumption_exp",
            "agri_exp", "asset_pur_exp", "ritual_exp", "alc_
                tobacco_exp", "health_exp")  )


######Household Characteristics######
hh_2016 <- hh_char %>%
  left_join(., asset, by = c("hhid")) %>%
  left_join(., expenses, by = c("hhid")) %>%
  left_join(., income, by = c("hhid")) %>%
  mutate(wage_hhsize = number_wage_earners/hh_size) %>%
  left_join(., cpi, by = c("hhid")) %>%
  mutate(across(.cols = c("migration_cost", "remittance_recieved"
      ), ~./regional_cpi*100))  %>%
  select(-c(ends_with("_cpi", ignore.case = FALSE)))


write_rds(hh_2016, file = "../../data/complete_data/2016_hh.Rds",
          compress = "gz",
          compression = 2L)


write_csv( hh_2016, "../../data/2016_hh.csv.gz" )
```

C.4 Summary statistic generation

```r
if(!is.null(dev.list())) dev.off()
rm(list=ls())
setwd(dirname(rstudioapi::getSourceEditorContext()$path))
cat("\014")
library("tidyverse")
library("dplyr")
library("tidyr")
```

```r
library("modelsummary")
library("sampleSelection")
library("fastDummies")
library("gt")
#### Data for analysis

#adat <- readRDS("../../data/conference/COMPLETE_DATA.RDS")
alldata <- readRDS("../../data/complete_data/Balanced_panel.Rds")
dat <- readRDS("../../data/useReady_data/newMigration_panel.Rds")
    %>%
  mutate(shock_cost =socio_political_sck+cost_sck_natural+cost_
      sck_household+
            cost_sck_agri+cost_sck_agri) %>%
  filter(international==1)




sdat <- dat %>%
  mutate(year = factor(gone_between,
                       levels = c("b2016n2017", "b2017n2018")))

tdat <- fastDummies::dummy_cols(sdat, select_columns = c("caste_
    group_5","place_classify_all" ),  remove_first_dummy = FALSE)

empty <- function(...) ""

########Data summary of dummy variables #########
a <- datasummary(caste_group_5_Khas + caste_group_5_
    AdhibasiJanajati +
                    caste_group_5_Madhesi + caste_group_5_Dalit +
                    caste_group_5_Others+migrated_is_male+
                        international
                    +literate + place_classify_all_domestic+place_
                        classify_all_India
                + place_classify_all_Asia+place_classify_all_
                    Gulf+maleHead
                + place_classify_all_OECD+socio_political_sck+
                    household_sck
                +agri_sck+ natural_sck+trend_goingAbroad ~
                  year * ((Mean)*Arguments(w = wgt, fmt = "%.3f"
                    )),
                data = tdat, output = "data.frame")  %>%
  mutate(`2016-2017` = as.numeric(b2016n2017),
          `2017-2018` = as.numeric(b2017n2018)) %>%
  mutate_if(is.numeric, ~ . * 100) %>%
select(c(" ", "2016-2017", "2017-2018"))
```

```r
b <- datasummary(asset_wo_real_state
                        ~ year * ((Mean + SD)*Arguments(w = wgt, fmt
                            = "%.2f")),
                    data = tdat, output = "data.frame") %>%
  mutate(`20162017 / Mean` = as.numeric(`b2016n2017 / Mean`),
          `20162017 / SD`  = as.numeric(`b2016n2017 / SD`),
          `20172018 / Mean`  = as.numeric(`b2017n2018 / Mean`),
          `20172018 / SD`    = as.numeric(`b2017n2018 / SD`)) %>%
  mutate_if(is.numeric, ~ ./1000) %>%
  mutate(`2016-2017` = paste0(round(`20162017 / Mean`, 2), "(",
      round(`20162017 / SD`,2), ")"),
          `2017-2018` = paste0(round(`20172018 / Mean`,2), "(",
              round(`20172018 / SD`,2), ")")) %>%
  select(c(" ", "2016-2017", "2017-2018"))


b1<-datasummary(hh_size + yrs_schoolingHead +tot_land_ha
                  + time_to_dailyMarket + all~
                    year * ((Mean + SD)*Arguments(w = wgt, fmt = "
                        %.2f")),
                    data = tdat, output = "data.frame") %>%
  mutate(`20162017 / Mean` = as.numeric(`b2016n2017 / Mean`),
          `20162017 / SD`  = as.numeric(`b2016n2017 / SD`),
          `20172018 / Mean`  = as.numeric(`b2017n2018 / Mean`),
          `20172018 / SD`    = as.numeric(`b2017n2018 / SD`)) %>%
  mutate(`2016-2017` = paste0(round(`20162017 / Mean`, 2), "(",
      round(`20162017 / SD`,2), ")"),
          `2017-2018` = paste0(round(`20172018 / Mean`,2), "(",
              round(`20172018 / SD`,2), ")")) %>%
  select(c(" ", "2016-2017", "2017-2018"))



c <- rbind(b,b1, a) %>%
  rename(Variables = ` `)

var_complete_names <- data.frame(var_names = c("asset_wo_real_
    state",
                                                "tot_land_ha",
                                                "all",
                                                "trend_goingAbroad
                                                    ",
                                                "international",
                                                "hh_size",
                                                "literate",
                                                "maleHead",
                                                "yrs_schoolingHead
                                                    ",
                                                "time_to_
```

```r
                                         dailyMarket",
                                       "caste_group_5",
                                       "place_classify_
                                           all"),
                          variableName = c("Total assests(
                             in 000s)",
                                           "Land size ($hs$
                                               )",
                                           "household
                                               migration
                                               network",
                                           "Coumunity
                                               migration
                                               trend",
                                           "International
                                               (\\%)",
                                           "Household size
                                               of Migrants"
                                               ,
                                            "Litarete
                                               migrants
                                               (\\%)",
                                           "Male HH head",
                                           "Years of
                                               Schooling
                                               of HH head
                                               \\%",
                                           "Time to maket
                                               (hrs)",
                                            "Ethnicity of
                                               migrants
                                               (\\%)",
                                           "Destination
                                               place (\\%)
                                               "))
var_pattern <- paste(var_complete_names$var_names,  collapse = "|
    ")
oth_terms <- "|_sq|\\(Intercept\\)|Num.Obs.|R2|Adj.|AIC|BIC|Log.
    Lik.|F|RMSE"
cleanFactorPattern <- paste0("(", var_pattern,oth_terms, ")")

d<- c%>%  mutate(level = str_replace_all(Variables,
                                 pattern =
                                     cleanFactorPattern,
                                 replacement = ""))%>%
  mutate(level = str_sub(level, start = 2L))
```

```r
Level_complete_names <- data.frame(var_names = c( "Khas",
                                                  "
                                                    AdhibasiJanajati
                                                    ",
                                                  "Madhesi",
                                                  "Dalit",
                                                  "Others",
                                                  "domestic",
                                                  "India",
                                                  "Asia",
                                                  "Gulf",
                                                  "OECD"),
                                    levelNames = c("Khas",
                                                   "
                                                     AdhibasiJanajati
                                                     ",
                                                   "Madhesi",
                                                   "Dalit",
                                                   "Others",
                                                   "domestic",
                                                   "India",
                                                   "Asia",
                                                   "Gulf",
                                                   "OECD"))

lvls_pattern <- paste(Level_complete_names$var_names, collapse =
    "|")
cleanLvls_pattern <- paste0("(", lvls_pattern, ")")
e <- d%>% mutate(varNameRaw = str_replace_all(Variables,
                                              pattern =
                                                cleanLvls_
                                                pattern,
                                              replacement = ""))
                                                %>%
  mutate(CleanVar = if_else(str_ends(varNameRaw, pattern = "_"),
                            str_sub(varNameRaw, start = 1L, end =
                                str_length(varNameRaw)-1),
                            varNameRaw))%>%
  left_join(.,Level_complete_names, by = c("level" = "var_names")
      )%>%
  left_join(.,var_complete_names, by = c("CleanVar" = "var_names"
      ) )%>%
  select(-c("Variables", "level", "varNameRaw", "CleanVar"))%>%
  select(c("variableName", "levelNames"), everything())%>%
  mutate(levelNames = if_else(is.na(levelNames), "", levelNames),
         variableName = if_else(is.na(variableName), "",
```

```
                    variableName))

library("kableExtra")

kableExtra::kbl(e,
                booktabs = T,
                escape = FALSE,
                caption = "Summary Statistics on selected
                    variables for first objectives",
                caption.short = "Summary Statistics",
                col.names = c("", "",
                                "2016-2017", "2017-2018"
                                ),
                align = rep("l", 6),
                format = "latex")%>%
    column_spec(1, width = "10em")%>%
    column_spec(2, width = "10em")%>%
    collapse_rows(columns = c(1:2),
                latex_hline = "none",
                valign = "top")%>%
    row_spec(nrow(e),hline_after = TRUE)%>%
    kable_styling(position = "center",
                latex_options = c("scale_down"))%>%
    kableExtra::save_kable(file = "../../Output/Table/
        SummarystatisticsObj25.tex")
```

C.5 Analysis

```
if(!is.null(dev.list())) dev.off()
rm(list=ls())
setwd(dirname(rstudioapi::getSourceEditorContext()$path))
cat("\014")
library("dplyr")
library("tidyr")
#dplyr summaries warning remove
options(dplyr.summarise.inform = FALSE)

library("fixest")
dat <- readRDS("../../../data/useReady_data/balanced_HH_panel.Rds
    ") %>%
mutate(tot_asset_ = tot_asset/1000,
wage_earner_share = (number_wage_earners/hh_size) ,
income_wo_remittance =if_else(income_wo_rem<=0, 0, income_wo_rem)
    ,
log_income_wo_remittance =log(income_wo_remittance+1 ),
log_remittance_received = log(remittance_recieved+1),
log_loan_repay = log(repay_loan+1),
hh_size_70 = (old_70/hh_size),
```

```r
nofixed_eff = 0)%>%
select(everything())
new_dat<-dat %>% filter(caste_group_5=="Madhesi")

food_model <- feols(log_food_exp ~  hh_size + tot_land_ha +hh_
    size_70+
log_wage_income+ log_asset_wo_real_state+yrs_schoolingHead+
roadAccessibility_mth+time_to_dailyMarket+time_to_bank+
time_to_secondarySchool+time_to_healthPost
|as.factor(year)+ maleHead+marital_status_head+household_sck
+district_name| log_fRemit ~ vdc_iv2011,
panel.id = ~ hhid+year, data = dat, weights = dat$wgt)

non_food_model = update(food_model, log_non_food_exp ~ . , stage
    = )
education_expenses_model = update(food_model, log_edu_exp ~ . )
tot_consupmtion_model = update(food_model, log_consumption_exp ~
    . )
ritual_exp_model = update(food_model, log_ritual_exp ~ . )
al_tob_alcohol = update(food_model, log_alc_tobacco_exp ~ . )
health_model = update(food_model, log_health_exp ~ .  )

fixest::etable(tot_consupmtion_model, food_model, non_food_model,
education_expenses_model,  health_model,
ritual_exp_model,al_tob_alcohol, cluster = dat$cid,
title = "Full specification model",
dict = c("log_fRemit"   = "$Log$Foreign remittance",
"hh_size"       = "HH size",
"tot_land_skm" = "Land size($ha$)",
"log_wage_income" = "$Log$ wage income",
"log_asset_wo_real_state"="$Log$ HH assets",
"hh_size_70"        = "People age $<=70$" ,
"roadAccessibility_mth" = "Monthly road access",
"time_to_secondarySchool" = "Distance to secondary school",
"time_to_healthPost"    = "Distance to Health Post",
"time_to_dailyMarket" = "Distance to market",
"time_to_bank"        = "Distance to bank",
"as.factor(year)" = "Year",
"owns_house" = "House ownership",
"maleHead"   = "Male HH head",
"household_sck" = "Household shock",
"agri_sck"       = "Agriculture shock",
"district_name" = "District",
"marital_status_head" =" Marital status of head "),
tex=TRUE, file ="../../Output/Table2/fullSpecification_model.tex"
    )
```

```r
######Specification of food consuption model ############
######### Model Specification using update from the package
    Consumption



tot_consumption1 <- feols(log_consumption_exp ~  hh_size + tot_
    land_ha +hh_size_70+
log_wage_income+ log_asset_wo_real_state+yrs_schoolingHead+
roadAccessibility_mth+time_to_dailyMarket+time_to_bank+
time_to_secondarySchool+time_to_healthPost
|nofixed_eff| log_fRemit ~ vdc_iv2011,
panel.id = ~ hhid+year, data = dat, weights = dat$wgt)

tot_consumption2<-update(tot_consumption1, fml.update = . ~ . |.
    - nofixed_eff + as.factor(year)| .)
tot_consumption3<-update(tot_consumption2, fml.update = . ~ . |.+
     maleHead| .)
tot_consumption4<-update(tot_consumption3, fml.update = . ~ . |.+
    marital_status_head | .)
tot_consumption5<-update(tot_consumption4, fml.update = . ~ . |.+
     household_sck| .)
tot_consumption6<-update(tot_consumption5, fml.update = . ~ . |.+
    district_name | .)

fixest::etable(tot_consumption1,tot_consumption2,tot_consumption3
    , tot_consumption4,
tot_consumption5,tot_consumption6, cluster = dat$cid,
title = "Total consumption model with specification",
dict = c("log_fRemit"  = "$Log$Foreign remittance",
"hh_size"       = "HH size",
"tot_land_skm" = "Land size($ha$)",
"log_wage_income" = "$Log$ wage income",
"log_asset_wo_real_state"="$Log$ HH assets",
"hh_size_70"        = "People age $ >=70$" ,
"roadAccessibility_mth" = "Monthly road access",
"time_to_secondarySchool" = "Distance to secondary school",
"time_to_healthPost"    = "Distance to Health Post",
"time_to_dailyMarket" = "Distance to market",
"time_to_bank"         = "Distance to bank",
"as.factor(year)" = "Year",
"owns_house" = "House ownership",
"maleHead"   = "Male HH head",
"household_sck" = "Household shock",
"agri_sck"      = "Agriculture shock",
"district_name" = "District",
"marital_status_head" =" Marital status of head "),
```

```r
tex=TRUE, file ="../../Output/Table2/totalComsuptiospecification.
    tex")


############ food consumption specification ############

Food_consuption1 <- feols(log_food_exp ~hh_size + tot_land_ha +hh
    _size_70+
log_wage_income+ log_asset_wo_real_state+yrs_schoolingHead+
roadAccessibility_mth+time_to_dailyMarket+time_to_bank+
time_to_secondarySchool+time_to_healthPost
|nofixed_eff| log_fRemit ~ vdc_iv2011,
panel.id = ~ hhid+year, data = dat, weights = dat$wgt)

Food_consuption2<-update(Food_consuption1, fml.update = . ~ . |.
    - nofixed_eff +district_name | .)
Food_consuption3<-update(Food_consuption2, fml.update = . ~ . |.
    +as.factor(year) | .)

Food_consuption4<-update(Food_consuption3, fml.update = . ~ . |.+
    maleHead|  .)

Food_consuption5<-update(Food_consuption4, fml.update = . ~ . |.+
    household_sck | .)

Food_consuption6<-update(Food_consuption5, fml.update = . ~ . |.+
    marital_status_head| .)


fixest::etable(Food_consuption1, Food_consuption2, Food_
    consuption3,
Food_consuption4, Food_consuption5,Food_consuption6, cluster =
    dat$cid,
title = "Food consumption model with specification",
dict = c("log_fRemit"   = "$Log$Foreign remittance",
"hh_size"      = "HH size",
"tot_land_ha" = "Land size($ha$)",
"log_wage_income" = "$Log$ wage income",
"log_asset_wo_real_state"="$Log$ HH assets",
"hh_size_70"        = "People age $ 70$" ,
"roadAccessibility_mth" = "Monthly road access",
"time_to_secondarySchool" = "Distance to secondary school",
"time_to_healthPost"    = "Distance to Health Post",
"time_to_dailyMarket" = "Distance to market",
"time_to_bank"       = "Distance to bank",
"as.factor(year)" = "Year",
"owns_house" = "House ownership",
```

```r
"maleHead"    = "Male HH head",
"household_sck" = "Household shock",
"agri_sck"        = "Agriculture shock",
"district_name" = "District",
"marital_status_head" =" Marital status of head "),
tex=TRUE, file ="../../Output/Table2/foodconsuptionspecification.
    tex")


##########non_food consumption specification ##########

non_food_model1 <- feols(log_non_food_exp ~ hh_size + tot_land_ha
    +hh_size_70+
log_wage_income+ log_asset_wo_real_state+yrs_schoolingHead+
roadAccessibility_mth+time_to_dailyMarket+time_to_bank+
time_to_secondarySchool+time_to_healthPost
|nofixed_eff| log_fRemit ~ vdc_iv2011,
panel.id = ~ hhid+year, data = dat, weights = dat$wgt)

non_food_model2<-update(non_food_model1, fml.update = . ~ . |. -
    nofixed_eff + as.factor(year)| .)

non_food_model3<-update(non_food_model2, fml.update = . ~ . |. +
    maleHead  | .)

non_food_model4<-update(non_food_model3, fml.update = . ~ . |.+
    marital_status_head| .)
non_food_model5<-update(non_food_model4, fml.update = . ~ . |.+
    household_sck| .)

non_food_model6<-update(non_food_model5, fml.update = . ~ . |.+
    district_name | .)


fixest::etable(non_food_model1, non_food_model2, non_food_model3,
    non_food_model4,
non_food_model5,non_food_model6, cluster = dat$cid,
title = "Non-food consumption model with specification",
dict = c("log_fRemit"   = "$Log$Foreign remittance",
"hh_size"       = "HH size",
"tot_land_ha" = "Land size($ha$)",
"log_wage_income" = "$Log$ wage income",
"log_asset_wo_real_state"="$Log$ HH assets",
"hh_size_70"         = "People age $ >=70$" ,
"roadAccessibility_mth" = "Monthly road access",
"time_to_secondarySchool" = "Distance to secondary school",
"time_to_healthPost"    = "Distance to Health Post",
"time_to_dailyMarket" = "Distance to market",
```

```r
"time_to_bank"        = "Distance to bank",
"as.factor(year)" = "Year",
"owns_house" = "House ownership",
"maleHead"   = "Male HH head",
"household_sck" = "Household shock",
"agri_sck"       = "Agriculture shock",
"district_name" = "District",
"marital_status_head" =" Marital status of head "),
tex=TRUE, file ="../../Output/Table2/
    nonfoodconsuptionspecification.tex")


############# education specificaiton model ########

edu_exp_model1 <- feols(log_edu_exp ~  hh_size + tot_land_ha +hh_
    size_70+
log_wage_income+ log_asset_wo_real_state+yrs_schoolingHead+
roadAccessibility_mth+time_to_dailyMarket+time_to_bank+
time_to_secondarySchool+time_to_healthPost
|nofixed_eff| log_fRemit ~ vdc_iv2011,
panel.id = ~ hhid+year, data = dat, weights = dat$wgt)

edu_exp_model2<-update(edu_exp_model1, fml.update = . ~ . |. -
    nofixed_eff + as.factor(year)| .)
edu_exp_model3<-update(edu_exp_model2, fml.update = . ~ . |.+
    maleHead| .)
edu_exp_model4<-update(edu_exp_model3, fml.update = . ~ . |.+
    marital_status_head | .)
edu_exp_model5<-update(edu_exp_model4, fml.update = . ~ . |.+
    household_sck | .)
edu_exp_model6<-update(edu_exp_model5, fml.update = . ~ . |.+
    district_name | .)

fixest::etable(edu_exp_model1, edu_exp_model2, edu_exp_model3,
    edu_exp_model4,
edu_exp_model5,edu_exp_model6, cluster = dat$cid,
title = "Education expense model with specification",
dict = c("log_fRemit"   = "$Log$Foreign remittance",
"hh_size"       = "HH size",
"tot_land_skm" = "Land size($ha$)",
"log_wage_income" = "$Log$ wage income",
"log_asset_wo_real_state"="$Log$ HH assets",
"hh_size_70"        = "People age $ >=70$" ,
"roadAccessibility_mth" = "Monthly road access",
"time_to_secondarySchool" = "Distance to secondary school",
"time_to_healthPost"    = "Distance to Health Post",
"time_to_dailyMarket" = "Distance to market",
"time_to_bank"        = "Distance to bank",
```

```r
  "as.factor(year)" = "Year",
  "owns_house" = "House ownership",
  "maleHead"   = "Male HH head",
  "household_sck" = "Household shock",
  "agri_sck"      = "Agriculture shock",
  "district_name" = "District",
  "marital_status_head" =" Marital status of head "),
  tex=TRUE, file ="../../Output/Table2/
      educationExpensespecification2.tex")


###########IV result ##############

model1 <- feols(log_consumption_exp ~ hh_size + tot_land_ha +hh_
    size_70+
log_wage_income+ log_asset_wo_real_state+yrs_schoolingHead+
roadAccessibility_mth+time_to_dailyMarket+time_to_bank+
time_to_secondarySchool+time_to_healthPost
|nofixed_eff| log_fRemit ~ vdc_iv2011,
panel.id = ~ hhid+year, data = dat, weights = dat$wgt)


fixest::etable(model1, cluster = dat$cid, stage = 1:2)
```