REMITTANCES, HOUSEHOLD DEVELOPMENT AND POVERTY: A DISTRICT-LEVEL ANALYSIS OF PUNJAB, PAKISTAN

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ABSTRACT

Migrant remittances can play a critical role in the development (human development and poverty eradication) of households (HHs) in the country of origin. There is however still a lack of understanding on the developmental outcomes of remittance inflows given the limited number of micro-level analysis at the sub-national levels for migrant sending countries in South Asia. The Punjab province in Pakistan provides an excellent laboratory for a detailed case study on the sub-national developmental impacts of migrant remittances for the following reasons: First, it is the largest province of Pakistan, which houses 36 districts. Second, it is the largest recipient of remittance inflows to Pakistan, reflecting the nature of migrant-based HHs. The objectives of the study are threefold: First, to construct a new household-based human development index (HHDI), comprising sub-indices of education, health and housing. Second, to empirically examine the interactions between remittances and HHDI. Third, to empirically assess the impact of remittances on the incidence and severity of poverty. The remittance-HHDI and remittance-poverty nexuses are compared across districts, and at the intra-district urban-rural context. The study employs high quality household survey data based on the latest Multiple Indicators Cluster Survey (MICS, 2014-15) for Punjab. A sample of 36,400 HHs were chosen for the study. The key findings of the study are summarized herein. The HHDI reveals that not all districts in Punjab can be categorized as 'low development' as alluded to by the national human development index (HDI). Instead, medium levels of human development are noted for districts with high and low remittance inflows. The results also support the importance of decomposing the HHDI into its sub-indices. In examining differences in human development between migrant HHs and non-migrant HHs, the results indicate that the core sub-index that should not go unnoticed is the housing environment (considered as material wealth or assets and standard of living).

Non-migrant HHs seem to be worse off or deprived in terms of their housing environment (facilities and conditions) relative to remittance receiving HHs. Further, the empirical results on the remittance-HHDI nexus suggest that migrant HHs are relatively better-off than non-migrant HHs across most of the districts in Punjab, after controlling for HH characteristics and features specific to the HH head. Disaggregated estimations of HH development again indicate that remittances matter for development in terms of housing for most of the districts in Pakistan. Additionally, the remittance-poverty analysis implies that the probability of being poor among migrant HHs is significantly lower than the non-migrant HHs in all districts of Punjab. The implications that follow from the findings are: First, the study supports the feasibility of quantifying human development at the sub-national HH-level, as the newly constructed HHDI confirms the varying levels of human development across the districts of Punjab. Second, the study suggests that migrant remittances are most likely to increase inequalities in the development of housing and poverty disparities between migrant- and non-migrant HHs in all districts of Punjab. The government therefore needs to balance its focus on education and health with housing, when providing developmental assistance to the HHs in Punjab. The target group of HHs to be given priority should be those located in districts with the highest incidence of poverty and lowest HHDI, namely HHs in South Punjab.

ABSTRAK

Kiriman wang asing boleh memainkan peranan yang penting dalam pembangunan (pembangunan insan dan pembasmian kemiskinan) isi rumah (HHs) di negara asal. Tetapi masih terdapat kurang pemahaman terhadap kesan aliran masuk kiriman wang atas pembangunan memandangkan analisis peringkat mikro di peringkat sub-nasional bagi negara Asia Selatan yang menghantar migran adalah terhad. Wilayah Punjab di Pakistan merupakan makmal yang sangat baik untuk kajian kes terperinci mengenai kesan kiriman wang asing atas pembangunan sub-nasional kerana: Pertama, ia adalah wilayah terbesar Pakistan, yang mempunyai 36 daerah. Kedua, ia adalah penerima terbesar aliran masuk kiriman wang ke Pakistan, dan ini mencerminkan sifat HHs yang berasaskan migran. Terdapat tiga objektif kajian ini: Pertama, untuk membina indeks pembangunan insan berasaskan isi rumah (HHDI) yang baru, yang terdiri daripada sub-indeks pendidikan, kesihatan dan perumahan. Kedua, untuk mengkaji secara empirikal interaksi antara kiriman wang dan HHDI. Ketiga, untuk menilai secara empirikal kesan kiriman wang atas insiden dan tahap kemiskinan. Neksus kiriman wang-HHDI dan kiriman wang-kemiskinan dibandingkan antara daerah, dan intra-daerah dalam konteks bandar dan luar bandar. Kajian ini menggunakan data kajian isi rumah berkualiti tinggi berasaskan Multiple Indicators Cluster Survey (MICS, 2014-15) yang terkini untuk Punjab. Sampel sebanyak 36,400 HHs telah dipilih untuk kajian ini. Keputusan utama kajian ini diringkaskan di bawah. HHDI mendedahkan bahawa bukan semua daerah di Punjab boleh dikategorikan sebagai 'pembangunan rendah' seperti yang ditunjukkan indeks pembangunan insan nasional (HDI). Sebaliknya, tahap pembangunan insan sederhana ditunjukkan di daerah dengan aliran masuk kiriman wang yang tinggi dan rendah. Keputusan juga menyokong kepentingan menguraikan HHDI kepada sub-indeksnya. Apabila mengkaji perbezaan pembangunan insan antara HHs migran dan HHs bukan-migran, keputusan menunjukkan bahawa sub-indeks utama yang tidak boleh diabaikan adalah persekitaran perumahan (dianggap sebagai kekayaan material atau aset dan taraf hidup). HHs bukan-migran adalah lebih teruk atau kekurangan dari segi persekitaran perumahan (kemudahan dan keadaan) berbanding dengan HHs yang menerima kiriman. Seterusnya, keputusan empirikal untuk neksus kiriman wang-HHDI mencadangkan bahawa HHs migran lebih baik berbanding HHs bukan-migran di sebahagian besar daerah Punjab, selepas kawalan untuk sifat HH dan ciri-ciri khusus ketua HH. Anggaran dis-aggregat pembangunan HH juga menunjukkan bahawa kiriman wang penting untuk pembangunan dari segi perumahan untuk sebahagian besar daerah di Pakistan. Selain itu,

analisis kiriman wang-kemiskinan menunjukkan bahawa kebarangkalian menjadi miskin di kalangan HHs migran adalah jauh lebih rendah berbanding dengan HHs bukan-migran di semua daerah di Punjab. Implikasi daripada keputusan adalah: Pertama, kajian ini menyokong kemungkinan mengukur pembangunan insan pada peringkat HH sub-nasional, kerana HHDI yang baru ini mengesahkan kepelbagaian peringkat pembangunan insan di semua daerah di Punjab. Kedua, kajian ini mencadangkan bahawa kiriman wang asing kemungkinan besar meningkatkan ketidaksamaan dalam pembangunan perumahan dan jurang kemiskinan antara HHs migran dan bukan-migran di semua daerah di Punjab. Oleh itu, kerajaan perlu mengimbangkan tumpuan atas pendidikan dan kesihatan dengan perumahan, apabila menghulurkan bantuan pembangunan kepada HHs di Punjab. Kumpulan sasaran HHs yang diberi keutamaan haruslah mereka yang terletak di daerah dengan kadar kemiskinan tertinggi dan HHDI terendah, iaitu HHs di Punjab Selatan.

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LIST OF ABBREVIATIONS

ATT	:	average treatment effect on the treated
BEOE	:	Bureau of Emigration & Overseas Employment
BISP	:	Benazir Income Support Programme
BOS	:	Bureau of Statistics
CBN	:	Central Bank of Nigeria
DHS	:	Demographic and Health Surveys
EOBI	:	old age benefits institution
FATA	:	Federal Administered Tribal Areas
FDI	:	foreign direct investment
FGT	:	Foster-Greer-Thorbecke
GDP	:	Gross domestic product
GHEF	:	Global health and education foundation
GOP	:	Government of Pakistan
HCR	:	headcount ratio
HD	:	household development
HDI	:	human development index
HDR	:	human development report
HH	:	household
HHDI	:	household-level human development index
HIES	:	Household Integrated Economic Survey
HSOMR	:	Household Survey on Overseas Migrants and Remittances
IBFT	:	interbank fund transfer
IFAD	:	International Fund for Agricultural Development
IMF	:	International Monetary Fund
IOM	:	International Organization for Migration

LCH	:	life-cycle hypothesis
LPG	:	liquefied petroleum gas
MDGs	:	Millennium Development Goals
MFIs	:	microfinance institutions
MICS	:	Multiple Indicator Cluster Survey
MoU	:	Memorandum of Understanding
NELM	:	New Economics of Labour Migration
NHDR	:	National Human Development Report
NIRC	:	National Industrial Relations Commission
NN	:	Nearest Neighbour
ODA	:	Official Development Assistance
OEC	:	Overseas Employment Corporation
OLS	:	Ordinary Least Squares
OPF	:	Overseas Pakistanis Foundation
OPs	:	Overseas Pakistanis
PCM	:	Principal Component Method
PG	:	poverty gap index
PGS	:	poverty gap squared
PPAF	:	Pakistan Poverty Alleviation Fund
PRI	:	Pakistan Remittance Initiative
PSLM	:	Pakistan Social and Living Standards Measurement
PSM	:	Propensity Score Matching
RCC	:	reinforce cement concrete
SAARC	:	South Asian Association for Regional Cooperation
SAARF	:	South African Advertising Research Foundation
SBP	:	State Bank of Pakistan

TT	:	telegraphic transfer
UAE	:	United Arab Emirates
UK	:	United Kingdom
UN	:	United Nations
UNDP	:	United Nations Development Programme
UNICEF	:	United Nations Children's Fund
USA	:	United States
WWF	:	Workers Welfare Fund

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CHAPTER 1: INTRODUCTION

1.1 Background of Study

International migration is an important aspect of globalization, and a phenomenon that affects the economic and social activities of both sending and receiving countries. History suggests that in order to improve the living conditions of families in host countries (Khan, 2005), the movement of workers across national borders will continue. International migration not only improve the living standards of families at the place of origin, but also changes the physical environment and human capital of migrants. Due to remittances to the home country, the migration of workers can be seen as a sign of local development opportunity, following some form of technology transfer. Globally, almost 1 out of 7 people is either an internal or international migrant (World Bank, 2014). The United Nations (UNFPA, 2016) reports that almost 244 million people live outside of their home country (3.3 percent of the world population), contributing significantly to the development of both the host and home countries.

Remittances can encourage economic growth through macro and micro channels, especially if the money remitted is used for funding children's education and health. Remittances are therefore strongly associated with better health outcomes, schooling, and, to some extent, a reduction in poverty (Lopez-Cordova, Andrea and Eric, 2005). Households (HHs) that receive remittances usually spend it on their children's education, health care, and establish small businesses (Davis & Lopez-Carr, 2010). When the money remitted is used for consumption, it creates multiplier effects, which are growth-enhancing in economies with high unemployment rates (Maimbo & Ratha, 2005). It is noted that the spending of the money remitted to developing countries reflects status-oriented consumption, while a relatively lower portion is used for savings and

investments (Chami, Fullenkamp & Jahjah, 2005). Remittances comprise an elastic feature that plays a crucial role in protecting productive capacity *via* ex-ante investment, thus smoothing income and promoting economic growth. Additionally, remittances inflow may reduce the instability of HH consumption *via* their contribution to ex-post risk management (Combes & Ebeke, 2011).

Remittance funds can also mitigate poverty, because the poor receive it directly as cash payment (Adams & Page, 2005). As such, it contributes to the receiving HHs' wellbeing and living standards, especially considering the vulnerability of the poor to unstable earnings resulting from price instability of agriculture crops, crop failure, or from poor health and job losses. Some researchers found that inequality in home countries increases with emigration because a majority of migrants are from relatively high-income HHs (Stark, Taylor & Yitzhaki, 1988). Nevertheless, emigration is encouraged by most developing countries as the money remitted from overseas migrants are considered important for reducing poverty.

Remittances have a lower degree of volatility as compared to other sources of external capital for developing countries (IMF, 2005). A steady flow of these funds also augments the creditworthiness of remittance-receiving families (for example, they have easier access to bank loans). This improved access paves the way for entrepreneurial activities among returning migrants, and helps to grow the economy by encouraging human capital accumulation. This source of capital also plays a key role in building the society's assets and services, and ultimately economic growth (Mim & Ali, 2012). In various communities of Africa, Asia, and Latin America, remittances provide the necessary capital for the construction of schools, community centers, medical facilities, and roads, which result in better welfare, and economic expansion of those societies (Ghosh, 2006).

During the last two decades, there has been tremendous growth in international remittances inflow to the developing world. In a number of developing economies, remittances are the largest source of external funding after foreign direct investment (FDI) (World Bank, 2009). In some economies, remittances are equal to FDI inflows (IMF, 2009). In 2015, a total of $554 billion was transferred by international migrants back to their home countries (compared to just $200 billion in 2000). However, the recorded amount could have exceeded 50 percent if the money sent *via* informal channels was also considered (World Bank, 2010). Money remitted *via* informal channels could be between 50 and 200 percent of the official recorded data (Aggarwal, Asli & Maria, 2011). For many developing economies, remittances are a major source of foreign exchange earnings - even much greater than private capital flows, public aid, and FDI (World Bank, 2009). The middle income and developing countries are the major beneficiaries of this external source of funding; they received more than a 70 percent share of total remittances in 2015.

Three South Asian countries (India, Pakistan and Bangladesh) received almost 20 percent of total world remittances in 2015 (World Bank, 2016). Pakistan, a major labour supplier to host economies experiencing labour shortages, is a notable recipient of remittance funds. Pakistani workers currently reside in (and send money from) more than 50 countries around the world. More than seven million Pakistanis had registered for migration in 2014 (BEOE, 2015). Hence, remittances inflow has become a rising source of foreign capital for Pakistan. In Pakistan, foreign remittances inflow covers more than 25 percent of imports and more than 30 percent of exports.

Early studies on remittances primarily explained the importance of remittances inflow in a macroeconomic context. Policymakers and scholars explored the degree to which

the money remitted constitutes a development resource (Adams & Page, 2003). Late studies focused on the impacts of remittances on HHs. However, the existing literature at the HH level establishes no consensus regarding a net gain from remittances. The evidence is at best mixed. The crucial questions at the micro HH level are: What are the specific development impacts of remittances inflow on recipient HHs? Are remittances important for both the incidence and severity of poverty? Further investigation on the microeconomic impact of remittances is therefore needed.

1.2 Problem Statement

Workers' remittances are an important source of external capital and foreign exchange for a developing country like Pakistan. In 2013, more than 6.2 million Pakistani workers were serving in foreign countries (UN, 2016), and they remitted $19.30 billion in the same year (World Bank, 2016). Remittances inflow have profound implications for the recipients, as they help HHs stabilize irregular incomes and enhance their human and social capital. In many cases, the remittance receivers are found to be financially better-off than those who lack this stream of income (Sander & Maimbo, 2003). Among the Pakistani HHs that received remittances, more than 50 percent of their children attended private schools, and more than 80 percent of their members visited private hospitals for treatment in 2013 (PBS, 2014). Thus, remittance transfers have become a vital source of financial support for many poor HHs in Pakistan and have helped them extensively in facing the curse of poverty.

The micro aspect of remittances is closely related with the dependency framework. In other words, the transfer of remittances from individual to individual has resulted in HH dependency on the former, to fulfill their consumption, education and/or medical needs. Despite this dependency of HHs on remittances, there has been no finer level of

assessment and comparison of district-wise HH development for remittance receiving and non-remittance receiving HHs. A number of studies have been conducted in Pakistan to analyze the impact of remittances inflow on the socioeconomic status/characteristics of the receiving HHs (see Bilquees & Hamid, 1981). However, these studies were confined to assessing remittances inflow and HH development at the national and provincial levels. Less attention has been paid to examine the impacts of remittances inflow on HHs at the sub-national district level in Pakistan (Adams, 1996; Iqbal, 2013; Waqas, 2013).

District-level and urban-rural analyses for migrant HHs in Pakistan are important for the following reason. There is substantial HH inequality between and within districts (urban-rural). Further, the Pakistan economy is bifurcated into distinct rural and urban locales, with observed disparities in poverty between the two (Planning Commission of Pakistan, 2014). The rural economy hosts a larger population and is agriculture-based, while the urban economy is associated with industrial and service sectors. A micro-level analysis is therefore to reveal useful insights from the varying impacts of remittances for migrant HHs, and the specific or types of developmental outcomes of remittances inflow.

For this purpose, the Punjab province is taken as a case study for the following reasons: First, it is the largest (houses 36 districts) and the most populous province of Pakistan, hosting more than 50 percent of the population of the country. Second, it is the largest recipient of remittances inflow to Pakistan, reflecting the nature of migrant-based HHs. More than 50 percent of Pakistani emigrants were from the Punjab province (BEOE, 2015). This province therefore received 55 percent of total international remittances inflow to Pakistan (PBS, 2014). Third, the existing evidence shows that workers' remittances to Punjab have brought considerable developmental effects to the

receiving HHs. In Punjab's rural areas, 37 percent of the population still uses a hand pump to obtain water; however, among rural remittance receivers, this ratio has shrunk to 12 percent. Furthermore, 29 percent of rural remittance receivers now use gas or kerosene for cooking, while a considerable portion of non-remittance-receiving HHs still use conventional methods of cooking (PBS, 2014).

This study therefore takes on a micro level analysis at the district level of Punjab to investigate the socio-economic impact of remittances on HH development (accounting for education, health, and housing) and on poverty. In the context of the latter, the poverty effects of remittances are examined in terms of the incidence and severity of poverty. The micro-district (intra-district) level of remittances, HH development, and poverty will provide input for the broader policy agenda on poverty eradication in Punjab.

1.3 Research Questions and Research Objectives

The study provides answers to the following questions:

1. What are the levels of HH development across the districts of Punjab?
2. Does the household-based human development index (HHDI) differ within districts by urban-rural regions?
3. What are the implications of remittances inflow for HH development in the urban and rural areas?
4. Have remittance inflows reduced the incidence and severity of poverty among receiving HHs across the Punjab districts?

Based on the above questions, the primary objectives of the study are delineated below:

(a) To construct a comprehensive HHDI at the sub-national district-level for Punjab, comprising the core dimensions of development (education, health and housing).

(b) To empirically investigate the association between remittance inflows and HHDI in the context of urban-rural at the district level.

(c) To identify the links between remittances inflow and the incidence and severity of poverty, in the context of urban-rural at the district level.

1.4 Contributions of Study

There is a vast body of literature on remittances inflow, HH income, and economic growth. However, there are still some critical gaps in measuring the human developmental impacts of remittances at the HH level. For example, some researchers measured HH development with asset possession (see Eversole & Johnson, 2014), some with consumption (Castaldo & Reilly, 2007), and others with expenditure (Ahmad, Guntur & Shikha, 2010). Income is also used as a measure of welfare (Brown & Leeves, 2007), and a number of studies used poverty levels as a measure of welfare of the recipient HHs (Adams, 2004). It is difficult to find a study that has comprehensively constructed a composite HH-related welfare indicator to capture development.

This study therefore enriches the literature with a newly constructed HHDI at the Punjab district level. It extends the work of Harttgen and Klasen (2012) to identify the extent of human development for HHs across and within the districts of Punjab. The constructed HHDI is comparatively better than available indices for Pakistan. It proposes better measures for the sub-indices of HHDI, namely for health and housing, using high-quality data based on the latest comprehensive HH survey for Pakistan, comprising 41,413 HHs (of which 7.9 percent of the HHs are remittance recipients).

The newly constructed HHDI index uses 24 factors that cover many aspects of human life. The health sub-index is measured by three elements, which was calculated as a single

indicator in previous studies. The health sub-index basically departs from the norm of using broad proxy, such as the number of physicians/10,000 people, life expectancy and child mortality (NHDR, 2003; Jamal and Khan, 2007; Campos-Vázquez and Vélez-Grajales, 2012), to that of anthropometric indicators such as wasting, underweight and stunting in children. The latter indicators are relevant in that they reflect malnutrition in children (WHO, 2010), which is a major challenge for Pakistan (UNICEF, 2015). Similarly, the housing sub-index covers 19 elements that better reflect the living standards or material welfare (housing quality, housing durables, utilities and other assets) of the HH. The newly constructed index further differentiates two segments of the population, migrant HHs (recipients of remittances) and non-migrant HHs (non-recipients of remittances), for the empirical investigation. The direct assessment of the district-wise HHDI, decomposition of HHDI by sub-indices and by household-specific characteristics yield new insights to sub-national human development.

In the case of the remittance-poverty nexus in Pakistan, previous researchers have based their investigations on the outdated poverty line (Mughal & Anwar, 2012). This study derives poverty measures with the latest poverty line of Pakistan. It then uses several measures of poverty that makes it possible to investigate the robustness of the effects of remittances on different measures of poverty.

Taken together, HH development and poverty impacts of foreign remittances in this study are analyzed based on newly constructed HHDI and poverty measures. This study then examines the remittance-HHDI and remittance-poverty nexuses for migrant HHs at the disaggregated sub-national level, namely district-level (Punjab), and also compares the relationship within districts (urban-rural locales). The district-level analysis provides rich insights to the interactions between remittances, HH development and poverty. The

findings of the study therefore inform the debate on the similarities/disparities in the development of HHs receiving remittances across and within the districts of Pakistan.

1.5 Organization of Study

The thesis consists of eight chapters. The first chapter details the problem statement, research questions and research objectives, and the contribution of the study. Chapter 2 reviews the literature, both in terms of theory and empirics. It surveys the measures and indices of HH-based human development and the theoretical impacts of remittances inflow and poverty on HH development from various dimensions/ vectors. The empirical findings for the related literature are compared in terms of results and methodology.

Chapter 3 outlines the conceptual framework for the study. It explains the computation of the HHDI based on the various dimensions and sub-dimensions of education, health and housing. This is followed by a discussion of the model specifications, the empirical strategies and a description of the variables constructed for the study. It also details the data sources and limitations of the study. Chapter 4 profiles the magnitude of remittances inflow, sources and channels of remittances, and poverty levels in Pakistan to set the background of the study.

Chapters 5, 6 and 7 form the main analytical chapters of the thesis. Chapter 5 presents the results of the computed HHDI from the latest Multiple Indicators Cluster Survey (MICS) (2014-15). The trends of the HHDI are appraised at the intra- and inter district levels. Chapter 6 empirically estimates the impact of remittances inflow on HH development from the socio-economic dimensions (education, health, and housing). Chapter 7 extends the empirical investigation to the remittance inflow impacts on the incidence and severity of poverty.

The final chapter, Chapter 8, summarizes the key findings of the study, and concludes with some policy recommendations on remittances inflows, HH development and poverty.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

The issue of remittances is salient to the governments of labour exporting countries, as well as to the remitter, and the benefitting household (HH). Hence, a significantly growing interest has been paid to foreign remittances by scholars and policy makers over the past two decades due to the fact that a number of countries (both remittance-receiving and remittance-sending) around the globe are experiencing the effect of emigration.

It has been observed from both a micro and a macro point of view that remittances play a vital role in many economies. Most countries that received remittance inflows have experienced significant increases in their GDP (Meyer & Shera, 2016). In Tajikistan remittances formed 41.7 per cent of the country's GDP (Zotova & Cohen, 2016; Danzer & Ivanschenko, 2010), and many small economies continue to rely heavily on remittances for cash flows (for example the Pacific island nations; see Chen & Jayaraman, 2016). Considering remittances as a HH concern, the microeconomic literature mainly focuses on the flows of remittances and the motivations for sending them, as well as their impact on HH consumption, education, health, living patterns and the labour market.

Migrant workers offer different forms of capital that impose developmental impacts on their home countries, which may be financial, social, political, cultural or economic. These impacts can be examined at the micro level, for example at the household level, while the macroeconomic literature concentrates on the remittance impacts on home economies, such as economic growth, financial development, and poverty reduction. Recently, there has been a growing interest in remittances inflow and their effects on migrant-sending countries, particularly in developing economies (World Bank, 2006).

As a result, a number of studies have been carried out on the outcomes of labour migration on the welfare of migrants, as well as on their communities and home countries. For instance, Pakistan, which is a major labour supplier to economies having labour shortages, is a notable recipient of remittances and its foreign remittance inflows have been observed to be a significantly stable financial source for the country.

This chapter focuses on reviewing research studies based on two aspects; (i) the relationship of remittances inflow and social indicators, and (ii) the economic impact of remittances on HHs. This chapter also sheds some light on the major motives of remittances and its uses among receivers, especially in the case of Pakistan.

2.2 Human Development: Definitions and Dimensions

A popular way to measure the human development of regions or HHs is to calculate the proportionate sum of the life achievements of various individuals such as education, health, housing and ease to spend, nevertheless, there are also a number of other factors used by various researchers to calculate this.

The history of measuring human development in cardinal numbers is not very old. Mahbub ul Haq and Amartya Sen are known as pioneers of using some factors of human life to determine the level of development of a nation. These compilations can be found in a composite index known as the human development index (HDI). The first HDI was published in a yearly Human Development Report (HDR) by the United Nations Development Programme (UNDP) in 1990. The explicit goal of the HDI was to move the focus of economic development from national income based to a people-focused approach. Haq believed that a simple measure of human development was required to convince the general population, scholars, and policymakers that they can and ought to

assess development by economic improvement as well as enhancements in human well-being. Key dimensions of human development such as access to education, health, and goods are included in the HDI. With the availability of these factors, people can accomplish their desired level of well-being as well as increase life expectancy, literacy, school enrollment, and income. Thus, these factors can then be shaped into a single index that can be utilized to compare human well-being level among countries, or to check a nation's development over time.

A notable shortcoming of the HDI is that it takes only average achievements and ignores the distribution of human development within a country or by population subgroups, and as such, every single past endeavor to detect inequality in the HDI has been based on aggregate information. It was not until recently that a number of researchers constructed and defined HDIs at HH level.

Harttgen and Klasen (2012) considered HDI at the HH level as crucial because it examines the inequality of human development between subgroups of population and by socioeconomic status. Using Demographic and Health Surveys (DHS), they constructed a HH-based HDI for 15 developing economies. Due to the unavailability of income and expenditure data, in their index, they used an asset index as a proxy for the income dimension of the HDI. For the asset index, they included components such as consumer durables (television, radio, refrigerator, motorized transport, bike) and housing amenities (type of floor and wall material, type of toilet facility, and type of drinking water). Following Harttgen and Klasen (2012), Permanyer (2013) also calculated an asset index to measure the standard of living. Permanyer included 11 basic HH commodities such as piped water, flush toilet, type of floor and wall materials, roof type, electricity

availability, radio, television, refrigerator, phone, and car. He used equal weights for all the 11 elements in constructing the index.

Likewise, using an array of basic consumer commodities, the South African Advertising Research Foundation (SAARF) developed an index to measure the HH or individuals' living standards. The SAARF (2002) living standards measure described the socio-economic condition of a single person or group. The HH commodities in the index covered type of housing (town house, metropolitan dweller), amenities (kitchen, dishwasher, microwave oven, refrigerator/freezer, vacuum cleaner/floor polisher, flush toilet, cell phone, home telephone, radio set, domestic worker at HH, television, VCR, DVD player, washing machine, sewing machine, electric stove, computer, m-net/DSTV subscription, Hi-Fi/music center, hot running water, drinking water, tumble dryer and home security service) and transport (motor vehicle).

Despite criticisms placed on the asset index as proxy of income, Harttgen and Klasen (2012) argued that the asset index permits recognizing the significantly deprived or destitute HHs (see Sanusi, 2008) better than the income indicator. Assets at the HH-level may be a better proxy for long-term income and living standards than annual income (see Filmer & Scott, 2012), especially in the presence of economic shocks (McKenzie, 2005). The asset index, relative to income and expenditure, is found to be less vulnerable to variances over time. In fact, income itself is not a measure of human development (Ravallion, 2012a; 2012b). Subsequently, Filmer and Scott (2012) validated the effectiveness of various asset indices by contrasting their performance with per capita expenditures. They concluded that the results obtained by asset indices were similar to the outcomes based on per capita expenditures.

While the above studies focused on measuring HDI at the HH level, some studies modified the existing HDR-HDI index. For instance, using Swedish data, Erikson (1993) analyzed critically the measures depicting welfare. For the health dimension, the study took into consideration the ability to walk 100 metres, a number of illnesses, and visits to health centres. For income, unemployment experiences, risks of leaving the work-place during working hours, income, wealth, ownership of property, and capability to handle unforeseen expenditures were considered. He also included some social elements such as marital status of members, contacts with friends and relatives, number of residents per room, number of vacation trips, amenities, leisure-time pursuits, political resources like voting in elections, and membership of political parties and unions. With the above mentioned factors, the study captured the regional differences of development as well as the class differences within a region. Obviously, these differences cannot be evaluated with the classical HDI.

Others, such as Lopez-Calva and Ortiz-Juarez (2012), and Campos-Vázquez and Vélez-Grajales (2012), also argued that the classical approach of HDI was imperfect for the following three reasons; (i) the constructed HDI did not include all variables that reflected development; (ii) comparability along time became an issue as it was harder to expand the HDI at higher ranks than at lower steps of development. Similarly, it was not clear how to make inductions of outcomes when additions at various points in the distribution were acquired; and (iii) on average, the HDI is not sensitive to inequalities among and within the three measurements of education, health and income. Thus, Lopez-Calva and Ortiz-Juarez (2012) reverted to the income approach of HDI but rescaled the survey-based HH income with national income using specific adjustment factors for Mexico, Nicaragua and Peru. They named their index as 'household-based distribution-sensitive human development index. Similarly, Campos-Vázquez and Vélez-Grajales

(2012) constructed a 'quasi-human development index' that accounted for distinctive measures of ranking and dispersion to assess the volatility of development within Mexico.

Table 2.1 presents different indicators of HH-based HDIs that were adopted by different researchers.

2.3 Theoretical Underpinning

2.3.1 Motives of remitting

In a bid to find out different reasons for sending remittances by researchers, four notable motives can be explored to explain the migration movements and remitting (Docquier, Faye & Pestieau, 2008; Rapoport & Docquier, 2006). There remains a strong debate among the opposing hypotheses of motives of remittances – altruism, exchange, insurance and investment (Rapoport & Docquier, 2006; Gubert, 2002; Poirine, 1997; Lucas & Stark, 1985) - as well as their potential role in the economic development of the recipient countries (Opong, Philip & Collins, 2015). Thus, this research attempts to collect evidence on these opposing hypotheses as well as on the motives of migration. However, most of the considered studies paid attention to wage differentials as a cross-sectional test among the competing theories of remittances.

Table 2.1: Different Indicators of Household based HDIs

No.	Author(s) / Indicators	Moller et al. (1987)	Erikson (1993)	SAARF (2002)	Campos-Vázquez & Vélez-Grajales (2012)	Lopez-Calva and Ortiz-Juarez (2012)	Harttgen and Klasen (2012)	Permanyer (2013)	Kironji (2008)	Hermansons (2015)	Sahadudheen (2014)	Jordan (2004)	Grimm et al. (2008)	Alkire and Foster (2011)
A	Income	√	√			√						√	√	√
1	Work/job								√					
2	Income tax													
3	Consumption													√
B	Living standard													
1	Personal possessions	√												
2	Dwelling adequacy	√		√					√		√	√		
3	Wealth	√												
4	Ownership of property		√											
5	Kitchen			√										
6	Flush toilet			√			√	√	√				√	
7	Type of floor material						√	√					√	
8	Type of wall material						√	√						
9	Type of roof material							√						
10	Microwave oven			√										
11	Electric stove			√										
12	Refrigerator/freezer			√			√	√					√	
13	Dishwasher			√										
14	Drinking water			√			√	√	√				√	
15	Radio set			√			√	√					√	
16	Television set			√			√	√	√				√	
17	VCR, DVD player			√										
18	Washing machine			√										
19	Tumble drier			√										
20	Personal computer			√										
21	Vacuum cleaner/floor polisher			√										
22	Cell phone			√				√	√					
23	Solar energy								√					
24	Sewing machine			√										
25	M-net/DSTV subscription			√										
26	Hi-Fi/music centre			√										
27	Hot running water			√										
28	Bicycle												√	
29	Bike						√				√			
30	Motor vehicle			√			√	√	√		√		√	
31	Electricity availability							√	√					
32	Home telephone			√										
33	Unemployment experiences,		√									√		
34	Job opportunity	√												
35	Financial security in old age	√												
36	Financial Access of the HH										√			

Table 2.1 continued

37	Risks to leave the work-place during the working hours		√											
38	Ability to provide for family	√												
39	Life comparison with other races	√												
40	Capability to handle unforeseen expenditures		√											
41	Marital status of members		√											
42	Contacts with friends & relatives		√											
43	Number of residents per room		√						√					
44	Number of vacation trips		√											
45	Amenities		√											
46	Leisure-time pursuits		√											
47	Political resources like voting in elections		√											
48	Membership of political parties & unions		√											
49	Domestic worker at HH			√										
50	Home security service			√										
51	Urbanization rates and population density				√									
52	Rubbish removal													
53	Quality and quantity of food	√								√				
54	Cultivable Land										√			
55	Livestock										√			
C	Health													
1	Mortality rate					√				√			√	√
2	Access to primary health centers										√			
3	Medical aid coverage								√					
4	Illness symptoms		√											
5	Visits to/of doctors and nurses		√											
6	Physicians/10,000 people				√									
7	Quality and quantity of food	√												
8	Access to safe drinking Water										√			
9	Toilet facility										√			
10	Ability to 100 meters walk		√											
D	Education	√				√	√	√	√	√				√

Source: Compiled from the literature.

2.3.1.1 Altruism motive

Altruism is a key motive of remitting money, which demonstrates that migrants send money in order to improve the welfare of their loved ones at home (Loschmann & Siegel, 2015; Rapoport & Docquier, 2006; Agarwal & Horowitz, 2002; Lillard & Willis, 1997; Banerjee, 1984; Johnson & Whitelaw, 1974). Migrants generally feel the altruistic need to maintain their families, which makes remittance inflow a steady source of money for their families and as a result, such families will tend to rely on this source in the future (Bouhga-Hagbe, 2006). Some researchers like Becker (1981), Lucas and Stark (1985), Stark (1995), and Osili (2007) however, argued that the altruism motive of remittances was extracted from utility theory which advocates that the sender maximizes his/her expected utility by remitting.

2.3.1.2 Exchange motive

The exchange motive suggests that migrants send money back to their families in order to get services or to secure future legacy from them (see Cox & Jimenez, 1992; Hoddinott, 1992; Cox, 1987), and this can actually account for the self-interest motive for sending remittances. Migrants use remittances as a tool to get a number of services (Rapoport & Docquier, 2006). Hence, it implies that migrants trust their family members/relatives to maintain their properties on their behalf. In this regard, remittances act as compensation for these services (de la Brière, Sadoulet, de Janvry & Lambert, 2002).

2.3.1.3 Insurance motive

The insurance motive considers remittances as a risk diversification to protect the family against shocks. Insurance contracts are completed and made possible by the reality that the risks of migrant's urban or foreign work are hardly related to the risks intrinsic

in his/her former HH's rural activities. Similar to the self-interested contract, the insurance contract needs to be self-enforcing, as well. The simple obedience and altruism of a migrant can serve as an adequate enforcement in the aspect of health insurance, whose aim is to insure and smoothen the consumption rather than for income maximization (Rapoport & Docquier, 2006; Rosenzweig, 1988; Stark & Levhari, 1982).

2.3.1.4 Investment motive

The investment motive sees remittances as a repayment of past debt obtained from family, probably in the form of educational cost and emigration processing cost of migrants. Based on the investment motive, a migrant repays his/her family for a financial loan rather than services and obviously, the higher the debt, the more the remittances to be paid (Cai, 2003; Ahlburg & Brown, 1998; Poirine, 1997; Lucas & Stark, 1985; Stark & Bloom, 1985).

Existing literature reveals that remittance inflows, even in the un-invested state, can have a dependable multiplier effect. A single remittance dollar consumed for basic needs can fuel the retail sales that encourage further demand for goods and services, and as a result enhance output and employment (Lowell & de la Garza, 2000).

With the pioneering contributions and seminal work of Sjaastad (1962), Todaro (1969), and Harris and Todaro (1970), the study of migration is fairly immense. The Todaro model considers that migration occurs from rural to urban areas, basically driven by moderately higher expected income in the urban part. Hence, the model works as a cost-benefit process, which endures until the net expected benefit of migration reaches zero. This concept concentrates on the welfare of migrants who exclusively decide to move for their own benefits. Despite its benefits, the model concentrates on the individual

that faces a considerable measure of criticism. A number of authors have argued that migration can better be explained as a collective decision by HHs that can assist to decrease the uncertainty and market failures, which is common to developing economies (Stark, 1991; Stark & Bloom, 1985). This critique, often known as the 'new economics of labour migration' (NELM) tries to recast the Todaro class of models in the HH decision-making paradigm.

This research specifies a consumption pattern of remittances especially for daily expenditures such as food, healthcare, and clothing, irrespective of the receiving country. Likewise, it constructs a noteworthy share of the receiver's income with such funds being consumed to improve housing, the purchasing of land and HH durable goods. The higher consumption escalates the demand for goods and as a result boosts production. Migrants usually decide whether the remitted money should be utilized for consumption or investment, with a strategy based on improving HH living standards. If remittances are consumed on consumption, their welfare effects will depend on the comparative factor intensity of traded and non-traded goods (Djajic, 1998). According to the environment in a number of home countries, the choice of whether to invest or spend is clouded in a comparatively critical investment climate, with inadequate opportunities to initiate small-scale businesses. In El Salvador and the Dominican Republic, for instance, studies have observed that remittances were used first for HH expenses, while the remainder was spent on improving the standard of living through better housing, loan repayment, and education (Boly, 1998; Delgado & Siri, 1995; Georges, 1990).

Several theoretical researches usually consider the models dealing with multiplier welfare impacts of migration and remittances. Such models deliberate remittances as a potential offset to the deterioration in production suffered by developing nations, affected

by trade loss opportunities as a result of migration. In the case of the migration of low-skilled individuals, the well-being of the home countries improves if the remittance inflows are larger than the loss in national income. On the other hand, if highly-skilled workers migrate and the migration is escorted by capital, remittances have a developmental effect for non-migrant HHs when the capital-labour ratio of the home country remains unchanged or increases. If the capital-labour ratio declines, then the welfare effects are unspecified or even negative (Quibria, 1997). For instance, in some European countries, Straubhaar and Wolburg (1999) concluded that remittance inflows do not compensate for the loss in well-being of HHs because of the migration of high-skilled workers to Germany. Nonetheless, in the presence of foreign capital, remittances-financed capital improves the well-being of the country.

2.3.2 New Economics of Labour Migration theory

The NELM considers return migration as the coherent outcome of a "calculated strategy", characterized at the level of the migrant's HH, and ensuing from the fruitful achievement of targets. Seminal work of Oded Stark contends that NELM's approach shifts the attention of migration hypothesis from individual independence to mutual interdependence, at HH level to enhance the HH's living standard (see Stark, 1991; Stark & Bloom, 1985). Besides, it sees return as an ordinary outcome of a succeeded experience abroad, amid which migrants met their targets while remitting naturally a portion of their earnings to the HH. Remittances are expected to diversify the income of the HH with a perspective to better rewarding for the risks connected to the lack of an effective insurance market in home countries, and it additionally creates an explanatory element of the decision to return. With respect to remittances and the probability of return, Constant and Massey (2002) analyzed the data of return migration of guest workers in Germany, and found that the migrants had a higher ratio of employment in

home countries, and that having a spouse at HH increases their probability of return. Furthermore, skills gained in the host country are observed as being influenced by the possibility of return. Indeed, as indicated by NELM, migrants traveled abroad for a short time, until they keep furnishing their families with the resources of their expected gain.

The NELM's approach emphasizes that the duration of staying overseas is counted with respect to the HH need, in terms of savings, insurance and purchasing power, but nevertheless, most people migrate on a temporary basis. In short, the NELM theory of return migration goes beyond "a response to negative wage differential" (Stark, 1996). Migrants have defined clearly their tactics throughout the migration experiences. Indeed, the aforementioned "calculated strategy" is, for the NELM approach, a mode of highlighting the fact that the decision of migration can no longer be seen as "an act of desperation or boundless optimism" (Stark, 1996). Whether they experience market failure at their states of origin or with the objective to make up for wage differences between both countries (home and foreign), migrants try to plan according to reaction to market uncertainties (Warner & Afifi, 2013).

2.3.3 Prospect theory

The prospect theory explains decision making under uncertainty with a view to maximizing utility (Kahneman & Tversky, 1979). It is designed for empirical experiments rather than on the normative basis on how individuals make choices in a risky situation. The prospect theory is connected to the traditional utility theory in a number of ways. A fundamental view of this theory is a proposition that explains choices based on risks fueled from a 'reference point', and that individuals are much more delicate to deviances; ups and downs with respect to this reference point that affects their risk tolerance.

The prospect theory proposed potential insights into understanding the migrant's remittance decisions. The most usual reference point in the decision to remit is the social status of loved ones migrants have left behind (Opong, Philip & Collins, 2015). Thus, there is an invisible bond between migrants and their home countries. The value of such bond, in terms of contribution to life's enhancement, may frequently be unidentifiable and it cannot be easily severed in the minds of migrants. There are common advantages for remitters to leave their homes in pursuit of longitudinal economic improvements. However, there are also a number of disadvantages involved in terms of possible cessations with the robust social and HH bonds. The prospect theory, therefore, reflects a perceptual perspective to think about remittance, goods, and uncertainty (Camerer, 2005).

Some migrants are therefore concerned with any possibility of making up for their absence in their HHs and as a result, they are willing to use resources to preserve their places. Therefore, migrants are interested in improving the living style of their HHs and as such, they keep connected to their HHs and social bonds in their home countries since any loss of such links will not be rewarded by any means in the new social location.

2.3.4 Human capital theory

The skills and abilities of workers are critical to understanding the investment pattern and structure of wages. The human capital theory demonstrates that the educational level of individuals or groups has a significant association with income distribution (Tittenbrun, 2017; Alam, 2009). Generally, the human capital theory relates the knowledge or features of a worker to his/her ‘productivity'.

This theory covers not only the education level, but also other characteristics of an individual, such as human capital investment. These characteristics may be school quality, training and attitudes towards work. So, considering the HH head as a worker, one can hypothesize that an educated and skillful HH head can have more earnings and investment opportunities, and as a result the higher development and lower poverty level of the HH. Becker (1962) argued that human capital is directly useful in the production process. Human capital investment improves personal characteristics, talents, skills, capabilities, and ultimately it would help to achieve additional resources (Rice & Tucker, 1986). Human capital is especially useful when facing situations of 'disequilibrium' (Schultz, 1988).

2.3.5 Life-Cycle hypothesis

The Life-Cycle hypothesis (LCH) is an economic theory that relates the spending and saving patterns of people over time. The LCH presumes that an individual consumes on the basis of future income. If the individual is a HH head, then he/she has to consume by considering his/her income, the HH size, and dependent members of the HH. Preferences may be different for a married and an unmarried HH heads.

Furthermore, the LCH concludes that the average propensity to consume is higher in both young and aging individuals since they tend to borrow against future income (in the case of young individuals) or using savings (as with aging or retired individuals). Middle-aged people, on the other hand, have a greater propensity to save and *vice versa.* The LCH dating back to the research of Friedman (1957) and Ando and Modigliani (1963), introduced considerations, that were absent in the analysis of consumption based on current income. Their hypothesis recognized predictable life cycle pattern in earnings,

asset accumulation, and consumption (Bussolo, Schotte & Matytsin, 2017; Blomqvist, 1981; Mincer, 1974).

2.4 Empirical Literature

Existing literature have identified economic instability as one of the components affecting the level of income inequality in an economy, thus expanding the incidence of poverty. Some coping tools are required by HHs to decrease the extent of such effects on their living status. One of such coping tools has been identified to be remittances. Remittances can be a vital source of revenue for HHs and its economic effect has been measured consequently to be beneficial at the micro as well as at the macro levels, at least for a short-run.

There are different views regarding consumption of this source of funding. A number of scholars, such as Isaacs (2017), Chami et al. (2003), Sofranko and Idris (1999), Lipton (1980) and Perwaiz (1980) argued that remittances mostly were spent on consumption of basic needs such as food and health care; a smaller portion was saved (treasury bonds and in bank/postal deposits; see Arru & Ramella, 2000), or invested and they considered this investment as unproductive as they were frequently targeted at acquiring better education and more assets in the form of housing and land purchases (Rapoport Docquier, 2006). However, Osili (2004) noted that a considerable share of remittances was consumed for housing.

A study by Esquivel and Huerta-Pineda (2007) classified poverty into three categories: food-based, capabilities-based, and assets-based poverty, after which they compared both remittance receivers and non-remittance receivers Mexican HHs. Thus, they found that these funds helped to reduce food-based and capabilities-based poverty, but do not play

any role in reducing the assets-based poverty. Quartey and Blankson (2004) opined that remittances were frequently spent on consumption, education, health care, and housing, as against being invested in savings or utilized for personal business. On the other hand, Adams (1998) disagreed with Quartey and Blankson (2004) on the observation that for some countries, a major portion of remittances was being saved.

Most existing literature are of the view that remittances are used for better education, health care activities, and housing facilities. The following section gives an overview of the major uses of remittances.

2.4.1 Remittances and education

The relationship between remittances and education is uncertain. However, international remittance inflows may allow children of HHs to further their studies, and this might delay their entering into the workforce. This positive impact of international remittances on educational attainments can be seen from two main perspectives. First, remittances help to alleviate liquidity constraints of migrant HHs and as such, it allows HHs to invest in children' education. Second, highly educated persons are more likely to get better-paid jobs in destination countries and as result, dependent members of HH are more encouraged to attain higher levels of education. This claim is supported by Adams (1991), who observed that international remittances inflow is an important source for diverse types of investments. Adams argued that migrant HHs would spend proportionately a small portion of these funds on consumption and a larger portion on human capital, including education of children, as compared to non-migrant HHs.

Schultz (1960), Becker (1964) and Mincer (1974) discerned education as an investment that would pay off in the future. Thus, majority of HHs invest a sufficient

amount on educating their children, and the specific effect of remittances on education has been assessed by the educational achievements of HH members. A specific concern relates to how migration influences HH investment in human capital. On the other hand, the loss of job of an earning member in a HH may create a serious problem in the HH. Specifically, the absence of complementary labor could mean the loss of an extra source of revenue or extra work at home, which might affect the welfare of the younger members of the HH who may be pressurized by the surrounding circumstance to assist the HH. If the opportunity cost of losing such a labor is more than the rewards from emigration, HHs may forego child education to fill this labor gap. Therefore, migration may affect HH investment in children's education (Hanson, 2007; Hanson & Woodruff, 2003). The decision to send a child to school or for labour depends upon the economic condition of HH. Poverty is a key reason why children do work rather than to attend school (Amin, Quayes & Rives, 2004; Jensen & Nielsen, 1997). In the same vein, HH income is negatively associated with child-labor ratio (Edmonds & Pavcnik, 2005).

Economic theory implies that by smoothing liquidity restrictions, remittances should increase investments in human capital. In most developing economies, students have to pay for books, transportation, and some other additional costs. Remittances, through loosening the constraint of lower budget of HHs, can enhance investments in human capital through raising the affordability of maximum years of schooling. Employing a reduced-form approach, Kalaj (2013), Edwards and Ureta (2003) and Hanson and Woodruff (2003) analyzed the effect of remittances inflow on children's education in the case of Mexico, El Salvador, and Albania respectively. With the exception for the study by Kalaj, the other two remaining studies concluded that there was a positive relationship between children education and having an emigrant family member and they were also of the view that remittances are a mechanism that connects both. Importantly, the

Edwards and Ureta study made provision for rural/urban differences in the magnitude effect based on survival functions. However, their study did not deal with potential sample selection issues; the endogeneity of remittances. Contrary to the other two studies, Kalaj (2013) found that remittances from abroad increased the risk of leaving school, especially at the end of secondary school.

Using survey data, Elbadawy and Roushdy (2010), Acosta (2006), McKenzie and Rapoport (2006) and Yang (2005) examined the impacts of remittances on different age groups of children. The study by Acosta presented evidences that girls and boys between the ages of 11 and 14 years are more likely to benefit from remittances (through higher education rates) but he could not say same for boys and girls between the ages of 15 and 17 years in El Salvador. Furthermore, he said remittances are mainly used as a substitute for child labor, which is common among high school dropouts. Alternatively, Yang, Elbadawy and Roushdy found positive relationships between remittances and school attendance for those between the ages of 15 to 17 years and 17 to 21 years in Egypt and the Philippines, respectively. McKenzie and Rapoport (2006) further supported that migration has an inverse relationship with school attendance for children of 16 to 18 years of age, especially males, and has an insignificant impact on children of 12 to 15 years of age in rural Mexico. They also found that this effect helped reduce the extent of educational inequality among female students but at the expense of their male counterparts.

Battistella and Conaco (1998) estimated the impact of remittances on children education as well as on their behaviour in the absence of a father, mother or both. According to them, the migration of parents would affect the emotional level of children in such a way that some would become disobedient, defiant, and naughty. On the other

hand, the absence of parents might also make children to be more obedient, serious, responsible, and able to take care of themselves. Largely, the children showed an understanding, despite the absence of their parents, to improve their economic and education condition. They also conducted the study for the Philippines, and explored that private school education was considered as better education. However, getting an education in such schools largely depended on HHs whose fathers were working abroad. A great number of children belonging to European and North American emigrants in private schools were observed to follow this phenomenon. They also concluded that although the performance of children with one or both parents working abroad was lower than those with both parents, the situation was not that bad given the joint family system and involvement of relatives in the children's educational development.

Focusing on the short-term impacts of international remittances on school attendance as well as child labor among migrant HHs of Mexico, Alcaraz, Chiquiar and Salcedo (2012) obtained their estimation from existing long-term impacts of migration on HH choices. They used the global economic crisis of 2008-09 as an exogenous event, which had an inverse relationship with remittance inflows from the United States (US), to identify whether remittance receivers responded to this shock by enhancing child labor or taking them out of school. For empirical purposes, Alcaraz and others employed the differences-in-differences approach, where the treated group was migrant HHs' children of ages between 12 to 16 years, while the control group contained non-migrant HHs' children. They arrived at the conclusion that the negative shock caused a significant increase in child labor, and with the same intensity, a cut in school attendance. They found that remittance receivers were credit constrained and as a result, they reacted to the negative shock by getting their children employed.

Eversole and Johnson (2014) viewed the impacts of remittances from three perspectives; (i) from an economic development view, in order to analyze HH assets and productivity, (ii) from a social development perspective, which deals with gender and socio-economic status and (iii) from a livelihood point of view, which helps to determine the remittance dependence and diversification. They used primary data of migrant HHs from three provinces of Philippines. The study concluded that HHs used remittances mainly for consumption, investment and human capital such as education. The migrant families considered their children's education as a major priority for working abroad, and it was also observed that there was no difference in educating both sexes. Nevertheless, due to high overseas demand, much preference was attached to professional education, such as nursing, and these migrants saw educating their children as a very productive and important investment.

Besides HH level association of remittance inflows with consumption, remittances promote long-term growth *via* investments in education, business and property purchases. Furthermore, international remittances, as a financial asset, enhance other types of capital assets like human capital and physical capital, which are essential for growth and development. These developmental effects were not restricted to the initial remittances receivers, but it produced a multiplier effect that was difficult to assess (Rajan & Zachariah, 2007; Adams, 2004; Glytsos, 2002; Kannan & Hari, 2002; Adams, 1998; Findley & Sow, 1998; Taylor & Wyatt, 1996).

From a longer-term view, putting remittances to uses which are not directly prolific may strongly influence the mainstays of growth, namely health, education, environment or the culture. By shielding HHs from poverty, which has been observed to be a major

cause of dropping out of school, remittances may ultimately have a substantial effect on human capital accumulation, and hence on growth (see Sawada, 2003).

2.4.2 Remittances and healthcare

From a narrow perspective, other sources of income transfers such as remittances are expected to have a positive impact on health expenditure (Grossman, 1972). In analyzing the role of remittances in the provision of healthcare, it is important to consider the relationship between migration and health. The relationship between migration and remittances with regard to health in developing countries can be analyzed from two perspectives; (i) migration and remittances to health status; and (ii) migration and remittances to health spending. Health can be taken as an asset, and health production as an investment, which compensates for capital consumption (Zweifel, Breyer & Kifmann, 2009). The investment is carried out in the form of contribution to medical care, and the return on this investment is the spending of less time in a period of bad health. Health is indeed a crucial factor of production, in the sense that it has a direct effect on economic growth, and hence poverty reduction.

Using Mexican migrants as a case study, Hildebrandt and McKenzie (2005) concluded that in migrant HHs, health and infant mortality improvements, as well as higher birth weight of born children were observed after one or more members migrated to the US. They also observed that a growing income not only improved health, but also the knowledge of mothers' health. With Indonesia as a case study, Lu (2007) also found similar results to those of Hildebrandt and McKenzie (2005), who was of the view that infant mortality, an important gauge of health, tended to worsen in communities with higher out-migration ratio, but could be alleviated by remittances. Lu also found that with a stable growth in remittances inflow, infant mortality rate would be reduced.

With reference to children's health, Acosta, Fajnzylber and Lopez (2007) agreed that children from migrant HHs were healthier and had more access to health facilities than those from non-emigrant families with similar socio-economic and demographic characteristics in Guatemala and Nicaragua. They also concluded that the effect of remittances on children's health was concentrated in low income HHs that were placed in the first quintile of the income distribution. Using Guatemalan data, Lindstrom and Munoz-Franco (2005) examined the association between the migration experience and its influence on maternal health care services. They concluded that remittances were a possible way to obtain healthcare facilities in rural areas. Furthermore, migration was also associated with formal delivery assistance.

Amuedo-Dorantes and Pozo (2011) concluded that remittances elevated health expenditures. They used survey data of 2002 for Mexico and observed that approximately 6 percent of the money was spent on health-related activities if the remittance amount increased by 100 pesos, while health expenditures were less responsive to remittance income among the lower-income HHs. They also concluded that HHs lacking health coverage showed larger remittance income sensitivity than those who had coverage. Consequently, remittances may provide the equality in the usage of healthcare services by families with and without some sort of health care coverage. In the absence of health insurance schemes and the insufficiency of medical infrastructure, remittance inflows help to develop public health and, eventually, the quality of labour force. This is however hard to quantify.

In a different frame, Guilmoto and Sandron (2003) argued that by disrupting main institutions such as the relationship between gender, generations and social class, migration and remittances could be an aspect of social variation in the local regions.

More precisely, they may be a part of a flow that would challenge the attitude of gerontocracy and the bequeathed inequalities of the social status, which frequently followed after the emergence or diligence of some kinds of poverty.

Also, a significant positive link between remittances and healthcare spending was observed, especially for HHs without access to medical insurance (Jorge, 2008). With HH survey data of Albania, using an instrumental variable method, Kalaj (2013) investigated the relationship between remittances and health related activities. The study analyzed the association directly and indirectly and it gave rise to two important questions; (i) Do remittances enhance health care expenses? (ii) Do migration and remittances have a relationship with health status? The study also supported the view that remittances were important for increasing medical and health related services expenditures. However, the remittance impacts on health were only noted for receiving HHs living in the rural areas.

2.4.3 Remittances and poverty

Poverty reflects a lack of resources to meet basic requirements of life; food (Leliveld, 1997), clothing, and shelter as well as education, health, and other human developmental items (World Bank, 2002; CBN, 1999). Poverty is a vital reason to migrate due to the fact that remittances can reduce the incidence of poverty (Martin & Sirkeci, 2017). Therefore, the interrelationship between migration, remittances, and poverty can always be reinforced to enhance the developmental impact of remittances inflow.

In theory, the poverty effects of remittances on migrant HHs and sending regions could be placed between two possible ends (de Haas, 2010; Taylor, Armitage & Poston, 2005). One extreme of the spectrum structured the ‘optimistic' state in which migration

lessened poverty in migrant-source communities by upgrading people from low-income rural area to comparatively high-income urban part. Remittances could contribute to earnings of HHs in the migrant-sending localities, and as such increase the well-being of HHs. At the other extreme end, a ‘pessimistic' scenario where poor HHs faced the lack of money and risk constraints that bound their access to migrant labour markets was proffered. This state was postulated particularly for overseas migration, but nevertheless, would hold in any situation in which migration involves high transport and entry costs. HHs with members contributing to the migration process may have an advantage, but the recipients of such migration may not include the poor segment in rural areas. If migration is expensive and risky, at least primarily, then only the middle or upper population would migrate since it is unaffordable to HHs from the poorest segment.

The empirical literature supports the optimistic scenario. Hence it depicts a largely healthy picture for poverty reducing impacts of remittances in the host and beneficiary countries or communities. It is argued that migration and remittances offer triple wins as migrants have higher wages, they fill job vacancies in host economies, and sending countries receive remittances (Martin, 2016). Certainly, the findings of many studies conducted in different countries appear to demonstrate that migration, as well as remittances, positively affected the income of the people and HHs (Yang & Martinez, 2006; Adams & Page, 2005; Chimhowu, Piesse & Pinder, 2003; Barham & Boucher, 1998; Rodriguez, 1998; Adams, 1989; 2006). The estimated impact was observed to vary from country to country. In a couple of cases, however, it was observed that remittances did not adequately counterbalance the losses from migration, since the general impact was poverty enhancement (Acosta et al., 2007).

The situation under which migration happens is thus crucial to determine the poverty impacts. Numerous views can be recognized from the existing literature in this regard. For instance, using Nepal as a case study, Lokshin, Bontch-Osmolovski and Glinskayai (2007) demonstrated that international remittances were larger than domestic remittances, and as such, are seen to have a more prominent impact in decreasing poverty. Remittances, whether received in official or unofficial ways, had also caused reduction in the poverty levels of South Asia (Miambo & Ratha, 2005), Latin America (Acosta, Calderon, Fajnzylber & Lopez, 2008) and low and middle-income countries (Adams and Page, 2005).

Based on the consumption-smoothing impacts of remittances, HHs can smoothen the effects of income shocks and one of such forms is to spend their wealth (Deaton, 1992). Basically, HHs could reallocate resources across time, probably by borrowing from financial markets (Udry, 1994; Rosenzweig & Wolpin, 1993). They can also alter resource allocation at any stage, and this might entail the reallocation of consumption expenditures. A recently growing and significant consumption-smoothing method is the distribution of risks among people within the economy or across borders through private transfers.

Remittances are therefore considered a private financial support that directly comes to HHs, and this fund is likely to be counter-cyclical, but very often, it serves as a key source of finance to augment income and smooth consumption of the poor, and non-poor families (Quartey, 2005). Ratha (2003) also supported the view that emigrants sent more funds to their families during economic crises in their home countries. The study claimed that while the flow of funds increased during specific economic cycles and decreased in bad times, the remittance inflows appeared to respond less aggressively and showed

significant strength over time. According to the study, during the 1997/98 Asian financial crises, when private funds declined, remittances to developing economies continued to rise. Migrants are more likely to transfer funds to their families to reduce the impact of the negative shocks. Other negative shocks include lower rainfall that reduces agricultural output, which in turn affects rural and urban HHs, either directly or indirectly. It will decrease farm yields and hence farm revenue in the case of rural areas, and as a result it will lead to consumption instability and lower welfare. On the other hand, urban population will face inflated food prices, and given that food items account for a significant proportion of HH budget, it will lead to lower HH welfare. The impact can be mitigated for HHs that receive remittances or have other sources of income (Taylor, 2006; Quartey, 2005). Quartey using national household survey added more explanatory variables in the Ravallion (Ravallion & Chen, 1997) model such as economic shocks (measured by the price index), remittances, and the interaction term of remittances and economic shocks, to explain the possible mitigating impacts.

In contrast, other scholars forward the idea that remittances could hamper development by keeping HHs at their pre-migration income levels, while reducing their labour supply. Authors such as Stark (1978, 1980) disagreed and endeavoured to give a more optimistic view of remittances by showing that the imperfect rural credit system and labour markets provided HHs with the total responsibility to bear the full costs of agricultural production cycle (for example, purchasing seed and inputs, hiring equipment). Viewed from this angle, remittances are believed to contribute to productivity growth. Remittances directly influence poverty by enhancing the income of the migrant HH. They also alter the cumulative poverty level of home countries *via* their impacts on growth, exchange rate, inflation, and capital access. The study of Adams and Page (2003) using both Ghana and Guatemala as case studies, further revealed that

income (per capita), income distribution (measured by Gini coefficient) and remittances had different effects on poverty.

Growing evidence from HH survey data support the findings that international remittances have reduced the incidence and severity of poverty in several low-income countries. According to Adams (2005), remittances were found to have reduced the poverty headcount ratio by 11 percent in Uganda, 6 percent in Bangladesh, and 5 percent in Ghana. Gustafsson and Makonnen's (1993) study showed that a complete removal of remittances for Lesotho would raise the headcount poverty ratio (with a poverty line equal to 60 percent of mean HH expenditure) from 52 percent to 63 percent. International remittances were found to account for 60 percent of income for HHs in the lowest income decile, but were not very large for HHs located near the poverty line (roughly the fifth income decile). They found that international remittances have more impact on reducing the depth of poverty than on the poverty headcount. In other words, they were very instrumental to helping the poorest of the poor (World Bank, 2006; Amuedo-Dorantes, Bansak & Pozo, 2005; Taylor et al., 2005).

In the case of Guatemala, while remittances had only a limited role in reducing the number of poor people, they did significantly reduce the depth and severity of poverty (Adams, 2004). It gave opportunities for income posting and to reduce poverty incidence in home communities (Rapoport & Docquier, 2006; Adams & Page, 2003; Jones, 1998; Durand, Parrado & Massey, 1996; Taylor, Arango, Hugo, Kouaouci, Massey & Pellegrino, 1996; Russell, 1986). However, according to Banga and Sahu (2010), the poverty level would be reduced only in countries having more than 5 percent of GDP as remittances in developing countries. They qualify their results based on three poverty measures of the Foster-Greer-Thorbecke (poverty headcount ratio, poverty gap, and

poverty gap squared) (see also. Taylor, Mora & Adams 2005 for their analysis by regions in Mexico using the three poverty measures).

Several variations are observed in the examination of the remittance-poverty nexus in terms of data and methods in previous studies. Using Mexican household survey data and analyzing by the propensity score matching estimation technique, Esquivel and Pineda (2007) observed the poverty reducing impact of remittances on Mexico; 8 percent reduction in food-based poverty and 6 percent reduction in capabilities-based poverty. Also, Funkhouser (2006) used longitudinal data for Nicaragua for 1998 and 2001 and divided the sample into two groups: (1) HHs having migrant members between 1998 and 2001; and (2) HHs with no migrant member within the considered time frame. Using difference-in-difference technique, he found that the change in reduction of poverty was higher among HHs with migrant members. Further, by using a 2004 Nigerian national living standard survey data, Chukwuone, Amaechina, Enebeli-Uzor, Iyoko and Okpukpara (2007) asserted that international remittances were significant in reducing poverty among HHs relative to domestic remittances.

Beyene (2014) also checked the impacts of foreign remittances on poverty and inequality using an urban HH survey data of Ethiopia. Using data of non-remittance recipients, he estimated counterfactual consumption in a hypothetical case of no remittances. Measures of poverty and inequality in the counterfactual case were then compared with the actual values. The migrant HHs had somewhat greater per capita consumption, on average, than non-recipients in the no remittance situation, which implied that they were comparatively better-off than the non-receivers even without remittances. The difference between these groups widened with the inclusion of

remittances. The headcount, poverty gap and poverty gap squared ratios declined with remittance inflows.

Another related work was done by Lachaud (1999), which was based on a national priority survey data conducted in Burkina Faso between 1994 and 1995. Beginning with data description, the study showed the HH living patterns in Burkina Faso vis-à-vis different sources of income such as farm income (43 percent), non-farm income (28 percent), transfers (domestic + international remittances) (19 percent), and wages (11 percent). The author noted that 32 percent of rural HHs and 28 percent of urban HHs received remittances, either domestic or international. The study addressed the poverty impact of remittances, first by considering remittances as exogenous transfers, and then as potential alternatives for local earnings. The logic behind this method was in replacing remittances by the value of income accruing to the migrants and other HH members without migration. In the first situation, remittances taken as exogenous, was observed to have a balancing effect on income and a considerable influence on HH well-being, specifically in rural parts. Second, the results showed that remittances caused a reduction in poverty in both the rural and urban areas by 7 percent and 3 percent, respectively. Nevertheless, the ratio of poverty reduction was significant for only subsistent farmers and the inactive in rural regions. In the urban areas, it was significant for more susceptible socio-economic groups such as the unemployed or self-employed. Lachaud proved these outcomes by identifying that a nation relying heavily on international remittances was still integrally fragile.

Castaldo, Litchfield and Reilly (2007) compared the effects of domestic and international remittances on the consumption pattern of remittance recipient HHs of Albania. Using the Albania Living Standards Measurement Survey data collected in

2002, they found that the consumption style among HHs who received internal remittances was almost same as that of non-receivers. But nevertheless, the HHs who received international remittances had different spending patterns from non-receiving HHs in that they consumed, on average, a smaller portion of their expenses on food related items and more on durables goods as compared to non-receiving HHs. They noted that international remittance receivers preferred spending on luxurious goods to food items, and thus it was observed that the extra money made life more comfortable. The difference in food expenditures of both groups, international remittance recipients and non-recipients, was not too wide. The food consumption of non-recipient HHs was 4.5 lower than that of recipient HHs, with all other things being equal. On the other hand, remittances accounted for 16 percent and 25 percent of the budgetary allocation for durable goods and utilities category respectively for HHs who received international remittances. Furthermore, they found that HHs with international remittances channeled the funds to investment-type goods (see also Koç & Onan, 2004).

Remittance dependency was also the focus of Gustafsson and Makonnen (1993) and Leliveld (1997). The former based their research on survey data collected in 1986-1987 among 7,680 HHs to evaluate how returning migration and the cessation of their remittances would influence the poverty incidence of Lesotho. Demonstrating that remittances were a major source of 35 percent of HHs' income in the collected sample, the study estimated the poverty impact of remittances assuming it had ceased, by simply deducting the remitted money from HH consumption, and considering the HH size by including migrant members. The study concluded that HH per capita consumption decreased by 40 percent, while poverty increased by 14 percent.

Taking the rural areas from a survey data of 3,179 persons of Botswana in 1978-1979, Lucas and Stark (1985) and Stark and Lucas (1988) concluded that drought periods were followed by a rise in the remittances sent by migrant members. According to their studies, this was a proof of risk diversification through migration and remittances. Drèze and Sen (1989) further reported how many rural HHs in Kenya were saved from the famine of 1984 with remittances sent by relatives and friends. Similarly, in a HH survey, Adams (1991) estimated the determinants of foreign migration and relationship between remittances and poverty for rural Egypt. He included land ownership, the number of working-age male members at home and education levels of members as factors affecting emigration. Adams found that there was a positive impact of remittances on rural poverty. He concluded that that the poverty level declined by 10 percent when foreign remittances were included in per capita HH income.

Schrieder and Knerr (2000) carried out a research on Cameroon with a HH survey data collected in 1991-1992, in two areas categorized by a severe deficiency of food security. The study explained that remittances accounted for 26 percent of per capita income in the 140 HHs of the sample, and these remittances were affected by seasons (the average remittances doubled in dry seasons than that in wet seasons). Employing an econometric approach, they demonstrated that migration and remittances were imperfect insurance mechanisms.

A study by Gubert (2002) concentrated on remittance behaviour in the case of Kayes. Relying on a transfer function, the study analyzed the degree to which remittances protected the recipient HHs from the risks of poverty. The function involved three variables in the regression; (1) total deceased persons, (2) healthcare expenditure/capital by the HH, and (3) farm-income shock. They explained that these variables expressed

the numerous types of risks faced by HHs, for instance, the illness or death risk would require an unplanned expenditure (doctors fee, drugs bills, organizing funerals), which may alter HH income. The study revealed a positive and significant correlation between shocks and the remittances they received. Furthermore, if families sent some of their members abroad, as an insurance against any uncertainty/risk, the amounts remitted would be larger since family ties would enhance a sense of responsibility and thus, family members were reliable insurers.

In the case of Botswana, Lesotho, Malawi, Mozambique and South Africa, which was characterized by an extensive migration from these other countries to South Africa's mining areas, Lucas (1987) observed that the reduction in human capital in these home countries led to lower agricultural output in the short-run, but the remittances sent by these migrants facilitated an increment in productivity as well as livestock accumulation in the long-run, with the exception for Lesotho. Nevertheless, the author could not ascertain if these enhancements came as a result of a high use of inputs, purchase of new machinery or the application of new production techniques. Furthermore, the author could not say whether the gains realized in productivity could equalize the cost of labour due to migration.

Another study focusing on Lesotho, advocated that remittances especially from South Africa empowered receiving HHs to respond more speedily to agricultural constraints than HHs without migrant members. This clarified why technical inefficiency is lower in remittance receiving HHs than in non-remittance receiving HHs (Mochebelele & Winter-Nelson, 2000). Long-term economic growth, poverty reduction and food security enhancement cannot be achieved without significant investments in the agricultural sector (IFAD, 2016). Agricultural investment is essential to attain rural growth, job

creation, the provision of basic necessities and the establishment of a stable foundation upon which broader economic growth can be realized. Remittances play a key role in developing knowledge transfers and cross-border relationships. For example, the diaspora, can provide technical information on coping with disasters, and return to help with recovery and reconstruction (KNOMAD, 2016).

The research by Azam and Gubert (2002) was based on a preceding paradoxical observation that HH farms receiving remittances, despite requiring more capital and labour, accomplished significantly lower yields than farms without remittances. Supported by evidence, the authors asserted that the insurance function of remittances, while significantly improving the well-being of remittance receiving HHs, it likewise produced rent-seeking behaviour. They were of the opinion that migrants would send remittances home whenever their families were doubtlessly not having enough food and that the exertion put in by families cannot be felt by the migrants. They also demonstrated that HHs have an incentive to cheat by investing in less effort and depending on migrants for their living.

In some economies, the small and medium enterprises (SMEs) sector strongly was found to rely on remittances, though there were no particular programs or government intervention for this. In Mexico, El Salvador, and Dominican Republic, a robust relationship was found between small business establishments and migrants. Some of them who acquired skills in the US even had customers in New York, after starting their businesses using remittances. For instance, Portes and Guarnizo (1991), Lopez and Seligson (1991), and Cornelius and Marcelli (2000) observed that 90 percent of business owners were returnees or lived overseas, 89 percent had established businesses with the money they earned abroad, 42 percent were still receiving foreign remittances and 72

percent had returned migrants as workers. Although the investments were not regular, business investment migrant workers remitted $1.2 million for the sample data with 57 percent in the form of currency, and 37 percent in-kind.

In contrast, studying the Dominican Republic's migrant families, Amuedo-Dorantes and Pozo (2004) discussed the effect of remittances on the establishment of new businesses. They observed that remittances did not play any role in the creation of new businesses. But the authors found that many existing family businesses were strengthened due to remittance inflows. The study made use of data from a Latin-American Migration Project covering six different communities of Dominican Republic.

Some researchers challenged that in some parts of the globe especially in Africa, the question of whether immigration and remittances affect endogenous growth remains open. The reality that remittances simplify the budget constraint, which improves the well-being of HHs, do not imply that it leads to development. According to Ellerman (2003), there could only be endogenous development in a locality relying heavily on remittances if these funds increased viable productive activities regardless of migration. At the HH level, it could motivate income diversification or increase human capital, such that HHs could rely less on migration and be financially more independent. Theoretically, the presence of strict liquidity constraints due to poor functioning credit markets in a number of developing countries could encourage this dynamic utilization of remittances (Stark, 1980).

Cleary, remittances can reduce poverty in many ways. For example, at the HH level, it helps to smoothen the consumption pattern, improve access to health services and better food, reduce child labor incidence and thus improve educational attainment in the

same way savings and growing assets serve as collateral for various purposes. On the other hand, it plays a major role at the community level as well. It improves local infrastructure, which leads to development of local goods markets and the growth of new services (banking, trade, retail, construction, and travel). Thus, it generates more employment opportunities, which may lead to a reduction in poverty and inequality. Ullah (2017) contends that, though there is huge potential to contribute to the development in South Asia as it has not fully benefited from migrant remittances.

2.4.4 Remittances and household characteristics

Discussing HH characteristics based on questionnaire and interview data of 390 HHs of Kerman City (Iran), Yadollahi, Paim and Taboli (2013) analyzed the relationship between demographic facts of HH and its economic condition. They concluded that the earnings and expenditures were different under the headship of both genders, but they did not find any difference in physical ownership. Furthermore, they observed a linear relationship between HH economic status and level of education, and between income and education level. In line with Yadollahi et al. (2013), Sen and Begum (1998) also concluded that the education level of the HH head was strongly associated with the socio-economic status of HHs. It was apparent that the poverty level was higher among uneducated HHs. According to the World Bank (1998), the educational level of HH heads is a good index for his/her earning and economic status. It can be concluded that HH economic condition is more likely to grow if education increases.

Using Nepalese census data of 2001, Fafchamps and Shilpi (2011) examined the association between male and female education with numerous HH welfare indicators. They observed that among educated females, the child mortality ratio was significantly lower. For child education, they added that though the education of both parents imposed

a significant impact on schooling and attendance, the father's education was more important. As for the mothers' education, they asserted that an educated mother would help control child labour, but after a specific age, educated females would need children between ages 10-15 years for their professional tasks. Thus, female education is likely to be supported by the parents.

Zhang, Guariglia and Dickinson (2015) analyzed the relationship between old age dependency ratio and HH finance. They considered HH members with ages above 65 years as being dependent. Based on the life-cycle hypothesis, using HH-based data of 31 Chinese provinces of 1995-2013, they concluded that older dependents would reduce the HH savings, which in turn affects HH development.

2.5 Evidence from Pakistan

The empirical evidence revealed that HHs with remittances displayed the same consumption pattern as that of HHs that are not receiving these funds. Only the study of Adams (1998) reported that HHs saved more on foreign remittances (71 percent) relative to domestic remittances (49 percent) and the rental income (8.5 percent). Other studies on Pakistan, in general, suggested otherwise; a larger part of remittances was spent on consumption. The following discussion details the studies related to the remittance impacts on the Pakistan HHs.

Gilani, Khan and Iqbal (1981) concluded that over 60 percent of remittances was spent on consumption, usually on education and health. Education is considered a vital factor for poverty reduction as the more educated individuals can acquire better earning opportunities, and therefore, are less likely to be poor (Mughal & Diawara, 2010). In another early study, Abbasi, Irfan, Javed, Zahid and Arif (1983) used population, labour

force and migration survey data covering 10,288 HHs in 1979. They found that migrant HHs had better living standards than non-migrant HHs, mainly due to their consumption patterns. The consumption preferences among migrant HHs included food items and HH appliances, as well as the construction or renovation of houses. They disclosed that at the micro level, the HHs appliances and house acquisitions served as a symbolic status of migrant families; a sign of successful returns from emigration. In rural parts, the upgrading of mud houses to brick houses was considered a positive change in family status, which is also a display of newly acquired wealth. Speaking about children's education, they added that though the ratio of migrants' children enrolled in schools was notably higher than non-migrant HHs, it was not the priority of migrant HHs.

Remittances were also associated with higher farm yield due to growing spending on farm related equipment (Kerr, 1996). In rural Pakistan, the propensity to save out of remittance inflows appeared significantly higher than that for any other income source (Adams, 1998; 2002). Thus, remittances were deemed to have contributed to poverty reduction in Pakistan.

Using HH data and input-output tables of 1989-1990 and 1993 for Pakistan, Siddiqui and Kemal (2006) investigated the association between remittance inflows, trade liberalization, and poverty. Their results concurred with other studies on the poverty reducing effects of remittances. Trade liberalization was also found to have moderated poverty levels, but the effect was found to be more prominent for urban poverty relative to rural poverty.

Adams (1996) collected rural data from a series of interviews with 727 HHs for 1986-1987 and 1988-1989. Using information on education, income, expenditure,

employment, migration, and HH assets, the study explored the determinants of poverty in rural Pakistan, namely in Attock and Faisalabad (Punjab province), Dir (Khyber Pakhtunkhwa province) and Badin (Sind province). His analysis showed a positive effect of domestic remittances on income distribution, whereas the effect was negative for international remittances. Due to high "entry costs" of emigration, international remittances were received mainly by the upper-income HHs. Thus, international remittances were characterized as an inequality-promoting source of income.

Arif (2009) accounted for the economic and social effects of international remittances on migrant HHs. He used HH-based data from the 2009 Survey on Overseas Migrants and Remittances (HSOMR) for 548 HHs with at least one member working in Saudi Arabia. The survey was restricted to male migrants working in Saudi Arabia and the remittances covered 41 percent of the surveyed HHs' monthly income. The study explored the remittance-education relationship among migrant families. He concluded that foreign migration caused a qualitative improvement in children's education, from two perspectives: (1) the enrolment rate of children aged of 5 to 15 years; and (2) the ratio of private school enrollment. The result indicated a comparatively better picture for child education in migrant HHs. Moreover, the children of migrant HHs continued schooling for a longer period, which demonstrated their higher education level than children from non-migrant HHs. The rural and urban school enrollment gender gap was also much lower in migrant HHs compared to the gender gap at the national level. Overseas migration also was found to enhance the enrollment ratio in private educational institutes. Thus, Arif (2009) compared pre and post migration trends of private school enrollment and found enrollments to have from 15 percent to 48 percent after migration.

Ahmad et al. (2010) used the Household Integrated Economic Survey (HIES-2005-06) of Pakistan to analyze the foreign remittance impacts on various HH elements. Using a logit model, they found that the predicted average expenditures of migrant HHs were 41 percent higher than that of the non-migrant HHs, and these expenditures were mostly on children's education, food items, clothing, and for recreation. The most prominent increment was observed in the spending on durable assets, which increased by 74 percent in the presence of remittances. Further, they found that the poverty ratio decreased by 13 percent for migrant HHs. They also argued that the age of HH heads was positively associated with poverty; while an educated HH head played a crucial role in reducing poverty.

Mughal and Anwar (2012) examined the impact of remittance inflows on inequality and the incidence of poverty in Pakistan. They used data from the HIES 2005-2006 and 2007-2008, and discovered that remittances helped to decrease the poverty headcount ratio, the depth and the severity of poverty. They also observed that international remittances would cause a reduction in economic inequality in Pakistan. International remittances were found to be important relative to domestic remittances for poverty alleviation and for reducing the inequality. Migrant HHs were more likely to shift to the higher consumption quintiles. However, they did not find any impact of remittances on inequality at the macro level. International remittances reduced the marginal probability of HHs below the poverty line by 32 percent. The study covered remittances received from three major regions such as the Gulf Cooperation Council (GCC), Europe and North America. Interestingly, the study also found that the remittances from the GCC had a negative, but statistically insignificant effect on inequality, while that from European region had a positive impact. On the other hand, the remittances from North America had a strong and negative association with consumption inequality in Pakistan.

Iqbal (2013) also used the HIES 2007-2008 data to study the remittance-poverty relationship. In order to see the effect of international remittances on poverty levels and per capita income, Iqbal employed a propensity score matching approach. The results of his study suggested that remittances augmented the per capita income by 45 percent for migrant HHs as compared to non-migrants. The highest effect was seen in urban Pakistan, and the results further showed that remittances reduced the probability of HHs below the poverty line by 30 percent. At this level, the percentage was higher in rural areas (36 percent) than that of their urban counterparts (23 percent).

Studies in Pakistan such as that Sofranko and Idris (1999) showed that relatively small remittance earnings from migrant members working in the Middle East were put into business investments, regardless of government incentives undertaken by migrant HHs. The most suitable predictors of investment were determined by prior experience of business by the HH members, and whether the HH head had the know-how of business investment opportunities. Generally, before starting a business, one needs a sufficient level of assets, education, professional skills, funds, and family labour; requirements that are often not met in Pakistan.

2.6 Summary

Combining major factors of human well-being, a number of researchers constructed human development indices for making global comparisons, and comparisons at the sub-national provincial levels. However, there are some shortcomings in the existing indices of HH development. They are not relevant and comprehensive, as they do not capture all dimensions of well-being. Namely, the housing dimension has not been given appropriate attention.

The empirical evidence on the relationship between foreign remittances inflow and social and economic indicators of the receiving HHs in Pakistan are at best mixed. Most studies however suggest that remittances are spent on education, healthcare, and housing, but do not play a role in supporting business ventures. Only a limited number of researchers are of the view that remittances are a business enhancing tool. Collectively, most of the existing literature agree on the developmental role of foreign remittances on welfare of receivers (better education and health, increased purchasing power and consumption, and lower poverty), and the community at large.

Overall, national- and provincial level studies on remittances, HH development and poverty are broad-based, and therefore inadequate for understanding the extent of the impact remittances on the HHs in the home country.

CHAPTER 3: METHODOLOGY

3.1 Introduction

This chapter is divided into four sections. The first section details the conceptual framework of the study; it explains the economic and social dimensions of foreign remittances inflow on household development (HD). Section two describes the variables employed to construct the Household-Based Human Development Index (HHDI) for the migrant households (HHs) as well as for non-migrant HHs. This is followed by the empirical models employed for estimating the effects of remittances inflow on HD and poverty. Section three details the construction of the HHDI and the empirical strategy to analyse the impact of remittances inflow on the HHDI and poverty. The final section describes the data and the sources of information.

3.2 Conceptual Framework

This study builds on the New Economics of Labour Migration (NELM) theory, whereby migration decisions are made at the household level. The NELM approach is relevant in that it explicitly relates the migration decision with its impacts through remittances (Taylor & Fletcher, 2001). Based on this approach, a HH maximizes its shared income, status, and minimizes the risks. These three facets are linked to the migration decision of the HH. The potentially higher earning matters for emigration, as well as the relative income of the associated HH.

Migration decisions are mostly linked to both absolute and relative income (Stark, 1991). The relative income can be taken as a social 'status' context; compared with the HH's reference group, for example the local community or town. This social status demonstrates that a HH is better-off than others with respect to their spending power on

various activities: education, healthcare spending, and facilities for the home. In most of the cases, the migration cost is shared by HH members, so the remittances sent by the emigrant, economically supports the family members at home. Remittances inflow increases the existing income of HHs, or in some instances, it becomes the core income of the HH (Lipton, 1980; Chami et al., 2005; Adams & Cuecuecha, 2010).

The NELM approach is also linked to poverty, where emigration is considered a way out of poverty or relative deprivation for the poor HHs, or in the absence of a desirable job market (see Dercon, 2005). This is also thought to be one of the alternatives to ensure a sustainable livelihood, namely for improving welfare, skills, and natural resources (De Haan, 2002).

On the basis of the NELM theory, the conceptual framework is formulated. Figure 3.1 depicts how remittances inflow influences the living standards of migrant HHs. Remittances affect the economic conditions and the social status of HHs. The social aspect can be described by better opportunities for children through higher education, improved healthcare, and better housing facilities. Collectively, all these impacts reflect the living standards of HHs. From the economic perspective, remittance inflows enhance the income of the recipient HHs and decrease poverty.

Remittances inflow is expected to be positively correlated with the development of the HH, and negatively with the level and severity of poverty. However, HH spending may vary by HH characteristics; hence the effects of remittances on HH development and poverty may differ (see Yadollahi et al., 2013; Sen & Begum, 1998). On the basis of existing literature like Beyene (2014), Phangaphanga (2013), Yadollahi et al. (2013), Touhami, Florence, Najat and Sabine (2009), Adams (2006), Taylor (2006), Mark,

Joanne and Elizabeth (2002), Al-Samarrai and Tessa (1998), Sen and Begum (1998), and with the support of the 'human capital theory' and 'life-cycle hypothesis', factors namely such as the education level of HH head, age of HH head, gender of HH head, number of dependent members of the HH, and income other than remittances, are important control variables that need to be included in estimating the relationship between remittance inflows and HH development. Similarly, these control variables are relevant for the remittance-poverty estimations.

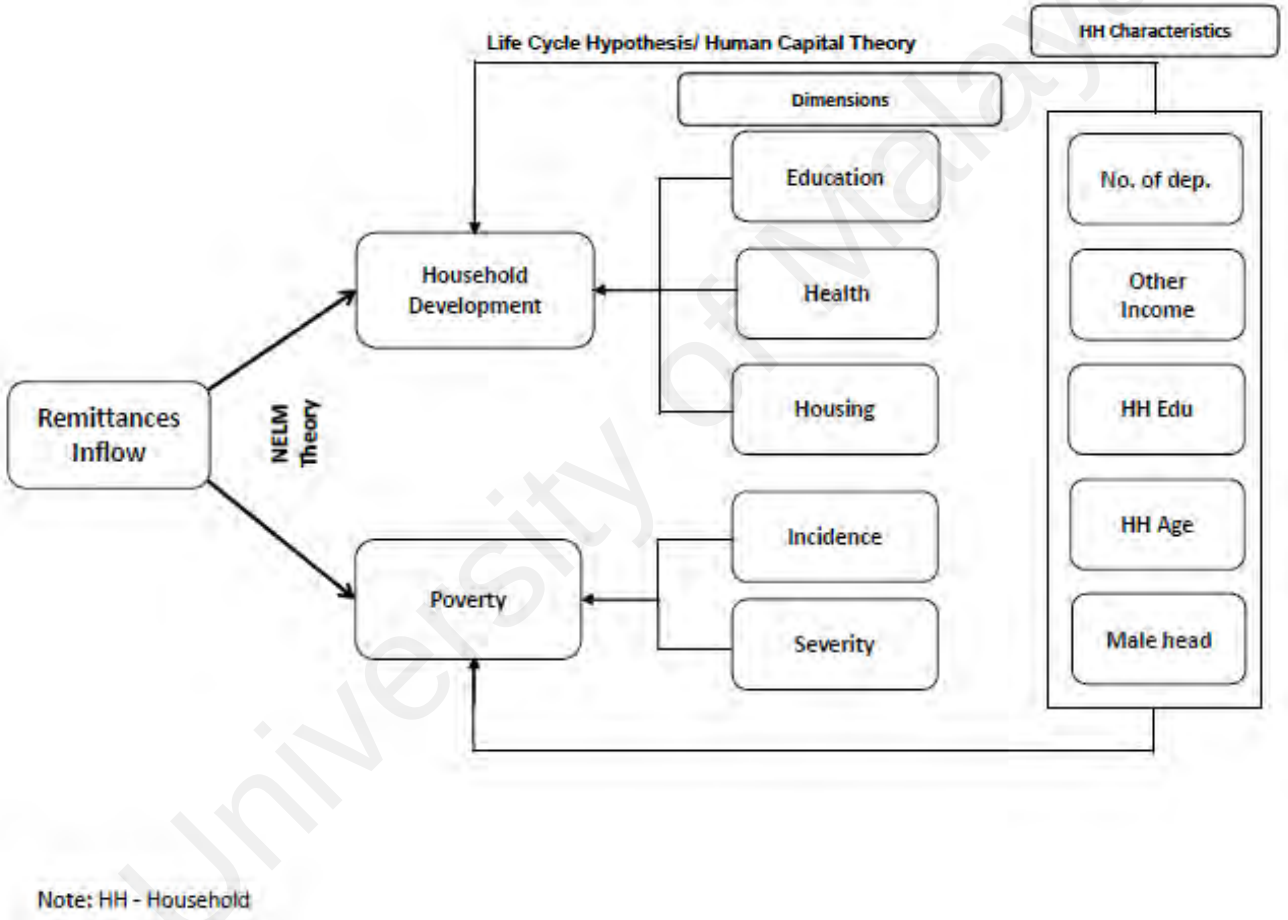

Figure 3.1: Conceptual Framework

From Figure 3.1, the following alternative hypotheses are therefore derived from the theory:

H_Aa: Remittances positively affect HH development

H_Ab: The number of HH dependents negatively affects HH development

H_Ac: Other sources of income positively affect HH development

H_Ad: An educated HH head positively affects HH development

H_Ae: An older HH head positively affects HH development

H_Af: A male HH head positively affects HH development

The hypotheses are also formulated for the remittance-poverty nexus, as given below:

H_Aa: Remittances negatively affect HH poverty

H_Ab: The number of dependents positively affects HH poverty

H_Ac: Other sources of income negatively affect HH poverty

H_Ad: An educated HH head negatively affects HH poverty

H_Ae: An older HH head negatively affects HH poverty

H_Af: A male HH head negatively affects HH poverty

3.3 Construction of Household-Based Human Development Index

3.3.1 Identification of dimensions and sub-dimensions

The first HDI was published in a yearly Human Development Report by the United Nations Development Programme (UNDP) in 1990. The explicit goal of HDI was to shift the centre of development economics from national income accounting to people-focused approaches. Three key measures were included in the HDI: access to education, health, and goods. These dimensions were further expanded to include life expectancy, literacy, school enrollment, and income. The sub-dimensions were then shaped into a single index to compare the well-being of people across countries.

The HDI was however cited to have some shortcomings. First, it neglected many important dimensions of well-being. Second, it took only average achievements and ignored the distribution of HD inside a country or by populace subgroups. A number of researchers constructed the HDIs for different nations (see Lopez-Calva & Ortiz-Juarez, 2012; Hanham, Brehanu & Leveridge, 2002; Agostini & Richardson, 1997; Corrie, 1994). Some researchers modified the basic dimensions of HDI, for example Permanyer (2013), Campos-Vázquez and Vélez-Grajales (2012), and Harttgen and Klasen (2012). Considering income as an insufficient measure of well-being, a number of studies modified the income dimension of the HDI[1]. Similarly, some researchers modified the health index (see Campos-Vázquez & Vélez-Grajales, 2012; Kironji, 2008), while others did not include the health dimension in the computation of the HDI (see Jordan, 2004).

In order to measure comprehensively the living conditions of HHs, the existing HDI is modified for this study, based on Harttgen and Klasen (2012), Permanyer (2013) and Kironji (2008). Based on the UNDP concept and Harttgen and Klasen (2012), the HHDI for HHs of the Punjab province and for remittance recipients, is constructed. Figure 3.2 maps the sub-indices of the HHDI and the sub-dimensions of the sub-indices of education, health and housing.

[1] For further details, see Harttgen and Klasen (2012), Permanyer (2012), Campos-Vázquez and Vélez-Grajales (2012), Kironji (2008) and Jordan (2004)

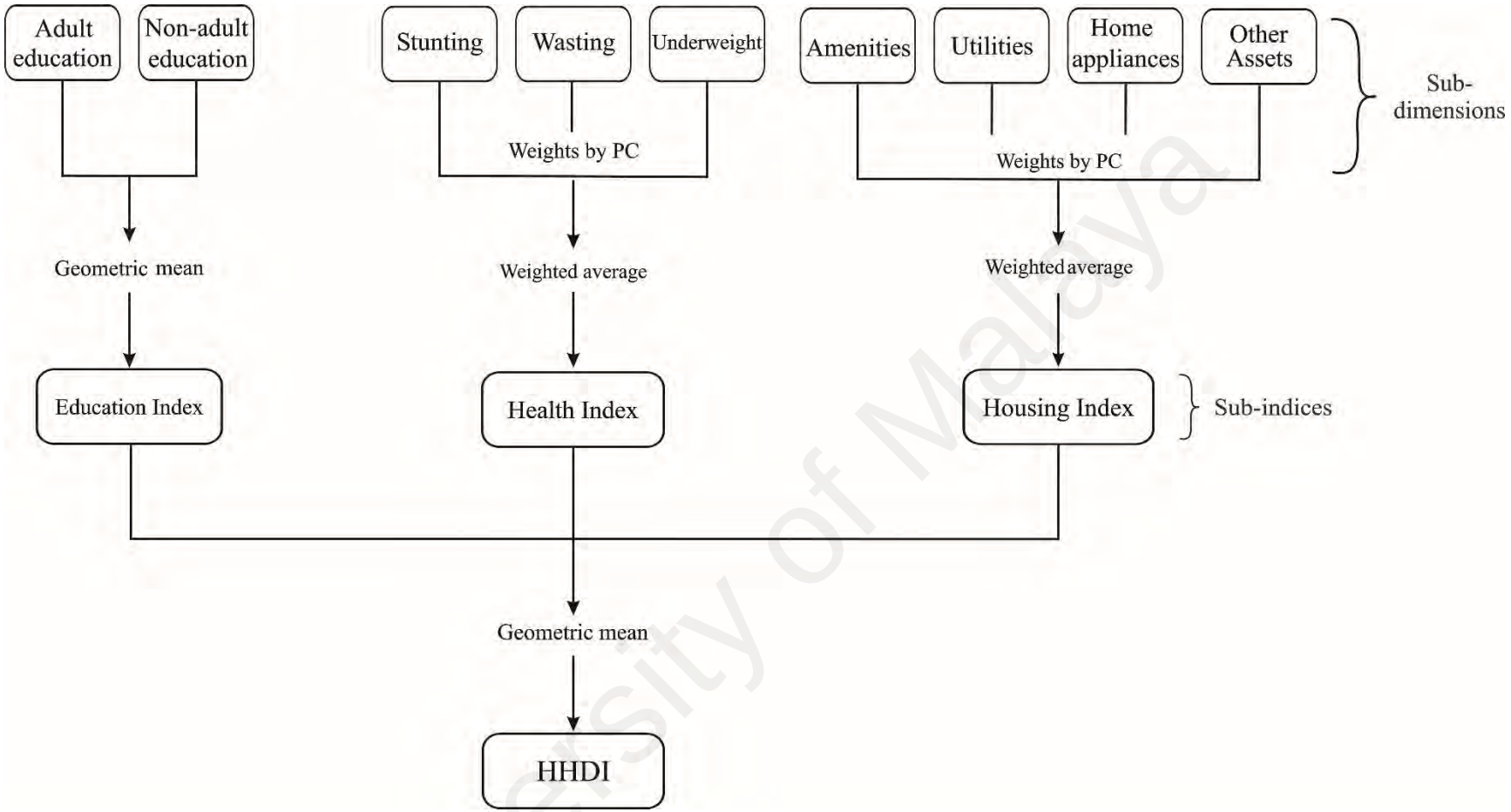

Figure 3.2: Sub-Indices and Sub-Dimensions of HHDI

3.3.2 Measurement procedure

From Figure 3.2, the overall HHDI is computed as a weighted sum of three sub-indices, education, health and housing. The first step is to construct all the sub-indices separately, by assigning a specific weight to each dimension using the Principal Component (PC) method (see Sahn & Stifel, 2000, 2003; Filmer & Pritchett, 2001; Harttgen & Klasen, 2012). To calculate the sub-indices, the UNDP's max-min approach is adopted. The second step is to take the geometric mean[2] of the calculated dimensions to obtain the overall HHDI as follow:

$$HHDI_j^h = \sqrt[3]{E_j^h . H_j^h . Hs_j^h} \qquad (3.1)$$

$0 \leq HHDI_j^h \leq 1$

where

E_j^h : education index of each HH

H_j^h : health index of each HH

Hs_j^h : housing index of each HH

The HHDI, calculated *via* the geometric mean, does not permit for substitutability among education, health and housing, and penalizes those HHs with unequal attainments across those sub-indices. Alternatively, it favours those HHs with balanced distributions across those dimensions. We considered this property in constructing the index. The following discussion details the construction of the sub-indices/dimensions of HHDI.

[2] Until 2009, the HHDI was computed based on the arithmetic mean approach. In 2010, the UNDP proposed the geometric mean approach to allow for the imperfect substitutability between the HDI's three sub-indices (Ravallion, 2012).

3.3.2.1 Education sub-index

Following the HDR-2010, adults are defined as HH members aged 25 years and above. If all the members of the HH are below the age of 25, then total weights are assigned to the other sub-dimensions. The same procedure has been adopted for the HHs without children or HHs with children below the schooling age[3]. To simply drop the HHs without children or HHs with children below a particular age and HHs with members under 25 years of age, may produce biased results (Schafer & Graham, 2002). Scores are assigned to each HH member according to their qualification and current enrolment. The higher the qualification completed by an adult member of the HH, the higher the assigned score. The same applies to class enrolment for children.

$$MYS_j^h = \frac{a_{ij} - a_{min}}{a_{max} - a_{min}} \qquad 0 \leq MYS_j^h \leq 1$$

$$EYS_j^h = \frac{c_{ij} - c_{min}}{c_{max} - c_{min}} \qquad 0 \leq EYS_j^h \leq 1$$

where

MYS_j^h: mean years of schooling at HH level

EYS_j^h: expected years of schooling at HH level

a_{ij}: score of education level of each adult member of HH j

c_{ij}: score of enrollment level of each child of HH j

By applying the geometric mean formula proposed by the UNDP to the normalized values of adult and children' education, the education sub-index at the HH level is calculated as:

[3] For further details, refer to the multidimensional poverty measure (UNDP, 2010).

$$E_j^h = \sqrt[2]{MYS_j^h . EYS_j^h} \quad (3.2)$$

$0 \leq E_j^h \leq 1$

3.3.2.2 Health sub-index

The health sub-index has three sub-dimensions: wasting, underweight and stunting. Collectively, these indicators represent malnutrition. Malnutrition among children, particularly those under the age of five (Kandala, Madungu, Emina, Nzita & Cappuccio, 2011), is a serious problem and has both short and long term consequences. For example, malnourished children are physically, emotionally and mentally less productive, and suffer more from chronic diseases and disabilities as compared to other children (Adair, 2014). It is also a key cause of about 50 percent mortalities occurring among children in developing countries (Pelletier, Frongillo, Schroeder & Habicht, 1994).

The term wasting refers to children that have low weight in relation to their height; underweight refers to low weight for age; and stunting represents less height compared to age. Weights of 0 are assigned to each sub-dimension if the value is equal or below -2 of the standard deviation, and 1 otherwise (refer to www.who.int). After assigning the scores, the data was normalized with the UNDP's max-min formula; maximum score equals 3 and minimum score equals 0. The three sub-dimensions are then merged to form the health sub-index, using specific weights by the PC method for each sub-dimension as follows:

$$H_j^h = w_j^h \omega^w + uw_j^h \omega^{uw} + s_j^h \omega^s \quad (3.3)$$

$0 \leq H_j^h \leq 1$

where

H_j^h *:* health index of each HH

w_j^h*:* normalized wasting value for each HH

ω^h*:* weight of wasting factor

uw_j^h*:* normalized underweight value for each HH

ω^{uw}*:* weight of underweight factor

s_j^h*:* normalized stunting value for each HH

ω^s*:* weight of stunting factor

3.3.2.3 Housing sub-index

A number of studies used different measures to proxy living status, for example asset index (see Permanyer, 2013; Harttgen & Klasen, 2012; Filmer & Pritchett, 2001; Sahn & Stifel, 2000), urbanization rate and population density (see Campos-Vázquez & Vélez-Grajales, 2012), and employment rate and poverty (see Jordan, 2004) and housing index (see Kironji, 2008). To measure the socio-economic standard of the HHs, in current study a housing sub-index is constructed, which combines housing amenities/quality, utilities, HH appliances/ consumer durables and vehicle ownership.

Amenities consist of five elements, source of drinking water, fuel used for cooking, floor material, roofing material and type of external wall (see Appendix-A). Drinking water is a basic need of human beings (UNICEF, 2010). The Multiple Indicators Cluster Survey (MICS) data shows that some HHs use mineral water for drinking purposes, while some use the surface water fetched from the stream or pond. Scores were assigned to the HHs according to the quality of drinking water, based on research from some environmental

protection institutes[4] and value judgments; the safer the water the higher the scores and *vice versa*. The second element of amenities is fuel used for cooking. WHO (2006) reports that more than four million persons die recklessly from illnesses due to air smog from cooking with solid fuels. The HH air pollution has also caused premature deaths of 3.8 million persons annually from stroke, ischaemic heart disease, chronic obstructive pulmonary disease and lungs cancer. From the MICS data, fuel used for cooking is classified into three categories; solid fuel, liquid fuel and gas. Scores are assigned to HHs according to the fuel they use for cooking. The score values for all the HHs, are normalized and based on the UNDP's max-min formula.

The maximum number of HH appliances available in the concerned data are included as the second sub-dimension. The appliances refer to radio, television, computer, air conditioner, air cooler, sewing machine/ knitting machine, washing machine, iron, refrigerator, and cooking range/ microwave oven. All appliances are assigned weights using the PC method. After assigning the scores, the data is normalized with the UNDP's max-min formula: maximum score = 10; and minimum score = 0.

Three types of utilities are considered for the third sub-dimension, electricity, gas, and telephone. The elements take a dichotomous form; the existence of any utility represents 1 and 0 otherwise. After assigning the scores the data is normalized with the UNDP's max-min formula: maximum score = 3; and minimum score = 0.

[4] Connecticut Environmental Conditions online –www.cteco.uconn.edu; and Water Quality Standards Program-Florida Department of Environmental Protection, US, available from: http://www.dep.state.fl.us/water/wqssp/classes.htm

The final sub-dimension of the housing index, categorized as 'other assets', refer to the vehicles owned by the HHs. Zero scores were assigned to HHs with no vehicles, three to HHs with cars/vans, two to HHs with motorcycles/scooters, and 1 to HHs with bicycles. After assigning the scores, the data were normalized between zero and one.

The final step for constructing the housing sub-index involves the calculation of weights for every sub-dimension through the PC, and the summation of the normalized values of the sub-dimensions, after multiplying them with their respective weights:

$$Hs_j^h = h_j^h \omega^h + ha_j^h \omega^{ha} + u_j^h \omega^u + o_j^h \omega^o \quad (3.4)$$

$0 \leq Hs_j^h \leq 1$

where

Hs_j^h: housing index of each HH

h_j^h: normalized amenities for each HH

ω^h: weight of amenities sub-dimension

ha_j^h: normalized home appliances for each HH

ω^{ha}: weight of home appliances sub-dimension

u_j^h: normalized utilities for each HH

ω^u: weight of utilities sub-dimension

o_j^h: normalized other assets for each HH

ω^o: weight of other assets sub-dimension

3.4 Models and Data

3.4.1 Model specification

On the basis of the empirical literature reviewed in Chapter 2 and the derived hypotheses, this study draws on six empirical models. The model specifications are described below.

Remittances Inflow and HHDI

To assess the impact of remittances on the overall and development types of HHs, equations 3.5(a) – 3.5(d) are estimated based on key determinants proposed in studies by Anyanwu (2014), Njung'e (2013), Touhami et al. (2009), Mark et al. (2002), Al-Samarrai and Tessa (1998), Adams (1993), and Lipton (1980) that relate to HH characteristics. The econometric specifications are as follow:

$$HHDI_i = \alpha + \gamma RI_i + \beta X_i + \delta H_i + \varepsilon_i \quad (3.5a)$$

$$E_i^h = \alpha + \gamma RI_i + \beta X_i + \delta H_i + \varepsilon_i \quad (3.5b)$$

$$H_i^h = \alpha + \gamma RI_i + \beta X_i + \delta H_i + \varepsilon_i \quad (3.5c)$$

$$Hs_i^h = \alpha + \gamma RI_i + \beta X_i + \delta H_i + \varepsilon_i \quad (3.5d)$$

where $HHDI_i$ represents the overall level of HH development, E_i^h, H_i^h, and Hs_i^h refer to education, health and housing sub-indices, respectively, RI_i represents remittances inflow, X_i is a vector of HH characteristics (number of dependents and other sources of income), H_i is a set of control variables that relate to the head of the HH, and ε_i is an error term.

Remittances inflow and poverty

Combining the existing literature on poverty, like Beyene (2014), Phangaphanga (2013), Ahmed et al. (2010), Andersen et al. (2007), Adams (2006), Andersson, Engvall and Kokko (2006), and Taylor (2006), the study draws upon some determinants of poverty for the empirical investigation, including remittances as the core explanatory variable. The specification is as follows:

$$Pov_i = \alpha + \beta RI_i + \lambda X_i + \phi H_i + e_i \qquad (3.6)$$

The subscript ***i*** represents each HH, and ***e*** is an error term.

Where Pov_i represents poverty, RI_i represents remittances inflow, X_i is a vector of HH characteristics, and H_i is a set of variables that relate to the head of the HH.

The extent of HH poverty (*Pov*) is calculated based on the Foster-Greer-Thorbecke (FGT) class of poverty measures, which include the headcount ratio[5] (HCR), poverty gap[6] (PG) and the poverty gap squared[7] (PGS; also known as the poverty severity index). The HCR and the PGS measures are used interchangeably as the dependent variable in equation (3.6) to proxy the incidence of poverty and the severity of poverty, respectively. Remittances inflow (*RI*) is the core variable in the model. It indicates the HHs that received the remittances. In the sample, data on the amount received from abroad was not available for approximately 36

[5] The HCR refers to the proportion of the population that is below the poverty line.
[6] The PG takes the difference between poor HHs' expenditure/income and the poverty line. For everyone else the gap is accounted to become zero. Mainly it shows how much would have to be given to HHs below the poverty line to bring their income/expenditure up to the poverty line. It can be considered the minimum cost for eliminating poverty.
[7] The PGS averages the squares of the *poverty* gaps relative to the *poverty* line, and gives more weight to the individuals that are significantly far from the poverty line.

percent of the migrant HHs. Hence, remittances take a binary form; 1 for migrant HHs and 0 otherwise. Remittances are expected to reduce the incidence and severity of poverty. The description of the variables is provided in Table 3.1.

Table 3.1: Description of Variables

Variable	Description	Measure
HHDI	Household-Based Human Development Index	Weighted sum of education, health and housing sub-indices
Pov	Incidence of poverty/ Severity of poverty	Measured as 'head count ratio' for incidence of poverty, and 'poverty gap square' for severity of poverty
RI	Foreign remittances inflow	Binary variable 1 for remittance receivers, 0 for non-receivers
Dep	Dependency	Number of HH members that are below 14 years of age and above 64 years of age
ln*OI*	Other income	Natural log of income (measured in local currency) from all sources other than foreign remittances
HHedu	Education level of HH head	Measured as below primary, middle, secondary, and higher education
HHage	Age of HH head	Measured in years
MH	Male HH head	Binary variable 1 for male, 0 for female

3.4.2 Definition and construction of variables

To empirically investigate the association between remittances inflow with recipients' overall and segmental development, and their poverty incidence and severity, this study used various econometric models, as prescribed above. Broadly, two dependent and a number of independent variables have been used in this study. The variables are detailed below:

i. Dependent variables

In the first empirical model, equation (3.5), the association between remittance inflows and HH development is analysed; HH development refers to the computed HHDI. The constructed HHDI is used as the dependent variable. Further, the model is expanded by developmental type, education, health and housing. Thus, three additional dependent variables, education sub-index, health sub-index and housing sub-index are constructed and used in the estimations.

For the poverty estimations, two different measures of poverty are used as dependent variables, poverty incidence and poverty severity. To analyze the poverty of HHs, the HCR is employed. A negative association is expected between remittances inflow and the poverty level of migrant HHs (Adam, 2004; Adam & Page, 2005). To allow for the investigation into the reduction of poverty due to remittances and to identify the extent to which remittances provide the extra money to cross the poverty line, the PGS is also used as the dependent variable.

ii. Independent variables

Besides foreign remittances inflow, a number of HH related and HH head related factors are included as independent variables in the empirical models.

Remittances inflow

Remittances inflow is the core variable in the empirical models. It is expected to affect a HH in the following perspectives: consumption to saving; schooling to health; and HH appliances to vehicle ownership. This study does not distinguish between the different channels of remittance transfer to the HHs. Instead the remittances cover both the formal

channel like banking and legal money transfer companies, and informal channels like the hundi/hawala and money remitted through friends/relatives.

Dependency

According to the classification of the World Bank (2010), persons below the age of 14 years and above 64 years are considered not productive, and therefore classified as dependents. Dependency is therefore measured as the number of persons who lie outside the age range of 14-64. With a large number of dependents, HHs spend higher proportions of their earnings on current consumption (Espenshade, Kamenske & Turchi, 1983), resulting in declines in the overall HH development (Zhang et al., 2015) and increases in poverty (Hashmi & Sial, 2005; Sen, 2003; McCulloch & Baulch, 2000; Adams & He, 1995; Lipton, 1983).

Income other than foreign remittances

This variable covers all types of incomes, other than that from remittances. It includes the following: salary; business earnings; income from the sale of crops and livestock; government funds like the Benazir Income Support Programme (BISP); pension, baitulmal, zakat and old age employees' benefit. It reflects the well-being of HHs in the absence of remittances. A HH may be less dependent on remittances if it has sufficient income, beyond that of remittances. It is expected to be positively associated with HH development and negatively with poverty. Other income is measured in local currency unit.

Education level of HH head

It shows the maximum level of education of the HH head. An educated HH head is different in nature as compared to an uneducated head. A more educated HH head is likely

to utilize remittances more efficiently than a HH head that is uneducated or less educated, and thereby resulting in a positive effect on HH development and negative effect on poverty incidence and poverty severity. Educated HH head can enhances HH development and lower future poverty by providing equal education for their children (boys and girls) (Al-Samarrai & Tessa, 1998). An educated HH head can be easily be employed with higher earnings and make better decisions on spending; this in turn reduces poverty (Bilenkisia, Gungorb & Tapsinc, 2015; Myftaraj, Zyka & Bici, 2014; Yadollahi et al., 2013; Mughal & Diawara, 2010; Maitra & Vahid, 2006; Hashmi & Sial, 2005; Okojie, 2002; Arif, 2000; World Bank, 1995; 1998). The education of the HH head for this is classified into six groups: education below primary level, up to middle level, higher school certificate, higher secondary school certificate, graduate, and post-graduate degrees.

Age of HH head

Age of the HH head is generally considered as an important factor for making appropriate spending decisions. Generally, it is considered that the older the person, the more the experience. It is assumed that a young person spends the money differently as compared to an older person due to the differences in priorities. Njung'e (2013) concluded that a HH head of more than 45 years of age is more likely to save as compared to a younger HH head. It can also be argued that in the case of Pakistan, the younger heads of HHs are considerably more educated than the older ones (Saavedra & Valdivia, 2000). The younger and older headed HHs are comparatively poorer than the middle-aged HH heads (Anyanwu, 2014). The age variable is measured as the number of years.

Male head

The head of a family is supposed to be the member in the HH, acknowledged by others in the family for taking decisions especially in crucial family matters. The gender of the HH head plays a key role as the spending pattern may differ by gender. A female head is more likely to consume the money, while the male head is more interested in saving (Touhami et al., 2009; Kibet, Muntai, Ouma, Ouma & Owour, 2009; Mark et al., 2002). The male headed HHs are less poor than those that are female headed (Anyanwu, 2014). The socio-economic status of female headed HHs is lower than the male headed HHs (Al-Samarrai & Tessa, 1998). According to Al-Samarrai and Tessa (1998), the girls from female headed HHs are more likely to attend secondary school, while the HH head gender does not have a significant effect on boys' education. Hence, it is crucial to include this variable to check the differential effects of male headed household in the case of Punjab.

3.4.3 Empirical strategy

This section describes the empirical strategies used to estimate the HHDI and poverty equations. The PC method, ordinary least square (OLS), propensity score matching (PSM), and logit technique are used for the estimations.

3.4.3.1 Ordinary least squares

The most fundamental estimator to analyse the relationship between the regressand and the regressor is the OLS. Under certain statistical properties, this method is used for regression analyses (Gujarati, 2003). Following from previous survey based studies related to remittances and their economic and social impacts (see Ahmed et al., 2010; Arif, 2009), remittances-poverty and inequality nexus (see Beyene, 2014; Odozi, Awoyemi & Omonona, 2010; Adams, 1989), remittances-income distribution and asset accumulation (see Adams,

1996), consumption, education, health and labour supply impacts of migration (see Zhu, Wu, Peng & Sheng, 2014; Andersen, Christensen & Tejerina, 2007; Castaldo & Reilly, 2007; Malik, Arif, 2004; Sarwar & Siddiqui, 1993), migration-schooling and child labor (see Mansuri, 2007), the OLS technique is employed to estimate equations (3.5) and (3.6).

3.4.3.2 Propensity score matching

In order to empirically compare the living status of migrant HHs from non-migrant HHs, the PSM technique is adopted. Migrant HHs may differ from non-migrant HHs in terms of ability, skills and motivation to work. These perceived and un-perceived qualities may not only affect the HH's probability of receiving remittances, but also change the many other characteristics (Görlich, Mahmoud & Trebesch, 2007). The application of the PSM is therefore useful to capture such possible non-randomness of migrant HHs. The PSM approach involves matching the HHs from the migrant HH group with the non-migrant HH group (Rosenbaum & Rubin, 1983), but with comparable characteristics (dependent members in the HH, male head, education level of HH head, residing region (urban/ rural/ district). It is considered as the conditional probability of assigning a specific treatment ($W_i = 1$) versus un-treated ($W_i = 0$), given a vector of observed covariates, x_i:

$$e(x_i) = Pr\{W_i = 1 | X_i = x\} \qquad (3.7)$$

Firstly, the possibility of migrant HHs to be selected given various HH covariates is estimated by the logit technique. This provides the propensity scores to observed regressors by ranking migrant HHs and non-migrant HHs:

$$\hat{q}(x_i) = log\left\{\frac{1 - \hat{e}(x)}{\hat{e}(x)}\right\} \qquad (3.8)$$

The distribution of $\hat{q}(x_i)$ approximates to normal.

In doing so, the variance between the development of the treated group (migrant HHs group) and the non-treated group (non-migrant HHs group) is calculated. This calculated difference is then averaged out to assign the Average Treatment effect on the Treated (ATT) (Heckman, 1997).

$$ATT = E(Y_1 - Y_0|W = 1) \quad (3.9)$$

where

W = 1 refers to the treatment

As not all of the parameters are apparent, hence they depend on counterfactual consequences. So to deal with this problem, ATT is re-written as:

$$ATT = E(Y_1|W = 1) - E(Y_0|W = 1) \quad (3.10)$$

The second part of equation (3.10) is the average result of treated HHs that had not got the treatment. They cannot be observed, but a commensurate quantity of the untreated can be observed, and is calculated as:

$$\Delta = E(Y_1|W = 1) - E(Y_0|W = 0) \quad (3.11)$$

The difference between ATT and Δ can be written as

$$\Delta = ATT + SB \quad (3.12)$$

where SB is the selection bias term: the difference between the counterfactual for treated HHs and observed results for un-treated HHs.

The ATT indicates what a HH would have looked like if it is in the non-migrant HH group. The PSM enables us to 'filter out' the outcome of remittances on HH wealth, controlling for the conceivable migration selection effect (Fransen & Mazzucato, 2014). The PSM is considered more suitable in the case of a small treated group and a bigger un-treated group. In our dataset (MICS, 2014-15), only 7.2 percent of HHs received foreign remittances. So, this approach is considered suitable.

A number of methods are used to match the treated and untreated groups. In this study, we use three common methods: Nearest Neighbour (NN), Kernel (Gaussian), and Radius score matching (see Caliendo & Kopeinig, 2008). For the final analyses, the Kernel matching is used, in which weighted averages of all HHs of the control group are calculated to create the counterfactual.

3.4.3.3 Logit regression

Logit approach is a binary response type of regression related to a number of explanatory variables**.** In logit regression, *probability* or *odds* of the response takes a particular value, modeled based on a combination of values taken by the predictors.

The binary logit regression estimates the probability that a characteristic is present (for example, estimated probability to be "non-poor"), given the values of explanatory variables, in this case a single categorical variable:

$$\pi = Pr\,(Y = 1|X = x) \tag{3.13}$$

therefore, the logit model can be written as:

$$\pi_i = \Pr(Y_i = 1|X_i = x_i) = \frac{\exp(\beta_0 + \beta_1 x_i)}{1 + \exp(\beta_0 + \beta_1 x_i)} \tag{3.14}$$

where Y is a binary response variable

X_i is a set of explanatory variables

$\boldsymbol{x_i}$ is the observed value of the explanatory variables for observation i

Following a number of studies on remittances and poverty (see Adams, 2006; Chukwuone et al., 2007; Campbell & Kandala, 2011; Wurku & Marangu, 2015), remittances and household behaviour (see Ang, Sugiyarto & Jha, 2009), remittances and household welfare (see Ahmad et al., 2010), remittances and labour participation (see Mughal & Makhlouf, 2013) and remittances and household expenditure (see Randazzo & Piracha, 2014), this study employs the logit technique to estimate equation (3.6).

3.4.3.4 Principle Component method

The PC method is used to assign the weight for each element to construct the health and housing sub-indices. The PC is a procedure to extract from a group of variables with limited

orthogonal linear combinations of the variables, which take the common statistics most successfully. In a series of variables, normally, the first PC is the linear index of all variables that imprison the largest common volume of information in all variables.

Following from a number of previous studies related to index construction, such as human development index (see Permanyer, 2013; Harttgen & Klasen, 2012; Nguefack-Tsague, Klasen & Zucchini, 2011; Kironji, 2008), wealth index (see Gwatkin, Rutstein, Johnson, Pande & Wagstaf, 2000), socio-economic index (see McKenzie, 2005; Ruel & Menon, 2002; Filmer & Pritchett, 2001), and political instability index (see Ponzio, 2005) the PC method is adopted in this study.

3.5 Data Description

The data is sourced from the latest Multiple Indicator Cluster Survey (MICS, 2014-15). The survey is conducted by the Bureau of Statistics, Planning & Development Department, Government of Punjab, in collaboration with the United Nations Children's Fund (UNICEF). MICS (2014-15) is the outcome of the fourth round of data collection, and includes a number of indicators related to the Millennium Development Goals (MDGs). This MDGs have become more relevant after the shifting of social development from the federation to the provinces through the 18th amendments[8]. MICS (2014-15) was conducted in June-October, 2014, and it covers all the 36 districts of Punjab. The survey divided Punjab into 2,050 clusters with approximately 20 HHs in each cluster, giving a sample of 41,413 HHs. The 774 clusters are assigned to urban areas, whereas the urban/rural split of housing units in the whole of the province Punjab is in the ratio of 32/68.

[8] An amendment to the National Constitution made in 2010, whereby it accorded more power to the provinces.

MICS (2014-15) data was used for this study as it comprises important social, economic, and demographic related information. The survey information is divided into four parts: child related, women related, HH members' education status, and HH characteristics related. After dropping the HHs with incomplete data, a total of 36,400 HHs were available for the analysis. Some information was made available at the individual level, for instance the education level. The data is compiled at the HH level and then by district. Finally, the data is arranged for each district by remittance receiving HHs and non-remittance receivers. For the former group, we obtained 2,891 (7.9 percent) HHs by re-filtering the data and applying the geometric mean technique.

3.6 Limitations of data

In this study, cross-sectional data from the latest MICS is used as it is the most comprehensive provincial dataset for Punjab province. A major limitation of cross-sectional data is the lack of repeated observations. Most surveys are simple cross sections, whereby observation is made only once for each individual, and the survey provides only a collection of snapshots of individual behaviour. For the purposes of modelling the dynamics of economic behaviour, a sequence of observations is desirable - a cine film rather than a snapshot (Johnson, 1989). Another issue that is associated with cross-sectional data is mis-specification: if individuals/HHs take time to adjust their behaviour to changed circumstances, then the lagged variables which should appear in the model to reflect this imperfect adjustment are unavailable without a sequence of repeated observations (Johnson, 1989). Hence in current thesis the data cannot be used to analyze behavior of HHs over a period to time.

There are some other limitations specific to the MICS dataset that are worth mentioning, as explained below:

- Expenditure data is not covered by the MICS, so the consumption based poverty could not be computed.
- The data is silent regarding the duration the migrant stays abroad; developmental comparison with the past is therefore difficult to estimate.
- In the case of education, some HHs had a score of zero, and the geometric mean approach does not consider the zero values. Following the UNDP case, this study used the geometric mean to calculate the HHDI, so a number of HHs having zero values were left out from the analysis.
- The HHs who had a migrant member, but did not receive any remittance in the previous year, were excluded from the sample of the migrant HH group.

CHAPTER 4: REMITTANCE INFLOWS TO PAKISTAN

4.1 Introduction

Outward migration is a phenomenon common to many developing economies, thereby resulting in capital inflows in the form of remittances. Thus, remittances inflow has emerged as a key source of capital for developing economies, including Pakistan. Remittances play a significant role in reducing poverty, enhancing living standards and supporting import bills, among others (see Le & Bodman, 2011; Odozi et al., 2010; Orozco, 2010; Acosta et al., 2008; Arif, 1999) in the home economy. This chapter sheds light on the patterns of remittances inflow to the Pakistan economy.

4.2 General Features of Pakistan

4.2.1 Overview

Pakistan, an active player in the South Asian Association for Regional Cooperation (SAARC), is considered as a resource-loaded economy. In the early years after independence, Pakistan was an agriculture based economy; the share of agriculture in the country's gross domestic product (GDP) was 59.9 percent. Soon after that, in 1949-50, the share declined to 38.9 percent, 25.8 percent, and 21 percent in the 1970s, 1990s, and 2014-15, respectively. After 70 years of Pakistan's birth, the services sector has taken the lead in terms of contribution to GDP. The services sector commands more than 59 percent of Pakistan's GDP. Although the services sector dominates output, the agriculture sector continues to lead in the generation of employment. Approximately 42 percent of the labour force is directly or indirectly attributed to this sector in 2016.

Pakistan is the 6th largest populous country in the world. It contains more than 190 million people and stands at 8th position with respect to labour force, exceeding 65 million people (World Bank, 2016). The Pakistan economy is bifurcated into rural and urban locales. The rural economy, which hosts a larger population, is agriculture-based, while the urban economy is associated with industrial and services sector. The distribution of rural and urban population of Pakistan can be gathered from Table 4.1.

Table 4.1: Distribution of Pakistan's Population (million persons)

Years	Total	Urban	Rural
2000	138.25	45.84	92.41
2001	141.28	47.25	94.03
2002	144.27	48.69	95.58
2003	147.25	50.16	97.09
2004	150.27	51.68	98.59
2005	153.36	53.26	100.10
2006	156.52	54.91	101.62
2007	159.77	56.62	103.14
2008	163.10	58.41	104.68
2009	166.52	60.28	106.24
2010	170.04	62.23	107.81
2011	173.67	64.27	109.40
2012	177.39	66.39	111.00
2013	184.35	69.87	114.48
2014	188.02	72.50	115.52
2015	191.71	75.19	116.52

Sources: World Bank, 2016; GOP, 2015.

4.2.2 Unemployment and poverty

The unemployment rate in Pakistan increased from 5.32 percent in 2006-07 to 5.95 percent in 2010-11 and subsequently decreased to 5.94 percent in 2014-15 (Table 4.2). In the urban area, it was 6.66 percent in 2006-07 and increased to 8.84 percent, then decreased to 7.98 percent in 2010-11 and 2013-14 respectively (GOP, 2015). The rural unemployment rate in 2006-07 was higher than the urban rate, but in the subsequent years, the trend

reversed. It may be due to government development expenditures on a number of social sector programs in the rural areas, for example, the agriculture sector, community services, human development and safety nets.

Table 4.2: Unemployment Rate in Pakistan, by Region and Gender (in percent)

Years / Province	2006-07			2010-11			2014-15		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
Pakistan	5.32	4.53	8.38	5.95	5.07	8.88	5.94	4.98	8.97
Rural	7.42	8.4	5.56	4.68	4.00	6.44	5.01	4.31	6.72
Urban	6.66	5.63	14.55	8.84	7.08	20.65	7.98	6.18	20.41
Punjab	5.49	5.04	6.77	6.10	5.25	8.35	6.29	5.69	7.78
Rural	4.69	4.29	5.59	5.09	4.58	6.17	5.46	5.15	6.06
Urban	7.50	6.57	12.87	8.61	6.59	19.24	8.33	6.72	16.95
Sindh	3.39	2.70	8.68	5.08	4.74	6.83	4.66	3.57	10.92
Rural	2.31	1.52	6.74	1.92	1.81	2.30	2.46	1.74	5.27
Urban	4.63	3.96	13.45	9.24	8.03	21.70	7.31	5.48	28.69
Khyber Pakhtunkhwa	9.54	7.22	24.31	8.06	5.97	16.60	7.71	5.75	15.78
Rural	9.07	6.90	22.06	7.58	5.67	14.69	7.26	5.46	13.96
Urban	11.88	8.74	40.76	10.38	7.27	33.07	9.74	6.92	30.16
Baluchistan	2.58	1.47	9.64	3.00	2.41	8.08	3.92	2.84	8.54
Rural	2.27	1.17	8.40	2.42	1.95	6.06	3.35	2.44	6.65
Urban	3.82	2.58	21.59	5.07	3.96	20.34	5.82	4.00	22.50

Source: PBS, 2017.

Pakistan's population comprises 49 percent females (GOP, 2015). To sustain HH income, women are engaged actively in formal work. This has helped significantly in lessening poverty. However, the unemployment of females remains relatively higher than the males. Especially in the case of the Khyber Pakhtunkhwa and Balochistan provinces, the female unemployment rate is remarkably higher than the male unemployment rate. For example, in 2006-07, the urban female unemployment rate was almost fivefold of the corresponding rate for males, and this proportion remained constant until 2014-15 in the case of the Khyber Pakhtunkhwa province (see Table 4.2). The same pattern can be seen in the case of

Balochistan. The urban female unemployment rate was more than eight fold of urban males; although this ratio declined, it is more than fivefold in the subsequent years. The observed trends were not different from that in rural locales. In the case of the Punjab and Sindh provinces, the rate of unemployed women was also higher than the males in all the periods; but then as the gender gaps in unemployment was less compared to the Khyber Pakhtunkhwa and Balochistan provinces. The main reasons for the huge gender gaps in unemployment rates in the latter two provinces are the relatively low literacy rate among women and cultural factors related to tribal traditions.

During the last decade, Pakistan recorded positive economic growth (World Bank, 2016); however, the unemployment rate increased by 0.62, 0.8, 1.27 and 1.34 percent in Pakistan, Punjab, Sindh and Balochistan province respectively, and the unemployment rate reduced during the last decade only in the case of province Khyber Pakhtunkhwa. Growing unemployment may be a factor that led to the migration of the local workforce. Despite the growing unemployment, the rate of poverty reduced (see Table 4.3). In the case of a developing country like Pakistan, consumption is considered a more suitable measure than income, to measure the poverty level, since it is difficult to define and measure income, especially for self-employed persons. Further, income is more variable than consumption. If the food stamp programs, which are a notable source of raising the income of various people, are cut back in the future, actual poverty will rise even more (Bruce & Sullivan, 2011). The declining pattern of poverty, based on household consumption of Pakistan households is reported in Table 4.3.

Table 4.3: Regional Poverty Index in Pakistan (in percent)

Year	2000-01	2004-05	2005-06	2007-08	2010-11
Poverty line	PKR 723.40	PKR 878.64	PKR 944.47	PKR 1141.53	PKR 1745.00
Overall	34.40	23.90	22.30	17.20	12.40
Urban	22.60	14.90	13.10	10.00	7.10
Rural	39.20	28.10	27.00	20.60	15.10

Notes: Percentage of population living below national poverty line. PKR - Pakistan Rupees
Source: Planning Commission of Pakistan, 2014.

From Table 4.3, poverty decreased from 34.4 percent in 2000-01 to 22.3 percent in 2005-06, and after that, the overall condition of poverty appears to have improved in 2010-11; this improvement was noted in both the rural and urban areas. This declining trend in poverty can be attributed to factors like some social safety programmes, the Benazir Income Support Programme (BISP)[9], Pakistan Poverty Alleviation Fund[10], Budgetary allocation of Social Security & Welfare, Subsidies, Food Support Programme, Pakistan Bait-ul-Mal[11], People's Works Program[12], People's Rozgar Scheme[13], Zakat & Ushr[14], Employees Old-age Benefit Scheme[15], growing remittance inflows, better support price for agricultural products', some new and improved crop seeds that lead to better agriculture output. All of the aforementioned factors helped to reduce the poverty ratio in rural areas more specifically, and increased

[9] BISP was initiated in 2008 with the objective of supporting poor people, especially the women by transferring a specific amount to them on a monthly basis to cover the negative effects of slow economic growth, the food crisis, and the inflation, etc. Also, to smooth the consumption, to empower the women, and to enhance the universal primary education. Currently, the number of its beneficiaries is approximately 4.7 million persons. The poorest households have been identified through a poverty scorecard survey based on household demographics, assets, and other measurable characteristics. The Nationwide Poverty Scorecard Survey is the first of such kind of survey in South Asia.

[10] Pakistan Poverty Alleviation Fund (PPAF) is an independent legal entity. It provides financing to needy persons through grants and loans. With the aim to reduce poverty, enhance the access of poor people to more resource and opportunities, it works with collaboration of the Govt. of Pakistan and World Bank. PPAF supports the educational programmes in governmental and community schools of fifty eight districts across the Pakistan. It disbursed the micro-credit loans of more than 6.9 million rupees. In order to empower the poor people more, PPAF conducted more than 17000 skill development and training programmes for individuals, also supporting the health facilities in seventy two districts of Pakistan.

[11] A cash grant by the Federal Government to disabled persons, widows, invalids, orphans and households who are living below the national poverty line for daughters' weddings, food supplement and for the education purpose.

[12] A project managed by the Federal Government to decrease the poverty level of especially the rural areas with the provision of electricity & gas connection, farm to market roads, water supply and other facilities as well as cash.

[13] Financing for selected businesses for unemployed educated persons by commercial banks e.g. Community Transport, Community Mobile Utility Stores, Community Utility Stores, PCO/Tele-Centers with a maximum of PKR. 200,000. Three new products for Medical Graduates, Science Graduates and B-Pharmacy Graduates were included like Commercial Vehicle, Shopkeepers and Primary Healthcare Equipment, etc. The maximum grant limit ranges from PKR 500,000 to PKR 700,000 was set. The project was managed by the National Bank of Pakistan.

[14] A help programme for deserving or needy Muslims only, managed by the Federal Government and Zakat & Ushr Committees of Pakistan.

[15] A federal government project for formal sector employees only; give them cash.

female labour force participation, thereby decreasing the consumption-based poverty headcount. Figure 4.1 shows the poverty headcount ratio in Pakistan by the World Bank.

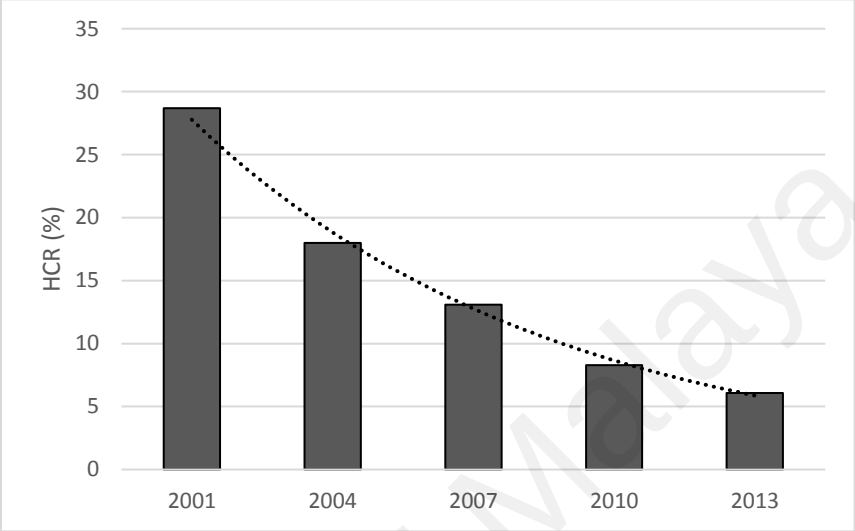

Figure 4.1: Poverty Headcount Ratio for Pakistan (% of total population)

Note: Percentage of population living on less than $1.90/day at 2011 global prices
Source: World Bank, 2012.

For maintaining sustainable growth and prosperity, a country needs capital. Capital accumulation and the efficient use of existing capital are necessary for achieving long-term economic growth. Capital may arise from internal or external sources. Generally, the major external sources are, i) export receipts, ii) foreign direct investment (FDI), iii) loans from foreign donors (including ODA[16]), and iv) remittances inflow. Each source of external capital has its own benefits and consequences.

It is viable for a country to produce some commodities that are highly demanded globally, or have a comparative advantage in some commodities exported. In terms of FDI flows,

[16] ODA- Official Development Assistance comprises the disbursement of loans issued at concessional basis and grants by official agencies and multilateral institutions to promote economic development and prosperity of people in countries in the *Development Assistance Committee* list.

investors prefer to invest in a country that has sufficient and cheap labour force, easily available raw materials and less trade barriers, stable political condition, and good rule of law and order. As for the ODA, it is not a preferred source of capital given the heavy interest rates on loans and the stringent conditions imposed by donor agencies. Finally, remittances inflow is a stable and highly important source of external capital inflow. Based on the World Bank (2016), remittances inflow in 2014 to all recipient nations was more than $580 billion, which was much higher than the $126 billion in the year 2000, recording more than 300 percent growth within a short period. The major beneficiaries of remittances are middle-income countries; they received more than 70 percent of world remittances in 2013.

4.3 Remittance Inflows to Pakistan

4.3.1 General patterns

Outward migration is a feature of the Pakistan economy. In 1990, Pakistan was ranked second last in the top ten worker supplier countries list. Pakistan jumped to 6th position in 2015 (see Table 4.4). Due to currency rate differentials between developed and some developing economies, there is a significant outflow of workers from Pakistan in search of jobs. In rural areas, more than one in four HHs report at least one migrant (Mansuri, 2007). The remittances received by these HHs through emigration, in turn, helped them to improve their economic status.

Table 4.4: Top Ten Destination Countries of International Migrants, 1990 and 2015 (in million)

Rank	Country	1990	Country	2015
1	Russia	12.7	India	15.6
2	Afghanistan	7.3	Mexico	12.4
3	India	6.8	Russia	10.6
4	Bangladesh	5.6	China	9.6
5	Ukraine	5.6	Bangladesh	7.2
6	Mexico	5.0	Pakistan	5.9
7	China	4.1	Ukraine	5.8
8	United Kingdom	4.1	Philippines	5.3
9	Pakistan	3.6	Syrian Arab Republic	5.0
10	Italy	3.5	United Kingdom	4.9

Source: UN, 2016.

As the number of Pakistani emigrants increased, remittances inflow also increased. With the receipt of more than $19 billion in 2015, equal to 7 percent of GDP, Pakistan ranked 7th position in the top ten remittance receiving countries. The 10 countries listed in Table 4.5 received more than half of global remittances in 2015. Pakistan became the second largest remittance receiving country in the South Asian region. In 2015, Pakistan received 3.49 percent of total world remittances and more than 16 percent of the South Asian region's remittances. About one-fifth of global remittances are estimated to flow into three South Asian countries; India, Pakistan, and Bangladesh. This places the South Asian region high in the ranking in terms of intra-regional remittances flow (UN, 2016).

From a global perspective, India and China ranked first and second in remittance receiving countries respectively. However, if the per capita remittances receiving amount of these two countries is compared to that of Pakistan, Pakistan's per capita remittances receiving amount ($100) is much more than India's per capita remittances ($50), and China's per capita remittances ($45).

Table 4.5: Top Ten Remittances Receiving Countries, 2015 (USD billion)

	World's top ten receiving countries			South Asian receiving countries		
Rank	Country	Amount	% of world	Country	Amount	% of SA
1	India	68.91	12.45	India	68.91	58.57
2	China	62.33	10.74	Pakistan	19.30	16.41
3	Philippines	29.80	5.38	Bangladesh	15.38	13.08
4	France	23.35	4.22	Sri Lanka	6.99	5.95
5	Mexico	26.23	4.74	Nepal	6.73	5.72
6	Nigeria	21.06	3.80	Afghanistan	0.30	0.25
7	Pakistan	19.30	3.49	Bhutan	0.02	0.01
8	Egypt	18.32	3.31	Maldives	0.00	0.00
9	Germany	16.13	2.91			
10	Bangladesh	15.38	2.78			

Note: SA - South Asia
Source: World Bank, 2016.

Thus remittances have indeed become a crucial source of external capital for a developing country like Pakistan. Based on the sources of external capital for Pakistan, remittances are the second-largest source of capital after export receipts (see Table 4.6). On the contrary, export receipts are not stable, while remittance inflows are growing consistently. The other sources of external capital, ODA and FDI, are significantly lower than remittances. In 2008 and 2012, ODA was 1/5th and 1/7th of total remittances, respectively. Similarly, in the case of FDI, in the years 2012, 2013 and 2015, it was 1/16th, 1/11th, and 1/20th of remittances, respectively. Hence, remittances inflow is a key source of capital in Pakistan. For the past several years, Pakistan's remittances inflow has displayed an upward trend (see Figure 4.2 below). Pakistan is also one among the 20 countries of the world where remittances cover more than 20 percent of imports, equivalent to more than 30 percent of exports (GOP, 2015).

Table 4.6: Major Sources of External Capital for Pakistan (USD million)

Year	Exports	FDI	Remittances	ODA
2004	13918	1118	3943	1440
2005	15350	2201	4280	1614
2006	194001	4273	5121	2180
2007	20137	5590	5998	2269
2008	21060	5438	7039	1550
2009	20809	2338	8717	2769
2010	23946	2018	9690	3020
2011	29831	1309	12263	3497
2012	27816	859	14006	2016
2013	30708	1307	14629	2191
2014	29911	1778	17066	3612
2015	28691	979	19306	3790

Source: World Bank, 2016.

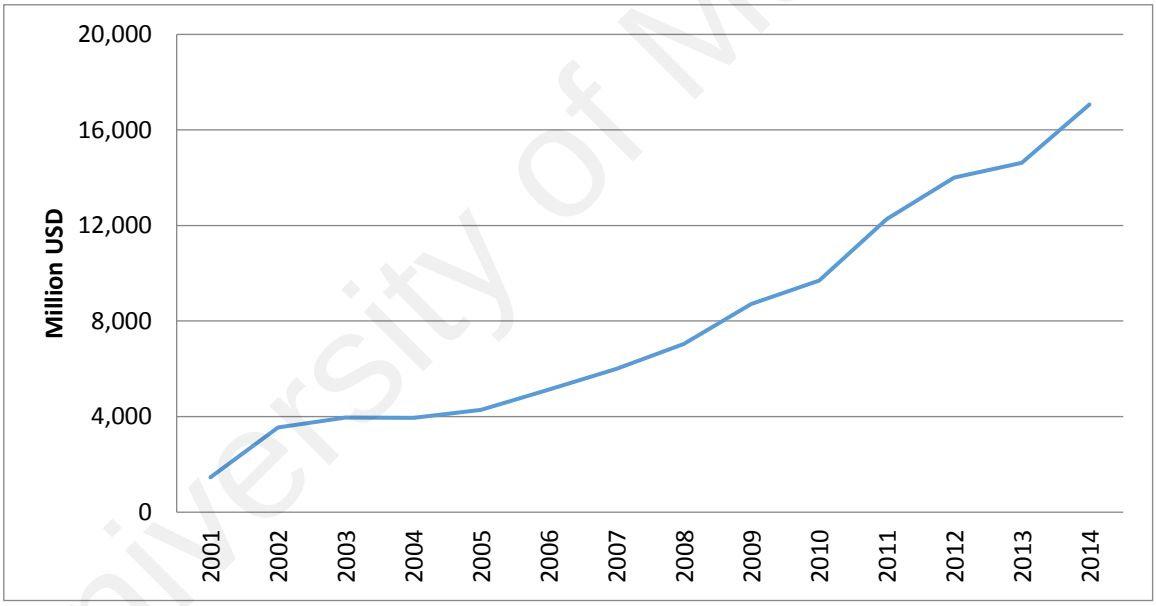

Figure 4.2: Remittances Inflow to Pakistan, 2001-2014 (USD millon)

Source: World Bank, 2015.

4.3.2 Sources of remittance inflows

Migration of Pakistani labour to different parts of the world has a long history; emigration from Pakistan to the Middle East countries since the mid-1970s has been the most momentous. Pakistan workers are now spread globally, working in various countries. Hence,

it is receiving remittances from various parts of the world. Low-income HHs with members outside the country mainly depend on remittances. Most migrants send money regularly to support their families (Connell & Brown, 1995; Stanwix & Connell, 1995). Table 4.7 reports the statistics of the top 10 destination countries and top ten sources of remittances for Pakistan.

Table 4.7: Top Ten Destinations and Remittances Sources

Destinations for Pakistani migrants (thousand persons)				Country wise workers' remittances (million USD)	
Rank	Country	2010 - 2014	1971 - 2014	Country	Amount
1	Saudi Arabia	1354	3907	Saudi Arabia	4729
2	UAE	1076	2558	UAE	3110
3	Oman	248	605	USA	2468
4	Kuwait	0.69	181	U.K.	2180
5	Bahrain	46	135	Dubai	1550
6	Qatar	34	113	Abu Dhabi	1512
7	Libya	11	81	Kuwait	681
8	Iraq	2	70	Oman	531
9	Malaysia	29	49	Qatar	329
10	Italy	14	28	Bahrain	319

Sources: BEOE, 2015; State Bank of Pakistan, 2015.

Table 4.7 further reveals that from 1971 to 2014, almost four million Pakistani workers were residing in Saudi Arabia, of which 35 percent emigrated there between 2010 and 2014. Among the top ten destination countries, the least number of Pakistani workers went to Italy for the period of review, in which 50 percent of the total migrants travelled to Italy in the last five years. As Saudi Arabia is the top of the list in terms of destination countries, it is also at the top of the list in terms of remittance sending countries. In 2014, Pakistan received more than $4700 million from Saudi Arabia in the form of remittances. The United Arab Emirates (UAE) takes the second position in terms of the destination country and remittances inflow, while Bahrain ranks last in the latter. The average duration of foreign stay ranged

from 7 and 8 years for urban and rural Pakistani migrants respectively; most emigrants stayed 6-9 years (Arif, 2009).

Although the US and the United Kingdom (UK) are not in the top ten destination countries for Pakistani workers, however, in terms of remittances inflow, they occupy the third and fourth positions, respectively. On average, Pakistani migrants remit lower than Indian and Filipino workers in the US and the UK, possibly because of the lower earnings of the former. For example, a Pakistani migrant earns lower wages at about $60,000/annum, as compared to an Indian ($89,000) and Filipino ($74,000) worker in the US. This difference is due to their education levels. The migrants from India and the Philippines hold managerial posts, nearly 50 percent and 35 percent, respectively. In the UK, the Indian workers are reported to be the highest earning community among the migrants (Migration Policy Institute, 2015).

By skills[17], the emigrants from Pakistan constitute largely of the unskilled, followed by skilled (see Table 4.8). Most migrants from Pakistan do not belong to the highly qualified or highly skilled workers. However, in recent years, there has been a marginal increase in the emigration of highly qualified persons due to attractive salary packages, exchange rate differences, and better facilities in developed countries. The country's political condition and weak law and order also play a crucial role as a push factor for outward migration. The Household Survey on Overseas Migrants and Remittances (HSOMR, 2009) indicates that young skilled people are more willing to move abroad as their education level is much higher as compared to the national average level (Arif, 2009).

[17] The Bureau of Emigration and Overseas Employment (BEOE) of Pakistan classifies emigrants into five categories: highly-qualified, highly-skilled, skilled, semi-skilled, and un-skilled. The highly qualified category of workers includes professionals with higher levels of education like doctors and engineers. Highly skilled workers are those who have specialized skills, for example, technicians and nurses. However, their qualifications are relatively lower than highly qualified workers. The skilled workers include masons, drivers, and carpenters. There is however no clear definition between semi-skilled and unskilled workers (IOM, 2008).

Table 4.8: Distribution of Pakistani Migrants Overseas, by Skill Levels (in percent)

Year	Highly qualified	Highly skilled	Skilled	Semi-skilled	Unskilled
2005	2.63	10.88	40.66	1.88	43.95
2006	3.12	8.92	39.25	1.84	46.88
2007	2.85	7.31	38.65	1.13	50.06
2008	2.26	7.71	41.32	0.98	47.74
2009	1.23	0.81	45.27	0.61	52.09
2010	1.95	8.72	45.67	1.43	42.23
2011	1.53	0.66	37.57	16.03	44.21
2012	1.46	0.66	40.95	16.32	40.61
2013	1.94	0.81	42.26	16.53	38.46
2014	1.95	0.83	38.23	15.97	43.03

Source: Bureau of Emigration and Overseas Employment, 2015.

By provinces, most of the emigrants are from Punjab (see Table 4.9). The proportion of migrants of Punjab was more than twofold, sixfold and twenty-eight-fold of the Khyber Pakhtunkhwa, Sindh, and Balochistan provinces, respectively. After more than a decade, Punjab retained its position as the province with the largest share of migrants from Pakistan. Though Punjab's share in total migrants from Pakistan decreased marginally between 2013 and 2014, it still accounted for more than 50 percent of total emigrants.

Table 4.9: Distribution of Pakistani Emigrants, by Provinces (in percent)

Years	Punjab	Sindh	Khyber Pakhtunkhwa	Baluchistan	Others
2005	54.51	8.30	24.63	1.93	10.62
2006	54.69	8.10	24.53	1.73	10.96
2007	53.76	7.12	26.71	1.38	11.04
2008	47.94	7.40	30.52	1.57	12.57
2009	49.88	7.63	28.41	1.11	12.98
2010	52.51	8.77	27.07	0.86	10.80
2011	50.06	8.79	28.48	1.15	11.52
2012	53.54	7.30	27.62	0.80	10.75
2013	53.50	8.93	24.16	1.49	11.93
2014	52.16	11.92	22.25	0.96	12.71

Source: BEOE, 2015.

4.3.3 Channels of remittances

The statistics in the preceding sections are based on recorded remittances received through the formal channels. However, according to the World Bank (2010), if the money sent by informal ways is considered, the total remittances may amount to 50 percent more than that as stipulated in the official record. It could in fact range from 50 to 200 percent more than the officially recorded remittances (Aggarwal et al., 2011).

Pakistan also receives remittances through informal channels. However, these statistics are not available at the national level but can be sourced through surveys that reveal the receiving amount through different channels from remitters. Extracting from the HSOMR (2009), 40 percent of international remittances were received *via* the banking channel, 29 percent through 'Hundi'[18], and the rest were transferred through friends/relatives or migrants themselves during their visit to Pakistan. However, a recent improved 'Pakistan Social and Living Standards Measurement' PSLM (2014) survey suggested that 60 percent of Pakistani migrants used the banking facility for remitting purposes, and 22 percent used the Hundi in 2014 (see Table 4.10). Punjab, with the largest number of emigrants, reports the banking channel for remitting money. In contrast, Hundi is popular among the Balochistan emigrants, where only 9 percent of their emigrants used the banking system.

[18] A hundi is an informal and cheaper system for transferring money from place to place, as compared to remittances, practicing, especially in South Asia, Middle East and some parts of Africa. It is also known as hawala. In this financial system, the local agents accumulate money or goods on behalf of friends, relatives, or other agents without legal protection or supervision, trusting that all remaining obligations will be settled through future transactions, while at the other place, other agents disburse the same.

Table 4.10: Channels for Remitting Money to Pakistan, 2014 (in percent)

Province	Channels		
	Banking	Hundi	Others
Punjab	91	4	5
Sindh	76	18	6
Khyber Pakhtunkhwa	32	39	29
Baluchistan	9	91	0
Total	62	22	16

Note: Other channels refer to emigrant himself and through friends/ relatives.
Source: Calculated based on PSLM, 2014.

Figure 4.3 compares remittances inflow to Punjab between 2008 and 2014. Clearly, migrants from Punjab preferred using the formal banking channel to remit their money. Informal channels remain relevant for remitting money by emigrants from other provinces, mainly because it involves lower transaction relative to the formal channel, as described by Khachani (2005) (see Table 4.11).

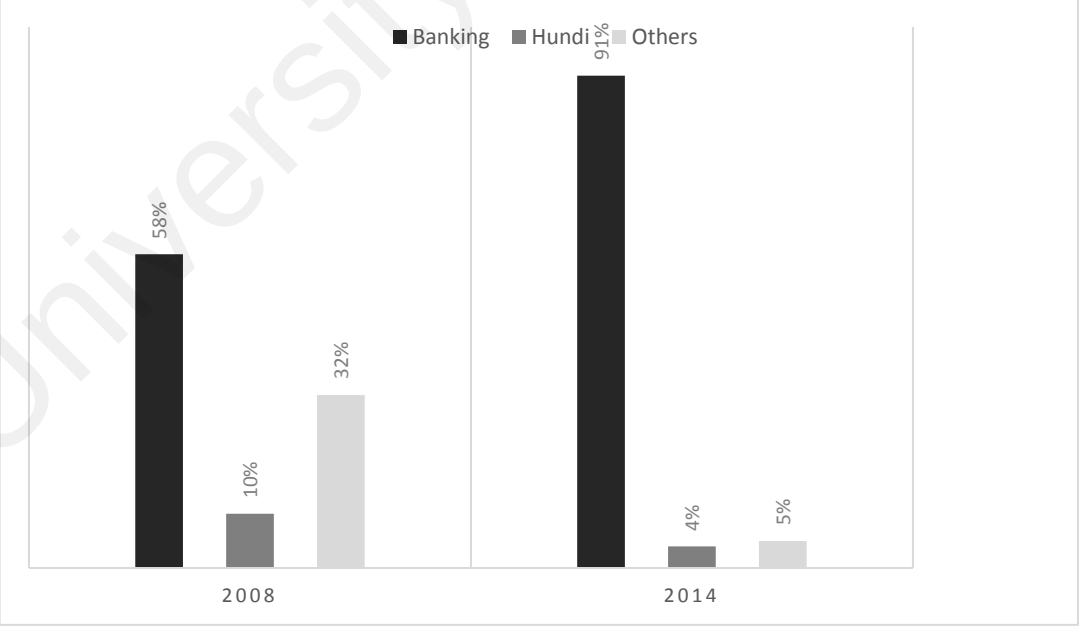

Figure 4.3: Channels for Remitting Money to Punjab, 2008 and 2014 (in percent)

Source: Calculated based on PSLM, 2008, 2014.

Table 4.11: Merits and Demerits of Money Transaction Channels

Transaction channel	Merits	De-merits
Hundi/Hawala	Less time and lower transaction associated costs	Less reliable
Own/friend	Less time and zero transaction associated costs	Risky
Formal way (bank)	Reliable and safe	High transaction costs, time consuming, not easily available

Source: Khachani, 2005.

4.4 Utilization of Remittances

The utilization of remittances by households differs. Generally, remittances are used for consumption, rather than investment and savings (Steimann, 2005). Consumption includes food, health, clothing, education and housing (Meyers, 1998; Black, 2003; World Bank, 2006). In the case of Pakistan, remittances are used to purchase agricultural and commercial land, cattle, durable consumer goods, repay debt and for fulfilling religious needs (travel to Mecca for pilgrims and animal for slaughtering at Eid-ul-Azha) (Siddiqui & Mahmood, 2005; Steimann, 2005). Only three items, real estate and agricultural machinery (16.68 percent), wedding ceremonies (12.86 percent), and durable items (10.53 percent) cover more than 40 percent of the usage of remittances (Figure 4.4). The balance of the remittances received is either saved or spent on food items and to repay outstanding loans (HSOMR, 2009). Both health and education do not seem to take priority in terms of remittances utilization in Pakistan. The same trends hold when considering the utilization of remittances at the district level for the Punjab province.

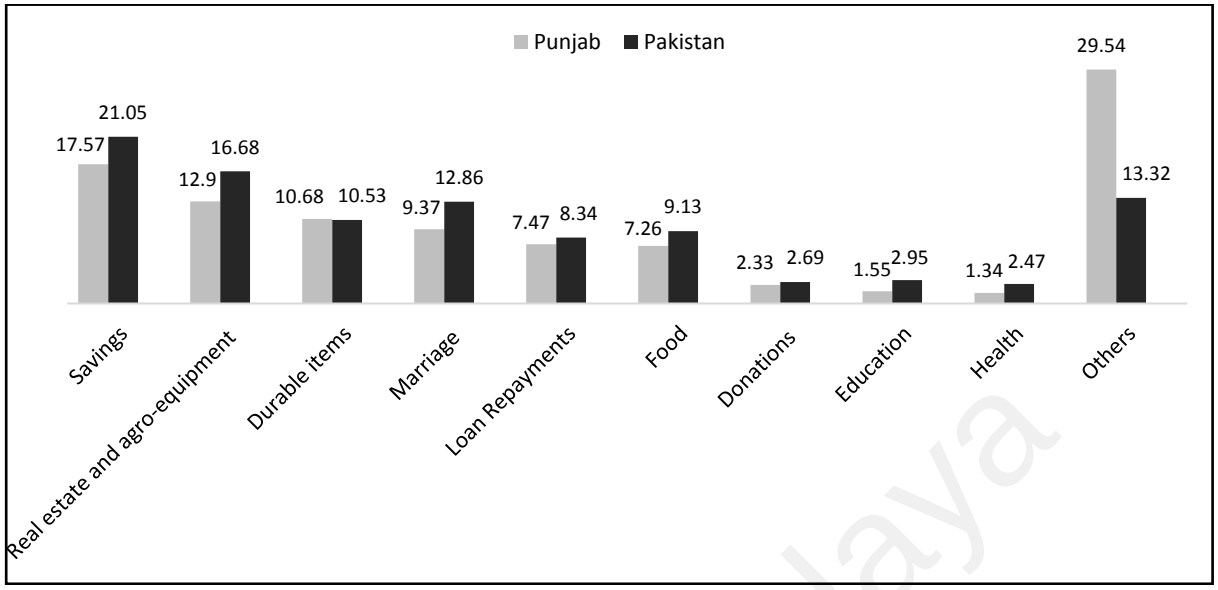

Figure 4.4: Distribution of Remittances Inflow to Pakistan and Punjab, 2009 (in percent)

Source: Household Survey of Overseas Migrants and Remittances, 2009.

4.5 Provincial Level Patterns: Case of Punjab

Administratively, Pakistan is divided into five provinces; Punjab, Sindh, Balochistan, Khyber Pakhtunkhwa and Gilgit-Baltastan, and two federal administered areas; Federal Administered Tribal Areas (FATA), and the Federal Capital, Islamabad. Geographically, Punjab comprises 26 percent of the land area of the country. It has 59 percent of cultivated land of the country, and grows the 68 percent of national food grain. Approximately 48,000 industrial units are operating in this province (GOP, 2012). Punjab is a highly populated province, with more than 50 percent of the total population of the country. It is therefore not surprising that a majority of Pakistani emigrants come from Punjab. In 2014, more than 52 percent of Pakistani migrants were from the Punjab province alone (see Table 4.9).

HHs in Punjab are therefore highly dependent on remittances to improve their living standards. More than 50 percent of the migrant HHs received PKR 1 million - 5 million. (see

Table 4.12). With remittances inflow, the improvement in their life patterns can be realized from aspects related to their children's education, health, housing and their overall standard of living (UNDP, 1992). The following discussion compares the status of remittance receiving HHs from that of non-receivers along the three aforementioned dimensions based on the latest MICS.

Table 4.12: Frequencies of Remittances Inflow

Remittances inflows	No. of HHs	% of total
1000-100000	1,055	37
100001-500000	1,574	54
500001-1000000	206	7
1000001-2000000	43	2
2000001-3000000	4	0.1
3000001-4000000	4	0.1
4000001-5000000	4	0.1
5000001 ≥	1	0.0
Total	2,891	100

Source: Calculated based on MICS (2014-15).

From the educational perspective, 70 percent of remittance receiving HH members below the age of 25 is still getting some form of education, relative to 67 percent among non-receivers (see Table 4.13). Among remittance receiving HHs, 53 percent of the HHs send their children to private schools, while the majority of non-receivers attend government institutions. It is a general perception that up to class ten, the education system of private institutions is better than government institutions. So people prefer the private institutions for their children's education if they can afford their fees. The results corroborate previous findings. Arif (2009) used the HSOMR (2009), and concluded that remittances inflow has a positive association with the enrollment ratio of children, and migrant HHs prefer to enroll their children in private institutions considering the better quality of education with the

English mode of instruction. Using the PSLM (1979), Abbasi et al. (1983) observed a higher schooling of migrants' HHs children than non-migrants. The same conclusion was drawn by Abbasi and Irfan (1986) based on the data from PSLM (1979) survey.

Table 4.13: Proportion of School Going Children and Type of School, 2008 and 2014 (in percent)

	2008		2014	
Below 25 years age	Remittance receivers	Non-remittance Receivers	Remittance receivers	Non-remittance Receivers
Going school	45	45	70	67
Up to class-10				
Government institutions	51	62	47	62
Private institutions	49	38	53	48

Source: Calculated based on PSLM, (2008, 2014).

Migrant HHs have better access to safe drinking water than non-migrant families. More than 50 percent migrant families have motorized pump and this ratio is below 50 percent among non-migrant families (see Table 4.14).

Table 4.14: Uilities and Energy (in percent)

	Remittance receivers	Non-remittance receivers
Sources of Water Supply		
Motorized pump	55	44
Hand pump	18	33
Piped into dwelling	13	13
Protected well	2	0
Fuel for Cooking		
Agricultural crop residue/wood	4	11
Gas	53	38
Wood	29	35

Source: Calculated based on MICS (2014-15).

The remittance receiving HHs are comparatively better in consumption of safe fuel for cooking. Table 4.14 shows that 53 percent migrant HHs use gas fuel as compared to 38

percent among non-migrants. The use of unsafe fuel like agricultural crop residue/wood is almost three-fold higher among non-migrant families than remittance receiving HHs.

The MICS data also revealed that with remittances, there has been a rise in the consumption of durables (such as television, refrigerator and washing machine/dryer) by remittance receiving HHs from 51-66 per cent to 80 percent (see Figure 4.5). It can be concluded that migrant families prefer to spend a significant part of remittances on such HH durable items. Based on a self-collected survey data, Bilquees and Hamid (1981) also detected that the remittance recipients have a relatively higher ratio of home appliances like television and refrigerator. Improvements also can be seen in motorcycle relative to car ownership (see also Khan, Israr, Summar, Shaukat, Khan, Abdul-Manan, Ahmad & Karim, 2011).

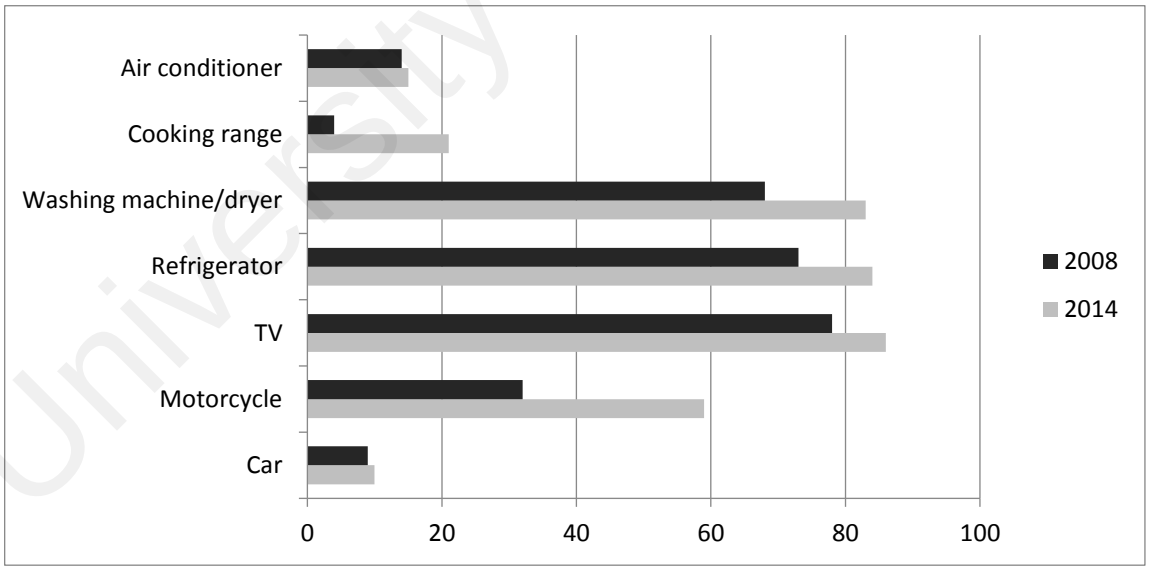

Figure 4.5: Durable Assets of Migrant Households, 2008-2014

Source: Calculated based on MICS (2014-15) and PSLM (2008).

Arif (2004) further used the Pakistan Socioeconomic Survey 2000-01 and concluded that the per capita expenditures, especially on non-food items of migrant HHs were 50 percent

more than the non-migrant HHs. These expenses were made on children's education, housing and the health obtaining activities. Based on MICS (2014-15), the pattern of consumption persists. It appears that the priority of migrant HHs is to spend money on durable items, hence lead a comfortable life.

4.6 District Level Patterns: Case of Punjab

The '*district*' is the third level of the administrative unit in Pakistan and is a subdivision of the province. Before mid of the year 2000, the '*division*' was the administrative unit under province and contained districts as the fourth level of government. In the second half of the same year, the division system was abolished, and the provinces were directly distributed into the districts.

Pakistan contains 132 districts and the province Punjab is at the top, with 36 districts followed by Balochistan (see Table 4.15).

Table 4.15: Province and Districts of Pakistan

Province	No. of Districts
Balochistan	30
FATA[19]	13
Federal Area	1
Khyber Pakhtun Khwa	25
Punjab	36
Sindh	27
Total	132

Source: PBS, 2017.

Province Punjab is the largest province of Pakistan with a population of almost 100 million (see Table 4.16). It can be divided into 3 regions: Central, North, and South Punjab.

[19] Federally Administered Tribal Areas.

The Central region comprises 15 districts, while the South and North regions consist 11 and 10 districts, respectively (see Figure 4.10). Lahore is provincial capital, situated in the central region, surrounded by Sheikhupura, Kasur and Nankana Sahib District of the province and New Delhi of India. It is also the most populous city with more than 9 million inhabitants, followed by Faisalabad and Gujranwala districts with 7.25 and 4.7 million persons, respectively.

Rawalpindi is the most literate district of the province with a literacy rate of 78 percent, followed by Lahore, Jhelum, and Gujranwala, with a literacy rate of 73, 73 and 72 percent respectively. With an area of 24,830 square kilometers, Bahawalpur is the largest district of Punjab (see Figure 4.6 and Table 4.16), while Rajanpur and DG Khan take second and third positions, respectively. Every district of Punjab has cultivated land and industrial units. The Bhakkar district is the most prominent with respect to having the highest cultivated land, 730 thousand hectares, followed by Rahim Yar Khan and Bahawalnagar. Jhelum has the least cultivated land. Interestingly, the capital city Lahore is the smallest district in terms of area, with 1,772 square kilometers, but with more than 2,100 registered industrial units.

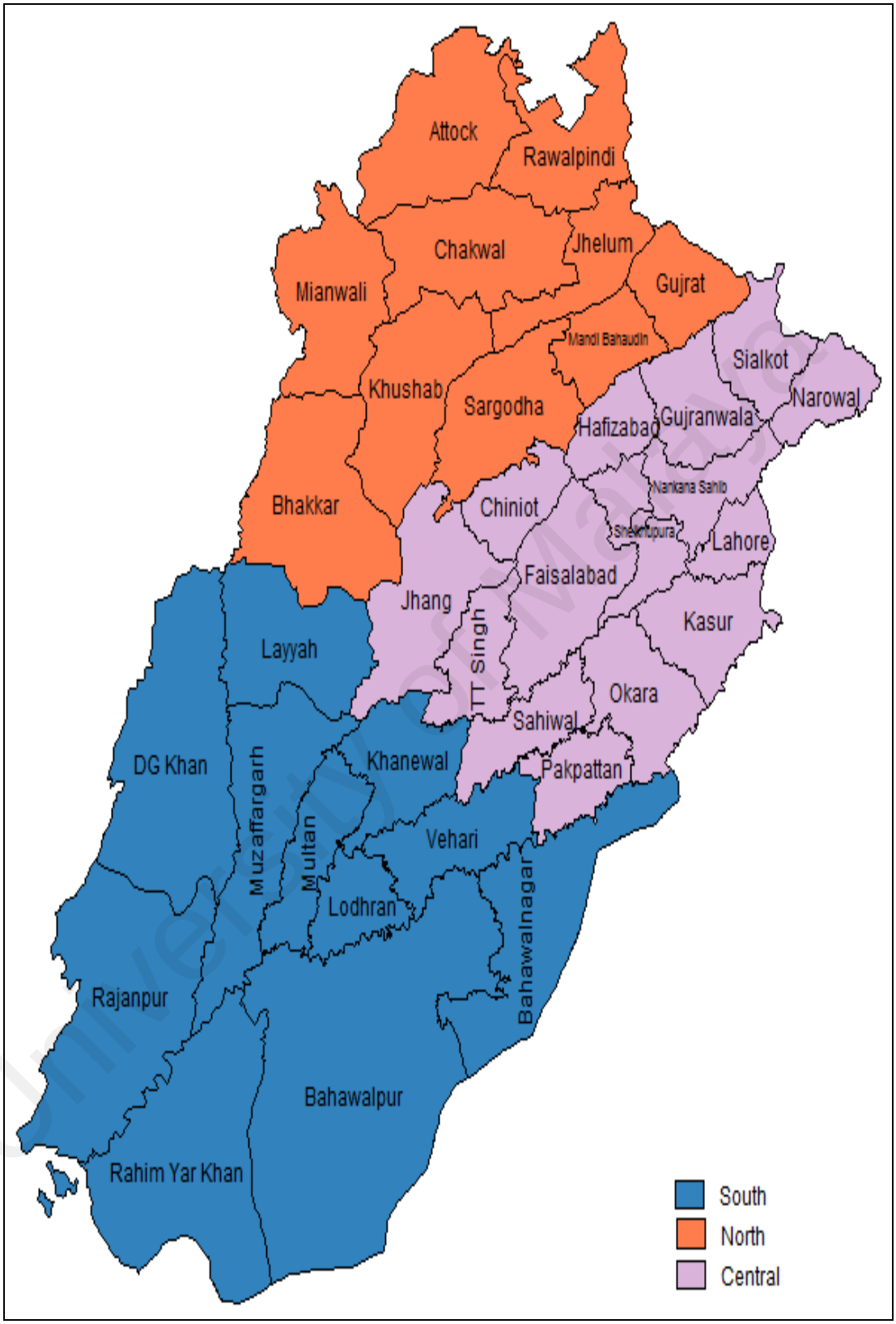

Figure 4.6: Map of Punjab Province

Table 4.16: Description of Districts in Province Punjab

No.	District	Population (thousand)	Literacy rate (percent)	Total area (sq. km)	Cultivated area (thousand hectares)	Registered factories (numbers)
1	Attock	1652	64	6857	319	52
2	Bahawalpur	3453	48	24830	436	355
3	Bhakkar	1435	52	8153	730	29
4	Bahawal Nagar	2722	50	8878	613	208
5	Chakwal	1367	70	6524	319	138
6	Chiniot	1217	47	2643	150	54
7	DG Khan	2391	42	11922	430	102
8	Faisalabad	7249	66	5856	473	1770
9	Gujranwala	4707	72	3622	315	1105
10	Gujrat	2653	71	3192	254	560
11	Hafizabad	1083	57	2367	197	64
12	Jhang	2423	52	6166	481	179
13	Jhelum	1196	73	3587	125	94
14	Kasur	3212	49	3995	356	729
15	Khanewal	2744	59	4349	367	173
16	Khushab	1150	57	6511	468	110
17	Lahore	9350	73	1772	121	2150
18	Layyah	1596	52	6291	474	130
19	Lodhran	1605	44	2778	249	132
20	Mandi Bahaudin	1447	68	2673	226	88
21	Muzaffargarh	3862	42	8249	475	132
22	Mianwali	1388	57	5840	356	73
23	Multan	4262	55	3720	307	442
24	Narowal	1592	70	2337	177	24
25	Nankana Sahib	1291	58	2720	192	196
26	Okara	2953	51	4377	342	120
27	Pakpattan	1718	45	2724	247	177
28	Rajanpur	1600	33	12318	457	73
29	Rawalpindi	4614	78	5285	233	317
30	Rahim Yar Khan	4517	46	11880	639	217
31	Sahiwal	2368	67	3201	261	220
32	Sargodha	3337	61	5854	514	361
33	Sheikhupura	3073	61	3242	359	866
34	Sialkot	3619	70	3016	251	807
35	Toba Tek Singh	2077	65	3252	262	135
36	Vehari	2849	51	4364	393	181

Source: BEOE, 2015.

Recently, it is a growing trend among the young population of the Punjab province to emigrate to improve the living standards of their HHs. Table 4.17 reports the migration rate of registered overseas migrants from all districts of Punjab, except Chiniot[20], for 2011-2015. The table demonstrates that the overseas migration rate among the districts of Punjab was highest in the last half decade relative to the overall period of 1971-2015. It ranges from 23 percent of total migrants (from 1971-2015) for Rawalpindi to 84 percent for Nankana Sahib. It is evident that in the Nankana Sahib District, the trend in emigration is somewhat recent. For DG Khan, Muzaffargarh and Vehari, Khanewal, Narowal, Okara, and Rahim Yar Khan, almost 50 percent of the migrants travelled between 2011 and 2015. Districts Gujrat and Jhelum displayed consistent rates in emmigration.

Districts such as Faisalabad, Gujranwala, and Sialkot, have better employment opportunities relative to the other districts as they are the industrial hub of Punjab. In these districts, the rural share of remittances is higher than the urban share (Table 4.18). Rural Gujranwala and Sialkot received 60 percent and 73 percent of their total district remittances, respectively. Some other districts such as DG Khan, Layyah, Lodhran, and Vehari also show higher inflow of remittances to their rural than urban areas. The rural parts of these district contains less fertile land and insufficient water supply, hence lower crop yields. Thus emigration is seen as an option to obtain higher earnings. Overall, for the Punjab province, the rural areas received more remittances (64 percent) relative to the urban areas. The higher remittances inflow to rural Punjab reflects the higher emigration vis-à-vis urban Punjab due to uncertain agricultural earnings in the rural areas.

[20] The data is not available.

Table 4.17: District Wise Migration Rate of Province Punjab, 2011-2015 (percent of total migrants, 1971-2015)

No.	District	2011	2012	2013	2014	2015	Total
1	Attock	5	7	6	7	7	32
2	Bahawalpur	7	9	8	9	10	43
3	Bhakkar	3	9	11	13	9	44
4	Bahawal Nagar	6	9	10	11	12	47
5	Chakwal	6	9	8	9	9	40
6	Chiniot	-	-	-	-	-	-
7	DG Khan	7	10	9	10	13	50
8	Faisalabad	6	9	9	10	11	45
9	Gujranwala	7	10	9	9	10	44
10	Gujrat	5	6	5	5	5	26
11	Hafizabad	7	12	13	21	23	76
12	Jhang	4	9	8	13	11	45
13	Jhelum	5	7	6	6	5	30
14	Kasur	4	7	9	11	10	40
15	Khanewal	6	9	11	14	14	54
16	Khushab	4	9	9	12	12	47
17	Lahore	5	7	8	8	8	36
18	Layyah	4	7	7	9	17	43
19	Lodhran	6	15	14	11	14	60
20	Mandi Bahaudin	9	12	11	16	15	62
21	Muzaffargarh	6	9	9	13	11	48
22	Mianwali	4	7	8	12	10	41
23	Multan	5	8	8	8	11	40
24	Narowal	8	11	10	11	14	54
25	Nankana Sahib	6	18	20	21	19	84
26	Okara	5	9	9	13	12	48
27	Pakpattan	5	11	12	17	15	60
28	Rajanpur	7	9	11	17	12	56
29	Rawalpindi	3	5	4	5	5	23
30	Rahim Yar Khan	6	9	9	12	11	48
31	Sahiwal	5	7	7	10	10	40
32	Sargodha	5	8	8	11	9	42
33	Sheikhupura	6	8	6	10	11	41
34	Sialkot	7	8	8	8	8	38
35	Toba Tek Singh	6	9	8	12	13	47
36	Vehari	7	11	9	10	12	49

Source: BEOE, 2015.

Table 4.18: Distribution of Remittances Inflow to Punjab Districts, by urban and rural areas, 2014 (in percent)

No.	District	Urban area	Rural area	Total share in province
1	Attock	62	38	3.91
2	Bahawalpur	35	65	0.55
3	Bhakkar	59	41	0.14
4	Bahawalnagar	52	48	0.58
5	Chakwal	34	66	2.50
6	Chiniot	83	17	0.62
7	DG Khan	20	80	1.89
8	Faisalabad	48	52	3.63
9	Gujranwala	40	60	8.46
10	Gujrat	36	64	14.65
11	Hafizabad	22	78	1.07
12	Jhang	54	46	0.67
13	Jhelum	33	67	4.07
14	Kasur	68	32	0.59
15	Khanewal	41	59	0.61
16	Khushab	56	44	0.94
17	Lahore	15	85	13.22
18	Layyah	13	87	0.27
19	Lodhran	13	87	0.41
20	Mandi Bahaudin	37	63	6.59
21	Muzaffargarh	21	79	0.58
22	Mianwali	47	53	0.89
23	Multan	56	44	0.59
24	Narowal	31	69	3.19
25	Nankana Sahib	62	38	1.45
26	Okara	66	34	0.79
27	Pakpattan	24	76	0.42
28	Rajanpur	48	52	0.72
29	Rawalpindi	51	49	4.03
30	Rahim Yar Khan	43	57	0.92
31	Sahiwal	37	63	1.68
32	Sargodha	47	53	2.38
33	Sheikhupura	60	40	1.20
34	Sialkot	27	73	10.83
35	Toba Tek Singh	50	50	2.96
36	Vehari	19	81	2.00
	Total	36	64	100

Source: Calculated from BEOE, 2015.

At the district level, only Gujrat, Lahore, and Sialkot received a combined 39 percent of the total remittances to the province, while the combined remittances of Bhakkar, Layyah and Lodhran were less than 1 percent of total Punjab's remittances (see Table 4.18), despite the fact that the migration rates of the former three districts were comparatively lower than the latter three districts (see Table 4.17). It might be due to reasons that the literacy rates of the former three districts are much higher than the latter, leading to higher earnings abroad and more money remittance inflows to those districts. Further, the total population of districts Bhakkar, Layyah and Lodhran is less than half of only a single district such as Lahore (see Table 4.16). So, the number of emigrants are large from the former three districts despite the lower recorded migration rates vis-à-vis the latter three districts.

4.7 Policies on Remittances Inflow

Since remittances inflow is the second largest source of foreign exchange for Pakistan, the government is continuously trying to encourage migration and tap on remittances. In mid-2013, after merging two ministries, a new ministry, the Ministry of Overseas Pakistanis and Human Resource Development, was established with the prime goal of increasing welfare and resolving issues related to Pakistani emigrants. The government aims to design a progressive emigration policy to create new job opportunities abroad for Pakistani workers in order to minimize poverty and increase income.

The Ministry of Overseas Pakistanis and Human Resource Development contains four sub-agencies, which are further divided into various sub-sectors[21] (see

[21] A. Administration Wing (National Industrial Relations Commission (NIRC), B. Policy Planning Unit, C. Emigration/OP Wing (i. Bureau of Emigration & Overseas Employment (BE & OE), ii. Overseas Employment Corporation (OEC)), D. Human Resource Development Wing (i. Employees' Old Age Benefits Institution (EOBI), ii. Workers Welfare Fund (WWF), iii. Overseas Pakistanis Foundation (OPF), iv. International Conventions & reporting, v. Internal relations and welfare of labour and manpower.

http://www.ophrd.gov.pk/). The agencies are responsible for specific tasks and they have a common goal to provide assistance to the HHs of the Pakistan diaspora abroad. Some of the developments and programmes are delineated below:

i. The Ministry signed a Memorandum of Understanding (MoU) with the government of the Kingdom of Bahrain in the area of Labour and Occupational Training, in 2014.

ii. The Overseas Employment Corporation (OEC) provided jobs to more than one million migrants in 55 diverse countries.

iii. The Overseas Pakistanis Foundation (OPF) started more than twenty schools and two colleges to facilitate the Overseas Pakistanis (OPs) children and awarded scholarships for more than 200 deserved OPs children, and more than 50 merit scholarships. The construction of schools in many districts is still in progress.

iv. OPF distributes a sufficient amount among the families whose members work abroad has expired or in the event of deaths. In the latter case, the OPF provides free ambulance service from the airport to concerned village/town of deceased.

v. To assist the OPs families, the OPF constructed two eye hospitals in Punjab and Azad Kashmir. The OPF also signed a MoU with the Punjab Employees Social Security Institution in 2014 to provide health facilities to OPs and their families in the Punjab province.

vi. A pension scheme for OPs was also launched in 2001.

vii. To ensure the welfare of Pakistanis diaspora and their families in Pakistan; offices of Community Welfare Attaches were opened in 14 countries.

viii. Permission was granted to the well-reputed Overseas Employment Promoters to collect information according to the nature of manpower demands and set a data

bank of their own. Also, to save the time and ensure prompt response to labour needs, the verification process of the applications is being made *via* fax, telephone texts, internet, and e-mail.

ix. To provide a special protocol and assistance to the OPs, OPF has specified counters at all international airports in Pakistan. These counters are operating at both the arrival and departure lounges.

x. Besides education and health facility, the government is assisting the OPs with residence schemes. Under the Overseas Pakistani Foundation Housing Scheme, many homes have been constructed in the cities of Pakistan.

Although Pakistan is considered a resource based economy, the growing population is putting pressure on the resources. The government has therefore launched various programmes for workers' skill development and encourage overseas employment. The government is constantly searching new global markets to export its labour (GOP, 2013). In this regard, the government has also launched a number of programmes and initiatives to facilitate remittance inflows, such as microfinance institutions (MFIs) and the Pakistan Remittances Initiative (PRI).

4.7.1 Role of microfinance institutions

The government of Pakistan and other concerned groups are attempting to promote the use of formal channels for remittance transfers. Domestic banks abroad are offering free-of-charge money transfer services to encourage formal money transfers (Suleri & Savage, 2006). Apart from banks, MFIs are also operating with other global money transfer companies, to improve the remittances delivery system. The MFIs are more responsive to customers and they largely serve the low-income population. They focus on low-cost

transfer facilities and specific financial products that are not offered by the traditional banking system. Institutions that deal in financial services like savings accounts, lending, and insurance to remittances receipts and seek to activate savings for indigenous investments, are also involved in providing services for remittance transfers (Orozco & Hamilton, 2005).

The MFIs have a unique role of fulfilling the needs of remittance receivers, while the reinvestment of additional funds is used to improve the opportunities for the local community (IFAD, 2015)[22]. The money transfer service by MFIs leads to frequent visits of money/remittance receivers that resultantly create the market for other available services, which contribute to the growing deposits as well as the increase in financial competition and reduction in transaction charges (Orozco, 2008). Due to the lower transaction cost for remittance receivers to deposit their money, the MFIs attract more deposits than other financial institutions. Supposing most of the remittance recipients and senders no longer use the traditional banking system, MFIs may emerge as the sole formal financial channel to provide transfers of remittances (Mata, 2012).

4.7.2 Government initiatives

To facilitate and support the remitters and receivers with cheaper, rapid, convenient and efficient flow of remittances, the State Bank of Pakistan, Ministry of Finance, and Ministry of Overseas Pakistanis jointly launched the PRI in 2009. The PRI made every effort to increase the flow of remittances into the country through the formal channels and to build the ownership structure in the country for remittances facilitation. The PRI contributed to

[22] See Financing Facility for Remittances; International Fund for Agricultural Development www.ifad.org/remittances/

enhancing the remittances inflow to the country; this remittances growth is primarily because of the following: i) large emigration flow, ii) Interbank Fund Transfer (IBFT) facility, and iii) releasing of PKR 10.46 billion by the Government on account of telegraphic transfer (TT) charges on home remittances (Suleri & Savage, 2006; SBP, 2014).

A foremost step taken under the PRI was to make it compulsory for migrant workers to open the bank account through a simple procedure (to control them from using informal ways of sending money). These accounts are treated differently from usual bank accounts, and the flow of funds is monitored, which is helpful for authorities to identify transfer problems. For example, if the inflow is constantly low in any area, it indicates the use of other less formal channels for the transaction of money.

4.8 Summary

Remittances inflow is a major and growing source of external capital in Pakistan. Pakistan is the 7th largest recipient of remittances in the world. Remittances play a vital role, both at the macro (national) and micro (HH) levels in Pakistan. At the macro level, it increases the pool of foreign capital, which provides a cushion for the rising import bill, while at the micro level, it reduces poverty and improves the living standard of receiving HHs.

The Punjab province, which hosts the largest number of emigrants from Pakistan, receives the largest share of remittances relative to the other provinces. Remittances are therefore a significant source of capital for the province. Remittances inflow is however concentrated in specific districts within Punjab. Within districts, emigration is also generally higher among the ruralites relative to the urban folks. The development and poverty impacts of remittances are therefore most likely to differ between and within districts (urban-rural locality).

CHAPTER 5: HOUSEHOLD HUMAN DEVELOPMENT INDEX FOR PUNJAB'S DISTRICTS

5.1 Introduction

The standards of living as well as the social advancement of households (HHs) in the districts of Punjab are distinctive. Foreign remittances inflow additionally influences them differently. In order to get an understanding and quick comparisons of different statistics among districts, this chapter focuses on a graphical examination of the Household Based Human Development Index (HHDI) and its sub-indices. This is due to the fact that graphical illustrations of data are more visually comprehensible. Thus with this approach, it is easy to compare the development status across and within districts.

5.2 Feasibility of HHDI

Our calculated HHDI reveals that the levels of HD vary significantly between (i) sub-groups of remittance receiving HHs and non-remittance receivers; and (ii) sub-groups and by type of development, namely housing. These differences could not have been detected from a national level HDI.

The computation of the HHDI for Punjab has been dealt with in several studies. It dates to 2003 when the NHDR-UNDP calculated the HDI for Pakistan's provinces. Later, Jamal and Khan (2007) replicated the NHDR-UNDP methodology with some modifications and presented in the status of HD for 1998 and 2005. More recently, the UNDP (2015) and Jamal (2016) released their computations of the HDI for Punjab. Table 5.1 compares the HDI, calculated at the provincial level for Punjab, from the above mentioned studies. (The

methodology and factors included in the computation of the HDI in previous studies and that of the HHDI for this study is described in Appendix-B).

Table 5.1: Comparison of Average HDI for Punjab

Study	HDI/ HHDI	Education	Health	Income/housing
Jamal (2016)	0.550	-	-	-
UNDP (2015)	0.538			
Jamal and Khan (2007)	0.669	-	-	-
NHDR (2003)	0.557	0.557	0.830	0.281
Author's calculation	0.483	0.466	0.820	0.392

Note: The above data is the average value at the provincial level.
Source: Compiled from the literature. Author's calculation based on MICS (2014-15).

Table 5.1 shows that the HDI values for Punjab, as cited in previous work, are higher than the HHDI of this study. The opposite holds true when the decomposed housing sub-index is considered. The calculated housing sub-index in this study is higher than that of the NHDR (2003) because it goes beyond the simple measure of income to account for the material wealth of the HH. As for education and health, the values of both indices in this study remain lower than the NHDR (2003) study. This can be attributed to the nature of how weights are assigned to the sub-dimensions of the indices, and the availability of data. For example, in this study, weights for the sub-dimensions of education are assigned according to the education level of HH members, with equal weights given to adult literacy rate and child enrollment rate, following the new UNDP methodology. This is because all the sub-dimensions represented in the sub-index are considered equally important. In addition, there is no substitution among them. Further, the data used in this study are at a disaggregated district-level. In the case of the health sub-index, malnutrition indicators are deployed.

Given the above reasons, which are, the comprehensive coverage (specifically for the housing sub-index) and relevant (health sub-index) sub-dimensions of the decomposed sub-

indices, getting the balance right in terms of assigning weights to sub-dimensions of the decomposed indices, and the use of disaggregated district-level data, the HHDI values of this study may be considered a progressive improvement to previous similar work.

5.3 Mapping of HHDI and its Components

The districts with their respective ranges of HHDI are divided into four categories, namely, low development, medium development, high development and very high development (UNDP, 1997)[23]. Figures 5.1 and 5.2 compare the HHDI of remittance and non-remittance receiving HHs in Punjab. Interestingly, no district in Punjab falls into the

[23] HHDI of less than 0.55 have low level of human development; those between 0.55 and 0.70 medium level, those between 0.70 and 0.80 high level and those above 0.80, very high level (UNDP, 1997).

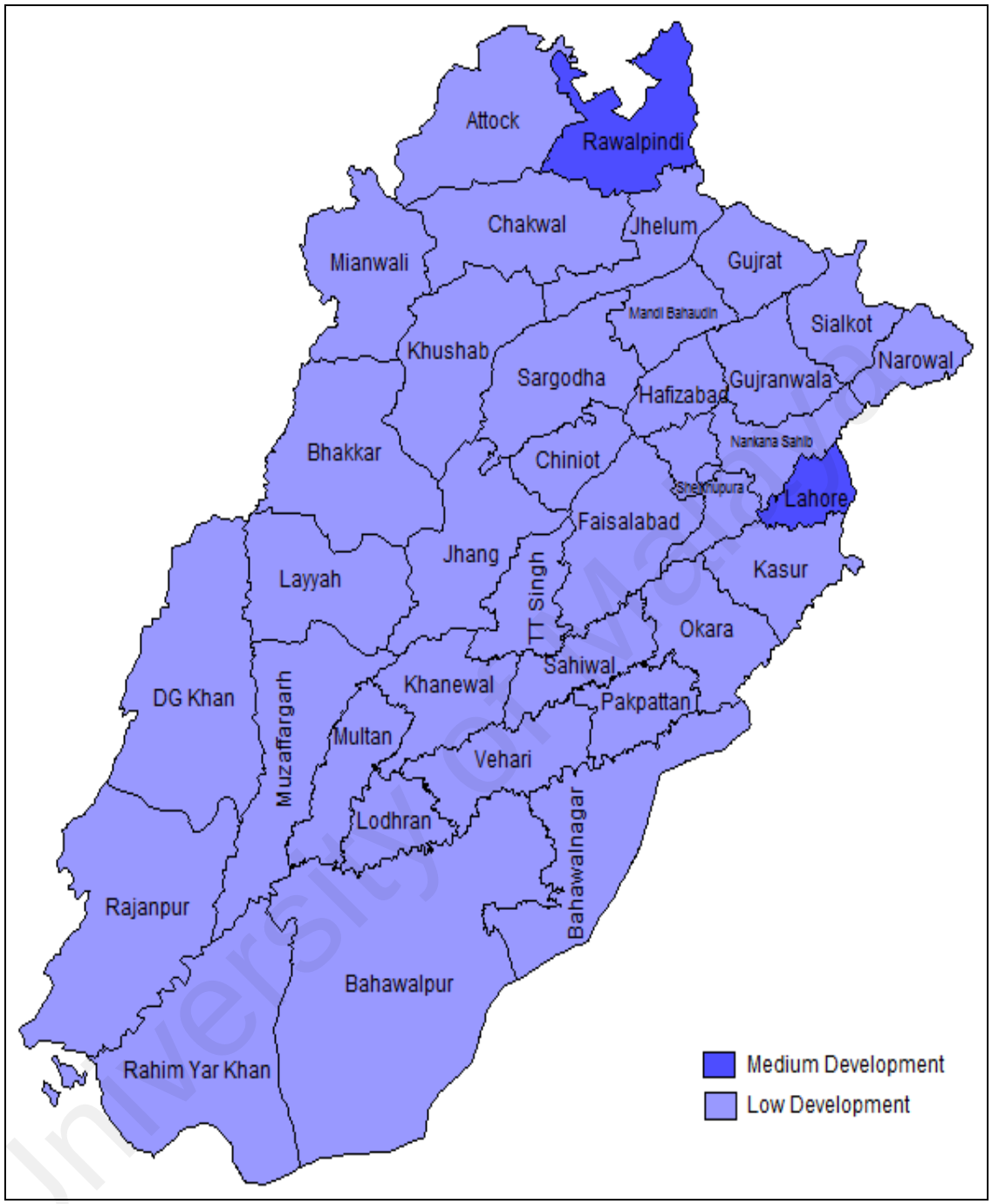

Figure 5.1: District-Wise HHDI Ranks of Non-Remittance Receivers of Punjab, 2014

Source: Author's own calculations.

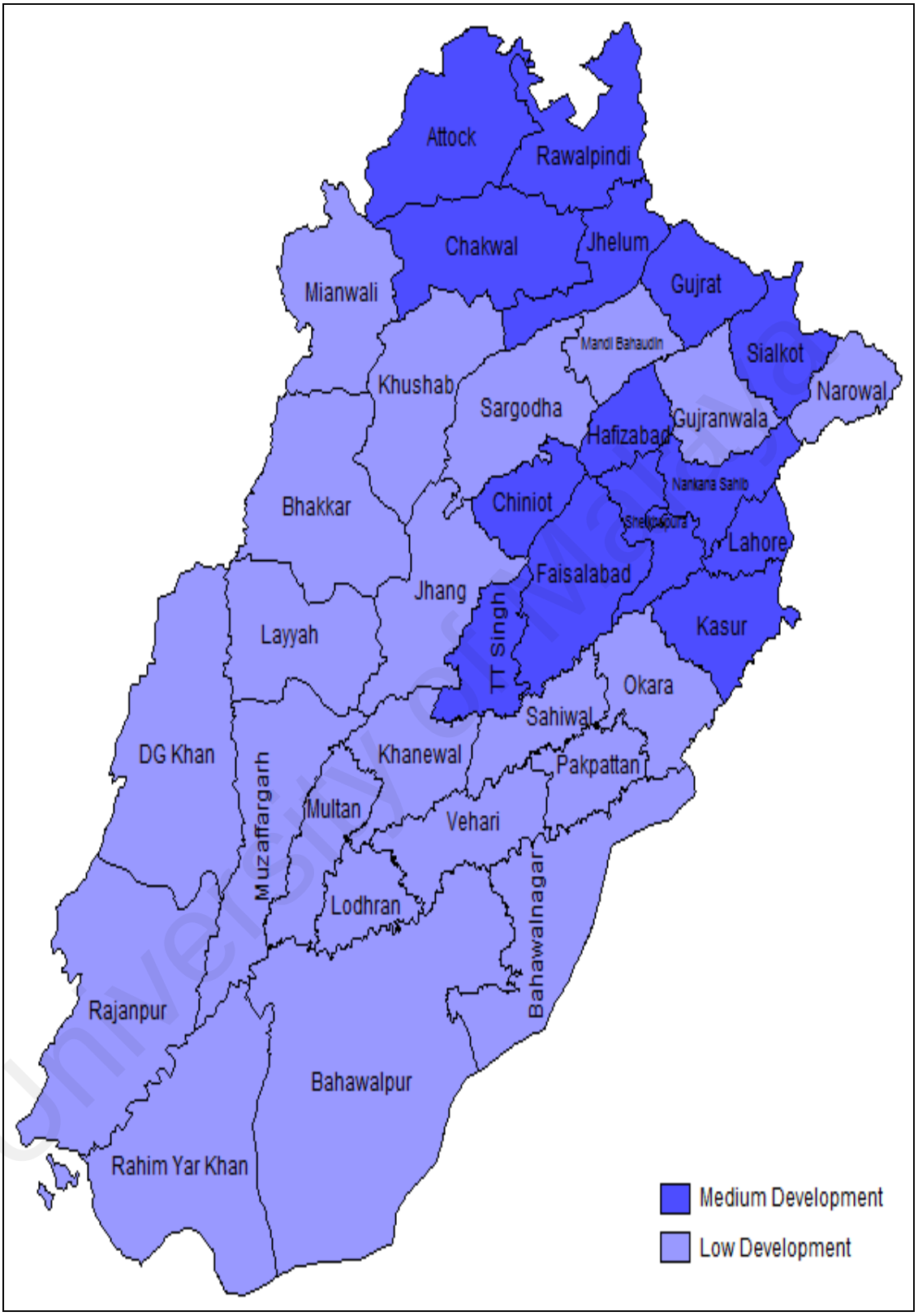

Figure 5.2: District-Wise HHDI Ranks of Remittance Receivers of Punjab, 2014

Source: Author's own calculations.

very high or high development category. The map shows that only Lahore[24] and Rawalpindi out of the 36 districts in Punjab are considered medium developed districts when taking into account only the non-remittance receiving HHs. However, when remittance receiving HHs are taken into consideration, 12 other districts (Attock, Chakwal, Chiniot, Faisalabad, Gujrat, Hafizabad, Jhelum, Kasur, Nankana Sahib, Sialkot, Sheikhupura, and Toba Tek Singh) are also included in the category of medium development (see Figure 5.2).

In another vein, considering the educational achievement of non-remittance receiving HHs, 35 out of the 36 districts fall into the low development category with only the district of Rawalpindi falling into the medium development category (see Appendix-C). Similarly, Appendix-D shows the education index for remittance receiving HHs with only 8 percent of districts (3 out of the 36) falling in the medium development category as compared to 3 percent of non-remittance receiving HHs.

Dispersion of the HHDI and its sub-indices among districts displayed in Appendix-C are summarized in Table 5.2.

Table 5.2: Distribution of HHDI and Sub-Indices among Districts

Measures	Non-remittance Receivers				Remittance Receivers			
	Low Dev.	Medium Dev.	High Dev.	Very High Dev.	Low Dev.	Medium Dev.	High Dev.	Very High Dev.
HHDI	34	2	0	0	22	14	0	0
Education	35	1	0	0	33	3	0	0
Health	0	0	14	22	0	0	7	29
Housing	36	0	0	0	22	14	0	0

Source: Author's own calculations.

[24] Lahore is the second largest city, after Karachi, in Pakistan. It being ranked as only experiencing medium development confirms the low overall HDI assigned to Pakistan.

From Table 5.2 and the figures displayed in the Appendix-C to Appendix-H, we see that with respect to healthcare for non-remittance receiving HHs, 61 percent of the districts (22 out of the 36) fall into the very high developed category as compared to 81 percent (29 out of the 36) for remittance receiving HHs. In the high development category, remittance receivers also have a lower ratio than non-remittance receivers (7 vs. 14). Lastly, in view of the housing status, 100 percent of the districts fall into the low development category for non-remittance receiving HHs as compared to 61 percent (22 out of 36) for remittance-receiving HHs. In the medium development category, there are 14 districts for remittance receivers as compared to zero for non-receivers. Furthermore, no district for both remittance receiving and non-remittance receiving HHs is found in the high and very high development categories.

5.4 District-Wise Comparison of HHDI and its Components

All the districts have different levels of well-being with respect to education, health and housing. The remittances inflow has a distinctive relationship with the development of HHs in different districts. Based on remittance recipient scores, Figure 5.3 shows the disparity in HHDI across the districts of Punjab. District Lahore is seen to have the highest HHDI value among remittance recipients and it is ranked second with respect to non-recipient HHs. The non-remittance receiving HHs have the highest HHDI value in district Rawalpindi. Districts from south Punjab region such as DG Khan, Rajanpur and Muzaffargarh are at the bottom of the HHDI ranking for both remittance receiving and non-remittance receiving HHs. The highest difference between the HHDI value for remittance receivers and that of non-receivers is observed in the districts of central Punjab, specifically Chiniot and Nankana Sahib. Therefore, we can conclude that the districts of

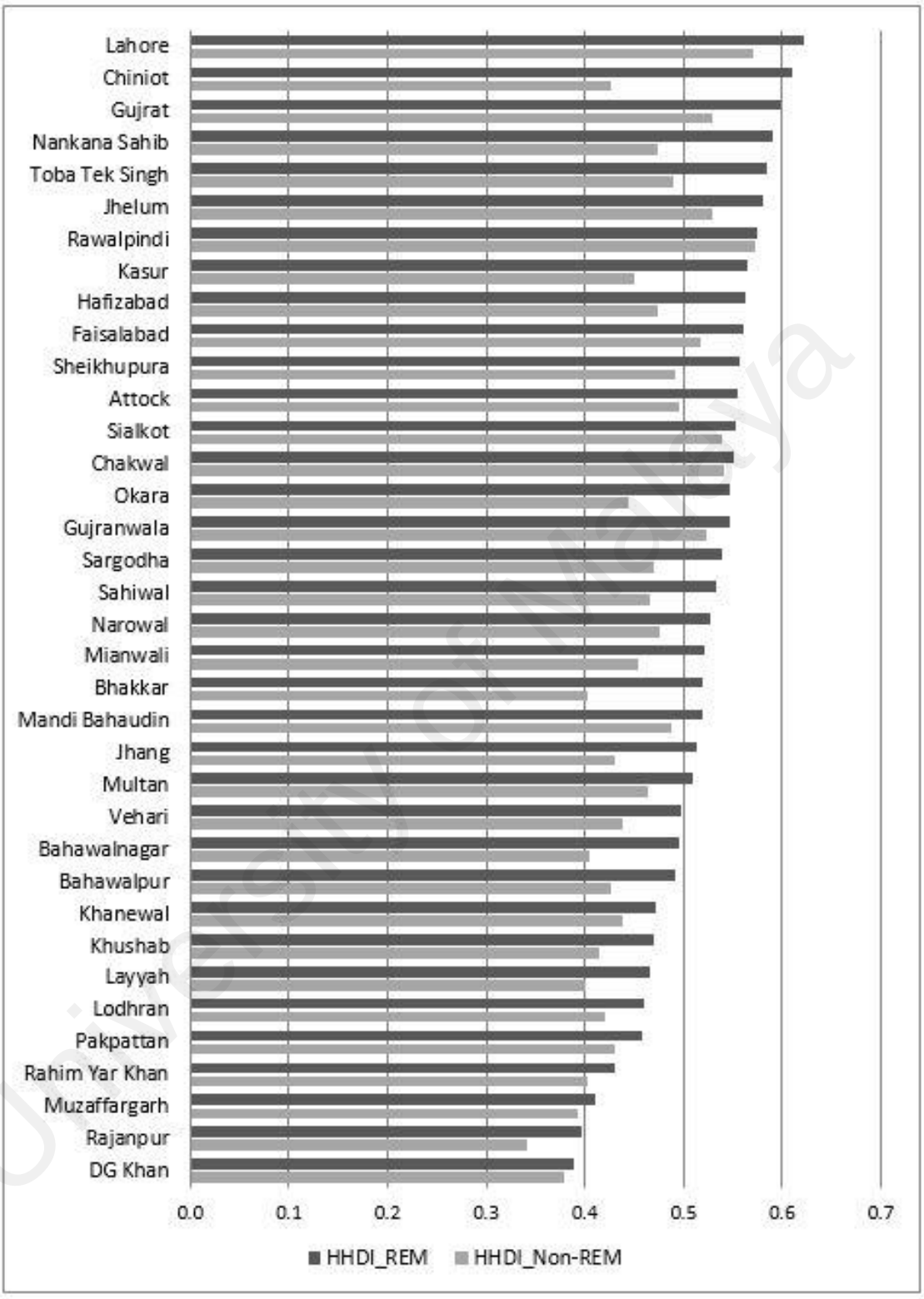

Figure 5.3: District-Wise Comparison of HHDI: Remittance Receivers vs. Non-Remittance Receivers, 2014

Source: Author's own calculations.

central Punjab are more prosperous than those of the north and south Punjab regions with the south Punjab region being the most vulnerable. With regard to remittance receivers, 67 percent of the districts have mean HHDI values higher than 0.50 as compared to 22 percent for non-receivers.

Similar to its HHDI ranking, District Lahore is also at the top in educational achievement among remittance receivers (see Figure 5.4). District Kasur is in second position in this respect. With a slight change from its district ranking, south Punjab region is positioned at the bottom. Precisely, two districts namely, DG Khan and Rawalpindi demonstrate the lower educational values among remittance receivers than non-remittance receivers. The maximum and minimum difference between remittance receivers and non-remittance receivers was noted in districts Kasur and Multan respectively.

In terms of healthcare, we can conclude from Figure 5.5 that non-remittance receiving HHs have higher mean health index values than remittance receiving HHs in 33 percent of the districts. It is in line with a number of studies that emigration could be a cause of improper breastfeeding and irregular vaccination that results in bad health, and growing rate of infant mortality (see Levitt, 1997; Kanaiaupuni & Donato, 1999; McKenzie, 2005). Thus, this demonstrates that health is vital to both remittance receivers and non-receivers. The government plays a vital role in the provision of health facilities, providing free medical services at the door step with the help of more than 48,000 paramedical staff. Among remittance-receivers, the districts of Chiniot, Bhakkar, and Multan occupy the first, second and third positions respectively. On the other hand, the districts of Chakwal, Jhelum, and Khushab are in the first, second and third positions respectively among non-

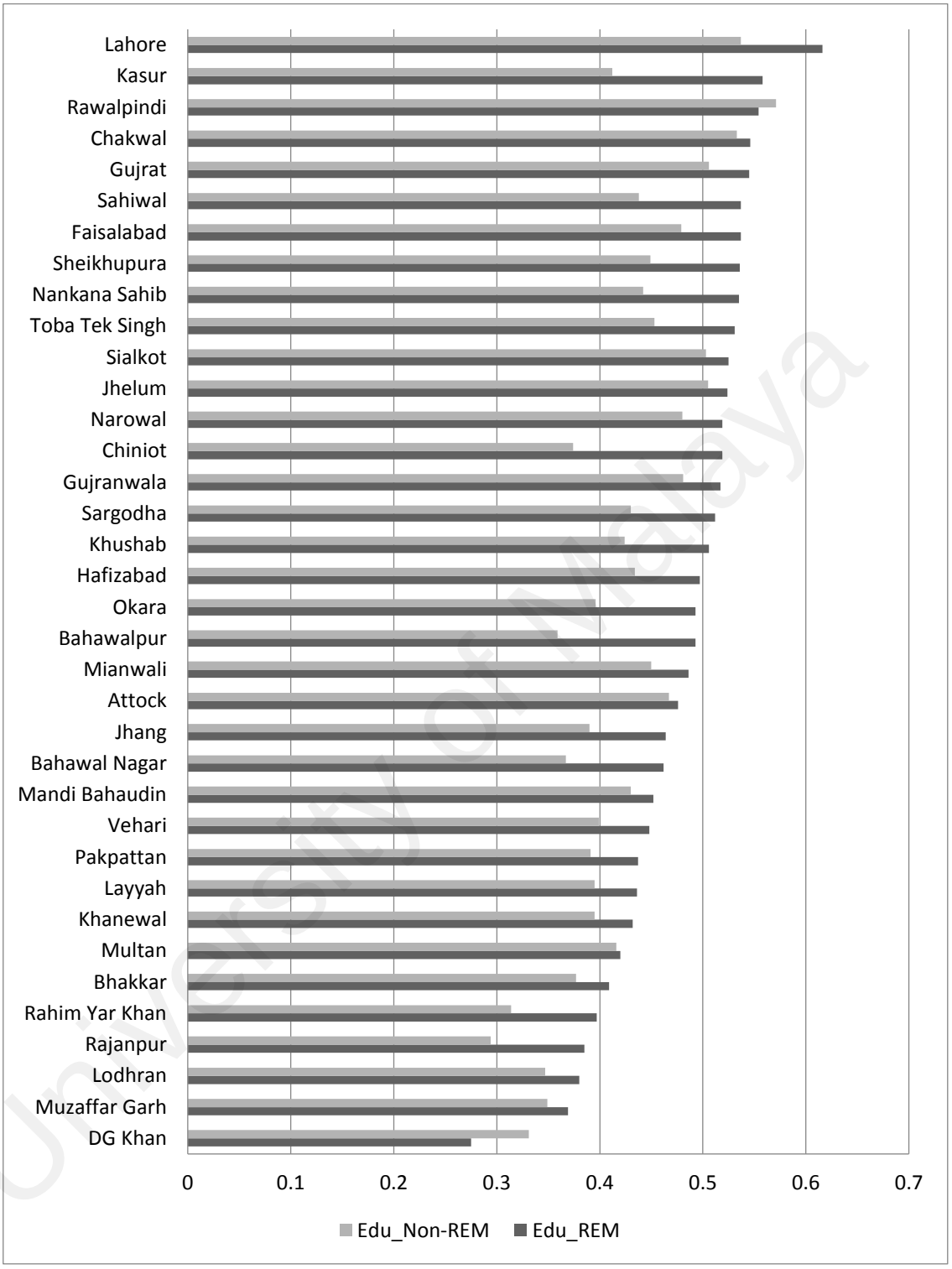

Figure 5.4: District-Wise Comparison of Education Index: Remittance Receivers vs. Non-Remittance Receivers, 2014

Source: Author's own calculations.

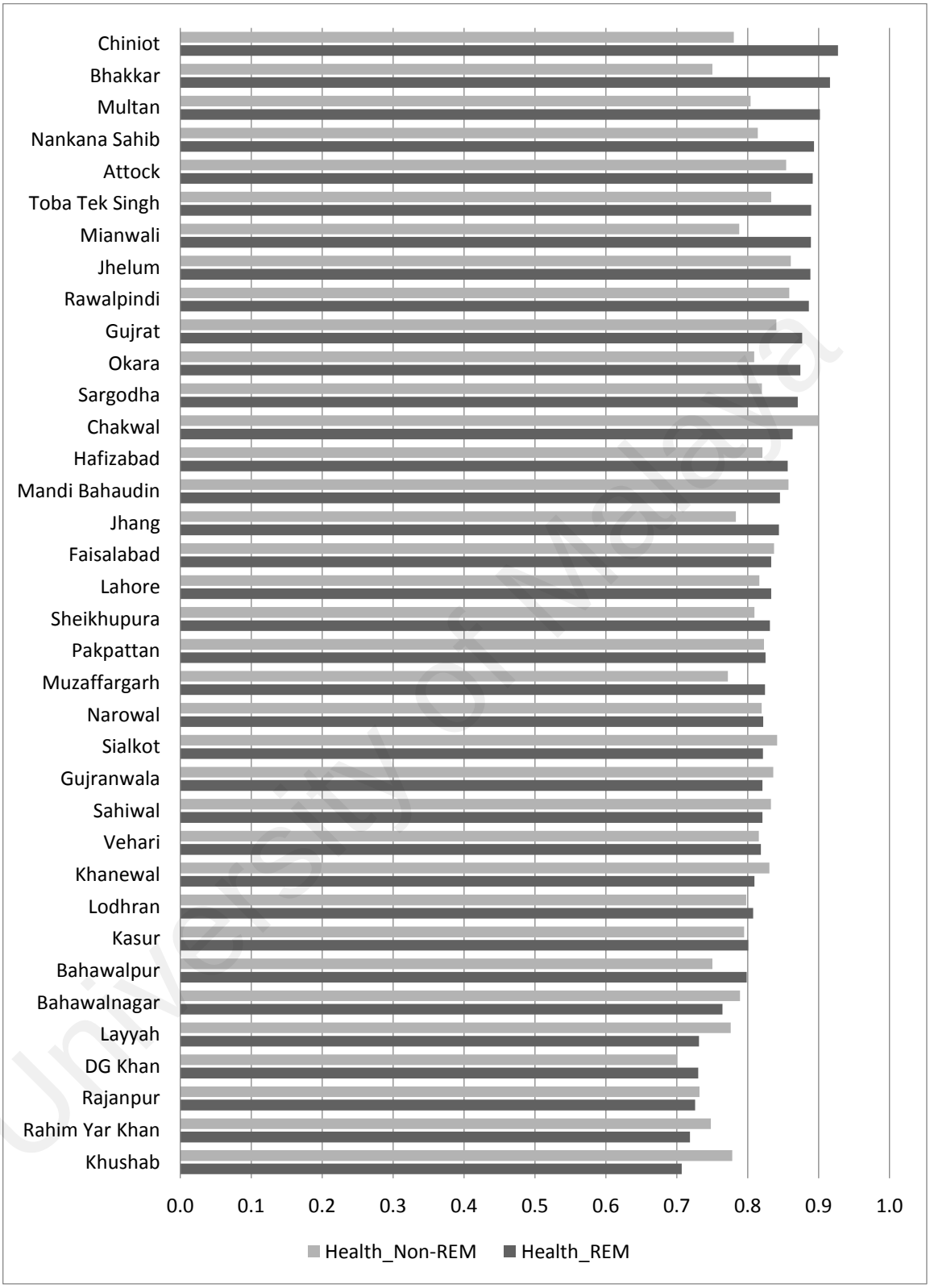

Figure 5.5: District Wise Comparison of Health Index: Remittance Receivers vs. Non-Remittance Receivers, 2014

Source: Author's own calculations.

receiving HHs. The maximum difference between the health index values of both groups was seen in the districts of Bhakkar and Chiniot respectively. In summary, all HHs in the non-remittance receivers and remittance receivers groups are considered to have attained high levels of development with regard to health.

Generally, the remittance receiving HHs are found to be better off than their non-receiving counterparts based on the values of overall HHDI and housing index (Figure 5.6). As for remittance receiving HHs, almost half of the province (17 out of the 36 districts) have the mean housing index values greater than 0.50 whereas among non-remittance receivers, only a single district has this range of housing index (see Figure 5.6). District Lahore and Rawalpindi occupy the first and second positions in the housing index with respect to remittance receiving and non-receiving HHs. With regard to housing, the south Punjab region is considered the least developed with the District DG Khan having the lowest value for non-receiving HHs while Rajanpur has the lowest value for remittance receiving HHs. The maximum difference between remittance receivers and non-receivers is observed in the district Chiniot, while the minimum difference is seen in district Multan. Unlike health and education, the government does not provide any support for housing related factors. So, to get acquire and improve HH facilities, most HHs utilize remittances for this purpose. As a result, migrant HHs enjoy better housing facilities than non-migrant HHs.

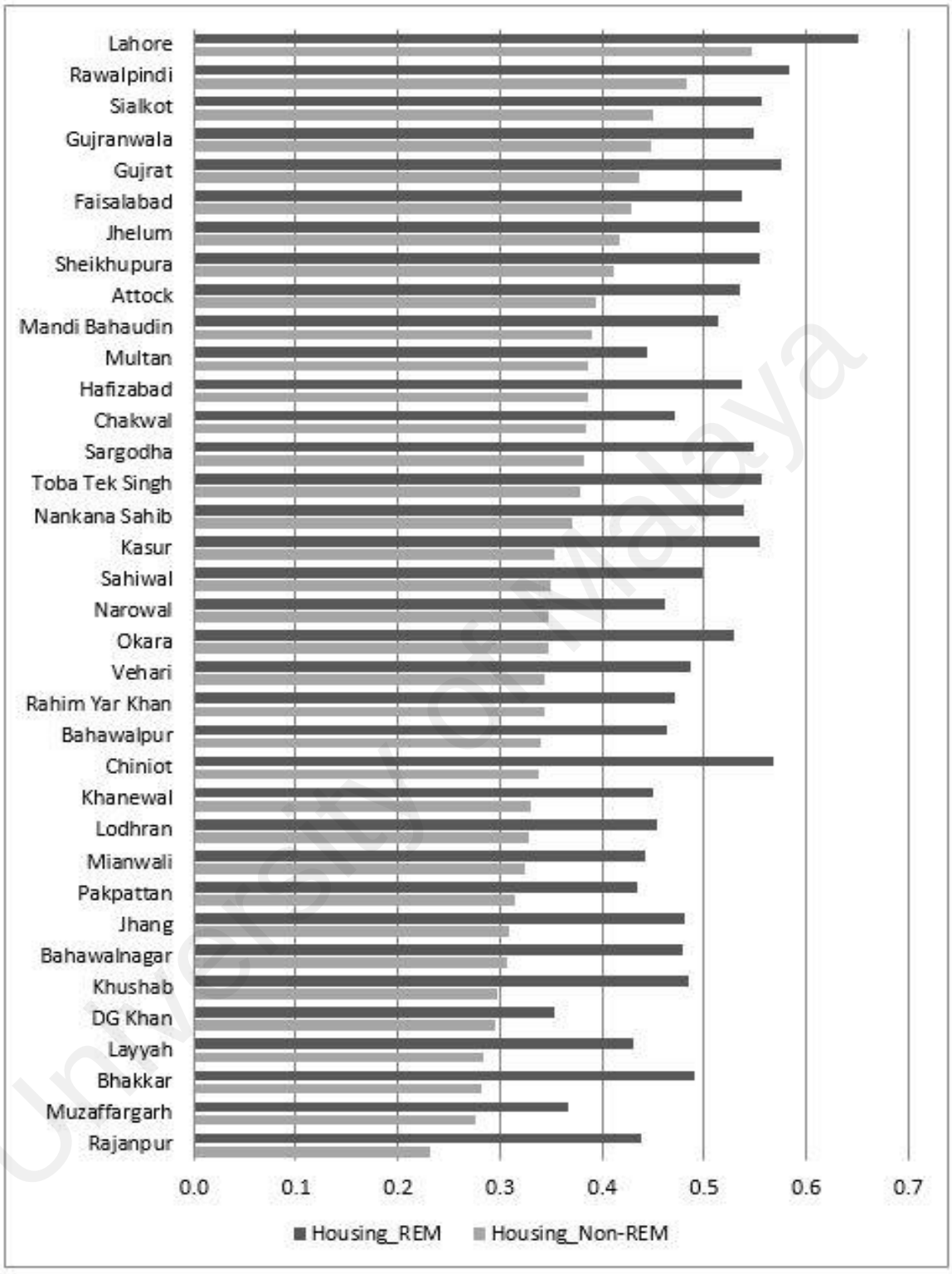

Figure 5.6: District-Wise Comparison of Housing Index: Remittance Receivers vs. Non-Remittance Receivers, 2014

Source: Author's own calculations.

5.5 Intra-District Comparison of HHDI and its Components

Comparison within the district demonstrates that for remittance receiving HHs, the urban part of the province is wealthier in the terms of social and economic status than the rural part. The districts of Chakwal and Gujrat have the maximum HHDI values in the urban and rural parts respectively. On the other hand, the districts of DG Khan and Rajanpur have the least HHDI values in the rural and urban parts respectively (see Figure 5.7). The highest difference between the HHDI values of both parts is found in district Pakpattan, while the least difference is seen in district Bhakkar. For instance, urban remittance recipients of district Pakpattan have a 0.2588 higher HHDI value than their rural counterparts. Similarly, urban recipients of Bhakkar are superior by 0.0090 in HHDI value than their rural recipients. The districts with high urbanization and industrialization have higher rates of employment. Generally, the urban population has better job opportunities and earning potentials, which makes them less reliant on remittances. In some districts, however, the difference between urban and rural HHDI is remarkably low. Some rural parts have fertile land and hence provide high crop yields. As a result, rural parts of some districts are also considerably prosperous.

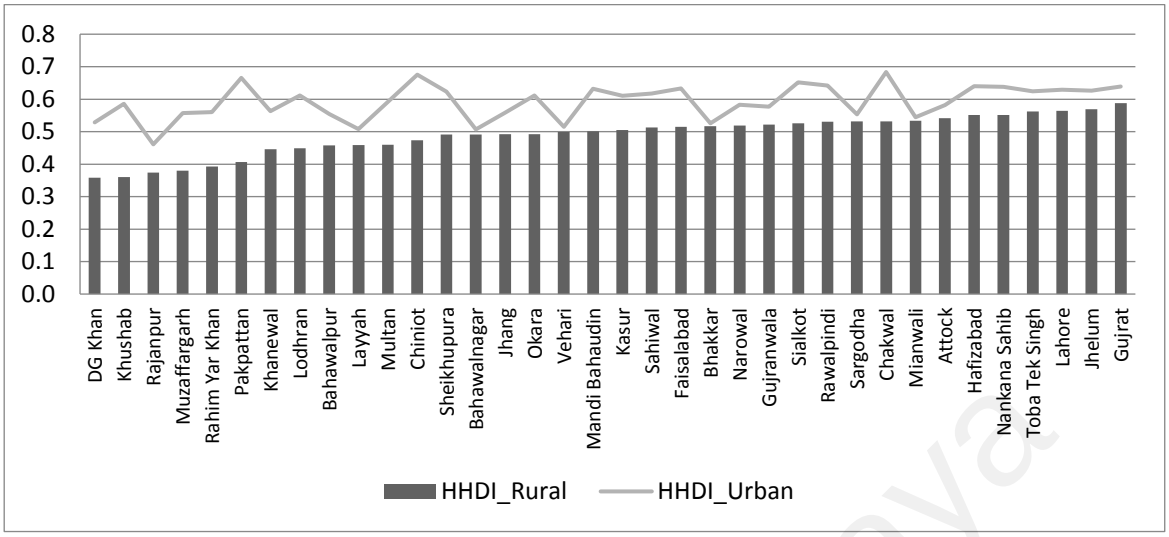

Figure 5.7: Intra-District Comparison of HHDI of Remittance Receivers, 2014

Source: Author's own calculations.

Figure 5.8 shows the educational status of remittance receivers for both rural and urban parts. The highest urban education index value is seen in Sahiwal and the highest rural index value is found in district Lahore. The lowest values of the index are observed in the districts of Chiniot and Layyah in the rural and urban regions respectively. The rural parts of some districts have similar educational levels to urban areas such as districts Layyah, Attock and Narowal. However, in some rural areas of districts such as Chiniot, Rahim Yar Khan and Sheikhupura, the educational level is significantly lower than that of the urban part.

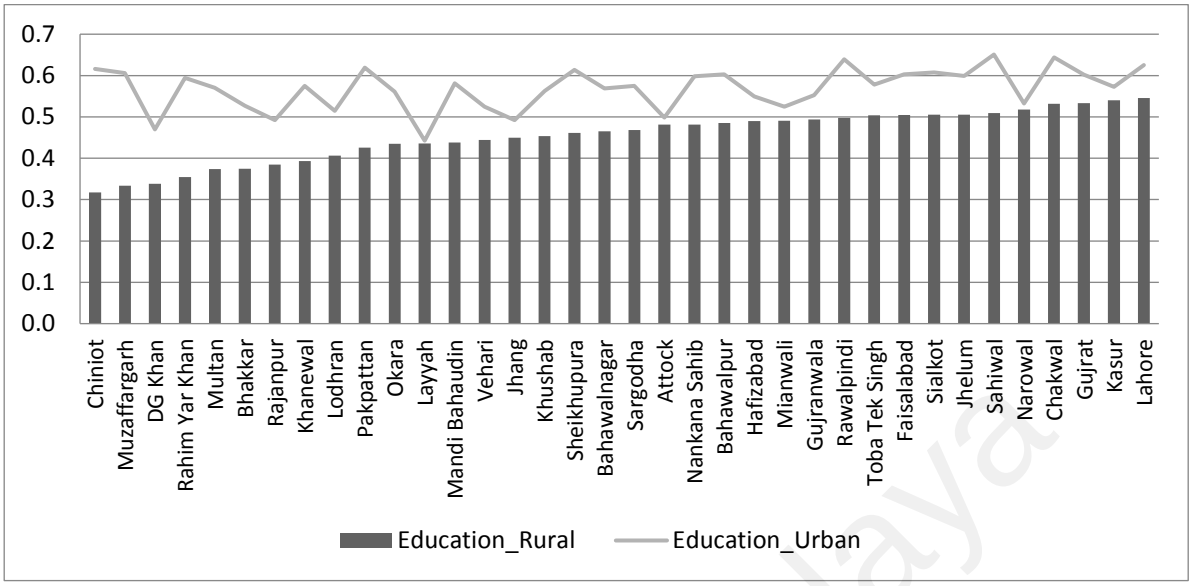

Figure 5.8: Intra-District Comparison of Education Index of Remittance Receivers, 2014

Source: Author's own calculations.

The graphical representation of the health index shows that district Bhakkar has the highest value in the rural part while the maximum value in the urban part is seen in Lodhran. On the other hand, the minimum value for the urban part is seen in the district Bhakkar whereas, the district Khushab is found to have the minimum value for rural recipients. Interestingly, with respect to the health index, the southern part of the province is not any more vulnerable than it is with regard to the other two indices. The maximum difference between both the rural and urban parts is found in the district Bhakkar and the lowest difference is found in Nankana Sahib (see Figure 5.9).

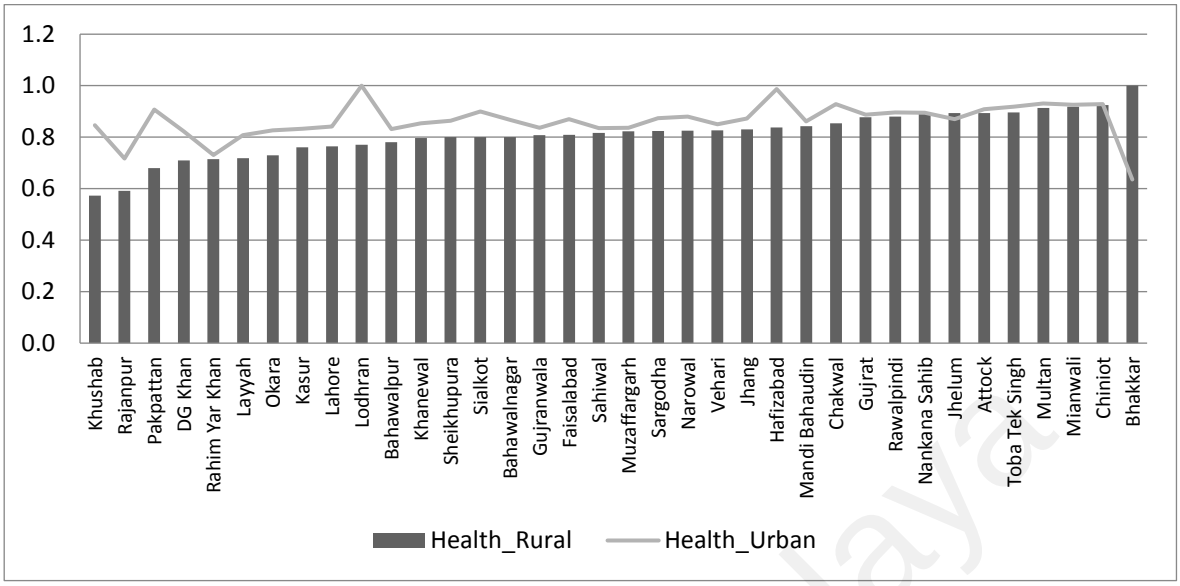

Figure 5.9: Intra-District Comparison of Health Index of Remittance Receivers, 2014

Source: Author's own calculations.

The districts Rahim Yar Khan and Lahore are more developed in terms of housing facilities in both urban and rural regions than other districts. On the other hand, the districts DG Khan and Rajanpur are the least developed in the rural and urban parts. The maximum difference between both regions is seen in the southern district, namely, Rahim Yar Khan, and the least difference is seen in the central districts such as Kasur.

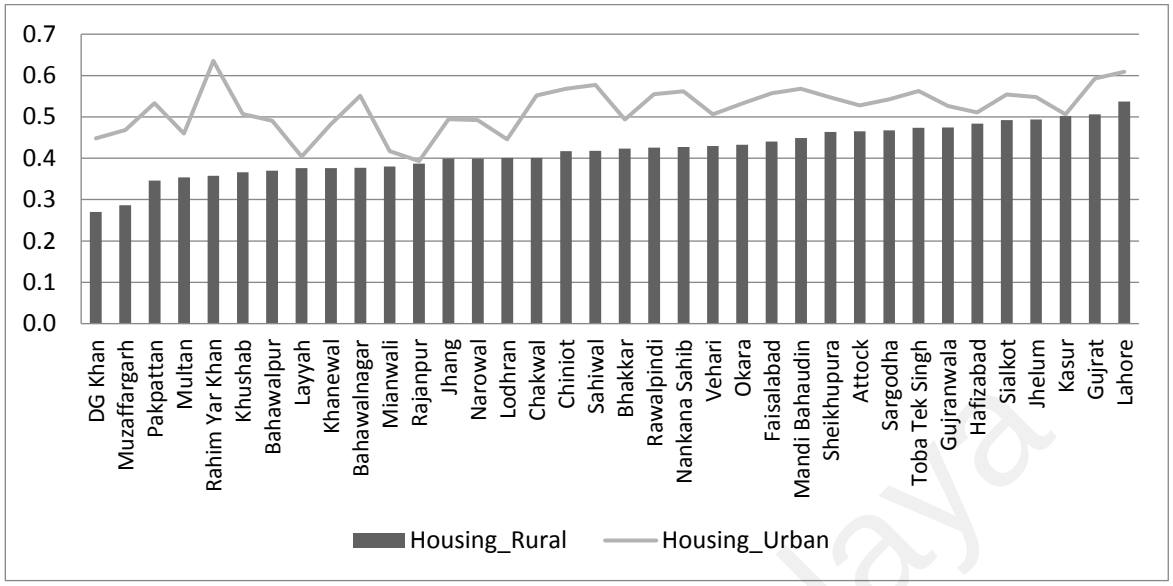

Figure 5.10: Intra-District Comparison of Housing Index of Remittance Receivers, 2014

Source: Author's own calculations.

Figure 5.11 shows the intra-district change of HHDI due to foreign remittances inflow. It shows that in most of the districts, the rural part grew more than its urban counterpart. The largest change is seen in the districts Chiniot and Jhelum for the urban and rural regions respectively. The smallest developmental change occurred in the districts Sargodha and Muzaffargarh in the urban and rural parts respectively. Nevertheless, urban areas in some districts such as Vehari, Mianwali, Rajanpur, Layyah, DG Khan and Attock and the rural areas of districts Pakpattan, Okara, Khushab and Sahiwal experienced negative growth even with the inclusion of foreign remittance inflow. However, in the case of non-recipients, the aforementioned areas have higher HHDI values (see Figure 5.11). The average change in development is 0.06 and 0.05 in rural and urban areas respectively (see Appendix-I).

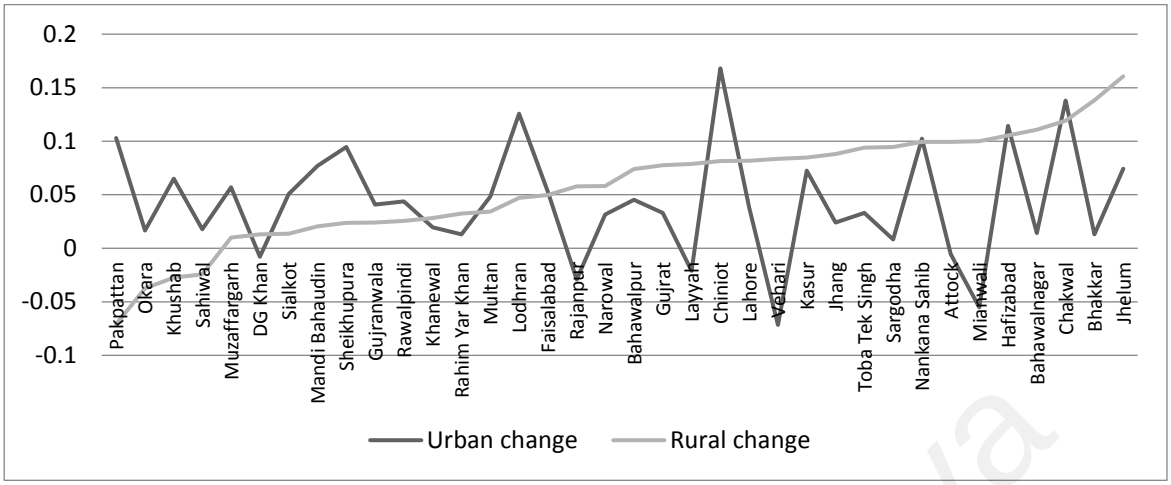

Figure 5.11: Intra-District Change of HHDI: Remittance Receivers vs. Non-Remittance Receivers, 2014

Source: Author's own calculations.

Since the key objective of this study is to analyze the relationship between foreign remittances inflow and development of the recipients, we calculate the HHDI and its sub-indices for both the remittance-recipients and non-recipients' sections of the population. Table 5.3 compares the calculated HHDI mean values and its sub-indices for the remittance receivers and non-remittance receivers in Punjab. The results confirm that remittance recipients are better off than non-recipients in terms of the HHDI. Health is observed to be the highest HHs development followed by education and housing for both groups, respectively. The decomposed HHDI values show the highest disparity in the housing sub-index between both groups.

Table 5.3: A Comparison of HHDI and its Components Values at Province Level: Remittance Receivers vs. Non-remittance Receivers, 2014

Population type	HHDI	Education Index	Health Index	Housing Index
Non-remittance recipients	0.477	0.462	0.818	0.384
Remittance recipients	0.550	0.517	0.836	0.5541

Source: Author's own calculations.

The district-wise overall HHDI and its decomposed results are reported in Table 5.4. Lahore ranks first on the list with respect to HHDI with a mean value of 0.621. Although Gujrat ranks first as a remittance receiving district, it occupies the third position in the HHDI ranking. Furthermore, the district DG Khan occupies the fifteenth position among 36 districts in receiving international remittances, but it is last in the HHDI ranking.

Table 5.4: District-Wise HHDI Ranking of Remittance Receivers, 2014

Rank	Districts	Remittance Inflows	HHDI	Education Index	Housing Index	Health Index	HHDI Level
1	Lahore	106.984	0.6215	0.6166	0.6508	0.8333	Medium
2	Chiniot	5.05	0.6101	0.5190	0.5689	0.9273	Medium
3	Gujrat	118.515	0.5992	0.5483	0.5755	0.8768	Medium
4	Nankana Sahib	11.715	0.5910	0.5353	0.5391	0.8936	Medium
5	Toba Tek Singh	23.897	0.5850	0.5309	0.5560	0.8896	Medium
6	Jhelum	32.909	0.5807	0.5249	0.5551	0.8887	Medium
7	Rawalpindi	32.621	0.5753	0.5543	0.5826	0.8863	Medium
8	Kasur	4.755	0.5641	0.5582	0.5543	0.8008	Medium
9	Hafizabad	8.677	0.5627	0.4973	0.5374	0.8566	Medium
10	Faisalabad	29.4	0.5611	0.5433	0.5365	0.8334	Medium
11	Sheikhupura	9.725	0.5563	0.5365	0.5548	0.8315	Medium
12	Attock	31.639	0.5541	0.4770	0.5349	0.8916	Medium
13	Sialkot	87.623	0.5526	0.5270	0.5556	0.8217	Medium
14	Chakwal	20.234	0.5518	0.5462	0.4711	0.8633	Medium
15	Okara	6.432	0.5475	0.4933	0.5287	0.8743	Low
16	Gujranwala	68.476	0.5466	0.5202	0.5478	0.8210	Low
17	Sargodha	19.29	0.5401	0.5123	0.5484	0.8708	Low
18	Sahiwal	13.61	0.5333	0.5370	0.4992	0.8207	Low
19	Narowal	25.811	0.5275	0.5196	0.4619	0.8218	Low
20	Mianwali	7.208	0.5219	0.4862	0.4416	0.8893	Low
21	Bhakkar	1.148	0.5192	0.4093	0.4898	0.9162	Low
22	Mandi Bahaudin	53.345	0.5190	0.4574	0.5148	0.8456	Low
23	Jhang	5.385	0.5141	0.4641	0.4812	0.8440	Low
24	Multan	4.835	0.5093	0.4483	0.4435	0.9019	Low
25	Vehari	16.174	0.4983	0.4524	0.4875	0.8189	Low
26	Bahawalnagar	4.677	0.4962	0.4959	0.5786	0.7643	Low
27	Bahawalpur	4.426	0.4923	0.5271	0.4631	0.7986	Low
28	Khanewal	4.904	0.4714	0.4326	0.4494	0.8096	Low
29	Khushab	7.567	0.4708	0.5067	0.4851	0.7072	Low
30	Layyah	2.199	0.4659	0.4368	0.5604	0.7315	Low
31	Lodhran	3.294	0.4605	0.4140	0.5540	0.8078	Low
32	Pakpattan	3.44	0.4588	0.4644	0.4338	0.8254	Low
33	Rahim Yar Khan	7.422	0.4314	0.4099	0.4718	0.7185	Low
34	Muzaffargarh	4.689	0.4097	0.3792	0.5668	0.8246	Low
35	Rajanpur	5.773	0.3970	0.4138	0.5885	0.7259	Low
36	DG Khan	15.318	0.3898	0.3626	0.3530	0.7304	Low

Source: Author's own calculations.

The results in the preceding section bring to the fore the importance of calculating HHDI at the sub-national level, which is at the 'district-migrant-HH' level. Firstly, not all districts of Punjab can be categorized as 'low development' based on the HHDI. In fact, it is not out of place to say that 39 percent (14 out of the 36 districts) are categorized as 'medium development'. Secondly, the levels of human developments vary significantly between subgroups of (i) remittance receiving HHs and non-remittance receiving HHs, (ii) and type of development in terms of housing, health etc. These differences could not have been detected from a national level HHDI.

5.6 Summary

Foreign remittances seem to be a crucial factor in the development of receiving HHs. The calculations showed that remittances lifted many districts from the low development category to the medium development category. However, the calculated HHDI and its sub-indices confirmed the varying levels of HD across districts and HHs with specific characteristics. The calculated HHDI showed that not all districts in Punjab could be categorized as low development, as alluded to by the national HHDI. Medium levels of HD were observed for districts with high and low remittances inflow. However, some districts such as district DG Khan and Rajanpur were extremely low in all or some main considerations, whereas some districts such as Lahore and Chiniot were extremely rich in all respects. In addition, remittances inflow had a different level of relationship with the improvement of HHs in every district. The districts such as DG Khan, Rajanpur, and Muzaffargarh commanded large provincial shares in remittances inflow and outward migration, but their social and economic improvements were fundamentally lower than other districts. This might be attributed to the differences in spending patterns or preferences.

Central Punjab was observed to be more developed than other parts of the province, particularly the south.

The intra-district overview showed that among receivers, the urban areas were more developed than their rural counterparts. However, a net change in development was seen in rural areas due to foreign remittances. Thus, remittances are more likely to improve the living standards in rural areas than urban areas.

The results also supported the importance of decomposing the HHDI into its sub-indices. In examining the differences in HD between HHs receiving remittances and non-remittance receivers, the results indicated that the core sub-index that should not go unnoticed is the housing environment (considered as material wealth or assets and standard of living). Non-remittance receiving HHs seemed to be worse off in terms of their housing environment (facilities and conditions) relative to remittance receiving HHs. The findings agreed with those of Qureshi and Arif (2001), Arif and Nazim (2012), and Fatima and Qayyum (2016).

CHAPTER 6: REMITTANCE INFLOWS AND HOUSEHOLD DEVELOPMENT

6.1 Introduction

A predominant part of existing literature agrees on the developmental role of foreign remittances, not only on the receivers' welfare in the form of better education and health opportunities, increasing purchasing power and improved consumption behaviour, and reduction in poverty, but also on the community as a whole. Remittances are usually used to offset loans, finance housing, improve food consumption, education, and healthcare, while a large part of it is also saved (Arru & Ramella, 2000).

Remittances influence household (HH) development positively, since recipient HHs are observed to be better off compared to non-recipient HHs. Despite the fact that some scholars are of the view that remittances are mostly not spent on productive investments that bring about long-term progress, it might be asserted that the improvement of the standard of living of migrant HHs, such as access to better food and better education, can be regarded as productive investments (Koç & Onan, 2004).

This chapter empirically investigates the relationship between remittances inflow and household development (HHD) at the district level, as well as at the intra-district (urban-rural) level.

6.2 Model Specification

A number of studies such as Anyanwu (2014), Njung'e (2013) Kibet et al. (2009), Touhami et al. (2009), and Mark et al. (2002), Al-Samarrai and Tessa (1998) considered HH

and HH head related factors important for HH development. The following model is estimated to identify the impact of foreign remittances on HD.

$$HHDI_i = \beta_0 + \beta_1 RI_i + \beta_2 Dep_i + \beta_3 lnOI_i + \beta_4 HHedu_i + \beta_5 HHage_i + \beta_6 MH_i + e_i \quad (6.1)$$

The subscript *i* represents the i[th] household, and *e* is an error term. The other variables are defined below:

HHDI = household development
RI = foreign remittances inflow
Dep = dependency
OI = other income
HHedu = education level of household head
HHage = age of household head
MH = male household head

Table 6.1 presents the descriptive statistics of the HHs from the sample dataset, and compares the statistics for remittance receivers with non-receivers. In summary, it shows that the average educational level of HH head is at the primary school grade. However, this level is higher among migrant families, which can be interpreted that migrant families are not from the poorest population segment. The youngest HH head is 14 years old and the mean age of the HH head is 48 years. The minimum and mean age ratio is also higher among migrant families, which may be due to the fact that members of non-migrant families may live separately, and the male member (husband) may be the head. From a security point of view, members of migrant HHs prefer to live in a joint family system where the father or elder brother of a migrant member plays the role of a HH head (see Khan, Alam & Rehman,

2016; Bloom, Wypij & Gupta, 2001). In all cases, approximately three persons on the average are dependent in a household.

Table 6.1: Descriptive Statistics

Total Sample					
	RI	*Dep*	*OI*	*HHedu*	*HHage*
Mean	245340	3	227741	5	48
Std. Dev.	355664	2	370610	5	14
Min	1000	0	0	0	14
Max	7.2 M*	24	10.3 M	16	99
No. of Obs.	2891	37025	37025	35055	37025
Remittance receivers					
Mean	245340	3	121862	6	52
Std. Dev.	355664	2	278141	5	15
Min	1000	0	0	0	15
Max	7.2 M	17	6.15 M	16	95
No. of Obs.	2891	2891	2891	2891	2891
Non-remittance receivers					
Mean		3	212372	5	47
Std. Dev.		2	316751	5	14
Min		0	0	0	14
Max		24	10.32 M	16	99
No. of Obs.		34134	34134	32164	34134
Difference **		0	-90510	1	5

Note: *M – Million PKR, ** mean of remittances receivers minus mean of non-receivers
Source: Author's own calculations.

A total of 2,891 households have received some remittances. On the average, PKR 245,340 have been received by each HH, ranging from a maximum of PKR 7.2 million to a minimum of PKR 1,000. Incomes other than foreign remittances are higher among non-migrant HHs, which justifies the migration of members of migrant HHs in a bid to equalize their income level with non-migrants.

6.3 Empirical Results

The empirical analysis has been divided into two parts: (1) Impact of foreign remittances inflow on household development (HHDI), and (2) Impact of foreign remittances inflow on sub-indices of HHDI.

6.3.1 Impact of foreign remittances inflow on HH development

This section has been divided into three sub-sections: (i) regression results based on Punjab province, (ii) regression results based on Urban Punjab and (iii) regression results based on Rural Punjab.

6.3.1.1 Remittances and district-wise household development

Table 6.2 displays the results based on the OLS approach for all districts of Punjab province. In order to perform an unbiased estimation, sample weights were used.

Foreign remittances inflow

Results show that besides an approximately 20 percent of districts especially from central Punjab, namely, Faisalabad, Gujranwala, Lahore, Mandi Bahaudin, Multan, Sheikhupura, and Sialkot, the foreign remittances inflow has a positive and significant impact on receivers' development. As explained in Chapter 3, household development is measured by constructing an index (HHDI) which is a proportionate sum of three sub-indices, e.g. education index, health index, and housing index. The positive impact on any of the three sub-indices will boost the HHDI, resulting in household development and vice versa. All elements of the HHDI such as children's education fees, safe drinking water, food items, safe fuel for cooking, household appliances, and other facilities need funding. Since foreign remittances provide such funding to migrant HHs in Punjab province, it therefore enhances the standard of living in the province.

From Table 6.3, we can see that in most of the Punjab's districts, foreign remittances inflow is a noteworthy factor that enhances the standard of living of recipient HHs and this is in line with prominent existing literature (see Le & Bodman, 2011; Odozi et al., 2010;

Orozco, 2010; Acosta et al., 2008; Arif, 1999). Moreover, Table 6.3 also shows that HHs that have members working abroad are better off than those without such members. This superiority ratio ranges from 0.0398 percent to 0.117 percent. The highest ratio is found in less developed district such as Bhakkar and the lowest in industrial districts such as Gujrat.

The reasons why the impact of foreign remittances is statistically insignificant in some districts is probably because some of the migrant HHs invest their funds in land (agricultural, commercial and residential), building, livestock, agro-equipment, the wedding of HH members, performing Hajj/Umrah, gold, and business shares, which are not measured in the HHDI.

Furthermore, the majority of the districts with an insignificant relationship are more urbanized/industrialized such Faisalabad, Gujranwala, Lahore, Multan, and Sialkot. They provide a range of employment and business opportunities and as such, the residents can easily find a job or initiate a business, according to their qualification or investment compared to other districts. Hence, migrant families do not have an economic advantage over non-migrants in such districts since non-migrant HHs can live a comfortable life as well. However, in the districts with a lower overall HHDI value, migrant HHs are better off than their non-migrant counterparts to a very large extent. Most of the south Punjab's districts have lower HHDI values and as such, migrant HHs are better off than non-migrant HHs in this part.

Table 6.2: District Wise OLS Based Results for Punjab Province

No.	Districts	*RI*	*Dep*	*lnOI*	*HHedu*	*HHage*	*MH*	Constant	Obs
North Punjab									
1	Attock	0.0657** (0.0307)	-0.008*** (0.0024)	0.016*** (0.0054)	0.0613*** (0.0038)	0.001*** (0.0004)	-0.0178 (0.0341)	0.1091 (0.075)	960
2	Bhakkar	0.117*** (0.0326)	-0.0052** (0.0026)	0.0209*** (0.0072)	0.0563*** (0.0052)	0.0015*** (0.0005)	0.0878*** (0.0224)	-0.122 (0.0812)	747
3	Chakwal	0.076*** (0.028)	-0.0074*** (0.0023)	0.0218*** (0.0059)	0.0558*** (0.0042)	0.001*** (0.0004)	0.0547** (0.0253)	-0.0273 (0.0756)	1035
4	Gujrat	0.0398*** (0.0145)	-0.0072*** (0.0028)	0.0087** (0.0046)	0.0467*** (0.0051)	0.0003 (0.0004)	0.0299 (0.0200)	0.272*** (0.082)	946
5	Jhelum	0.0635** (0.0305)	-0.0033*** (0.0012)	0.023*** (0.0058)	0.0576*** (0.0046)	0.0006 (0.0004)	0.0173 (0.0216)	0.0001 (0.0727)	837
6	Khushab	0.0701* (0.0432)	-0.007** (0.0034)	0.02*** (0.0062)	0.0577*** (0.0053)	0.0023*** (0.0005)	0.095*** (0.0283)	-0.168*** (0.0789)	680
7	Mandi Bahaudin	0.0139 (0.0181)	-0.0012*** (0.0003)	0.0206*** (0.0052)	0.0469*** (0.0046)	0.001** (0.0005)	0.0862*** (0.0205)	-0.0022 (0.073)	745
8	Mianwali	0.0714** (0.0348)	-0.0092*** (0.0028)	0.0271*** (0.0056)	0.0444*** (0.0052)	0.0009* (0.0005)	0.0326 (0.0346)	-0.0449 (0.0775)	765
9	Rawalpindi	0.0475** (0.0235)	-0.015*** (0.0042)	0.0246*** (0.0077)	0.0476*** (0.0054)	0.0009* (0.0005)	0.0336 (0.0227)	0.0454 (0.0908)	687
10	Sargodha	0.0428* (0.0243)	-0.0073*** (0.0026)	0.018*** (0.0049)	0.0477*** (0.0042)	0.0015*** (0.0004)	0.0541*** (0.0152)	0.0244 (0.0636)	1154
Central Punjab									
11	Chiniot	0.1151*** (0.0273)	-0.0077*** (0.0029)	0.0121* (0.0062)	0.0542*** (0.0051)	0.0005 (0.0005)	0.0259 (0.0253)	0.1291* (0.0792)	706
12	Faisalabad	0.0281 (0.0198)	-0.007*** (0.002)	0.03*** (0.0052)	0.0487*** (0.0032)	0.0008*** (0.0003)	0.0162 (0.0154)	-0.0537 (0.0649)	1771
13	Gujranwala	0.0053 (0.0175)	-0.0081*** (0.0023)	0.004*** (0.0016)	0.0542*** (0.0038)	0.0006 (0.0004)	0.0339** (0.0155)	0.292*** (0.0824)	1380
14	Hafizabad	0.0514* (0.0278)	-0.0068* (0.0035)	0.0213*** (0.0073)	0.0561*** (0.0052)	0.0006 (0.0006)	0.0637* (0.0355)	0.00713 (0.0934)	647
15	Jhang	0.0689* (0.0369)	-0.007*** (0.0022)	0.041*** (0.005)	0.048*** (0.0035)	0.0006 (0.0004)	0.0576*** (0.0247)	-0.2461*** (0.0643)	1007
16	Kasur	0.046* (0.0279)	-0.0091*** (0.0024)	0.0161*** (0.0042)	0.0486*** (0.0042)	0.0011*** (0.0004)	0.026 (0.0217)	0.0922 (0.0611)	1062
17	Lahore	0.0316 (0.0364)	-0.0131*** (0.0026)	0.0023*** (0.0009)	0.0457*** (0.00397)	0.0009*** (0.0004)	0.0227 (0.0239)	0.47*** (0.0879)	1744
18	Nankana Sahib	0.0131*** (0.0240)	-0.0145*** (0.0033)	0.0128** (0.0061)	0.0555*** (0.0047)	0.0007 (0.0005)	0.0079 (0.0307)	0.1771** (0.0852)	710

Table 6.2 continued

19	Narowal	0.0685*** (0.0183)	-0.0039* (0.0023)	0.0108** (0.0051)	0.0534*** (0.0044)	0.0004 (0.0004)	0.0403** (0.0179)	0.163*** (0.0694)	786
20	Okara	0.0653*** (0.0269)	-0.0052* (0.0028)	0.0192*** (0.0048)	0.0463*** (0.00433)	0.0014*** (0.0004)	0.0681*** (0.0202)	0.0379 (0.0626)	728
21	Pakpattan	0.0573** (0.0274)	-0.0069** (0.0033)	0.0218*** (0.0058)	0.0446*** (0.0052)	0.0004 (0.0005)	0.0494* (0.0274)	0.0649 (0.0778)	795
22	Sahiwal	0.0574*** (0.0218)	-0.0141*** (0.003)	0.0161*** (0.0053)	0.0531*** (0.0043)	0.0002 (0.0004)	0.0664*** (0.0205)	0.15** (0.0727)	1261
23	Sheikhupura	0.0386** (0.0295)	-0.0064*** (0.0026)	0.0169*** (0.0065)	0.051*** (0.0040)	0.0009*** (0.0004)	0.0507* (0.0271)	0.075 (0.086)	1065
24	Sialkot	0.0044 (0.0167)	-0.0097*** (0.0027)	0.0208*** (0.0056)	0.0456*** (0.0040)	5.32E-05 (0.0004)	0.0239 (0.0175)	0.121 (0.0776)	1173
25	Toba Tek Singh	0.0703*** (0.0190)	-0.0057** (0.0029)	0.0136* (0.0079)	0.0542*** (0.0042)	0.0008** (0.0004)	0.0607** (0.0256)	0.0973 (0.1020)	932
South Punjab									
26	Bahawalpur	0.0697** (0.0309)	-0.0126*** (0.0028)	0.0036* (0.0019)	0.0566*** (0.0046)	0.0013*** (0.0004)	0.0169 (0.0288)	0.209* (0.111)	1032
27	Bahawalnagar	0.0828* (0.0443)	-0.0158*** (0.0028)	0.0206*** (0.0065)	0.0573*** (0.0048)	0.0011*** (0.0004)	0.0125 (0.0289)	0.0172 (0.0850)	976
28	DG Khan	0.0751** (0.0234)	-0.0131*** (0.0027)	0.0258*** (0.0067)	0.047*** (0.0055)	0.0014*** (0.0005)	0.0463 (0.0339)	-0.102 (0.0863)	799
29	Khanewal	0.0552 (0.0357)	-0.0088*** (0.0027)	0.0098* (0.0062)	0.063*** (0.0042)	0.001*** (0.0004)	0.0219 (0.0224)	0.121* (0.0772)	1064
30	Layyah	0.0619*** (0.0183)	-0.0089*** (0.0029)	0.0295*** (0.0067)	0.06*** (0.0048)	0.0017*** (0.0005)	0.048* (0.0248)	-0.175** (0.0791)	789
31	Lodhran	0.0591 (0.0379)	-0.0128*** (0.0034)	0.0185*** (0.0064)	0.0521*** (0.0049)	0.0012*** (0.0005)	0.0348 (0.0331)	0.105 (0.0841)	771
32	Multan	0.0448 (0.0311)	-0.0158*** (0.003)	0.0373*** (0.0054)	0.0494*** (0.0043)	0.0016*** (0.0004)	0.0058 (0.0253)	-0.143* (0.0745)	1230
33	Muzaffargarh	0.0714** (0.0356)	-0.0103*** (0.0026)	0.0217*** (0.0068)	0.0589*** (0.0043)	0.0013*** (0.0003)	0.0587** (0.024)	-0.0805 (0.0859)	1111
34	Rahim Yar Khan	0.0565* (0.0293)	-0.0113*** (0.0025)	0.0374*** (0.0073)	0.0565*** (0.0043)	0.0007* (0.0004)	0.0271 (0.023)	-0.2** (0.0879)	1130
35	Rajanpur	0.0863* (0.0531)	-0.0129*** (0.0026)	0.0405*** (0.0085)	0.053*** (0.0057)	0.0012** (0.0006)	0.0103 (0.05)	-0.251*** (0.107)	681
36	Vehari	0.0577** (0.0269)	-0.0076*** (0.003)	0.0256*** (0.0083)	0.0548*** (0.0043)	0.0019*** (0.0004)	0.0157 (0.0259)	-0.0794 (0.0986)	1067

Robust standard errors are in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Among the 10 districts with the highest coefficient values, 4 are from South Punjab region. From the North Punjab region, Bhakkar, Chakwal, Mianwali, and Khushab are more affected by remittances. It can be concluded from the results that the smaller and less developed districts offer fewer opportunities of employment to the residents which results in a lower earnings stream and purchasing power. Although the priority of the HHs is to fulfill their basic needs, a member abroad provides them with an extra source of income that can be channeled towards good education, food, and various HH facilities, which result in a higher HHDI.

A number of studies also show similar results. For instance, Arif (2004) concluded that foreign remittances are positively linked to children's education and it is a prime cause of the improvement of HH nutrition, which leads to good health of family members and consequently the enhancement of HH development. Remittances create a multiplier effect when spent on children's education and health (Kalaj, 2013; Eversole & Johnson, 2014). Also, remittances have elevated the education level of children which is a key element in human development. Furthermore, a growing amount of remittances in a locality leads to better health as well as schooling (Duryea, López-Córdova & Olmedo, 2005; Yang, 2005). Remittances included directly to the household budget, can help to fulfill basic needs, improve HH welfare and standard of living (Kalaj, 2013). Improvements in the standard of living of migrant households such as access to better food and education are also forms of productive investment (Koç & Onan, 2004). The inflow of remittances increases the welfare of HHs in the sense that it diminishes the workload and frustration of HH members left behind (Bilqees & Hamid, 1981).

Dependency

A growing number of dependent persons has a negative impact on HH development, especially if the members are unable to work or are unproductive. This is because children below 5 years of age need special care, which leads to higher expenditures. According to Espenshade et al. (1983), HHs spend a key share of their earnings on current consumption as the number of children increases. Hence, a decline in per capita income is negatively associated with HH development. In a similar vein, aged HH members also demand special care which affects the HH earnings and other income sources. However, the scenario may be different if aged HH members are entitled to pension income or other government transfers as well as if children engage in child labour. In the case of Punjab province, all 36 districts have a significant and negative relationship between household development and dependency. The highest and lowest coefficient values were found in the districts of south and north Punjab respectively namely Multan and Mandi Bahaudin. It can be interpreted that south Punjab has fewer earning opportunities, so that more dependent members affect adversely HH development.

Income other than foreign remittances

The income other than foreign remittances has a positive and significant relationship with HH development. As expected, the higher the money inflow to the HH, the more the opportunities to improve welfare, e.g. improved housing, better education of children, better nutrition, and affordability of health related facilities, all of which ultimately improves the standard of living. This variable is highly significant in more than 80 percent of the districts with the highest coefficient value found in the district of Jhang and the lowest in the district of Attock. A comparison between remittances and other income shows that although other incomes are necessary to meet HHs' basic needs, the impact of remittances on the HHDI is

higher than that of other income across the province. Hence, we can say that remittances are more important for good education, healthy nutrition, and improved housing with other incomes fulfilling basic needs. Although a significant portion of HHs rely heavily on foreign remittances in Punjab province, HHs also depend on other income sources, corroborating the results of Eversole and Johnson (2014).

Education level of household head

The education level of HH heads has a significant and positive relationship with HH development in all the districts of Punjab province. Thus, it can be concluded that HHs with educated heads are better developed than those with uneducated heads and vice versa, keeping other variables constant. District Khanewal and Mianwali show the largest and smallest effect of this variable. From Table 6.2, it can also be concluded that in small or less developed districts, the educated HH head performs better in boosting household development. In less developed districts, the competition is lower and as such, the probability of getting a good job is higher. With regard to HH head education, out of the top 10 districts, 5 are from south Punjab, 3 from central, and 2 are from the north Punjab. Therefore, educated heads perform better in south Punjab than in the other 2 regions.

Kalaj (2013) concluded that in the presence of an educated HH head, the total expenditure on medical treatment reduces, which can then be used for other welfare activities. An educated head significantly improves the economic condition of the HH (Ogundari & Aromolaran, 2014).

A higher level of HH head's education leads to a higher level of education among other family members (Javed, Khilji & Mujahid, 2008). Some researchers consider the education

of the HH head as a robust indicator of economic position rather than income or occupation (see Muller, 2002; Miech & Hauser, 2001). Educational attainment of the HH head is also strongly related with the socioeconomic level of HHs.

Age of household head

It is usually expected that the older the HH head, the more the experience and expertise to solve the various HH matters as well as welfare. However, an educated young HH head may cause a higher HH development than an uneducated aged HH head. Table 6.2 shows that 69 percent of districts have a positive and significant relationship between HH development and age of HH head. Similarly, older heads are considered as higher earners than younger HHs which is indicative of a higher HH development. This is in line with the conclusion of Sánchez and Zhu (2015) that heads usually have more earnings than younger HH heads. Hence, the HHs with younger heads are more likely to face the food insecurity (David, 2013).

Male head

In the case of Punjab province, male headed household showed a significant association in less than 50 percent of districts. A growing engagement of females with a job or home-based businesses empowers them which results in HH development. Although male members can play more efficient roles than females, an increase in education and employment ratio also enables female heads to be more active. Thus, the development of HHs is not more concerned with the male heads.

A glance at the results shows that among other determinants of HH development, foreign remittances are the most crucial factor that improves the welfare of receivers. Since, a binary

variable is used to differentiate remittance receivers and non-remittance receivers, it is not possible to identify the 'receiving-rupee' effect of HH development as in the case of other income, age of HH head, education level of HH head, and the addition of a dependent member in the family. But the development advantage enjoyed by HHs remittance recipient over non-recipient HHs can be observed. In summary, it can be concluded that among others, foreign remittances inflow is a crucial determinant of HH development.

Table 6.3 summarizes the hypothesis validity of all the districts of Punjab province. The table discloses that foreign remittances inflow rejects the null hypothesis of a negative relationship between foreign remittances and HH development in 29 out of 36 districts. The null hypotheses of negative impact of education of HH head, income other than the foreign remittances, and dependency on human development are rejected for the whole province. The proportion of districts that failed to reject the null hypothesis was higher than other determinants, only in the case of male head.

Table 6.3: District Wise Hypothesis Testing

No.	Variables	No. of Districts	Decision
1	RI → HHD	28	Reject H_0
		8	Do not reject
2	Dep → HHD	36	Reject H_0
		0	Do not reject
3	OI → HHD	36	Reject H_0
		0	Do not reject
4	HHedu → HHD	36	Reject H_0
		0	Do not reject
5	HHage → HHD	26	Reject H_0
		10	Do not reject
6	MH → HHD	15	Reject H_0
		21	Do not reject

Source: Derived from Table 6.2.

In order to verify the reliability results, the robustness of the model needs to be checked. Robust regression is an alternative to least squares regression when data are expected to have outliers or influential observations. Besides, it can also be used to detect influential observations which can lead to unreliable results. The Stata's default robust regression is about 95 percent as efficient as OLS (Hamilton, 1991).

The results based on the robust regression are presented in Appendix-J. The results are slightly different from the basic regression results in terms of coefficient intensity and significance level. Moreover, in robust regressions, the ratios of districts with significant levels are higher than that obtained from the basic results. The results based on the OLS are also considered as unbiased and robust, since, the robust standard errors option based on the Huber-White sandwich estimators are used. Such robust standard errors can deal with a collection of minor concerns about failure to meet assumptions, such as minor problems about normality, heteroscedasticity, or some observations that exhibit large residuals, leverage or influence. For such minor problems, the robust option may effectively deal with these concerns (IDRE, 2016). Further, the weight option in OLS is employed to get standard errors that are robust to unspecified heteroscedasticity (see Dupraz, 2013, for further details).

6.3.1.2 Remittances and urban development

In 25 percent of the districts, remittances do not have a significant impact on receiver HHs' development. The districts with high urbanization and industrialization such as Gujrat, Rawalpindi, Sargodha (north Punjab), Faisalabad, Gujranwala, Kasur, Lahore, Sialkot and Sheikhupura (central Punjab) are included in this portion of the province (see Table 6.4). These districts provide a higher rate of employment to residents with respect to

Table 6.4: District Wise OLS Results - Urban Region

No.	Districts	*RI*	*Dep*	*lnOI*	*HHedu*	*HHage*	*MH*	Constant	No. of Obs.
North Punjab									
1	Attock	0.0495* (0.0308)	-0.0161*** (0.0058)	0.0125* (0.0071)	0.0574*** (0.0075)	0.0018* (0.0010)	0.0340 (0.0282)	0.1181 (0.1781)	293
2	Bhakkar	0.0671* (0.0417)	-0.0165*** (0.0015)	0.0107* (0.0068)	0.0694*** (0.0077)	0.0012 (0.0009)	0.131*** (0.0527)	0.0967 (0.1300)	229
3	Chakwal	0.0457* (0.0245)	-0.0103*** (0.0036)	0.0312*** (0.0096)	0.0523*** (0.0072)	0.0007* (0.0004)	0.0104*** (0.0035)	0.0024 (0.1170)	374
4	Gujrat	0.0205* (0.0308)	-0.0061* (0.0034)	0.0096*** (0.0013)	0.0504*** (0.0074)	0.0011* (0.0007)	0.0041 (0.0701)	0.3490** (0.1540)	363
5	Jhelum	0.0637* (0.0328)	-0.0009*** (0.0003)	0.0272* (0.0140)	0.0513*** (0.0097)	0.0005*** (0.0002)	0.0542* (0.0335)	-0.0197 (0.1640)	244
6	Khushab	0.0526* (0.0283)	-0.0193*** (0.0065)	0.0521*** (0.0136)	0.0525*** (0.0079)	0.0014 (0.0010)	0.0490** (0.0238)	-0.408*** (0.1620)	254
7	Mandi Bahaudin	0.0557* (0.0280)	-0.0109* (0.0065)	0.0187*** (0.0057)	0.0572*** (0.0086)	0.0004*** (0.0001)	0.0390 (0.0297)	0.1540* (0.0942)	227
8	Mianwali	0.0641** (0.0287)	-0.0137*** (0.0037)	0.0208* (0.0114)	0.0557*** (0.0073)	0.0010 (0.0008)	0.0494* (0.0292)	0.0832 (0.1610)	253
9	Rawalpindi	0.0434 (0.0306)	-0.0025*** (0.0004)	0.0097*** (0.0011)	0.0535*** (0.0072)	0.0009* (0.0005)	0.0370 (0.0398)	-0.0854 (0.1549)	263
10	Sargodha	0.0273 (0.0463)	-0.0059* (0.0034)	0.0105* (0.0058)	0.0380*** (0.0069)	0.0002** (0.0001)	0.0125 (0.0158)	0.0609 (0.1140)	440
Central Punjab									
11	Chiniot	0.0808*** (0.0311)	-0.0116*** (0.0049)	0.0474*** (0.0108)	0.0614*** (0.0071)	0.0020*** (0.0007)	0.0342 (0.0307)	0.1440 (0.1450)	265
12	Faisalabad	0.0547 (0.0483)	-0.0042** (0.0020)	0.0082*** (0.0028)	0.0505*** (0.0050)	0.0007* (0.0004)	0.0191 (0.0226)	0.0281 (0.1050)	801
13	Gujranwala	0.0073 (0.0291)	-0.0045** (0.0023)	0.0086*** (0.0029)	0.0526*** (0.0056)	0.0007*** (0.0002)	0.0203 (0.0216)	0.3450*** (0.1250)	685
14	Hafizabad	0.0542* (0.0345)	-0.0124*** (0.0052)	0.0285* (0.0164)	0.0563*** (0.0083)	0.0011* (0.0006)	0.0062 (0.0075)	0.0624 (0.1840)	242
15	Jhang	0.0731* (0.0405)	-0.0149*** (0.0043)	0.0342*** (0.0106)	0.0602*** (0.0058)	0.0006*** (0.0002)	0.0479* (0.0297)	-0.1320 (0.1361)	369
16	Kasur	0.0069 (0.0507)	-0.0076** (0.0037)	0.0153*** (0.0062)	0.0540*** (0.0059)	0.0011* (0.0007)	0.0015 (0.0283)	0.1740** (0.0845)	389
17	Lahore	0.0276 (0.0402)	-0.0012*** (0.0003)	0.0057*** (0.0018)	0.0426*** (0.0046)	0.0015*** (0.0005)	0.0175 (0.0261)	0.5250*** (0.1020)	1,186
18	Nankana Sahib	0.0471*** (0.0196)	-0.0166*** (0.0068)	0.0202 (0.0130)	0.0707*** (0.0076)	0.0002** (0.0001)	0.115* (0.0635)	0.5220*** (0.1800)	209

Table 6.4 continued

19	Narowal	0.0369** (0.0169)	-0.0106** (0.0046)	0.0364*** (0.0114)	0.0780*** (0.0071)	0.0008* (0.0005)	0.0432** (0.0204)	0.1781 (0.1510)	213
20	Okara	0.0887*** (0.0249)	-0.0138*** (0.0052)	0.0214*** (0.0090)	0.0635*** (0.0064)	0.0023*** (0.0007)	0.0259* (0.0157)	0.2550** (0.1281)	187
21	Pakpattan	0.0336*** (0.0124)	-0.0105** (0.0049)	0.0287*** (0.0112)	0.0499*** (0.0075)	0.0010 (0.0009)	0.0435** (0.0219)	0.0962 (0.1420)	276
22	Sahiwal	0.0362** (0.0158)	-0.0142*** (0.0045)	0.0204*** (0.0075)	0.0543*** (0.0060)	0.0010* (0.0006)	0.0547* (0.0304)	0.2610*** (0.1050)	675
23	Sheikhupura	0.0658 (0.0434)	-0.0098* (0.0051)	0.0201* (0.0113)	0.0631*** (0.0067)	0.0008* (0.0005)	0.0331 (0.0335)	0.2630 (0.1470)	426
24	Sialkot	0.0517 (0.0556)	-0.0016*** (0.0004)	0.0119* (0.0074)	0.0535*** (0.0060)	0.0009*** (0.0002)	0.0119 (0.0302)	0.3191** (0.1390)	420
25	Toba Tek Singh	0.0324* (0.0175)	-0.0102*** (0.0041)	0.0328*** (0.0091)	0.0487*** (0.0067)	0.0004*** (0.0001)	0.0667** (0.0313)	-0.0516 (0.1210)	314
South Punjab									
26	Bahawalpur	0.0664*** (0.0203)	-0.0176*** (0.0048)	0.0309* (0.0172)	0.0473*** (0.0073)	0.0002 (0.0007)	0.0158 (0.0416)	0.4110** (0.1970)	417
27	Bahawalnagar	0.0641*** (0.0274)	-0.0190*** (0.0053)	0.0323** (0.0143)	0.0574*** (0.0079)	0.0009 (0.0009)	0.0065 (0.0360)	0.0558 (0.1691)	323
28	DG Khan	0.0753* (0.0480)	-0.0120* (0.0069)	0.0301* (0.0167)	0.0376*** (0.0103)	0.0007 (0.0011)	0.0044 (0.0483)	0.0894 (0.1950)	253
29	Khanewal	0.0426*** (0.0163)	-0.0179** (0.0064)	0.0397*** (0.0112)	0.0502*** (0.0073)	0.0006 (0.0008)	0.0418 (0.0457)	-0.1200 (0.1550)	324
30	Layyah	0.0458*** (0.0159)	-0.0118* (0.0070)	0.0287*** (0.0113)	0.0560*** (0.0083)	0.0007*** (0.0002)	0.0518* (0.0326)	-0.1020 (0.1541)	234
31	Lodhran	0.2040*** (0.0288)	-0.0109* (0.0057)	0.0263* (0.0157)	0.0378*** (0.0106)	0.0007*** (0.0002)	0.0555 (0.0426)	0.0073 (0.2010)	250
32	Multan	0.0234*** (0.0075)	-0.0105*** (0.0049)	0.0178** (0.0083)	0.0380*** (0.0064)	0.0011* (0.0006)	0.0134 (0.0328)	-0.0681 (0.1100)	579
33	Muzaffargarh	0.0417** (0.0189)	-0.0238*** (0.0062)	0.0293* (0.0169)	0.0555*** (0.0097)	0.0005*** (0.0002)	0.0841* (0.0458)	-0.0891 (0.2971)	317
34	Rahim Yar Khan	0.0589 (0.0378)	-0.0135*** (0.0043)	0.0358*** (0.0106)	0.0563*** (0.0068)	0.0006*** (0.0002)	0.0068 (0.0433)	-0.0741 (0.1340)	432
35	Rajanpur	0.1330* (0.0773)	-0.0145*** (0.0042)	0.0583*** (0.0115)	0.0504*** (0.0077)	0.0003 (0.0003)	0.0421 (0.0664)	-0.490*** (0.1471)	238
36	Vehari	0.0455* (0.0262)	-0.0102** (0.0046)	0.0484*** (0.0110)	0.0627*** (0.0063)	0.0008*** (0.0003)	0.0426 (0.0372)	-0.3030** (0.1440)	331

Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

their abilities and as such, non-migrant HHs can also enjoy a comfortable life. Thus, it is seen that the urban population has other opportunities of earning which reduces their dependence on remittances.

In urban areas, dependent members may receive funds such as pension/benevolent fund, maternity fund/allowance etc. but on the average, this factor imposes a negative impact on HH development. Interestingly, developed districts have a lower impact of dependency, which might be attributed to the above benefits or availability of other income sources. south Punjab is found to be most affected by this factor.

Other income has a significant relationship in all the cases. Rural parts depend on urban parts to a large extent for their necessities, especially HH shopping and official dealings. The Urban part of every district has some dependent rural parts. It ranges from 256 rural areas for the district of Mianwali to 1579 rural areas for the district of Sialkot. As a result, in urban parts, the probability of business grooming is higher than the rural counterparts. In addition, job opportunities (both private and public) are also more plentiful in urban areas and some urban residents are also involved in personal businesses ranging from taxi driving to mobile restaurant/shop alongside their regular jobs. Thus, they enjoy extra monthly earnings. These elements reduce their dependency on remittances and as a result, remittances do not recipients in urban parts as big an advantage as for rural residents.

As stated earlier, the educational level of HH heads plays a crucial role in the development of HHs. The highest coefficient value in this regard was seen in the district of Narowal and the lowest was found in DG Khan. Without any further discrimination, this variable is significant for the whole province at 1 percent level of significance.

The age of HH head has a significant relationship with HH development in 75 percent of urban Punjab. In urban areas HH members are job holders, while others engage in their own businesses. Thus, age increment enhances their work experience which results in a higher salary and development at the HH level.

Lastly, the male HH heads plays a positive role in HH development in 36 percent of the districts. It demonstrates that in urban areas female heads can also play a satisfactory role in HH development. Due to readily available educational institutions, educational level of females in urban areas is also higher than that of their rural counterparts. In a similar vein, employment for females is also higher in urban areas and as a result, they have sufficient knowledge and confidence to fulfill HH tasks such as management of child's health and education, purchase of HH commodities as well as enhancing the HH earnings. In developed districts, male dominance was found to be statistically insignificant for HH development. The less developed districts provide lower female employment opportunities which accounts for male dominance in such districts.

Table 6.5 shows a summary of hypothesis findings. With regard to education of HH head, income other than remittances, and dependency, the null hypothesis is rejected in all 36 districts of Punjab province. The null hypothesis for foreign remittances and age of the HH head is rejected in 75 percent of the districts, and male head in 36 percent of the districts.

Table 6.5: Hypothesis Testing - Urban Region

No.	Variables	No. of Districts	Decision
1	RI → HHDI	27	Reject H_0
		09	Do not reject
2	Dep → HHDI	36	Reject H_0
		0	Do not reject
3	OI → HHDI	35	Reject H_0
		1	Do not reject
4	HHedu → HHDI	36	Reject H_0
		0	Do not reject
5	HHage → HHDI	27	Reject H_0
		09	Do not reject
6	MH → HHDI	14	Reject H_0
		22	Do not reject

Source: Derived from Table 6.4.
The results, based on the robust regression, are presented in Appendix-K.

The results were similar to those of the OLS-based analysis except for minor discrepancies. The education of HH head and other income sources show a positive and significant relationship with the dependent variable in all the districts. Dependency imposed a negative impact on development in the whole province. However, foreign remittance inflow exhibits a small difference from the basic regression.

6.3.1.3 Remittances and rural development

District-wise results for rural Punjab are demonstrated in Table 6.6. In 92 percent of rural areas of Punjab, foreign remittances inflow has a significant impact on HH development as compared to 75 percent of urban areas. It indicates that the rural areas are more affected by foreign remittances than their urban counterparts. A number of rural HHs are directly or indirectly involved in agro-activities but the income from such agro-activities is considered to be inconsistent. This is because any negative shock such as unfavorable weather condition, inconsistent input (fertilizer, oil, pesticides, seed, and labourer) prices, shortage of fertilizers, delay in crop purchasing by government, lower buying rate by intermediaries, and bribes to

government officials can adversely affect the HH earnings in rural side. Thus, foreign remittances could be a way to smoothen earning for rural migrant families and their dependence on these funds is higher compared to migrant HHs in urban Punjab. For instance, rural remittance receivers of the district Gujrat are better off than non-receivers by 0.0749 in terms of HHDI as compared to 0.0205 of their urban counterparts. Similarly, rural remittance recipients of district Bhakkar are better than non-remittance recipients by 0.1372 as compared to 0.0671 in the urban case. Table 6.6 also shows that a higher effect of remittances was found in rural areas that have a lower crop yield or less developed urban counterparts and as such, non-migrant HHs have lower opportunities of earning. The districts of southern and northern Punjab such as Bhakkar, Khushab, Mianwali, Rajanpur, etc. were found to be more affected by remittances as compared to central Punjab's districts because of cash crops, fertile land, and abandoned industries in urban areas of central Punjab.

Lower rainfall diminishes agricultural output, which results in lower farm yield and farm revenue in rural areas. As a result, it leads to consumption instability and poor welfare. The HHs with members abroad are more likely to transfer funds to them to increase their revenue which will in turn reduce the impact of the shock on their welfare (Ratha, 2003).

Table 6.6: District Wise OLS Results - Rural Region

	Districts	*RI*	*Dep*	*lnOI*	*HHedu*	*HHage*	*MH*	Constant	No. of Obs.
North Punjab									
1	Attock	0.0988*** (0.0352)	-0.0046* (0.0027)	0.0085*** (0.0036)	0.0571*** (0.0044)	0.0011** (0.0005)	0.0521 (0.0378)	0.2171*** (0.0827)	667
2	Bhakkar	0.1372*** (0.0370)	-0.0049* (0.0029)	0.0208*** (0.0082)	0.0540*** (0.0062)	0.0001 (0.0005)	0.0720*** (0.0217)	-0.1210 (0.0923)	518
3	Chakwal	0.0913** (0.0455)	-0.0051* (0.0028)	0.0115* (0.0070)	0.0485*** (0.0053)	0.0007* (0.0004)	0.0647* (0.0339)	0.0820 (0.0943)	661
4	Gujrat	0.0749*** (0.0165)	-0.0051** (0.0023)	0.0037** (0.0017)	0.0435*** (0.0065)	0.0017*** (0.0006)	0.0285 (0.0231)	0.3291*** (0.0975)	583
5	Jhelum	0.0914* (0.0575)	-0.0037*** (0.0012)	0.0185*** (0.0062)	0.0506*** (0.0054)	0.0020*** (0.0006)	0.0028 (0.0241)	0.0760 (0.0783)	593
6	Khushab	0.1237* (0.0670)	-0.0042* (0.0023)	0.0050* (0.0027)	0.0471*** (0.0065)	0.0006 (0.0004)	0.0895 (0.0387)	0.0204 (0.0938)	426
7	Mandi Bahaudin	0.0809*** (0.0200)	-0.0013*** (0.0004)	0.0206*** (0.0064)	0.0438*** (0.0053)	0.0011* (0.0007)	0.0351 (0.0344)	-0.0235 (0.0885)	518
8	Mianwali	0.1064** (0.0465)	-0.0080*** (0.0031)	0.0253*** (0.0062)	0.0396*** (0.0063)	0.0007 (0.0006)	0.0850*** (0.0244)	-0.0222 (0.0845)	512
9	Rawalpindi	0.0521* (0.0285)	-0.0200*** (0.0051)	0.0142* (0.0089)	0.0431*** (0.0069)	0.0013** (0.0006)	0.0169 (0.0277)	0.1891* (0.1090)	424
10	Sargodha	0.0852*** (0.0246)	-0.0032*** (0.0013)	0.0068* (0.0035)	0.0458*** (0.0052)	0.0019*** (0.0004)	0.0053 (0.0336)	0.0968 (0.0718)	714
Central Punjab									
11	Chiniot	0.0680** (0.0324)	-0.0060* (0.0036)	0.0151* (0.0080)	0.0369*** (0.0071)	0.0014** (0.0005)	0.0572*** (0.0175)	0.1661* (0.0990)	441
12	Faisalabad	0.0198 (0.0243)	-0.0101*** (0.0027)	0.0203*** (0.0065)	0.0444*** (0.0041)	0.0013*** (0.0004)	0.0458 (0.0350)	0.0136 (0.0815)	970
13	Gujranwala	0.0125 (0.0222)	-0.0042*** (0.0013)	0.0012*** (0.0005)	0.0552*** (0.0050)	0.0011** (0.0005)	0.0322 (0.0337)	0.2810*** (0.1110)	695
14	Hafizabad	0.0751** (0.0320)	-0.0081* (0.0043)	0.0218*** (0.0084)	0.0544*** (0.0070)	0.0013*** (0.0005)	0.0023 (0.0362)	-0.00123 (0.1120)	405
15	Jhang	0.0951* (0.0518)	-0.0052** (0.0025)	0.0397*** (0.0057)	0.0416*** (0.0042)	0.0002 (0.0004)	0.0335 (0.032)	-0.197*** (0.0757)	638
16	Kasur	0.0621*** (0.0228)	-0.0051* (0.0029)	0.0079* (0.0046)	0.0367*** (0.0059)	0.0010** (0.0005)	0.0280 (0.0285)	0.1830** (0.0863)	673
17	Lahore	0.0702 (0.0578)	-0.0094*** (0.0039)	0.0014 (0.0009)	0.0422*** (0.0079)	0.0017*** (0.0005)	0.0021 (0.0379)	0.5020*** (0.1481)	558
18	Nankana Sahib	0.0746*** (0.0228)	-0.0127*** (0.0037)	0.0111* (0.0070)	0.0479*** (0.0057)	0.0010** (0.0005)	0.0341 (0.0405)	0.1300 (0.0932)	501

Table 6.6 continued

19	Narowal	0.0351* (0.0206)	-0.0024* (0.0015)	0.0091* (0.0051)	0.0454*** (0.0052)	0.0010** (0.0004)	0.0154 (0.0248)	0.2010*** (0.0720)	573
20	Okara	0.0629** (0.0304)	-0.0043* (0.0023)	0.0192*** (0.0054)	0.0430*** (0.0049)	0.0014*** (0.0005)	0.0700*** (0.0225)	0.0396 (0.0692)	541
21	Pakpattan	0.0627* (0.0338)	-0.0047*** (0.0014)	0.0190*** (0.0065)	0.0386*** (0.0070)	0.0008 (0.0006)	0.0570*** (0.0206)	0.0787 (0.0915)	519
22	Sahiwal	0.0611** (0.0266)	-0.0128*** (0.0039)	0.0168*** (0.0065)	0.0473*** (0.0060)	0.0006 (0.0006)	0.0625*** (0.0252)	0.1861** (0.0905)	586
23	Sheikhupura	0.0515 (0.0393)	-0.0039** (0.0019)	0.0227*** (0.0080)	0.0385*** (0.0049)	0.0009** (0.0004)	0.0160 (0.0338)	0.0546 (0.1061)	639
24	Sialkot	0.0406** (0.0201)	-0.0066** (0.0032)	0.0173*** (0.0062)	0.0376*** (0.0053)	0.0018*** (0.0005)	0.0074 (0.0206)	0.1571* (0.0900)	753
25	Toba Tek Singh	0.0786*** (0.0250)	-0.0053** (0.0025)	0.0010* (0.0006)	0.0522*** (0.0050)	0.0012*** (0.0005)	0.0454** (0.0222)	0.2391* (0.126)	618
South Punjab									
26	Bahawalpur	0.0882*** (0.0350)	-0.0081** (0.0035)	0.0012*** (0.0005)	0.0532*** (0.0063)	0.0003 (0.0005)	0.0810* (0.0474)	0.2210** (0.1081)	615
27	Bahawalnagar	0.0797* (0.0449)	-0.0145*** (0.0032)	0.0158** (0.0075)	0.0510*** (0.0061)	0.0006 (0.0005)	0.0116 (0.0442)	0.0823 (0.1020)	653
28	DG Khan	0.0719*** (0.0256)	-0.0108*** (0.0029)	0.0133* (0.0071)	0.0412*** (0.0064)	0.0002 (0.0008)	0.0603*** (0.0255)	0.0414 (0.0987)	546
29	Khanewal	0.0503** (0.0219)	-0.0065** (0.0030)	0.0003*** (0.0001)	0.0596*** (0.0050)	0.0003 (0.0007)	0.0362* (0.0196)	0.2400*** (0.0871)	740
30	Layyah	0.0824*** (0.0157)	-0.0067** (0.0032)	0.0221*** (0.0080)	0.0558*** (0.0057)	0.0002 (0.0005)	0.0369* (0.0203)	-0.0861 (0.0939)	555
31	Lodhran	0.0621** (0.0296)	-0.0131*** (0.0039)	0.0168*** (0.0068)	0.0532*** (0.0056)	0.0013*** (0.0005)	0.0576* (0.0358)	0.1361 (0.0899)	521
32	Multan	0.0759** (0.0382)	-0.0145*** (0.0038)	0.0265*** (0.0074)	0.0535*** (0.0060)	0.0016*** (0.0005)	0.0179 (0.0358)	-0.0260 (0.1040)	651
33	Muzaffargarh	0.0995*** (0.0367)	-0.0068*** (0.0027)	0.0174*** (0.0064)	0.0534*** (0.0052)	0.0010*** (0.0004)	0.0431* (0.0268)	-0.0116 (0.0848)	794
34	Rahim Yar Khan	0.0535* (0.0308)	-0.0121*** (0.0028)	0.0295*** (0.0089)	0.0409*** (0.0055)	0.0005 (0.0005)	0.0144** (0.0068)	-0.0740 (0.1081)	698
35	Rajanpur	0.1063* (0.0655)	-0.0123*** (0.0030)	0.0291*** (0.0099)	0.0450*** (0.0075)	0.0009 (0.0006)	0.0110** (0.0054)	-0.0970 (0.124)	443
36	Vehari	0.0675*** (0.0280)	-0.0058 * (0.0034)	0.0133* (0.0069)	0.0461*** (0.0053)	0.0001 (0.0004)	0.0017* (0.0009)	0.0848 (0.1140)	736

Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Stark (1978, 1980) observed that an imperfect rural credit system and labour markets were the sole sources of funds to innovate or merely cover the full costs of the agricultural production cycle (for example purchasing seed and inputs, and hiring equipment) for HHs. In view of this, remittances contribute to productivity growth and its marginal impact on HH income cannot be overemphasized.

The dependency appears to have an inverse relationship in rural areas of the province. Although the age of HH head appears with a positive sign in all districts, it is statistically significant in only 56 percent of the districts. A higher effect of age increment was found in rural areas of districts that have developed urban parts such as Sargodha, Sialkot, Gujrat, Lahore, etc. Such urban parts not only provide jobs to the urban populations but also to their rural counterparts. Thus, age increment enhances their earnings which culminate in higher development and this effect is more prominent in the central Punjab region. Similar to the age of HH head, the male head is also statistically significant in 56 percent of rural parts of the province. This male headed factor has more effect in less developed districts with lower opportunities for females, such as south Punjab and various districts of north Punjab including Khushab, Mianwali, Bahawalpur, Bhakkar, and DG Khan.

The results pertaining to the education of HH head and other income are the same with the urban cases which are positively significant. As regard the education of HH heads, the districts of central Punjab such as Khanewal and Kasur have the highest and lowest effect respectively. For other income, also districts of central Punjab such as Jhang and Khanewal are found to have the highest and lowest coefficient values respectively.

Table 6.7 summarizes the hypothesis for rural Punjab. Similar to earlier outcomes, the null hypothesis is rejected for education of HH head, dependency, and income other than remittances in all districts of Punjab province and for foreign remittances in 92 percent of the province.

Table 6.7: Hypothesis Testing - Rural households

No.	Variables	No. of Districts	Decision
1	RI → HHDI	32	Reject H_0
		04	Do not reject
2	Dep → HHDI	36	Reject H_0
		0	Do not reject
3	OI → HHDI	36	Reject H_0
		0	Do not reject
4	HHedu → HHDI	36	Reject H_0
		0	Do not reject
5	HHage → HHDI	22	Reject H_0
		14	Do not reject
6	MH → HHDI	17	Reject H_0
		19	Do not reject

Source: Derived from Table 6.6.

The results, based on the robust regression, are shown in Appendix-L. Similar to previous results, the education of HH head and other income have a significant and positive relationship with HH development in all rural areas of Punjab province. For remittances, the results are also similar to those of the basic regression with a slight change in the sense that the district Chiniot does not have a significant impact on the dependent variable in the robust regression. However, the remaining results are not significantly different from those of the basic regression.

6.3.2 Remittances and educational attainments

Table 6.8 displays the results of the impact of remittances on educational attainments. The results show that in 75 percent of the districts, foreign remittances have a positive and significant relationship with the education of migrant HHs. It indicates that in most of the districts, migrant HHs spend their remittances on their children's education. It also shows that the school enrollment ratio is higher among migrant families than non-migrants.

Generally, a child's education is considered as a basic need among HHs and as a result, a number of HHs bear such expenses from their income rather than from remittances. This obviously accounts for its insignificant relationship in some districts. These results are in consonance with those of Eversole and Johnson (2014), Elbadawy and Roushdy (2010), Edwards and Ureta (2003), Hanson and Woodruff (2003), Arif, Najam us Saqib, Zahid and Khan (1999), Abbasi and Irfan (1986) and Gilani (1986).

The educational level of HH head is considered important. This variable has a significant effect on the educational achievements of other HH members in all districts of Punjab province. A household with an educated head is bound to have members with higher education since an educated HH head understands the importance of education more than an uneducated head.

Table 6.8: District Wise OLS Results – Remittances and Educational Attainment

No.	Districts	*RI*	*Dep*	*lnOI*	*HHedu*	*HHage*	*MH*	Constant	No. of Obs.
North Punjab									
1	Attock	0.0012 (0.0194)	-0.0063 (0.0056)	0.0056 (0.0057)	0.0969*** (0.0041)	0.0002 (0.0004)	0.0595*** (0.0246)	0.0413 (0.0700)	990
2	Bhakkar	0.0980 (0.0559)	-0.0072*** (0.0028)	0.0006 (0.0051)	0.0920*** (0.0046)	0.0003 (0.0004)	0.0569 (0.0451)	0.0734 (0.0756)	759
3	Chakwal	0.0101 (0.0355)	-0.0072 (0.0066)	0.0095* (0.0055)	0.0896*** (0.0043)	0.0008** (0.0004)	0.0499 (0.0274)	-0.0169 (0.0708)	1,065
4	Gujrat	0.0035** (0.0017)	-0.0124 (0.0122)	0.0001 (0.0048)	0.0729*** (0.0039)	0.0009*** (0.0003)	0.0407*** (0.0154)	0.197*** (0.0623)	1,096
5	Jhelum	0.0238* (0.0133)	-0.0087 (0.0063)	0.0013 (0.0067)	0.0953*** (0.0048)	6.71e-05 (0.0004)	0.0223 (0.0247)	0.172** (0.0827)	856
6	Khushab	0.0557* (0.0326)	-0.0124*** (0.0033)	0.0123** (0.0059)	0.0861*** (0.0050)	0.0008* (0.0005)	0.0720*** (0.0297)	-0.0839 (0.0761)	697
7	Mandi Bahaudin	0.0315** (0.0159)	-0.0118 (0.0132)	0.0110** (0.0050)	0.0727*** (0.0048)	-0.0001 (0.0004)	0.0676*** (0.0233)	0.0544 (0.0690)	788
8	Mianwali	0.0180 (0.0336)	-0.0012*** (0.0005)	0.0111** (0.0056)	0.0814*** (0.0046)	0.0006 (0.0004)	0.0899*** (0.0385)	-0.0277 (0.0775)	784
9	Rawalpindi	0.0172 (0.0176)	-0.0101 (0.0103)	0.0133** (0.0065)	0.0827*** (0.0049)	0.0017*** (0.0004)	0.0585*** (0.0232)	-0.00124 (0.0815)	734
10	Sargodha	0.0516** (0.0235)	-0.0165 (0.0128)	6.81e-05 (0.0050)	0.0784*** (0.0039)	0.0007* (0.0004)	0.0687*** (0.0193)	0.0892 (0.0628)	1,188
Central Punjab									
11	Chiniot	0.0711* (0.0391)	-0.0092 (0.0084)	0.0212*** (0.0067)	0.0913*** (0.0049)	-0.0001 (0.0005)	0.0026 (0.0331)	0.416*** (0.0867)	717
12	Faisalabad	0.0320* (0.0189)	-0.0105 (0.0102)	0.0140*** (0.0043)	0.0830*** (0.0030)	0.0013*** (0.0004)	0.0555*** (0.0170)	0.0068 (0.0538)	1,819
13	Gujranwala	0.0269** (0.0137)	-0.0102 (0.0102)	0.0048 (0.0049)	0.0834*** (0.0032)	-0.0008** (0.0004)	0.0260* (0.0158)	0.152*** (0.0621)	1,446
14	Hafizabad	0.0250** (0.0127)	-0.0122 (0.0104)	0.0027 (0.0069)	0.0737*** (0.0048)	-0.0005 (0.0005)	0.0099 (0.0353)	0.211*** (0.0892)	673
15	Jhang	0.0116 (0.0079)	-0.0073 (0.0062)	0.0091 (0.0065)	0.0742*** (0.0043)	0.0005 (0.0004)	0.0230 (0.0309)	0.0579 (0.0818)	1,017
16	Kasur	0.126*** (0.0440)	-0.0087 (0.0076)	0.0083* (0.0046)	0.0872*** (0.0039)	0.0006 (0.0004)	0.0351 (0.0272)	0.226*** (0.0644)	1,083
17	Lahore	0.0856*** (0.0205)	-0.0090 (0.0079)	0.0101*** (0.0041)	0.0921*** (0.0026)	0.0013*** (0.0004)	0.0535*** (0.0160)	0.0195 (0.0518)	1,799
18	Nankana Sahib	0.0574** (0.0285)	-0.0106 (0.0103)	0.0020 (0.0067)	0.0798*** (0.0046)	0.0002 (0.0004)	0.0717*** (0.0291)	0.103 (0.0846)	735

Table 6.8 continued

19	Narowal	0.0109** (0.0052)	-0.0142 (0.0102)	0.0114** (0.0057)	0.0788*** (0.0042)	-0.0001 (0.0003)	0.0301* (0.0191)	0.347*** (0.0753)	875
20	Okara	0.0696** (0.0260)	-0.0108 (0.0102)	0.0013 (0.0046)	0.0721*** (0.0043)	0.0005 (0.0004)	0.108*** (0.0206)	0.100* (0.0634)	788
21	Pakpattan	0.0178 (0.0232)	-0.0150 (0.0131)	0.0063* (0.0036)	0.0809*** (0.0046)	0.0010** (0.0004)	0.0654*** (0.0263)	0.0352 (0.0783)	858
22	Sahiwal	0.0298* (0.0164)	-0.0048 (0.0042)	0.0125*** (0.0041)	0.0868*** (0.0033)	0.0004 (0.0003)	0.0542*** (0.0181)	0.0438 (0.0537)	1,348
23	Sheikhupura	0.0435* (0.0256)	-0.0095 (0.0065)	0.0103* (0.0056)	0.0833*** (0.0036)	0.0004 (0.0004)	0.0578** (0.0257)	0.00679 (0.0745)	1,095
24	Sialkot	0.0130*** (0.0019)	-0.0120 (0.0102)	0.0041* (0.0026)	0.0774*** (0.0033)	0.0011*** (0.0003)	0.0322** (0.0163)	0.175*** (0.0620)	1,299
25	Toba Tek Singh	0.0590*** (0.0198)	-0.0174 (0.0129)	0.0025 (0.0066)	0.0792*** (0.0040)	-0.0003 (0.0004)	0.0749*** (0.0278)	0.126 (0.0827)	952
South Punjab									
26	Bahawalpur	0.0503 (0.0378)	-0.0028 (0.0031)	0.0149*** (0.0064)	0.105*** (0.0046)	0.0001 (0.0004)	0.0654*** (0.0276)	-0.113 (0.0783)	1,056
27	Bahawalnagar	0.0275 (0.0392)	-0.0059 (0.0038)	0.0064 (0.0061)	0.103*** (0.0044)	-0.0001 (0.0004)	0.00993 (0.0283)	0.0701 (0.0774)	997
28	DG Khan	0.0539*** (0.0227)	-0.0066*** (0.0027)	0.0123* (0.0063)	0.109*** (0.0047)	-0.0001 (0.0003)	0.0881*** (0.0280)	-0.159** (0.0795)	855
29	Khanewal	0.0089* (0.0050)	-0.0046* (0.0029)	0.0162** (0.0065)	0.0958*** (0.0041)	0.0005* (0.0003)	0.0410 (0.0271)	0.266*** (0.0825)	1,084
30	Layyah	0.0660** (0.0336)	-0.0038 (0.0031)	0.0116* (0.0069)	0.0935*** (0.0048)	-0.0005 (0.0004)	0.0690** (0.0342)	0.0171 (0.0880)	813
31	Lodhran	0.0814* (0.0462)	-0.0057 (0.0044)	0.0055 (0.0073)	0.0901*** (0.0053)	-0.0001 (0.0005)	0.00667 (0.0343)	0.106 (0.0947)	780
32	Multan	0.0304* (0.0166)	-0.0025 (0.0029)	0.0115** (0.0057)	0.0978*** (0.0038)	0.0009** (0.0004)	0.0277 (0.0230)	-0.0221 (0.0713)	1,269
33	Muzaffargarh	0.0232 (0.0381)	-0.0048 (0.0035)	0.0005 (0.0055)	0.105*** (0.0042)	-4.78e-06 (0.0004)	0.0523* (0.0269)	0.102 (0.0715)	1,169
34	Rahim Yar Khan	0.0680** (0.0314)	-0.0027 (0.0026)	0.0207*** (0.0063)	0.107*** (0.0041)	8.21e-05 (0.0003)	0.0542* (0.0286)	-0.141* (0.0790)	1,150
35	Rajanpur	0.0266 (0.0413)	-0.0113 (0.0128)	0.0217*** (0.0078)	0.0986*** (0.0051)	-0.0005 (0.0005)	0.0414 (0.0376)	-0.103 (0.0955)	706
36	Vehari	0.0460* (0.0256)	-0.0116 (0.0127)	0.0029 (0.0065)	0.0934*** (0.0042)	0.0003 (0.0004)	0.0378 (0.0242)	0.0814 (0.0805)	1,093

Standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

The other independent variables show mixed results. For instance, the age of a HH head has a positive impact only in the central and north Punjab's districts with more developed urban areas such as Faisalabad, Lahore, Gujrat, Rawalpindi, and Sialkot. In urban areas the age increment is expected to enhance the earnings of HHs. This enhancement in earnings leads to an increase in the education of children/of HH members. Although it is statistically insignificant in some districts, age increment imposes a negative impact. Furthermore, age increment might be the reason why some HH heads get their children involved in child labour with the intention of either making some extra earnings or lessening their own burdens.

With regard to other income, it is found to have a significant impact on education in most of the districts. A male HH head is more willing to enhance the educational level of HH members. This factor has a statistically significant relationship in more than 60 percent of districts whereas in the north Punjab region, it has a significant relationship in 80 percent of districts as compared to 60 percent and 45 percent in central Punjab and south Punjab respectively.

6.3.3 Remittances and healthcare

In our analysis, less than 40 percent of districts have a significant relationship between foreign remittances and health status of migrant HHs (see Table 6.9). The health index is measured by stunting, wasting the underweight of children below 5 years of age, which depends mostly on their food intake (see Esfarjani, Roustaee, Mohammadi-Nasrabadi & Esmaillzadeh, 2013), the health condition of women (see Martorell & Young, 2012), the medical treatment of women during pregnancy and maternity (see Hamel, Enne, Omer, Ayara, Yarima, Cockcroft & Andersson, 2015), and household sanitation (see Velleman &

Pugh, 2013). Thus, given its necessity, it is expected that the basic income, rather than remittances, is spent on it and the results of other income validate the phenomenon. Moreover, the government of Punjab provides basic health facilities free of charge, and 48000 female health workers have been appointed for the health and basic treatment of mothers and children in basic health units and hospitals. Table 6.9 shows that the districts with high literacy rate or heavy industrialization such as Attock, Faisalabad, Gujranwala, Gujrat, Lahore, Mandi Bahaudin, Narowal, Rawalpindi, Sahiwal, Sargodha Sheikhupura, Sialkot, and Toba Tek Singh do not have a significant relationship between remittances and health index. This may be due to the fact that high literacy rate creates awareness regarding child and mother's health. The least developed or less literate districts such as Bhakkar, Chakwal, Jhelum, Khushab, Mianwali, Chiniot, Jhang, Kasur, Nankana Sahib, Bahawalpur, Bahawalnagar, DG Khan, Lodhran, and Muzaffargarh have a significant relationship between remittances and health index.

The income other than remittance inflow has a positive impact on the healthcare of HHs in all 36 districts. It indicates that healthcare is a basic need of HHs and as a result, they spend their basic income for this purpose. The highest impact is seen in the district Gujrat and the lowest in the district Muzaffargarh. The results depict that more literate and developed districts have a higher coefficient value and vice versa. The lowest impact of other income is observed to be in the south Punjab region, and this may be due to their less purchasing power and lower awareness. In most of the province, it has a highly significant relationship with the dependent variable. Furthermore, it can be concluded that HHs categorize their incomes into remittances, and non-remittances and spend their domestic income on healthcare activities.

Table 6.9: District Wise OLS Results – Remittances and Healthcare

No.	Districts	*RI*	*Dep*	*lnOI*	*HHedu*	*Hage*	*MH*	Constant	No. of Obs
North Punjab									
1	Attock	0.0092 (0.0423)	-0.0487*** (0.004)	0.0325*** (0.0113)	0.0092*** (0.0017)	0.001 (0.0008)	0.0491 (0.0555)	0.9130*** (0.0832)	990
2	Bhakkar	0.0533* (0.0336)	-0.0414*** (0.0053)	0.0065*** (0.0013)	0.0117* (0.0067)	0.0007 (0.0007)	0.1180*** (0.041)	0.5900*** (0.0794)	759
3	Chakwal	0.0218*** (0.0077)	-0.0440*** (0.0047)	0.0148*** (0.0039)	0.0151** (0.007)	0.0013* (0.0007)	0.0464 (0.0337)	0.7881*** (0.0609)	1,065
4	Gujrat	0.0463 (0.0409)	-0.0259*** (0.0041)	0.0571*** (0.0126)	0.0171*** (0.0073)	0.0038*** (0.0009)	0.0047 (0.025)	0.8491*** (0.0646)	1,096
5	Jhelum	0.0251*** (0.0074)	-0.0388*** (0.0057)	0.0262** (0.0126)	0.0179** (0.0084)	0.0019*** (0.0008)	0.0478 (0.0329)	0.7230*** (0.0637)	856
6	Khushab	0.0452*** (0.0142)	-0.0571*** (0.0065)	0.00714*** (0.0017)	0.0098*** (0.0029)	0.0008 (0.0008)	0.0712 (0.0486)	0.7030*** (0.0901)	697
7	Mandi Bahaudin	0.038 (0.0288)	-0.0405*** (0.0053)	0.0257** (0.0148)	0.0132* (0.0079)	0.0022** (0.0008)	0.0870*** (0.0248)	0.7290*** (0.0704)	788
8	Mianwali	0.0552 (0.032)	-0.0461*** (0.0058)	0.0044** (0.0018)	0.0092*** (0.0038)	0.0012 (0.0008)	0.0591 (0.0402)	0.7800*** (0.0837)	784
9	Rawalpindi	0.0219 (0.0302)	-0.0353*** (0.007)	0.0512*** (0.0109)	0.0198*** (0.0062)	0.0031*** (0.001)	0.0229 (0.029)	0.9171*** (0.0619)	734
10	Sargodha	0.064 (0.0398)	-0.0304*** (0.0048)	0.0409*** (0.0093)	0.0145** (0.0072)	0.0032*** (0.0007)	0.0284 (0.0472)	0.6971*** (0.0561)	1,188
Central Punjab									
11	Chiniot	0.0445* (0.0112)	-0.0510*** (0.0052)	0.0163*** (0.0037)	0.0103** (0.0048)	0.0021*** (0.0008)	0.0898*** (0.026)	0.7221*** (0.0654)	717
12	Faisalabad	0.0199 (0.028)	-0.0319*** (0.0035)	0.0516*** (0.0097)	0.0113** (0.0049)	0.0025*** (0.0006)	0.0283 (0.023)	0.7571*** (0.0472)	1,819
13	Gujranwala	0.0265 (0.0244)	-0.0336*** (0.0039)	0.0491*** (0.0099)	0.0186** (0.0056)	0.0019*** (0.0007)	0.0621* (0.0398)	0.8210*** (0.0499)	1,446
14	Hafizabad	0.0323 (0.0435)	-0.0424*** (0.0063)	0.0156* (0.0094)	0.0174** (0.0086)	0.0019** (0.001)	0.0655 (0.0432)	0.7361*** (0.0765)	673
15	Jhang	0.0486* (0.0276)	-0.0419*** (0.0045)	0.0064*** (0.0027)	0.0108* (0.0062)	0.0004 (0.0006)	0.0582** (0.022)	0.7720*** (0.0616)	1,017
16	Kasur	0.0348*** (0.013)	-0.0480*** (0.0042)	0.0063** (0.0028)	0.0123* (0.0074)	0.0027*** (0.0007)	0.0366 (0.0391)	0.7371*** (0.0689)	1,083
17	Lahore	0.0139 (0.0423)	-0.0207*** (0.004)	0.0505*** (0.0082)	0.0160** (0.0055)	0.0021*** (0.0007)	0.0261 (0.0486)	0.9820*** (0.0539)	1,799
18	Nankana Sahib	0.0519* (0.0316)	-0.0552*** (0.0053)	0.0334*** (0.0110)	0.0124* (0.0077)	0.0020*** (0.0008)	0.0820*** (0.0341)	0.7840*** (0.0842)	735

Table 6.9 continued

19	Narowal	0.0111 (0.0292)	-0.0414*** (0.0048)	0.0161** (0.0073)	0.0139* (0.0078)	0.0017*** (0.0007)	0.0382 (0.0278)	0.7610*** (0.069)	875
20	Okara	0.0539* (0.0335)	-0.0357*** (0.0046)	0.0241** (0.0115)	0.0109* (0.0063)	0.0024*** (0.0007)	0.0113 (0.0265)	0.8130*** (0.0647)	788
21	Pakpattan	0.0364 (0.0355)	-0.0439*** (0.0055)	0.0103* (0.0061)	0.0117* (0.0071)	0.0017** (0.0008)	0.0027 (0.0385)	0.8710*** (0.0697)	858
22	Sahiwal	0.0013 (0.0303)	-0.0443*** (0.0058)	0.0234** (0.0099)	0.0106* (0.0063)	0.001* (0.0006)	0.0739*** (0.0259)	0.7891*** (0.059)	1,348
23	Sheikhupura	0.0263 (0.0468)	-0.0414*** (0.0048)	0.0148* (0.0089)	0.0229*** (0.0065)	0.0030*** (0.0008)	0.028 (0.0394)	0.6930*** (0.0647)	1,095
24	Sialkot	0.0015 (0.0556)	-0.0331*** (0.0041)	0.0459*** (0.0128)	0.0174*** (0.006)	0.0034*** (0.0008)	0.0366 (0.0419)	0.7910*** (0.0566)	1,299
25	Toba Tek Singh	0.016 (0.0294)	-0.0484*** (0.0051)	0.0279** (0.014)	0.0165*** (0.0066)	0.0016** (0.0008)	0.0948*** (0.0286)	0.7330*** (0.0663)	952
South Punjab									
26	Bahawalpur	0.0544*** (0.0243)	-0.0565*** (0.0047)	0.0077*** (0.0017)	0.0089*** (0.0027)	0.001* (0.0006)	0.0283 (0.0522)	0.8640*** (0.0735)	1,056
27	Bahawalnagar	0.0481*** (0.0187)	-0.0599*** (0.005)	0.0029*** (0.0011)	0.0104** (0.0048)	0.0011* (0.0007)	0.0918*** (0.0233)	0.7210*** (0.0683)	997
28	DG Khan	0.0351*** (0.0126)	-0.0482*** (0.0052)	0.0091** (0.0046)	0.0117*** (0.0029)	0.0040*** (0.0009)	0.0597*** (0.0241)	0.6220*** (0.0844)	855
29	Khanewal	0.0593 (0.0693)	-0.0469*** (0.0051)	0.0113* (0.0071)	0.0153** (0.0072)	0.0016** (0.0007)	0.0644** (0.0303)	0.7730*** (0.0629)	1,084
30	Layyah	0.0473 (0.0553)	-0.0519*** (0.0055)	0.0257** (0.0103)	0.0133* (0.0084)	0.0053*** (0.0008)	0.0432 (0.0513)	0.567*** (0.0823)	813
31	Lodhran	0.0511* (0.029)	-0.0563*** (0.0058)	0.0061*** (0.0009)	0.0132* (0.0058)	0.0037*** (0.0009)	0.0447 (0.0447)	0.7090*** (0.0768)	780
32	Multan	0.0598 (0.0384)	-0.0411*** (0.0052)	0.0305*** (0.0121)	0.0151** (0.0066)	0.0039*** (0.0007)	0.0336 (0.0357)	0.7040*** (0.0671)	1,269
33	Muzaffargarh	0.0719* (0.0373)	-0.0476*** (0.0047)	0.0014* (0.0008)	0.0120* (0.0068)	0.0044 (0.0036)	0.0643* (0.0363)	0.6040*** (0.0637)	1,169
34	Rahim Yar Khan	0.0775 (0.0506)	-0.0502*** (0.0045)	0.0053*** (0.0008)	0.0118* (0.0068)	0.0048*** (0.0008)	0.0463 (0.0467)	0.5800*** (0.0724)	1,150
35	Rajanpur	0.129* (0.0807)	-0.0346*** (0.0049)	0.0144*** (0.0012)	0.0121 (0.0096)	0.0003 (0.0003)	0.077 (0.0818)	0.5270*** (0.113)	706
36	Vehari	0.0074 (0.0427)	-0.0463*** (0.0051)	0.0073*** (0.0013)	0.0119* (0.0068)	0.0004 (0.0008)	0.0293 (0.043)	0.6510*** (0.0739)	1,093

Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

In a similar fashion to the educational level of HH head, the educational level of a HH head has a positive and significant effect on the health status of HHs in all 36 districts. This is because an educated HH head has more awareness about the importance of health and health related activities than an uneducated HH head and as such spends less for medicines. Grossman (1972) argued that higher educational level enhances health productivity because more educated people have more knowledge about the combination of medical inputs, which results in health productivity. The results further explained that in most developed districts, especially from central Punjab, a higher magnitude value is obtained compared to those of the north and south regions. This however, may be due to the high literacy rate and higher purchasing power of this region. Nevertheless, the least impact is found in the south Punjab region.

The age of the HH head has a significant impact on health index in 69 percent of districts and it is observed that in the least developed districts, there exist no significant relationship between the independent and dependent variables, especially in the districts of the south Punjab region. This may be attributed to fewer earnings associated with age increment in these districts, which restricts spending on healthcare activities.

In all 36 districts, an increase in the number of dependent HH members reduces the health index. It is thus observed that more dependent persons need more care, which also causes a reduction in per capita income. This reduction in per capita income adversely affects the growth of other children as well as the mother. The highest effect was found in the least developed districts of the south and north Punjab region which may be due to the fact that more developed districts have higher earnings. Thus, a unit increase in the number of HH members does not severely affect the welfare of other members.

The male head is found to have a significant positive impact in 31 percent of districts. The major impact appeared mostly in less developed districts such as Bhakkar, Mandi Bahaudin (north Punjab), Chiniot, Jhang, Nankana Sahib, Sahiwal, Toba Tek Singh (central Punjab), Bahawalnagar, DG Khan, Khanewal, and Muzaffargarh (southern Punjab). It can be seen that in developed or more literate districts, females are also well informed about their health as well as that of their children. In addition, the employment ratio is also higher in such districts, which thus leads to a better health index.

6.3.4 Remittances and housing

Table 6.10 displays the results of the relationship between foreign remittances and housing status of remittance-receiving HHs. The results show that remittances inflow has a positive and significant impact on the housing status of recipient HHs in all 36 districts. It is noted here that this ratio is highest among all previously found results. It proves that remittance-receiving HHs consider remittances as additional earnings and as such they spend it on commodities which are capable of raising their status in their vicinity as well as to achieve a comfortable life. In this case, the housing index is an amalgam of several components - household appliances, home amenities, utilities, and transportation facility. Thus, it can be concluded that migrant HHs spend a major part of their remittances on purchasing such commodities. In other words, they are better-off with such commodities since it improves their lifestyles.

Table 6.10: District Wise OLS Results – Remittances and Housing

No.	Districts	*RI*	*Dep*	*lnOI*	*HHedu*	*HHage*	*HHgender*	Constant	No. of Obs.
North Punjab									
1	Attock	0.0402* (0.0253)	-0.0484*** (0.0041)	0.0257*** (0.0103)	0.0273*** (0.0069)	0.0019*** (0.0008)	0.0836 (0.0616)	1.1890*** (0.142)	961
2	Bhakkar	0.0464** (0.0179)	-0.0414*** (0.0054)	0.0053*** (0.0018)	0.0104*** (0.0024)	0.0005 (0.0007)	0.1071** (0.0479)	0.5440*** (0.1190)	747
3	Chakwal	0.0401** (0.0188)	-0.0428*** (0.0047)	0.0060*** (0.0023)	0.0164** (0.0076)	0.0014 (0.0017)	0.0466 (0.0392)	0.8470*** (0.1251)	1,035
4	Gujrat	0.0344** (0.0152)	-0.0357*** (0.0045)	0.0190* (0.0099)	0.0209** (0.0085)	0.0037*** (0.0010)	0.00597 (0.0342)	1.0700*** (0.1340)	946
5	Jhelum	0.0490*** (0.0106)	-0.0484*** (0.0058)	0.0058*** (0.0012)	0.0284*** (0.0087)	0.0020 (0.0018)	0.0470 (0.0362)	0.785*** (0.1481)	837
6	Khushab	0.0459* (0.0277)	-0.0564*** (0.0066)	0.0144*** (0.0029)	0.0102*** (0.0019)	0.0010 (0.0009)	0.0627 (0.0513)	0.8610*** (0.1520)	681
7	Mandi Bahaudin	0.0411* (0.0213)	-0.0409*** (0.0055)	0.0064*** (0.0027)	0.0087*** (0.0033)	0.0020** (0.0009)	0.0926*** (0.0273)	0.6650*** (0.1131)	746
8	Mianwali	0.0505* (0.0297)	-0.0452*** (0.0058)	0.0073** (0.0035)	0.0116*** (0.0039)	0.0016 (0.0019)	0.0185 (0.0578)	0.8790*** (0.1450)	769
9	Rawalpindi	0.0223*** (0.0052)	-0.0258*** (0.0073)	0.0113*** (0.0015)	0.0045*** (0.0018)	0.0034*** (0.0010)	0.0242 (0.0311)	1.0280*** (0.141)	687
10	Sargodha	0.0271*** (0.0099)	-0.0203*** (0.0048)	0.0104*** (0.0013)	0.0126* (0.0076)	0.0034*** (0.0007)	0.0511*** (0.0250)	0.7080*** (0.1100)	1,157
Central Punjab									
11	Chiniot	0.0459* (0.0270)	-0.0512*** (0.0052)	0.0012* (0.0007)	0.0120*** (0.0038)	0.0007 (0.0007)	0.0952*** (0.0293)	0.7320*** (0.1391)	706
12	Faisalabad	0.0271*** (0.0115)	-0.0221*** (0.0035)	0.0144* (0.0081)	0.0092* (0.0054)	0.0025*** (0.0006)	0.0269 (0.0248)	0.7110*** (0.1041)	1,772
13	Gujranwala	0.0270** (0.0127)	-0.0227*** (0.0040)	0.0216** (0.0097)	0.0208*** (0.0058)	0.0021*** (0.0009)	0.0486** (0.0233)	1.0740*** (0.1251)	1,380
14	Hafizabad	0.0411** (0.0186)	-0.0431*** (0.0064)	0.0156* (0.0084)	0.0168* (0.0091)	0.0017*** (0.0007)	0.0860* (0.0467)	0.5540*** (0.1730)	649
15	Jhang	0.0421** (0.0201)	-0.0420*** (0.0045)	0.0091*** (0.0029)	0.0064*** (0.0026)	0.0014 (0.0011)	0.0537 (0.0421)	0.6830*** (0.1191)	1,010
16	Kasur	0.0276* (0.0172)	-0.0475*** (0.0043)	0.0106* (0.0057)	0.0134* (0.0076)	0.0018*** (0.0007)	0.0322 (0.0430)	0.8091*** (0.1090)	1,062
17	Lahore	0.0296** (0.0127)	-0.0200*** (0.0041)	0.0334*** (0.0100)	0.0080*** (0.0026)	0.0028*** (0.0008)	0.1081*** (0.0363)	1.3620*** (0.1251)	1,750
18	Nankana Sahib	0.0418* (0.0251)	-0.0446*** (0.0054)	0.0241** (0.0115)	0.0271*** (0.0080)	0.0005 (0.0009)	0.00649 (0.0585)	1.0581*** (0.1631)	710

Table 6.10 continued

19	Narowal	0.0445* (0.0243)	-0.0409*** (0.0049)	0.0103* (0.0058)	0.0249*** (0.0084)	0.0020 (0.0018)	0.0483 (0.0339)	0.6560*** (0.1220)	786
20	Okara	0.0479** (0.0231)	-0.0346*** (0.0048)	0.0091*** (0.0036)	0.0103** (0.0046)	0.0024*** (0.0008)	0.0308 (0.0287)	0.6820*** (0.0932)	730
21	Pakpattan	0.0481*** (0.0204)	-0.0428*** (0.0057)	0.0029*** (0.0011)	0.0017** (0.0008)	0.0015 (0.0019)	0.00129 (0.0401)	0.8400*** (0.1421)	795
22	Sahiwal	0.0509*** (0.0134)	-0.0445*** (0.0062)	0.0177*** (0.0075)	0.0170*** (0.0067)	0.0014 (0.0017)	0.0623** (0.0280)	0.9850*** (0.1090)	1,264
23	Sheikhupura	0.0293* (0.0169)	-0.0306*** (0.0049)	0.0103**8 (0.0036)	0.0243*** (0.0067)	0.0030*** (0.0008)	0.0451 (0.0369)	0.7940*** (0.1551)	1,067
24	Sialkot	0.0296* (0.0160)	-0.0234*** (0.0043)	0.0205*** (0.0082)	0.0083** (0.0036)	0.0028*** (0.0007)	0.0692*** (0.0278)	0.8820*** (0.1211)	1,173
25	Toba Tek Singh	0.0413* (0.0214)	-0.0489*** (0.0051)	0.0163* (0.0093)	0.0197*** (0.0075)	0.0021*** (0.0008)	0.0641* (0.0351)	0.9310*** (0.1760)	933
South Punjab									
26	Bahawalpur	0.0543** (0.0254)	-0.0547*** (0.0047)	0.0325*** (0.0113)	0.0144** (0.0074)	0.0009 (0.0007)	0.0528 (0.0545)	1.2240*** (0.1461)	1,032
27	Bahawalnagar	0.0628*** (0.0231)	-0.0595*** (0.0052)	0.0060*** (0.0023)	0.0175** (0.0088)	0.0037 (0.0028)	0.0226 (0.0481)	0.9020*** (0.1710)	976
28	DG Khan	0.0528*** (0.0160)	-0.0477*** (0.0054)	0.0057** (0.0026)	0.0112*** (0.0021)	0.0040 (0.0030)	0.0146 (0.0602)	0.7030*** (0.1710)	799
29	Khanewal	0.0413*** (0.0103)	-0.0468*** (0.0051)	0.0048*** (0.0019)	0.0145* (0.0076)	0.0015 (0.0018)	0.0695** (0.0339)	0.7120*** (0.1251)	1,065
30	Layyah	0.0663** (0.0290)	-0.0520*** (0.0056)	0.0162** (0.0076)	0.0386*** (0.00929)	0.0056 (0.0029)	0.0258 (0.0574)	0.7520*** (0.1491)	789
31	Lodhran	0.0693*** (0.0297)	-0.0568*** (0.0059)	0.0074*** (0.0028)	0.0134*** (0.0038)	0.0007 (0.0009)	0.0248 (0.0484)	0.7280*** (0.1591)	771
32	Multan	0.0279* (0.0151)	-0.0312*** (0.0053)	0.0134*** (0.0049)	0.0024* (0.0015)	0.0037*** (0.0007)	0.0263 (0.0408)	0.5661*** (0.1340)	1,233
33	Muzaffargarh	0.0855** (0.0421)	-0.0473*** (0.0048)	0.0071*** (0.0017)	0.0214*** (0.0076)	0.0005 (0.0007)	0.0398 (0.0473)	0.5400*** (0.1390)	1,111
34	Rahim Yar Khan	0.0563* (0.0307)	-0.0506*** (0.0045)	0.0148*** (0.0030)	0.0155** (0.0078)	0.0004*** (0.0001)	0.0417 (0.0471)	0.4350*** (0.1621)	1,130
35	Rajanpur	0.0618** (0.0279)	-0.0544*** (0.0049)	0.0057** (0.0026)	0.0286*** (0.0105)	0.0006 (0.0004)	0.0185 (0.113)	0.5040*** (0.2300)	682
36	Vehari	0.0478* (0.0258)	-0.0461*** (0.0052)	0.0079** (0.0034)	0.0166** (0.0080)	0.0005 (0.0008)	0.00679 (0.0491)	0.5821*** (0.1740)	1,067

Standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

The results also reveal that the lowest effect was found in the more developed districts such as Lahore, Faisalabad, Sialkot, Rawalpindi, Multan, Gujranwala, Sheikhupura, and Kasur. This is because these districts are heavily industrialized and have notable urban regions. Thus, higher employment opportunities lead to higher earnings than in other districts. Nevertheless, the non-migrant HHs also have the opportunities to enhance their housing quality and as such, the migrant HHs are not significantly better off than non-migrant HHs in terms of housing. The notable difference between remittance receivers and non-receivers are found in the least developed districts especially of southern Punjab such as Rajanpur, Muzaffargarh, Layyah, Lodhran, and Bahawalnagar. With lower earnings in these districts remittances enable migrant HHs to be better-off than non-migrant HHs; thus remittances provide them with the means to purchase housing facilities. Remittances are found most important for the southern Punjab region in the context of housing improvement.

A large number of existing studies have that foreign remittances are of great importance to migrant families in enhancing their housing conditions (see Ballard, 2005; Arif, 1999; Gilani et al., 1981). Ratha, Mohapatra and Scheja (2011) and also supported the view that remittances are usually invested in physical capital such as land or housing. A continuous inflow of remittances is vital to retaining the accrued assets (Batzlen, 1999). The migrant workers themselves are more likely to bring home used goods like TV, VCD, cooker, hand-phone, and other electronic appliances. These goods and other HH facilities are responsible for the improved status of migrant HHs (Sabur & Mahmud, 2009), as well as new knowledge and ideas (De Haas, 2005).

Also, it is worthy to note that overseas migration has led to a significant improvement in housing facilities starting from the pre-migration time (Arif, 1999). By comparing the

residential status between pre and post-migration period, Arif (1999) observed that home ownership was enhanced after migration from 78 percent to 84.5 percent and 95.8 percent to 97.5 percent in urban and rural areas respectively. Also, remittances have enabled migrant HHs to upgrade their homes from a mud framework to a concrete state.

With regard to other independent variables, the educational level of HH heads and other income are found to be crucial factors across the province. The age of the HH head is significantly related to housing status in less than 50 percent of the province. Table 6.10 reveals that these districts in question are mostly developed. Thus, an increase in age leads to more earnings in these districts which bring about improved housing. Further, as the number of dependent members in HH increases, more expenses are likely to be channeled to them and as a result, investment in HH appliances and other facilities decreases. In all cases, dependency has a negative and significant relationship with housing status but higher impact values are seen in low developed areas, especially from southern Punjab. In addition, the gender of HH heads appears to be statistically significant with a positive sign in 31 percent of the districts.

6.4 Propensity Score Matching

The OLS estimation method does not take into account the selectivity of migrants since it deals with all individuals similarly. In view of this, propensity score matching (PSM) was applied. The PSM matches remittance recipients with similar non-receivers (Rosenbaum & Rubin, 1983) to calculate an "average treatment effect for the treated" (ATT). The ATT portrays what a HH would have looked like if it did not receive remittances. This approach helps us to control a probable selection effect of migration in cases where it may be that remittance receiving HHs are more settled and therefore, more likely to migrate. The PSM

technique filters out the impact of foreign remittances on the development of HH by controlling for the possible migration selection effect.

Figure 6.1A displays the distributions of the propensity scores of the treated (remittance receivers) and untreated (non-receivers) group. A clear difference can be seen in both groups.

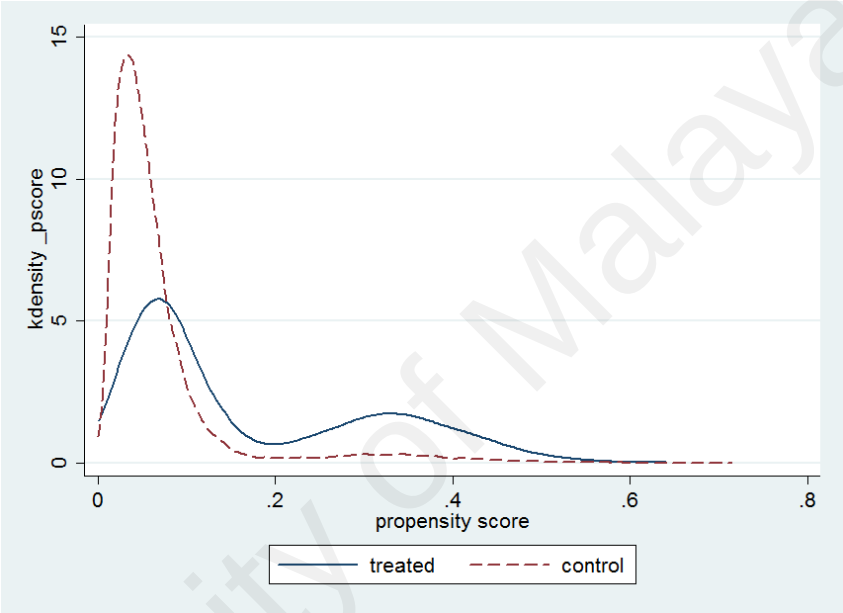

Figure 6.1A: Distributions of Propensity Scores before Matching

Then each remittance receiving HH is matched with one or more non-receiving HHs based on similar values on the propensity scores, using a set of covariates (mentioned next). The outcome of this operation is the creation of two groups of treated and untreated HHs, focusing on a similar distribution of the propensity scores, as shown in Figure 6.1B.

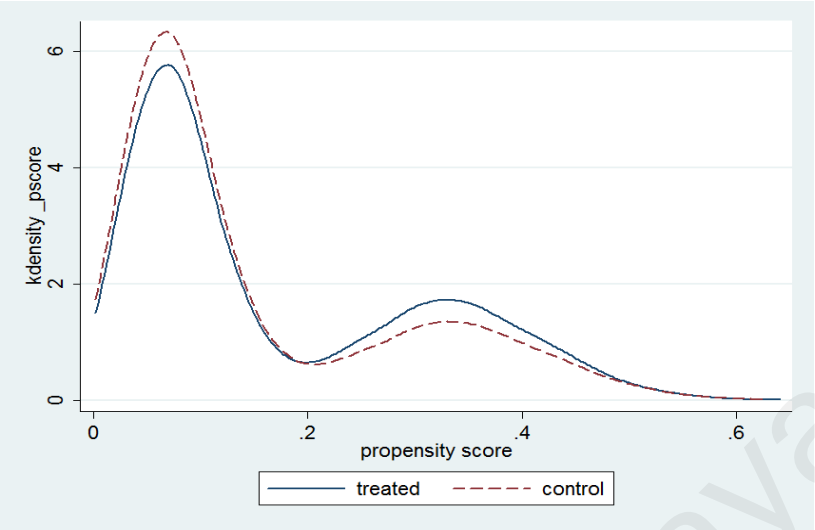

Figure 6.1B: Distributions of Propensity Scores after Matching

Table 6.11 shows the data included in PSM to be analyzed. The outcome variable in this case is household development (HHD) and the treatment variable is foreign remittances inflow (RI). Whereas, the matching covariates are the dependent members in the HH, gender of HH head, educational level of HH head, residing district, and HH size. Given these five variables, the HHs are matched from both groups.

Table 6.11: Summary of variables used in PSM

Outcome variable	Treatment variable	Covariates	No. of treated households	No. of controls
1	1	5	2891	35401

Propensity scores can be defined as a 'conditional probability' of a sample participant receiving treatment (remittances) given the observed covariates. Henceforth, not only the treated members, but also the untreated participants have non-zero propensity scores.

Figure 6.2 shows the distribution of the predicted propensity scores between treated and untreated. A good overlap between distributions of propensity scores in the two groups can be observed from the bar chart.

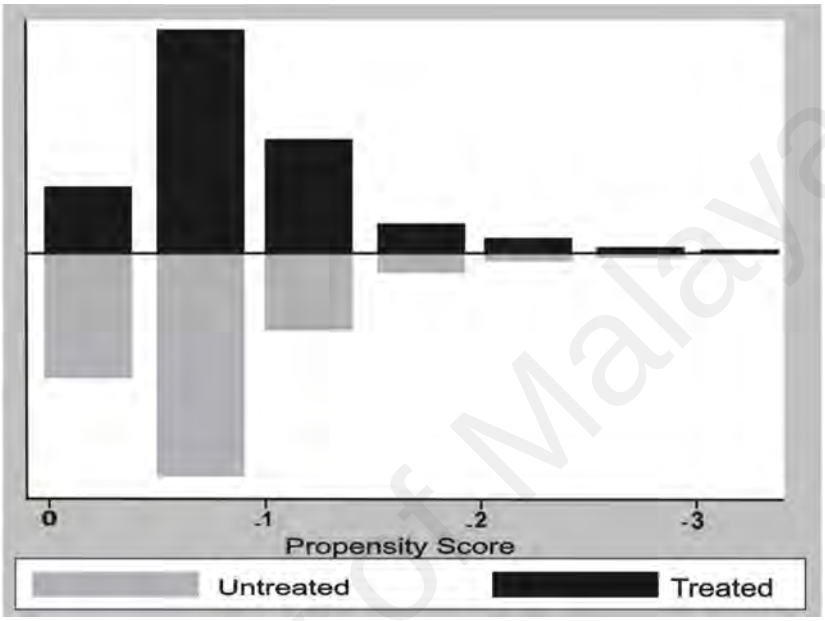

Figure 6.2: Propensity Scores of Matched Households

Table 6.12 consists of the PSM results. The table presents the mean values for the remittance receivers and non-receivers, the ATT, and the sensitivity analysis results. Using the Nearest-Neighbor, Kernel Estimator, and Radius method, the results reveal that remittance-receivers score higher than their matched non-receivers in HH development.

The presence of foreign remittances boosts the development of treated group by 9.8 units (significant at 1 percent level in the case of Kernel (Gaussian)). However, the difference is almost the same as other matching algorithms such as Nearest-Neighbor and Radius[25].

[25] The estimation is performed with the aid of Stata 13 software package.

The column at the extreme right of Table 6.12 shows the critical levels of sensitivity to hidden bias. Gamma values (Γ) that are close to 1.0 indicate that the matched HHs have equal chances to participate while larger values represent the insensitivity of hidden bias of estimates. Also, HHs that seem to be similar with respect to covariates could be dissimilar in the ratio of receiving treatment by as much as a factor equal to Gamma (Rosenbaum, 2002). In our case, the Γ values range from 1.17 to 1.21 which means a higher level of sensitivity for the outcome variable (household development). Thus, it can be considered that the matched HHs are almost sensitive to hidden bias.

Table 6.12: PSM: Remittances Inflows and Household Development

HHDI (Per Matching Algorithm)	Treated	Controls	ATT	T	No. of treated	No. of untreated	Hidden bias (Γ) (Critical level)
NN (3)	0.580	0.485	0.095*	21.08	2891	33516	1.17
Kernel (Gaussian)	0.581	0.483	0.098*	24.45	2891	33516	1.21
Radius, caliper (0.01)	0.581	0.488	0.093*	21.42	2891	33516	1.20

* $p < 0.01$

Table 6.13 shows a comparison of pseudo R^2 and p-values of the likelihood ratio tests before and after matching of HHs. It displays lower pseudo R^2 and insignificant p-values of the likelihood ratio tests after matching. This result indicates that there are no systematic differences in the covariates between remittance receivers and non-receivers, which imply that non-receiver HHs can be an appropriate control group.

Table 6.13: PSM Balancing Tests

Matching algorithm	Pseudo R^2 before matching	Pseudo R^2 after matching	Prob > χ^2 before matching	Prob > χ^2 after matching
Kernel	0.0996	0.0789	0.000**	1.000

** $p < 0.05$.

The previous estimation of PSM was based on the whole sample of HHs. However, the manner of spending remittances may be different between poor and rich HHs. Considering this scenario, the whole sample is divided into four groups according to their propensity scores. The matching is done for the HHs in each quartile separately (see Table 6.14). Due to lower inflows of remittances among less wealthy HHs, the first two quartiles are merged in order to get a sufficient sample size for both groups. The results show that in the case of Punjab province, both the poor and rich HHs spend remittances in the same manner and remittances affect all the recipients equally with a slight difference. Nevertheless, its effect is more on the lowest two quartiles which may be due to the heavy reliance of these groups on remittances.

In all cases, the critical levels of sensitivity to hidden bias (Γ) are higher than 1, which implies that the analyses are sensitive to potential hidden bias.

Table 6.14: PSM (Kernel, Gaussian) per Quartile of Household Development

Quartiles	Treated	Controls	ATT	T	No. of treated	No. of untreated	Hidden bias (Γ) (Critical level)
1&2	0.5978	0.4932	0.1046*	16.91	980	17537	1.23
3	0.5741	0.4761	0.0980*	10.49	461	8731	1.23
4	0.5965	0.5102	0.0863**	12.30	1435	7254	1.21

* $p < 0.01$ ** $p < 0.05$.

Table 6.15 gives the balancing test results of PSM estimates for all quartiles from Table 6.14. These results show that the non-receiver group of HHs is a suitable matching group. Furthermore, post-matching pseudo R^2 values are significantly lower and the p-values of the likelihood ratio test become insignificant, suggesting little systematic difference in the covariates between both groups.

Table 6.15: PSM Balancing Tests (Kernel, Gaussian)

Quartiles	Pseudo R^2 before matching	Pseudo R^2 after matching	Prob. > χ^2 before matching	Prob. > χ^2 after matching
1&2	0.011	0.003	0.723	1.000
3	0.005	0.001	0.985	1.000
4	0.139	0.102	0.000	1.000

6.5 Summary

In this chapter, we investigated the impact of foreign remittances on HH development for each district of Punjab. A number of related hypotheses proposed by existing literature were tested and the investigations showed that foreign remittances played a crucial role in the development of HHs in most districts of Punjab province. Furthermore, remittances were found to be more instrumental in rural areas than in urban parts and these findings are in line with 'relative deprivation hypothesis', which posits that rural HHs, being the most depressed, are more likely to migrate and thus, to receive remittances. These results are similar to those of Adams (2006) and Mazzucato, Van Den Boom and Nsowah-Nuamah (2008) and are also in line with the conclusion contained in existing literature that most remittance-receiving HHs are relatively well-off (Adams, 2011). A disaggregated estimation shows that migrant HHs prefer to spend remittances on housing related activities such as purchasing home appliances, construction of a new house, or renovating an old one. Spending on education and healthcare are respectively the second and third priorities in the use of remittances.

We also used a treatment effects approach to consider possible self-selection on the part of remittance-receiving HHs. In the analysis, remittances did not make a significant difference to that lower quartile HHs that received the funds. Poorer HHs were also affected by remittances in terms of spending pattern, which is similar to those of upper quartiles but

with a slightly higher magnitude. In general, foreign remittances significantly influenced the living conditions of receivers especially in rural areas. Nevertheless, besides remittances, the educational level of HH heads was found to be an important factor in HH development and the number of dependent members was also found as a significant factor in the whole province. Furthermore, other income besides remittances was proven to be a highly important factor for HH development since finance is obviously important for development, whether in the form of remittances or any other income. However, the male as well as the aged HH heads were seen to be more beneficial to HH development, especially in rural areas as compared to the urban.

CHAPTER 7: REMITTANCE INFLOWS AND HOUSEHOLD POVERTY

7.1 Introduction

In order to illustrate how poverty varies across regions and population sub-groups, poverty profiles are required. A typical poverty profile usually incorporates the poverty rate for each group and examines the poor or which group is prominent among the poor (World Bank, 2005). Nevertheless, the major aim of the poverty profile is to analyze how poverty varies geographically, and how it is affected by household (HH) characteristics.

The current chapter sheds more light on the existing empirical literature by preparing a detailed poverty profile of the Punjab province and its districts, using the most recent MICS (2014-15) and poverty line[26]. Poverty is measured for all HHs (whole sample) as well as for migrant HHs. For migrant HHs, poverty is measured in two stages; (i) with the inclusion of foreign remittances in total earnings and (ii) in the absence of these funds. Furthermore, poverty is also measured at the urban-rural levels to capture regional differences. The empirical analysis examines the effects of remittances on household-based poverty at the district-level and within districts (urban-rural based).

7.2 Poverty Profile of Punjab

The studies based on household surveys have shown that the poverty profile for Punjab is very similar to that of Pakistan and its provinces. Several studies have focused on evaluating the prevalence and severity of poverty at both the national and provincial levels for Pakistan (see, for instance, Bhatti, Haq, & Javed, 1999; Qureshi & Arif, 2001; Cheema,

[26] PKR. 3030/adult/month; announced by Pakistan Finance Minister (see for details, The Dawn News, April 08, 2016). This new poverty line has been modified for inflation and used for in the analysis based on the 2014 data. The poverty line is computed for individuals rather than households; then rescaled to the household level using the OECD-modified equivalence scale.

2005). Due to data constraints, only a handful of studies related to the spatial analysis of poverty or 'geography of poverty' at a disaggregated level are available. Existing research such as Arif and Farooq (2014), Ali (2011), Cheema, Khalid and Patnam (2008), Jamal and Khan (2007), Malik (2005), Jamal (2003), Gazdar (1999) and Wilder (1999) were only confined to measuring intra-province differences in poverty and differences across districts. In other words, these studies only focused on measuring poverty incidence at the district-level, leaving out rural-urban analysis. The measurement of poverty at the district-level and intra-district-level may help the authorities concerned to better allocate their resources among the neediest districts or backward part within a district.

The household-based poverty incidence is calculated by the FGT[27] class of poverty measures, which includes the head count ratio (HCR), poverty gap (PG) and the poverty gap squared (PGS, also known as the poverty severity index). The FGT allows us to calculate the head count ratio of the poor, as well as the severity of poverty based on the third measure. All three measures are calculated to analyze the differences in poverty in Punjab and by regions (urban and rural) and district.

Table 7.1 shows the incidence of poverty at the provincial level. On the average, almost one out of four HHs in the Punjab province is likely to be poor. The incidence of poverty in the rural area is more than two-fold that of the urban region. Approximately 15 percent of HHs in the urban areas are below the poverty line, which is less than half the share of the poor HHs in the rural part. The reason for this discrepancy may be the higher literacy rate,

[27] Discussed in section 3.4.1, for more details see Poverty, Inequality Handbook (Chapter 4) by World Bank.

better job opportunities and higher wages in the urban areas and also, industrialization which makes some districts more urbanized than others.

Table 7.1: Provincial Poverty Incidence, 2014

Punjab Province			Urban Region			Rural Region		
HCR	PG	PGS	HCR	PG	PGS	HCR	PG	PGS
0.2625	0.1115	0.0689	0.1458	0.0594	0.0385	0.3210	0.1376	0.0842

Note: HCR: Headcount ratio, PG: Poverty gap, PGS: Poverty gap squared
Source: Calculated from MICS (2014-15).

Poverty in rural parts is directly linked with agricultural output. Disparity in poverty can be observed over different ecological zones based on variant cropping pattern, land fertility, access to surface water, quality of groundwater and other socioeconomic features of the region. The unpredictable prices of intermediate inputs such as fertilizer, oil, and pesticides as well as the volatile crop prices, interrupted electricity supply, unfavorable weather, and natural disasters affect the earnings of those committed to agriculture. Thus, income is a good yardstick for the assessment of poverty of HHs. Furthermore, landlessness in rural parts is notably high (more than 50 percent of farmers do not own the land). Thus, small farmers and landless HHs will have to depend on non-farming work for their survival (Arif & Farooq, 2014). The unstable agricultural earnings are also due to the problem of inequity in the distribution of land. In the same vein, fragmentation of landholding reduces the availability of adequate farmland needed for a sufficient and sustainable income (Hussain, 2007).

Similar to the HCR, PG[28] is also lower in urban areas relative to rural; suggesting that it is easier to lift the former out of poverty. For instance, the poverty gap of urban areas was

[28] The poverty gap takes the difference between poor households' expenditure/income and the poverty line. For everyone else the gap is accounted to become zero. Mainly it shows how much would have to be given to households below the poverty line to bring their income/expenditure up to the poverty line. It can be considered the minimum cost for eliminating poverty.

estimated to be around 6 percent (see Table 7.1), indicating that the poor HHs would need an additional 6 percent of their current earnings to get the required basic needs, while in the rural areas, 14 percent of their current earnings are needed. In terms of the severity of poverty between regions, the rural part has a higher severity of poverty than the urban region based on the PGS index[29]. This may be due to their direct or indirect association with agriculture.

Table 7.2 gives the FGT poverty measures at the district-level in Punjab. The table shows that in terms of poverty incidence, the districts of the South Punjab region such as Rajanpur, Bhakkar Muzaffargarh, Bahawalpur and DG Khan are worse off than the other districts of the province. More than 50 percent of the districts in Punjab have poverty levels higher than the overall provincial level and these districts are from southern Punjab. The central Punjab region is found to be more prosperous than the southern and northern parts of the province. Southern Punjab relies heavily on agriculture but does not produce enough which might be linked to several factors. As Khawaja (2012) argues; the British Government established 9 canal colonies during 1885 to 1947[30], none in the south of Punjab. So, the irrigation system in the south until today is weaker than the other province. Secondly, the southern districts have very low rainfall and hence less water resources. Having more population, lower literacy rate and industrial projects (see Table 4.17), these districts have poor economic opportunities. Thirdly, the supply chain linkages for food and dairy processing facilities for these districts are not well-established (Dawn, 2010).

[29] It averages the squares of the poverty gaps relative to the poverty line and gives more weight to the individuals that are significantly far from the poverty line.
[30] The offender of the British era and independence of Pakistan.

Table 7.2: District-Wise Poverty Level for Punjab, by Urban-Rural Regions

		Punjab Province					Urban Region				Rural Region			
No	District	HCR	PG	PGS	Rank*	Zone	HCR	PG	PGS	Rank*	HCR	PG	PGS	Rank*
1	Rajanpur	0.4935	0.2204	0.1301	1	South	0.2199	0.0920	0.0537	9	0.5399	0.2422	0.1431	1
2	Bhakkar	0.4713	0.2235	0.1400	2	South	0.3112	0.1209	0.0686	1	0.5017	0.2429	0.1535	2
3	Muzaffargarh	0.4351	0.1938	0.1232	3	South	0.2999	0.1223	0.0756	2	0.4607	0.2074	0.1322	5
4	DG Khan	0.4297	0.2057	0.1319	4	South	0.2050	0.0877	0.0564	12	0.4818	0.2330	0.1494	3
5	Layyah	0.4273	0.1886	0.1155	5	South	0.1885	0.0690	0.0408	16	0.4696	0.2098	0.1287	4
6	Pakpattan	0.3569	0.1556	0.0950	6	Central	0.2331	0.1054	0.0748	5	0.3793	0.1647	0.0986	10
7	Bahawalnagar	0.3532	0.1399	0.0782	7	South	0.2196	0.0800	0.0445	10	0.3846	0.1540	0.0861	9
8	Sahiwal	0.3527	0.1522	0.0921	8	Central	0.1374	0.0611	0.0392	28	0.3975	0.1712	0.1031	7
9	Khushab	0.3514	0.1679	0.1073	9	North	0.2041	0.0651	0.0335	13	0.4083	0.2077	0.1358	6
10	Mianwali	0.3417	0.1590	0.1004	10	North	0.2375	0.0840	0.0457	4	0.3661	0.1766	0.1133	14
11	Bahawalpur	0.3327	0.1281	0.0713	11	South	0.2396	0.0923	0.0532	3	0.3735	0.1438	0.0793	11
12	Sargodha	0.3317	0.1515	0.0963	12	North	0.2073	0.0934	0.0610	11	0.3913	0.1793	0.1132	8
13	Rahim Yar Khan	0.3298	0.1181	0.0621	13	South	0.1932	0.0733	0.0426	15	0.3661	0.1300	0.0673	13
14	Okara	0.3244	0.1407	0.0881	14	Central	0.1845	0.0663	0.0426	17	0.3720	0.1660	0.1035	12
15	Kasur	0.2938	0.1271	0.0784	15	Central	0.1819	0.0713	0.0470	18	0.3422	0.1512	0.0920	15
16	Attock	0.2836	0.1338	0.0911	16	North	0.2284	0.0993	0.0669	6	0.3025	0.1456	0.0994	16
17	Lodhran	0.2797	0.0983	0.0511	17	South	0.2270	0.0872	0.0505	7	0.2889	0.1003	0.0512	21
18	Jhang	0.2727	0.1021	0.0542	18	Central	0.1975	0.0699	0.0361	14	0.2921	0.1104	0.0589	19
19	Narowal	0.2697	0.1389	0.1040	19	Central	0.1570	0.0966	0.0833	24	0.2895	0.1463	0.1076	20
20	Nankana Sahib	0.2686	0.1146	0.0717	20	Central	0.1671	0.0788	0.0539	22	0.3012	0.1261	0.0775	17
21	Hafizabad	0.2640	0.1222	0.0770	21	Central	0.2266	0.0956	0.0622	8	0.2781	0.1321	0.0826	23
22	Mandi Bahaudin	0.2620	0.1113	0.0691	22	North	0.1703	0.0715	0.0476	21	0.2788	0.1186	0.0730	21
23	Chakwal	0.2539	0.1210	0.0839	23	North	0.1270	0.0520	0.0351	29	0.2729	0.1313	0.0913	29
24	Khanewal	0.2496	0.0866	0.0474	24	South	0.1729	0.0619	0.0363	20	0.2667	0.0921	0.0498	20
25	Chiniot	0.2475	0.0972	0.0541	25	Central	0.1795	0.0646	0.0334	19	0.2769	0.1113	0.0631	19
26	Vehari	0.2443	0.0799	0.0414	26	South	0.1515	0.0497	0.0315	26	0.2628	0.0859	0.0433	26
27	Multan	0.2399	0.0965	0.0578	27	South	0.1411	0.0582	0.0373	27	0.2976	0.1188	0.0698	27
28	Sheikhupura	0.2297	0.0987	0.0624	28	Central	0.1528	0.0662	0.0442	25	0.2740	0.1175	0.0729	25
29	Jhelum	0.2109	0.0881	0.0565	29	North	0.1656	0.0682	0.0494	23	0.2267	0.0950	0.0589	23
30	Toba Tek Singh	0.1986	0.0678	0.0346	30	Central	0.1257	0.0434	0.0231	30	0.2200	0.0750	0.0379	30
31	Faisalabad	0.1942	0.0771	0.0454	31	Central	0.1175	0.0453	0.0281	31	0.2650	0.1065	0.0613	31
32	Gujrat	0.1928	0.1105	0.0882	32	North	0.0800	0.0408	0.0321	36	0.2312	0.1341	0.1073	36
33	Rawalpindi	0.1755	0.0872	0.0620	33	North	0.1043	0.0528	0.0394	34	0.2596	0.1279	0.0887	34
34	Gujranwala	0.1345	0.0504	0.0308	34	Central	0.0966	0.0330	0.0190	35	0.1764	0.0696	0.0438	35
35	Sialkot	0.1282	0.0581	0.0398	35	Central	0.1053	0.0579	0.0478	33	0.1370	0.0581	0.0367	33
36	Lahore	0.1254	0.0522	0.0351	36	Central	0.1069	0.0430	0.0293	32	0.2055	0.0921	0.0602	32

Note: HCR – Headcount ratio; PG – Poverty gap; and PGS – Poverty gap square. Rank is based on HCR.
Source: Calculations based on MICS (2014-15).

In their study, Arif and Farooq (2014) also considered the southern Punjab as an extremely poor region. On the other hand, districts of central Punjab, such as Lahore, Sialkot and Gujranwala have lowest poverty levels in rural regions while besides Gujranwala at urban side, districts of north Punjab namely Gujrat and Rawalpindi ha ve the lowest poverty ratio. At least every second person in the districts Rajanpur and Bhakkar is likely to be poor. In terms of the poverty gap in regard to its effect on the poverty incidence, the districts Bhakkar, Rajanpur and DG Khan need the highest resources to come out of the poverty zone at the rural level. In the urban region, the highest poverty gap was observed in districts Muzaffargarh, Bhakkar and Pakpattan respectively.

Generally, provincial poverty is more discussed than the intra-province poverty. Table 7.2 explains the needs of resources on district bases. It shows the direction of flow of resources and can guide initiatives to reduce the imbalances among different regions of the province. Provincial values show that every fourth person is poor, but it does not show the areas where every second person is surviving below the poverty line (for example, Rajanpur), and also the areas where every eighth person is considered poor (for example, Lahore). Thus, Table 7.2 presents a clear picture of variability of economic resources within the province of Punjab.

Each district has its own characteristics that affect its own economic condition. Extending the discussion at district level, we can discover some causes of intra-province variations. Central and North Punjab districts such as Faisalabad, Gujranwala, Lahore, Sialkot, Gujrat and Rawalpindi are found to be economically stronger at both levels (urban and rural) than the rest of the province. These districts have a literacy rate of more than 65 percent (BOS, Punjab, 2015), which can be a factor contributing to economic development. Several studies

such as Barro (1991), Bashir and Darrat (1994), and Hanushek and Kimko (2000) have shown that literacy rates exert a positive impact on economic status. According to Azariadis and Drazen (1990), economies that experienced rapid economic growth through technology had initially attained a particular level of education.

Although the rural areas of these districts consist of smaller cultivable plots than south Punjab (see Table 4.18), they are irrigated with a well-established canal system. Furthermore, the ground water of most of these areas is also of good quality, thus contributing to higher yields, higher earnings and lower poverty levels. In addition, urban parts of these districts are heavily industrialized, which not only provide employment to urban residents but also to the rural population. For instance, a number of textile units provide pick-up-and-drop facilities to workers from neighboring rural areas[31]. They also provide the female workers with transportation (Hamid, Nabi & Zafar, 2014). Moreover, major trading activities are also found in these areas.

The southern part of Punjab contained the poorest districts. Unlike central and north Punjab (above mentioned districts), southern Punjab's districts have more income variation within the districts. For instance, Rajanpur was found to be the poorest district with respect to rural part. However, it stands at 9th position in the urban poverty ranking while Muzaffargarh is 5th and 2nd, Layyah 4th and 16th, Bahawalpur 11th and 3rd, and DG Khan at 3rd and 12th ranking for rural and urban areas respectively. A major cause of poverty in these districts may be the low literacy rate. Also, the urban parts of these districts have fewer industrial enterprises and as a result they are unable to support their rural counterparts. Rural

[31] Visit for details, http://www.masoodtextile.com/jobbank/benifits.php

areas are faced with the problem of unavailability of water for agriculture, lowering agricultural yields despite having more cultivable land than districts of central Punjab. The district Bahawalpur has a canal system and its rural condition is better than that of its counterparts in other districts. It ranked 11th in rural poverty compared to 3rd in urban poverty. Factors such as lower literacy rates, fewer industries, unavailability of water for agriculture, poor infrastructure, distance from developed districts, and fewer employment opportunities are responsible for workforce migration, both domestically and abroad in most parts of south Punjab. Although lower literacy rate may restrict them from getting a good job abroad, the higher exchange rate of host countries can assist them to boost their families' economic status.

Districts of central Punjab are also linked via important roads like 'GT Road', which connects many cities from district Lahore to the capital city Islamabad, for example, Gujranwala, Gujrat, Jhelum, Rawalpindi, and other province such as Khyber Pakhtunkhwa and then finally connects with Afghanistan and China. Thus, it creates numerous business opportunities, such as a large number of shopping areas, filling stations, restaurants, auto workshops, and vehicle wash points can be seen around and throughout the 'GT road'. Similarly, another series of highways known as motorways (M1 to M5) also connect many districts like Lahore, Faisalabad, Multan, Toba Tek Singh, Hafizabad, Sargodha, Chakwal, and Rawalpindi and to other provinces and likewise create similar benefits. Another earning source for districts Lahore and Rawalpindi is their historical places and hill station[32]. The aforementioned poor districts of the south have no such earning generating facilities. Moreover, not a single industrial estate is situated here and they also lack universities.

[32] A famous hill station 'Murree' is situated in district Rawalpindi that not only bring the local tourists but also attract foreign tourists.

Like poverty incidence, the districts Gujranwala, Lahore, Sialkot, Gujrat and Toba Tek Singh have the lowest poverty gap (PG) among all districts. Similarly, in terms of poverty level and depth, the districts of Gujranwala and Lahore were lowest in poverty severity (PGS) overall besides Toba Tek Singh. Many districts, especially from southern Punjab are also found to be in severe poverty as indicated by the poverty incidence, e.g. Bhakkar (0.1400), DG Khan (0.1391), Rajanpur (0.1301) at overall district-level, Narowal (0.0833), Muzaffargarh (0.0756) and Pakpattan (0.0748) at the urban level, Bhakkar (0.1535), DG Khan (0.1494) and Rajanpur (0.1431) at rural level.

Figure 7.1 classifies the districts based on the calculated HCR. The figure shows that at the urban level the HCR is highest within the range of 20 percent and lowest in the range of 31-40 percent. Rural areas have higher ratios of districts in higher HCR categories than urban areas. In terms of classification, 7 out of 36 districts have head count ratio less than 20 percent, 15 districts have between 21 and 30 percent, 9 have between 31 and 40 and 5 out of 36 districts have the poverty ratio between 40 to 50 percent at the aggregate district level. A similar classification pattern also persists for poverty severity (see Appendix-M).

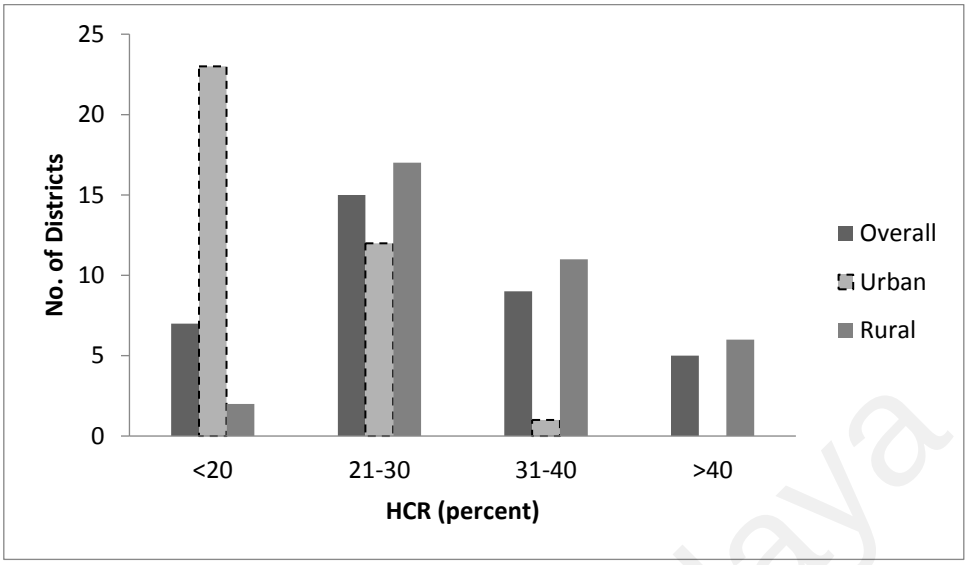

Figure 7.1: Classification of Districts by HCR

Source: Calculated based on MICS (2014-15).

Cheema et al. (2008) also calculated the poverty incidence at district-level for Punjab province using MICS-2003. Comparing our results with Cheema et al. we can see that during the last decade, with the exception of two districts (Mandi Bahaudin and Jhelum), the poverty level has been reduced among districts of Punjab province. The highest improvement was observed in districts such as Lodhran (31 percent), Multan (23 percent), Rahim Yar Khan (22 percent), Khanewal (21 percent) and Kasur (20 percent). Using PSLM 2008-09, Naveed and Ali (2012) also measured poverty in Pakistan's districts through a Multidimensional Poverty Index. Due to methodological differences, our values are different from Naveed and Ali's but the extreme poor and the least poor ranking of the districts is almost similar.

7.3 Remittances and Poverty

At the micro strand, remittances enhance the welfare of receiving HHs by boosting their incomes as well as consumption. Depending upon their distribution, remittances can

likewise influence poverty as long as poverty reduction remains a great concern to a number of developing countries. Hence, it is critical to see how poverty is influenced by remittances.

In order to review the poverty impacts of remittances, numerous empirical challenges, such as how to consider remittances as compared to other income, are involved. If remittances are treated as an exogenous source of income with an addition to other HH income, the goal simply is to look at poverty with remittances and without it (see Gustafsson & Makonnen, 1993). Meanwhile, remittances inflow is a product of migration, so it is not an exogenous factor. Rather, it is an alternative for income that a migrant would make at home (Adams, 1989).

If migration is expensive and riskier, at least primarily, migrants may move from middle or upper economic group of HHs rather than from poorest HHs with little or no finance to afford travelling overseas. Besides, these poor HHs have no access to credit due to unavailability of collateral.

A simple way of examining the effects of different types of income[33] is a simulation examination of change in income and observing its attendant impact on the poverty index (Taylor et al., 2005). This approach presumes an external cessation of remittances that consecutively affects the aggregate income while keeping all other components of income unchanged. Surely, HHs without remittances will not be affected.

[33] For example, basic income and foreign remittances in our case.

With the above discussion in mind, this thesis also examines the relationship between foreign remittances and poverty level and severity at provincial level and sub-provincial (districts) level of Punjab. Table 7.3 shows the measures of poverty for migrant HHs taking other income and the inclusion of remittances at the provincial level.

Table 7.3: Poverty at Provincial Level: Migrant HHs

Income without Remittances (*OI*)			Income with Remittances (*RI*+*OI*)		
HCR	PG	PGS	HCR	PG	PGS
0.4590	0.3373	0.2989	0.0782	0.0328	0.0196

Source: Calculated based on MICS (2014-15).

Results show that remittances have drastically changed the poverty level of migrant families. For instance, it decreased the poverty level by 38 percent. HHs that solely rely on foreign remittances can be badly affected if there is a cessation or reduction in this flow. Similarly, remittances have decreased the poverty gap and poverty severity by 30 and 28 percent respectively. Remittances played a noteworthy role in lessening poverty, even without a high level of urbanization (Arif & Farooq, 2014).

The same poverty indices are also drawn at district-level as given in Table 7.4. In the case of headcount ratio, the largest differences were observed in district Attock, Chakwal and Narowal with HCR 61 percent, 63 percent, and 55 percent respectively which drastically dropped to 6 percent, 8 percent, and 2.5 percent when HH income was included with remittances. Due to remittances inflow, the lowest ratio (15 percent) of poor HHs that get off the poverty line were from Jhang and without remittances, 20 percent migrant HHs were below the poverty line. By including remittances, this proportion declined to 5 percent. In 75 percent of districts, the remittances imposed more than 30 percent changes

Table 7.4: District Wise Poverty Level, Migrant HHs

		Income without Remittances (*OI*)				Income with Remittances (*RI+OI*)			
No	District	HCR	PG	PGS	Rank*	HCR	PG	PGS	Rank*
1	DG Khan	0.7242	0.5620	0.4973	1	0.3727	0.1599	0.0975	1
2	Chakwal	0.6333	0.4542	0.3894	2	0.0842	0.0457	0.0321	16
3	Attock	0.6112	0.4493	0.4074	3	0.0579	0.0245	0.0147	23
4	Multan	0.6009	0.3759	0.3138	4	0.1270	0.0520	0.0348	7
5	Lodhran	0.5823	0.3150	0.2516	5	0.1491	0.0897	0.0672	5
6	Narowal	0.5518	0.3830	0.3380	6	0.0253	0.0059	0.0017	32
7	Muzaffargarh	0.5434	0.4143	0.3604	7	0.1985	0.0644	0.0303	3
8	Hafizabad	0.5256	0.3524	0.3001	8	0.0780	0.0264	0.0103	17
9	Rawalpindi	0.5067	0.3895	0.3491	9	0.1152	0.0490	0.0289	9
10	Pakpattan	0.5055	0.3144	0.2401	10	0.0581	0.0023	0.0001	22
11	Layyah	0.4972	0.4319	0.4014	11	0.1091	0.0191	0.0088	10
12	Rajanpur	0.4947	0.3380	0.3053	12	0.1816	0.0537	0.0265	4
13	Jhelum	0.4924	0.3661	0.3267	13	0.0453	0.0210	0.0111	28
14	Gujrat	0.4697	0.3578	0.3187	14	0.0179	0.0071	0.0049	33
15	Bhakkar	0.4684	0.3120	0.2163	15	0.2655	0.0600	0.0182	2
16	Faisalabad	0.4552	0.3408	0.3047	16	0.0626	0.0278	0.0164	20
17	Mandi Bahaudin	0.4550	0.2718	0.2114	17	0.0707	0.0334	0.0203	19
18	Sialkot	0.4498	0.3492	0.3158	18	0.0603	0.0144	0.0053	21
19	Bahawalpur	0.4284	0.2625	0.2217	19	0.1295	0.0445	0.0213	6
20	Gujranwala	0.4231	0.3121	0.2832	20	0.0280	0.0120	0.0071	31
21	Sheikhupura	0.4146	0.2930	0.2584	21	0.1047	0.0400	0.0215	11
22	Khushab	0.4145	0.2592	0.2225	22	0.0895	0.0584	0.0443	14
23	Khanewal	0.4120	0.2422	0.2039	23	0.0494	0.0129	0.0048	27
24	Bahawalnagar	0.4092	0.2421	0.2090	24	0.0733	0.0666	0.0605	18
25	Sahiwal	0.4028	0.2912	0.2534	25	0.0565	0.0236	0.0141	25
26	Chiniot	0.3988	0.2591	0.2192	26	0.0396	0.0140	0.0049	30
27	Vehari	0.3881	0.2620	0.2171	27	0.0916	0.0283	0.0132	12
28	Mianwali	0.3688	0.2351	0.2027	28	0.0000	0.0000	0.0000	35
29	Lahore	0.3526	0.3148	0.3054	29	0.0409	0.0288	0.0216	29
30	Nankana Sahib	0.3488	0.2645	0.2452	30	0.0175	0.0045	0.0012	34
31	Toba Tek Singh	0.3475	0.2172	0.1785	31	0.0579	0.0142	0.0059	24
32	Sargodha	0.3375	0.2224	0.1821	32	0.0874	0.0503	0.0337	15
33	Okara	0.3262	0.2857	0.2715	33	0.0909	0.0662	0.0492	13
34	Rahim Yar Khan	0.2844	0.2148	0.1848	34	0.1174	0.0654	0.0422	8
35	Kasur	0.2281	0.1011	0.0806	35	0.0000	0.0000	0.0000	36
36	Jhang	0.2002	0.1412	0.1183	36	0.0545	0.0059	0.0006	26

Note: HCR – Headcount ratio; PG – Poverty gap; and PGS – Poverty gap square.
* Rank is based on HCR.
Source: Calculated based on MICS (2014-15).

and in districts such as Kasur and Mianwali, the remittances eliminated 100 percent poverty among migrant HHs.

Results of poverty gap show that the maximum effect in lessening dire poverty was seen in districts Attock (42 percent), Layyah (41 percent), and Chakwal (41 percent) which declined from 45 percent to 3 percent, 43 percent to 2 percent, and 45 percent to 4 percent respectively due to the remittances. On the other hand, the minimum difference was observed in the district Jhang which declined from 14 percent to 0.6 percent when remittances were included in total income. In 42 percent of districts, more than 30 percent migrant HHs were lifted out of extreme poverty due to remittances.

Like HCR and poverty depth, the poverty severity also reduced significantly in all the districts of the province. Districts such as Attock, DG Khan, and Layyah show highest changes in poverty severity due to remittances while the district Jhang had a minimum change. In 28 percent of districts, the poverty severity declined more than 30 percent, while in 42 percent of the districts it declined from 20 to 30 percent.

Generally stated, remittances inflow seems to have an effective role in reducing the number of poor HHs in Punjab province as well as in lessening the depth and severity of poverty.

7.4 Model Specification

Combining existing literature on poverty, such as Beyene (2014), Phangaphanga (2013), Adams (2006), Andersson et al. (2006), and Taylor (2006), some determinants of poverty were obtained for the empirical investigation, including remittances as one of the explanatory variables. The final estimated model is based on the following specification:

$$Pov_i = \beta_0 + \beta_1 RI_i + \beta_2 Dep_i + \beta_3 lnOI_i + \beta_4 HHedu_i + \beta_5 HHage_i + \beta_6 MH_i + e_i \quad (7.1)$$

The subscript ***i*** represents the i[th] household, and ***e*** is an error term. The other variables are explained here in. *Pov* is poverty incidence of the HHs[34]. *RI* is foreign remittances inflow, *Dep* is dependency, *OI* is other income, *HHedu* is education level of HH head, *HHage* is age of HH head, and *MH* is male household head.

7.5 Empirical Results

The logit regressions are conducted in three stages: (i) aggregate district based, (ii) urban-based and (iii) rural-based. The regressions account for both remittance receiving and non-receiving HHs.

[34] We repeated the model 7.1 with different dependent variables: a). Poverty incidence as dependent variable, and b). Poverty severity as dependent variable.

7.5.1 Remittances and district-wise poverty

a) Poverty incidence

Table 7.5 presents the logit results of districts. At a glance, the results reveal that foreign remittances have a significantly negative impact on poverty incidence. For the district Attock, the marginal effect of remittances on poverty is -0.1711, which suggests that the probability to be poor is 0.1711 lower among remittance receivers than for non-remittance receivers in this district. Furthermore, findings indicate that the highest probability to be non-poor due to remittances was located in southern districts such as Rajanpur (32 percent less than non-remittance receivers), Muzaffargarh (32 percent) and Bahawalnagar (31 percent). The HHs in these districts depend largely on remittances because of the presence of few industries and low agricultural earnings. For instance, in Bahawalnagar, only 25 percent of total geographical area is cultivable. Furthermore, the land size is also small since 18 percent of the farms are below 0.5 hectares in size and 56 percent are below 2 hectares (BOS, 2015). Remittance receivers have, on the average fivefold higher total earnings than non-receivers in the district Muzaffargarh and more than double in the district Rajanpur. Moreover, in Muzaffargarh, Rajanpur, and Bahawalnagar, 59, 47, and 44 percent of migrant HHs have higher remittance earnings than other earning sources, respectively because remittances are the most important source of income for them (MICS, 2014-15). Hence they are considerably better off than HHs with no remittances. The lowest probability for migrant HHs to be non-poor was in Lahore (7 percent), Sialkot (11 percent), and Multan (12 percent).

Table 7.5: District Wise Logit Results (Marginal Effects)

No.	Districts	*RI*	*Dep*	*HHedu*	*HHage*	*MH*	Constant	Obs.
North Punjab								
1	Attock	-0.1711*** (0.0268)	0.0318*** (0.0073)	-0.0223*** (0.0069)	-0.0011* (0.0006)	0.0158 (0.0604)	-0.1615*** (0.0268)	1031
2	Bhakkar	-0.2715*** (0.1131)	0.0229*** (0.0084)	-0.0329*** (0.0135)	-0.0012* (0.0007)	-0.0099 (0.1162)	-0.2304*** (0.0168)	813
3	Chakwal	-0.1730*** (0.0350)	0.0249*** (0.0066)	-0.0418*** (0.0110)	-0.0011 (0.0010)	-0.1312** (0.0610)	-0.2115*** (0.0629)	1126
4	Gujrat	-0.1231*** (0.0178)	0.0085** (0.0043)	-0.0892*** (0.0060)	-0.0044*** (0.0012)	-0.1558*** (0.0244)	-0.0954* (0.0601)	1100
5	Jhelum	-0.1959*** (0.0390)	0.0446*** (0.0087)	-0.0542*** (0.0132)	-0.0019*** (0.0011)	-0.2053*** (0.0632)	-0.1904*** (0.0322)	869
6	Khushab	-0.2504*** (0.0457)	0.0169* (0.0092)	-0.0409*** (0.0137)	-0.0015 (0.0014)	0.0910 (0.0791)	-0.1798 (0.1361)	710
7	Mandi Bahaudin	-0.1557*** (0.0257)	0.0202*** (0.0077)	-0.0533*** (0.0115)	-0.0025** (0.0012)	-0.0435 (0.0521)	-0.1141*** (0.0485)	799
8	Mianwali	-0.2307** (0.1177)	0.0147* (0.0081)	-0.0342*** (0.0047)	-0.001* (0.0006)	-0.1184** (0.0600)	-0.2068*** (0.0109)	770
9	Rawalpindi	-0.1181*** (0.0224)	0.0120* (0.0072)	-0.0798*** (0.0107)	-0.0031*** (0.0010)	0.0349 (0.0456)	-0.1366*** (0.0265)	741
10	Sargodha	-0.1389*** (0.0400)	0.0158** (0.0076)	-0.0764*** (0.0104)	-0.0028*** (0.0010)	-0.0987** (0.0490)	-0.1318** (0.0663)	1227
Central Punjab								
11	Chiniot	-0.1755*** (0.0559)	0.0253*** (0.0077)	-0.0527*** (0.0119)	-0.0019* (0.0011)	-0.0121 (0.0825)	-0.1124*** (0.0302)	762
12	Faisalabad	-0.1365*** (0.0202)	0.0180*** (0.0044)	-0.0762*** (0.0061)	-0.0030 (0.0073)	-0.0693** (0.0330)	-0.0969*** (0.0289)	1853
13	Gujranwala	-0.1302*** (0.0138)	0.0114*** (0.0041)	-0.0966*** (0.0106)	-0.0041*** (0.0014)	-0.1056*** (0.0259)	-0.1502 (0.1038)	1472
14	Hafizabad	-0.1233** (0.0570)	0.0090* (0.0056)	-0.0572*** (0.0132)	-0.0022* (0.0013)	0.0975 (0.0742)	-0.2564*** (0.0291)	690
15	Jhang	-0.1934*** (0.0458)	0.0401*** (0.0064)	-0.0456*** (0.0105)	-0.0020** (0.0009)	-0.1235* (0.0721)	-0.1244*** (0.0173)	1056
16	Kasur	-0.1571* (0.0911)	0.0280*** (0.0068)	-0.0660*** (0.0106)	-0.0024*** (0.0010)	-0.1818*** (0.0630)	-0.1478*** (0.0566)	1127
17	Lahore	-0.0726*** (0.0229)	0.0096*** (0.0036)	-0.1076*** (0.0133)	-0.0067*** (0.0014)	0.0396 (0.0296)	-0.0774 (0.0498)	1836
18	Nankana Sahib	-0.1449*** (0.0265)	0.0222*** (0.0079)	-0.0596*** (0.0115)	-0.0018** (0.0008)	-0.0515 (0.0676)	-0.1507*** (0.0353)	758

Table 7.5 continued

19	Narowal	-0.1656*** (0.0187)	0.0108* (0.0061)	-0.0548*** (0.0108)	-0.0016* (0.0010)	-0.3237*** (0.0421)	-0.1301** (0.0569)	883
20	Okara	-0.2158*** (0.0266)	0.0123* (0.0075)	-0.0613*** (0.0117)	-0.0017 (0.0011)	-0.1142** (0.0509)	-0.1322*** (0.0464)	784
21	Pakpattan	-0.1659*** (0.0252)	0.0119* (0.0063)	-0.0542*** (0.0119)	-0.0012 (0.0071)	-0.1733*** (0.0610)	-0.1221*** (0.0329)	869
22	Sahiwal	-0.1175*** (0.0244)	0.0172*** (0.0051)	-0.0533*** (0.0073)	0.0023 (0.0020)	-0.1014*** (0.0361)	-0.1421*** (0.0441)	1354
23	Sheikhupura	-0.1197*** (0.0406)	0.0279*** (0.0059)	-0.0525*** (0.0088)	-0.0024 (0.0017)	-0.1324*** (0.0569)	-0.1097*** (0.0231)	1133
24	Sialkot	-0.1093*** (0.0155)	0.0143*** (0.0037)	-0.0643*** (0.0061)	0.0032 (0.0021)	-0.1254*** (0.0247)	-0.1256** (0.0522)	1309
25	Toba Tek Singh	-0.1488*** (0.0217)	0.0175*** (0.0062)	-0.0595*** (0.0082)	-0.0014* (0.0009)	-0.1575** (0.0483)	-0.1275** (0.0417)	973
South Punjab								
26	Bahawalpur	-0.1930*** (0.0555)	0.0341*** (0.0071)	-0.0357*** (0.0109)	-0.0008* (0.0005)	-0.1312** (0.0590)	-0.1176*** (0.0282)	1213
27	Bahawalnagar	-0.3072*** (0.0256)	0.0462*** (0.0076)	-0.0375*** (0.0120)	-0.0018* (0.0011)	-0.1301* (0.0700)	-0.1826*** (0.0393)	1099
28	DG Khan	-0.1331*** (0.0478)	0.0505*** (0.0077)	-0.0335*** (0.0127)	-0.0009 (0.0011)	-0.0852*** (0.0351)	-0.0361 (0.0491)	1016
29	Khanewal	-0.1713*** (0.0397)	0.0301*** (0.0065)	-0.0493*** (0.0095)	-0.0016* (0.0009)	-0.0432 (0.0551)	-0.2555 (0.1892)	1135
30	Layyah	-0.3019*** (0.0610)	0.0368*** (0.0089)	-0.0576*** (0.0139)	-0.0013* (0.0008)	-0.2019*** (0.0812)	-0.0411 (0.0471)	862
31	Lodhran	-0.1988*** (0.0572)	0.0385*** (0.0079)	-0.0414*** (0.0127)	-0.0015 (0.0012)	-0.1871*** (0.0706)	-0.1348** (0.0618)	866
32	Multan	-0.1169*** (0.0442)	0.0301*** (0.0061)	-0.0739*** (0.0081)	0.0002 (0.0008)	0.0653 (0.0443)	-0.1369*** (0.0511)	1368
33	Muzaffargarh	-0.3164*** (0.0444)	0.0456*** (0.0071)	-0.0469*** (0.0117)	-0.0012* (0.0007)	-0.2569*** (0.0671)	-0.1268*** (0.0377)	1331
34	Rahim Yar Khan	-0.2005*** (0.0413)	0.0362*** (0.0061)	-0.0507*** (0.0100)	-0.0014* (0.0008)	-0.1385** (0.0635)	-0.1468*** (0.0487)	1367
35	Rajanpur	-0.3224*** (0.0585)	0.0301*** (0.0079)	-0.0487*** (0.0143)	-0.0009* (0.0005)	-0.1322* (0.0843)	-0.2204*** (0.0564)	836
36	Vehari	-0.1533*** (0.0308)	0.0345*** (0.0060)	-0.0420*** (0.0094)	-0.0012** (0.0006)	-0.0735 (0.0484)	-0.0775*** (0.0107)	1151

Note: Accounts for both remittance receiving and non-receiving HHs. The standard errors are given in the parenthesis. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Although the estimated impact of remittances on poverty varies from district to district, there is no doubt that the probability of being poor among remittance receivers is significantly lower than the non-receivers in all districts of Punjab. These results are consistent with existing studies (Acosta et al., 2008; Adams, 2004, 2006; Koç & Onan, 2004; Gustafsson & Makonnen, 1993).

For other variables such as the age of HH head, the results are mixed in terms of the signs and significance. It has a positive but insignificant (albeit limited) relationship with poverty incidence in only three (Sialkot, Multan, and Sahiwal) out of 36 districts. The lowest probability of being poor during every yearly increase in age was for HHs in the districts of Bahawalpur (-0.0008) and Rajanpur (-0.0009). It implies that for a yearly increase in age of the HH head, the probability of being poor is 0.08 percent less in Bahawalpur and 0.09 percent in Rajanpur. The highest impact was found in more developed districts since an increment in age enhances the salary and skills which in turn reduces poverty level. In about 69 percent of the districts, this variable is statistically significant and has an inverse relationship with poverty incidence. With growing age, a head of HH gains experience as well as accumulate capital. These gains in the quality of higher labour supply help to lower the likelihood of poverty. Using Argentina as a case study, Verner (2006) concluded that poverty is more concentrated in HHs headed by young members. Also, older HH heads have made dramatic improvements relative to younger heads in their economic well-being (Fry, Cohn, Livingston & Taylor, 2011).

Dependency has a positive and significant association with poverty incidence in the whole province. The highest probability values were found in districts DG Khan and Jhelum which

show increases on the average by 5 and 4 percent respectively for every dependent member in the HHs. The lowest probability values were observed in districts Gujrat and Hafizabad which increase by 1 percent for every dependent member added to the HHs.

The results are quite straightforward to interpret i.e. a growing number of dependent members in HHs reduces the per capita earnings and increases the expenses, which results in higher poverty. Farah (2015) also concluded that the HH with a higher level of dependency is poorer than others. A number of studies validate these findings. For instance, Hashmi and Sial (2005) found that HHs with higher dependency level were more likely to be poor. Similarly, Adams and He (1995), and McCulloch and Baulch (2002) concluded that the dependency ratio significantly boosts the risk to being poor. In the same vein, a high level of dependency reduces earning potential, and therefore increases the risk of being poor (Sen, 2003; McCulloch & Baulch, 2000; Lipton, 1983). A reduction of the dependency ratio is likely to improve the economic position of a HH (Arif & Farooq, 2014).

The education level of HH head plays a crucial role in lowering the poverty level. The table shows that for all districts of Punjab province, this variable has a highly significant impact on the dependent variable. The highest probability value was found in central Punjab districts namely Lahore and Gujranwala; an increase in the educational level of every HH head will cause a decrease in the probability of being poor by almost 11 and 10 percent in Lahore and Gujranwala respectively. Employment opportunities are higher in these districts and as such every level of education enables them to get a good job which in turn lowers the poverty level. Northern and southern districts such as Bhakkar and DG Khan have the lowest probability values in this regard. This is because these districts have fewer opportunities for educated persons and the effect on poverty is not as high as in central Punjab's districts.

Furthermore, the poverty ratio is found to be higher among HHs with uneducated heads (Sen & Begum, 1998).

An educated HH head can get better employment than an uneducated HH head as well as benefit from a better resource allocation and investment, which can lead to poverty reduction. According to Myftaraj et al. (2014), there exists an inverse relationship between the educational level of HH head and poverty level of HH using Albania as a case study. The educational level of HH head is a significant factor in getting rid of poverty in a HH (Hashmi & Sial, 2005). In Punjab province, poverty level is three and half times higher among HHs headed by an uneducated member than those headed by a literate member (Arif, 2000). World Bank (1995) reported that, primary and secondary education could boost the productivity of poor HHs and improve their health condition. Moreover, education equips the heads to make a meaningful contribution to the society. An educated HH head lowers the risk of poverty (Bilenkisia et al., 2015; Okojie, 2002). Household heads with secondary education have substantially better living conditions as compared to others (Maitra & Vahid, 2006).

In a different light, males are considered stronger and more active than females, since male HH heads play a more active role in HH activities including earnings than female heads (Fox, 2009; Ridgers, 2009). Therefore, in this regard, it can be said that the poverty level should be lower in male headed HHs than those headed by females. The results reveal that in 72 percent of districts, this variable has a significant and inverse relationship with HH poverty incidence. The results are in line with Farah (2015), Myftaraj et al. (2014), and Snyder, McLaughlin, Findeis (2006). Using survey data of Bangladesh, Farah (2015) observed that female headed HHs are poorer than HHs headed by a male member.

The above discussion shows that foreign remittances are the most effective tool among other determinants of poverty to shrink the poverty of HHs. Marginal effect of receiving remittances ranges from 0.0726 to 0.3224, which is significantly higher than other factors with the male head second. For example, the marginal effect of HH head age, HH head education, and male HH head ranges from 0.0009 to 0.0041, 0.0342 to 0.1070, and 0.0396 to 0.1322 respectively.

Table 7.6 summarizes the applicability of the hypotheses in all the districts of the Punjab province. The table shows that for foreign remittances, the alternative hypothesis of a negative relationship between foreign remittances and HH poverty incidence cannot be rejected in all the 36 districts. The alternative hypotheses of a negative relationship with the educational level of the HH head, and negative relationship with dependency, cannot be rejected for Punjab. For other variables, such as age and male HH head, the proportion of districts that do not reject the alternative hypothesis was higher than those that do reject.

Table 7.6: District Wise Hypothesis Testing

No.	Variables	No. of Districts	Decision
1	RI → Pov	36	Reject H_0
		0	Do not reject
2	Dep → Pov	36	Reject H_0
		0	Do not reject
3	HHedu → Pov	36	Reject H_0
		0	Do not reject
4	HHage → Pov	25	Reject H_0
		11	Do not reject
5	MH → Pov	24	Reject H_0
		12	Do not reject

Source: Derived from Table 7.5.

b) Poverty severity

The impact of remittances on poverty severity is not significantly different from that on poverty incidence in terms of sign and significance level but the coefficient values are not comparable. Unlike the poverty incidence analysis, the dependent variable in poverty severity analysis is not dichotomous and has unique values in each district. Thus, we used the OLS approach to explore the association between remittances inflow and poverty severity. Table 7.7 contains district-wise results of the impact of remittances on poverty severity. Results show that on the average, remittance receivers of the southern Punjab districts namely DG Khan have 0.2196 less of poverty severity than non-receivers and Rajanpur are better off by 0.1750 than non-receivers. Remittances inflow is very important in reducing the severity of poverty in southern Punjab. The lowest values were found for central Punjab districts such as Sialkot and Lahore with remittance receivers having 0.0165 and 0.0405 less of poverty severity respectively than others. Thus, remittances inflow is a vital source to reduce the poverty severity among recipient HHs across the province. The industrial districts of central Punjab such as Faisalabad, Gujranwala, Lahore, and Sialkot and northern Punjab such as Gujrat have lower effects of remittances on reducing the poverty severity than the other parts of the province especially south Punjab. Thus, it can be concluded that in such industrial districts, more dependence is placed on other income sources than on remittances.

Dependency has a positive and significant association with poverty severity in the whole province. The highest effect was found in districts of southern Punjab such as DG Khan and Bahawalnagar. A unit increase in the number of dependent members in a HH causes an increase in the poverty severity by 0.0274 and 0.0231 in districts DG Khan and Bahawalnagar respectively. Notably, the developed districts such as Faisalabad,

Table 7.7: District Wise OLS Results

No.	Districts	*RI*	*Dep*	*HHedu*	*HHage*	*MH*	Constant	Observations
North Punjab								
1	Attock	-0.0946*** (0.0166)	0.0121*** (0.0013)	-0.0201*** (0.0041)	-0.0014*** (0.0005)	-0.0446* (0.0272)	-0.1401*** (0.0482)	1,006
2	Bhakkar	-0.1698*** (0.0416)	0.0193*** (0.0019)	-0.0161* (0.0101)	-0.0021* (0.0011)	-0.0189* (0.0116)	-0.2090*** (0.0382)	788
3	Chakwal	-0.0889*** (0.0366)	0.0081*** (0.0019)	-0.0199*** (0.0025)	-0.0017 (0.0011)	-0.0018*** (0.0005)	-0.1901*** (0.0843)	1,086
4	Gujrat	-0.0674** (0.0324)	0.0021* (0.0012)	-0.0496*** (0.0056)	-0.0017** (0.0008)	-0.0022*** (0.0008)	-1.014e+07 (1.020e+07)	1,082
5	Jhelum	-0.0909*** (0.0203)	0.0061* (0.0032)	-0.0194*** (0.0053)	-0.0015*** (0.0005)	-0.0358* (0.0204)	-0.1691*** (0.0536)	875
6	Khushab	-0.1547*** (0.0342)	0.0126*** (0.0015)	-0.0149* (0.0079)	-0.0020* (0.0012)	-0.0156* (0.0089)	-0.1584 (0.1574)	695
7	Mandi Bahaudin	-0.0789* (0.0429)	0.0108* (0.0057)	-0.0214* (0.0121)	-0.0022* (0.0013)	-0.0147*** (0.0053)	-0.0927 (0.0699)	787
8	Mianwali	-0.1577*** (0.0357)	0.0189*** (0.0038)	-0.0023*** (0.0006)	-0.0056*** (0.0011)	-0.0146*** (0.0054)	-0.1854*** (0.0105)	786
9	Rawalpindi	-0.0684*** (0.0147)	0.0017* (0.0009)	-0.0518*** (0.0044)	-0.0008** (0.0004)	-0.0540* (0.0320)	-0.1152** (0.0479)	732
10	Sargodha	-0.0578* (0.0339)	0.0057* (0.0034)	-0.0495*** (0.0142)	-0.0032* (0.0019)	-0.0343*** (0.0135)	-0.1104 (0.0877)	1,192
Central Punjab								
11	Chiniot	-0.0987* (0.0557)	0.0021* (0.0011)	-0.0208* (0.0124)	-0.0022* (0.0013)	-0.0167*** (0.0068)	-0.0906* (0.0516)	745
12	Faisalabad	-0.0436* (0.0273)	0.0017* (0.0010)	-0.0563*** (0.0157)	-0.0058 (0.0367)	-0.0041* (0.0023)	-0.0755 (0.0503)	1,818
13	Gujranwala	-0.0987 (0.0697)	0.0021*** (0.0009)	-0.0587*** (0.0036)	-0.0014 (0.0009)	-0.0027** (0.0012)	-0.1288 (0.1252)	1,458
14	Hafizabad	-0.1054* (0.0615)	0.0021* (0.0013)	-0.0273*** (0.0049)	-0.0019*** (0.0005)	-0.0221** (0.0098)	-0.2351*** (0.0505)	672
15	Jhang	-0.1438* (0.0128)	0.0162*** (0.0026)	-0.0201*** (0.0031)	-0.0006 (0.0004)	-0.0095*** (0.0027)	-0.1032*** (0.0387)	1,028
16	Kasur	-0.0471* (0.0280)	0.0094* (0.0056)	-0.0341*** (0.0110)	-0.0024*** (0.0010)	-0.0488*** (0.0198)	-0.1264* (0.0780)	1,111
17	Lahore	-0.0405** (0.0181)	0.0023*** (0.0007)	-0.0657*** (0.0251)	-0.0010 (0.0007)	-0.0035*** (0.0011)	-0.0556 (0.0712)	1,817
18	Nankana Sahib	-0.0745*** (0.0189)	0.0193*** (0.0027)	-0.0209*** (0.0044)	-0.0020*** (0.0004)	-0.0227*** (0.0083)	-0.1293** (0.0567)	737

Table 7.7 continued

19	Narowal	-0.0782 (0.0501)	0.0052* (0.0031)	-0.0229* (0.0124)	-0.0015 (0.001)	-0.0685*** (0.0407)	-0.1087 (0.0783)	862
20	Okara	-0.0987** (0.0471)	0.0038** (0.0017)	-0.0294* (0.0182)	-0.0005 (0.0015)	-0.0188*** (0.0051)	-0.1108* (0.0678)	750
21	Pakpattan	-0.1054 (0.0677)	0.0068* (0.0035)	-0.0223* (0.0122)	-0.0024*** (0.0010)	-0.0403** (0.0186)	-0.1007* (0.0543)	841
22	Sahiwal	-0.0987* (0.0587)	0.0158*** (0.0034)	-0.0224** (0.0098)	-0.0010** (0.0005)	-0.0316* (0.0146)	-0.1207* (0.0654)	1,329
23	Sheikhupura	-0.0550*** (0.0142)	0.0074*** (0.0021)	-0.0261*** (0.0036)	-0.0009*** (0.0003)	-0.0415* (0.0233)	-0.0883** (0.0444)	1,114
24	Sialkot	-0.0565*** (0.0054)	0.0039*** (0.0017)	-0.0576*** (0.0045)	-0.0004 (0.0006)	-0.0076* (0.0044)	-0.1042 (0.0736)	1,296
25	Toba Tek Singh	-0.0879 (0.0578)	0.0191*** (0.0034)	-0.0156* (0.0088)	-0.0054*** (0.0013)	-0.0245* (0.0146)	-0.1061* (0.0631)	959
South Punjab								
26	Bahawalnagar	-0.1577*** (0.0664)	0.0151*** (0.0069)	-0.0156* (0.0081)	-0.0021* (0.0013)	-0.0102*** (0.0036)	-0.0962* (0.0496)	1,058
27	Bahawalpur	-0.1837*** (0.0545)	0.0162*** (0.0011)	-0.0138** (0.0069)	-0.0043*** (0.0014)	-0.0108* (0.0065)	-0.1612*** (0.0607)	1,183
28	DG Khan	-0.2196** (0.1094)	0.0159*** (0.0031)	-0.0216* (0.0124)	-0.0003 (0.0018)	-0.0478* (0.0301)	-0.0146** (0.0705)	987
29	Khanewal	-0.0871* (0.0480)	0.0052* (0.0031)	-0.0227** (0.0099)	-0.0021** (0.0010)	-0.0144** (0.0063)	-0.2341 (0.2106)	1,107
30	Layyah	-0.1510*** (0.0426)	0.0121*** (0.0037)	-0.0208*** (0.0047)	-0.0018*** (0.0005)	-0.0219*** (0.0061)	-0.0197 (0.0685)	839
31	Lodhran	-0.0946*** (0.0357)	0.0081* (0.0045)	-0.0195*** (0.0021)	-0.0019* (0.0010)	-0.0541*** (0.0182)	-0.1134 (0.0832)	845
32	Multan	-0.1050*** (0.0471)	0.0037* (0.0021)	-0.0422*** (0.0042)	-0.0005*** (0.0002)	-0.0101** (0.0047)	-0.1155* (0.0725)	1,335
33	Muzaffargarh	-0.1259*** (0.0480)	0.0172** (0.0087)	-0.0195* (0.0116)	-0.0027* (0.0014)	-0.0892** (0.0406)	-0.1054* (0.0591)	1,274
34	Rahim Yar Khan	-0.1057* (0.0611)	0.0161*** (0.0023)	-0.0208* (0.0123)	-0.0039*** (0.0016)	-0.0905** (0.0431)	-0.1254* (0.0701)	1,339
35	Rajanpur	-0.1750*** (0.0368)	0.0157*** (0.0023)	-0.0203*** (0.0046)	-0.0029*** (0.0006)	-0.0738* (0.0468)	-0.1992** (0.0778)	808
36	Vehari	-0.0902*** (0.0127)	0.0061*** (0.0026)	-0.0217*** (0.0027)	-0.0013*** (0.0003)	-0.0289** (0.0127)	-0.0561* (0.0321)	1,125

Note: Accounts for both remittance receiving and non-receiving HHs. The standard errors are given in the parenthesis. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Gujranwala, Gujrat, Lahore, Multan, and Sialkot have lower coefficient values for the same variable, which may be due to the presence of more job opportunities, old age benefits and child birth benefits.

Generally, the educational level of a HH head plays a crucial role in reducing the poverty severity. Table 7.7 shows that the educational level of a HH head is important in reducing poverty severity for all districts of Punjab province. The highest coefficient value was found in the districts of central Punjab such as Lahore and Gujranwala, and the lowest was found in northern and southern Punjab districts such as Mianwali and Bahawalpur.

Age of HH head is more important in reducing poverty severity as compared to incidence of poverty. A number of districts such as Narowal, Sheikhupura, Multan, Lodhran, Sahiwal, Chakwal, and Khushab do not have a significant association between remittances and poverty incidence but have a significant relationship in reducing poverty severity. Therefore, it is concluded that the age of a HH head does not lift the HH above the poverty line but can decrease its poverty severity. In 86 percent of districts, a yearly increase in the age of a HH head reduces the severity of poverty in the HH. This is because an increment in age enhances their work experience which in turn leads to higher earnings and lower poverty severity.

The effect of having a male HH head is significant in 100 percent of the districts as compared to 72 percent in the case of poverty incidence. It demonstrates that though male HH heads are not playing a significant role to push HHs above the poverty line, they assist the HHs to reduce the poverty severity. The higher coefficient values were found in the least developed districts where it is expected that males are more dominant. In developed districts,

females also play a productive role and as a result male dominancy is not as strong as in least developed districts.

The foregoing discussion shows that foreign remittances are more important in reducing poverty severity since it provides the additional amount to help HHs fulfill their basic needs. It is more important in reducing poverty severity in southern Punjab than in the north and central Punjab. As compared to other determinants, remittances inflow is a most effective tool in reducing poverty severity. It has the capability to reduce poverty severity from 0.2196 to 0.0165 among recipient HHs, which is significantly higher than the other factors. Table 7.8 summarizes the hypothesis validity.

Table 7.8: District Wise Hypothesis Testing

No.	Variables	No. of Districts	Decision
1	RI → Pov	32	Reject H_0
		4	Do not reject
2	Dep → Pov	36	Reject H_0
		0	Do not reject
3	HHedu → Pov	36	Reject H_0
		0	Do not reject
4	HHage → Pov	28	Reject H_0
		8	Do not reject
5	MH → Pov	36	Reject H_0
		0	Do not reject

Source: Derived from Table 7.7.

Goodness of fit test is usually employed after estimating a final model. In this study, two types of tests are used for model fitness. The results are presented in Table 7.9. Hosmer-Lemeshow (H-L) results show that in 97 percent of the districts, the null hypothesis (chosen model is correctly specified) is failed to reject. Similarly, the Pearson χ^2 test also verifies

the model fitness in 94 percent of districts. However, districts with miss-specified models are different in both models.

Table 7.9: Results of Goodness of Fit Tests

No.	District	H-L χ^2	Prob.	Pearson χ^2	Prob.
1	Attock	17.44	0.0259	971.66	0.0764
2	Bhakkar	10.56	0.2278	709.21	0.5225
3	Chakwal	8.81	0.3582	947.3	0.5278
4	Gujrat	10.96	0.2041	1356.9	0.000
5	Jhelum	15.8	0.0653	779.67	0.4063
6	Khushab	10.54	0.2294	646.36	0.4997
7	Mandi Bahaudin	8.24	0.4102	723.61	0.6208
8	Mianwali	4.79	0.7798	719.92	0.4414
9	Rawalpindi	8.39	0.3967	638.45	0.8654
10	Sargodha	10.54	0.2292	1063.02	0.5114
11	Chiniot	12.05	0.1489	676.47	0.3397
12	Faisalabad	6.6	0.5806	1534.23	0.1924
13	Gujranwala	3.96	0.8608	1292.83	0.3074
14	Hafizabad	7.34	0.5007	635.9	0.2181
15	Jhang	6.54	0.5875	929.14	0.4008
16	Kasur	7.59	0.4746	933.14	0.4926
17	Lahore	6	0.6476	1472.42	0.1246
18	Nankana Sahib	9.24	0.3226	678.21	0.5338
19	Narowal	10.01	0.2643	987.34	0.000
20	Okara	15.04	0.0584	748.18	0.1208
21	Pakpattan	5.05	0.7517	782.39	0.3052
22	Sahiwal	9.62	0.2927	1158.72	0.5382
23	Sheikhupura	6.78	0.5608	1001.41	0.2716
24	Sialkot	4.4	0.8197	1205.68	0.2223
25	Toba Tek Singh	13.05	0.11	831.33	0.696
26	Bahawalpur	11.64	0.1678	1002.57	0.427
27	Bahawalnagar	5.97	0.6501	886.35	0.7458
28	DG Khan	11.96	0.1528	894.45	0.3165
29	Khanewal	3.93	0.8635	979.68	0.4162
30	Layyah	9.18	0.3275	736.87	0.5769
31	Lodhran	11.04	0.1993	721.27	0.4171
32	Multan	12.1	0.147	1058.31	0.5606
33	Muzaffargarh	12.68	0.1232	1042.05	0.4762
34	Rahim Yar Khan	9.41	0.3088	1089.48	0.3404
35	Rajanpur	6.36	0.6069	702.63	0.5604
36	Vehari	9.05	0.338	985.2	0.1385

Note: H_0: Model is correctly specified
Source: Author's own analysis.

7.5.2 Remittances and urban poverty

To capture the poverty impacts of remittances inflow at the grass roots, this thesis expands the analysis to distinguish between the rural and urban levels. Table 7.10 shows the poverty level among urban migrant HHs and the change in poverty level due to remittances at the provincial level. For instance, the table shows that remittances inflow decreases the poverty HCR, the poverty gap and the poverty severity by 37, 31 and 30 percent respectively.

Table 7.10: Provincial FGT Poverty Measures of Migrant HHs: Urban Region

Income without Remittances (*OI*)			Income with Remittances (*RI*+*OI*)		
HCR	PG	PGS	HCR	PG	PGS
0.4114	0.3332	0.3109	0.0389	0.0181	0.0116

Source: Calculated based on MICS (2014-15).

The same calculation was carried out at the district level and the results are displayed in Table 7.11. A look at the table reveals that by including remittances, a drastic change was observed in poverty level of migrant HHs. In the district Lodhran, with the inclusion of remittances in total earnings the poverty level decreased by 100 percent. Similarly, this ratio dropped from 84 percent to 25 percent in the district Hafizabad. Furthermore, 28 percent of the districts have HCR of more than 0.50, without remittances. By including of remittances, 39 percent of the districts reached to zero HCR and 39 percent up to 0.05. Minimum difference was seen in the district Sargodha (from 18 percent to 11 percent).

Table 7.11: District Wise Poverty Level among Migrant HHs: Urban Region

		Income without Remittances (*OI*)				Income with Remittances (*RI+OI*)			
No.	District	HCR	PG	PGS	Rank*	HCR	PG	PGS	Rank*
1	Lodhran	1.0000	0.5162	0.4290	1	0	0	0	23
2	Hafizabad	0.8390	0.5344	0.4885	2	0.2526	0.0578	0.0167	2
3	DG Khan	0.7008	0.5500	0.5028	3	0.3276	0.1865	0.1368	1
4	Multan	0.5957	0.4241	0.4099	4	0.0318	0.0090	0.0025	15
5	Attock	0.5748	0.4634	0.4244	5	0.0203	0.0046	0.0010	19
6	Narowal	0.5682	0.4112	0.3635	6	0	0	0	24
7	Chakwal	0.5668	0.4080	0.3581	7	0.0415	0.0180	0.0078	13
8	Khanewal	0.5334	0.4059	0.3669	8	0.0666	0.0352	0.0186	7
9	Vehari	0.5279	0.4785	0.4613	9	0	0	0	25
10	Sialkot	0.5229	0.4447	0.4174	10	0.0571	0.0098	0.0018	8
11	Mandi Bahaudin	0.4811	0.3413	0.2971	11	0.0164	0.0065	0.0026	20
12	Gujrat	0.4792	0.4379	0.4234	12	0.0252	0.0068	0.0038	16
13	Gujranwala	0.4748	0.3824	0.3570	13	0.0213	0.0102	0.0057	18
14	Rajanpur	0.4324	0.3796	0.3775	14	0	0	0	26
15	Faisalabad	0.4269	0.3617	0.3391	15	0.0163	0.0052	0.0017	21
16	Bhakkar	0.4109	0.3763	0.3482	16	0	0	0	27
17	Chiniot	0.4087	0.2780	0.2468	17	0	0	0	28
18	Kasur	0.4065	0.1802	0.1436	18	0	0	0	29
19	Sahiwal	0.4043	0.3320	0.3221	19	0	0	0	30
20	Layyah	0.4001	0.3272	0.2806	20	0.1974	0.1071	0.0581	3
21	Okara	0.3964	0.3087	0.2780	21	0	0	0	31
22	Khushab	0.3751	0.2018	0.1698	22	0.0368	0.0052	0.0007	14
23	Bahawalnagar	0.3703	0.1459	0.0978	23	0	0	0	32
24	Jhelum	0.3660	0.3026	0.2698	24	0.0517	0.0122	0.0033	9
25	Sheikhupura	0.3548	0.2774	0.2572	25	0.0443	0.0094	0.0020	11
26	Rawalpindi	0.3512	0.2634	0.2314	26	0.0458	0.0205	0.0119	10
27	Lahore	0.3500	0.3188	0.3117	27	0.0244	0.0193	0.0155	17
28	Pakpattan	0.3068	0.0980	0.0588	28	0	0	0	33
29	Nankana Sahib	0.3057	0.2276	0.2121	29	0	0	0	34
30	Toba Tek Singh	0.2914	0.2003	0.1704	30	0.0157	0.0100	0.0064	22
31	Rahim Yar Khan	0.2653	0.1615	0.1364	31	0.0683	0.0081	0.0010	6
32	Mianwali	0.2459	0.1870	0.1799	32	0	0	0	35
33	Muzaffargarh	0.2359	0.2359	0.2359	33	0.0427	0.0059	0.0008	12
34	Bahawalpur	0.2195	0.1362	0.1067	34	0.1160	0.0563	0.0369	4
35	Sargodha	0.1795	0.1460	0.1394	35	0.1100	0.0843	0.0656	5
36	Jhang	0.1139	0.1139	0.1139	36	0	0	0	36

Note: HCR – Headcount ratio; PG – Poverty gap; and PGS – Poverty gap square. Rank is based on HCR.
Source: Calculated based on MICS (2014-15).

For the poverty gap ratio, the districts such as DG Khan (0.55), Hafizabad (0.53), and Lodhran (0.52) are ranked first, second, and third respectively with exclusion of remittances. These remittances were able to cause a change in the status of the aforementioned districts by 36, 47, and 52 percent respectively. The minimum change (6 percent) was observed in the district Sargodha. Due to remittances, 39 percent of the province had a zero PG value and 50 percent get up to 0.50.

The results for poverty severity are not significantly different from PG with slight differences with districts DG Kahn and Hafizabad at the top. The 39 and 56 percent of these districts had 0.00 to 0.05 poverty gap value due to remittances. It will not be out of place to conclude that foreign remittances can improve significantly the economic condition of recipients and help to put an end to poverty in the HHs of recipients.

a) Poverty incidence – logit analysis

Table 7.12 gives the district-wise logit results at the urban level. The results show that there exists a significant negative relationship between remittances inflow and poverty incident in all 36 districts. The highest probability to be non-poor due to remittances was found in the districts, Muzaffargarh (17 percent less than non-receivers), and Khushab (13 percent). The lowest probability values were found in central Punjab districts, such as Gujranwala (0.0429), and Faisalabad (0.0467). Almost in 80 percent of the districts, the marginal effect of foreign remittances ranges from 5 to 15 percent. It implies that being a remittance receiver can reduce the probability to be poor from 5 to 15 percent in 80 percent of the urban Punjab.

Table 7.12: District Wise Logit Results – Urban Region (Marginal Effects)

No.	Districts	*RI*	*Dep*	*HHedu*	*HHage*	*MH*	Constant	Obs.
North Punjab								
1	Attock	-0.1031*** (0.0321)	0.0231*** (0.0019)	-0.0615*** (0.0163)	-0.0023 (0.0017)	-0.1546** (0.0741)	-0.1365*** (0.0018)	303
2	Bhakkar	-0.1188*** (0.0466)	0.0072* (0.0042)	-0.0463** (0.0214)	-0.0017 (0.0012)	0.0022 (0.2081)	-0.2044*** (0.0092)	237
3	Chakwal	-0.1175*** (0.0345)	0.0207** (0.0105)	-0.0558*** (0.0091)	-0.0024* (0.0015)	-0.1390** (0.0703)	-0.1845*** (0.0359)	201
4	Gujrat	-0.0682*** (0.0189)	0.0060* (0.0036)	-0.1090*** (0.0052)	-0.0034*** (0.0007)	-0.0892*** (0.0247)	-0.0674** (0.0321)	418
5	Jhelum	-0.1265*** (0.0298)	0.0266*** (0.0092)	-0.0626*** (0.0140)	-0.0033*** (0.0013)	0.0375 (0.0520)	-0.1614*** (0.0032)	281
6	Khushab	-0.1332** (0.0577)	0.0128*** (0.0018)	-0.0591*** (0.0160)	-0.0025 (0.0018)	-0.0728 (0.1009)	-0.1548 (0.1111)	260
7	Mandi Bahaudin	-0.0710* (0.0374)	0.0143*** (0.0016)	-0.0664*** (0.0167)	-0.0025* (0.0015)	-0.0123 (0.0876)	-0.0881*** (0.0225)	245
8	Mianwali	-0.1069*** (0.0433)	0.0117*** (0.0045)	-0.0410** (0.0185)	-0.0025 (0.0023)	-0.2491 (0.1633)	-0.1798*** (0.0161)	247
9	Rawalpindi	-0.0607** (0.0307)	0.0095* (0.0056)	-0.0921*** (0.0077)	-0.0035*** (0.0009)	-0.0755* (0.0423)	-0.1086*** (0.0015)	710
10	Sargodha	-0.0554* (0.0311)	0.0113* (0.0071)	-0.0870*** (0.0132)	-0.0039*** (0.0015)	-0.1971*** (0.0610)	-0.1028*** (0.0373)	463
Central Punjab								
11	Chiniot	-0.1295* (0.0817)	0.0217* (0.0123)	-0.0742*** (0.0169)	-0.0019* (0.0011)	-0.1742 (0.1210)	-0.0874*** (0.0052)	268
12	Faisalabad	-0.0467** (0.0216)	0.0103** (0.0045)	-0.1066*** (0.0062)	-0.0042*** (0.0007)	0.0419 (0.0335)	-0.0709*** (0.0029)	840
13	Gujranwala	-0.0429*** (0.0159)	0.0068* (0.0039)	-0.1151*** (0.0070)	-0.0041*** (0.0007)	-0.0887*** (0.0282)	-0.1232 (0.0768)	725
14	Hafizabad	-0.0570*** (0.0019)	0.0037* (0.0022)	-0.0682*** (0.0184)	-0.0028** (0.0013)	-0.1848* (0.0988)	-0.2284*** (0.0011)	258
15	Jhang	-0.1027*** (0.0410)	0.0052*** (0.0019)	-0.0612*** (0.0147)	-0.0019** (0.0009)	-0.1652* (0.1007)	-0.0954*** (0.0117)	367
16	Kasur	-0.0729** (0.0369)	0.0174* (0.0097)	-0.0738*** (0.0129)	-0.0026* (0.0014)	-0.0962 (0.0705)	-0.1228*** (0.0316)	396
17	Lahore	-0.0473*** (0.0155)	0.0065* (0.0040)	-0.1295*** (0.0047)	-0.0051*** (0.0006)	-0.0638 (0.0504)	-0.0514** (0.0238)	1243
18	Nankana Sahib	-0.0972* (0.0575)	0.0191*** (0.0076)	-0.0682*** (0.0196)	-0.0019 (0.0023)	-0.0902 (0.1106)	-0.1237*** (0.0083)	221

Table 7.12 continued

19	Narowal	-0.0528* (0.0332)	0.0091* (0.0057)	-0.0672*** (0.0061)	-0.0019 (0.0021)	-0.4816*** (0.1391)	-0.1021*** (0.0289)	237
20	Okara	-0.1078* (0.0670)	0.0103** (0.0049)	-0.0699*** (0.0134)	-0.0025* (0.0015)	-0.2242*** (0.0705)	-0.1032*** (0.0174)	374
21	Pakpattan	-0.1037** (0.0525)	0.0104*** (0.0014)	-0.0640*** (0.0189)	-0.0035* (0.0020)	-0.2557*** (0.0902)	-0.0971*** (0.0079)	252
22	Sahiwal	-0.0782* (0.0466)	0.0109 (0.0091)	-0.0585*** (0.0119)	-0.0030* (0.0017)	-0.1481** (0.0718)	-0.1161*** (0.0181)	308
23	Sheikhupura	-0.0817** (0.0356)	0.0206*** (0.0084)	-0.0719*** (0.0074)	-0.0032*** (0.0013)	-0.1572** (0.0745)	-0.0827*** (0.0039)	450
24	Sialkot	-0.0486** (0.0186)	0.0115** (0.0053)	-0.0824*** (0.0075)	-0.0032*** (0.0009)	-0.1403*** (0.0302)	-0.0976*** (0.0242)	478
25	Toba Tek Singh	-0.1083*** (0.0233)	0.0081* (0.0048)	-0.0830*** (0.0100)	-0.0023 (0.0016)	-0.1276** (0.0575)	-0.0985*** (0.0127)	327
South Punjab								
26	Bahawalpur	-0.0954* (0.0567)	0.0124* (0.0077)	-0.0446*** (0.0132)	-0.0015* (0.0009)	-0.1597** (0.0713)	-0.0926*** (0.0032)	442
27	Bahawalnagar	-0.0897** (0.0454)	0.0287*** (0.0116)	-0.0483*** (0.0166)	-0.0017* (0.0009)	-0.1558 (0.1004)	-0.1566*** (0.0133)	329
28	DG Khan	0.1027* (0.0618)	0.0213* (0.0112)	-0.0364*** (0.0152)	-0.0015** (0.0007)	-0.0433 (0.0767)	-0.0091 (0.0221)	279
29	Khanewal	-0.0919* (0.0578)	0.0266*** (0.0099)	-0.0647*** (0.0128)	-0.0014 (0.0012)	-0.0950 (0.0742)	-0.2275 (0.1612)	337
30	Layyah	-0.0964* (0.0545)	0.0176* (0.0102)	-0.0767*** (0.0151)	-0.0017* (0.0010)	-0.1775** (0.0814)	-0.0121 (0.0181)	244
31	Lodhran	-0.1197* (0.0708)	0.0150* (0.0092)	-0.0552*** (0.0189)	-0.0018 (0.0020)	0.1057 (0.1111)	-0.1098*** (0.0368)	257
32	Multan	-0.1028*** (0.0361)	0.0232*** (0.0075)	-0.0902*** (0.0090)	-0.0026*** (0.0010)	-0.0621 (0.0485)	0.1109*** (0.0251)	620
33	Muzaffargarh	-0.1672* (0.1022)	0.0430*** (0.0131)	-0.0666*** (0.0171)	-0.0019* (0.0012)	-0.0267 (0.1166)	-0.0998*** (0.0107)	352
34	Rahim Yar Khan	-0.1033** (0.05122)	0.0262*** (0.0076)	-0.0601*** (0.0105)	-0.0022* (0.0012)	-0.0924* (0.0576)	-0.1188*** (0.0207)	452
35	Rajanpur	-0.1305** (0.0658)	0.0238** (0.0118)	-0.0604*** (0.0168)	-0.0016*** (0.0005)	-0.1402 (0.1401)	-0.1914*** (0.0274)	246
36	Vehari	0.0919* (0.0586)	0.0240*** (0.0085)	-0.0514*** (0.0123)	-0.0019 (0.0015)	0.1413** (0.0623)	-0.0525*** (0.0143)	354

Note: Accounts for both remittance receiving and non-receiving HHs. The standard errors are given in the parenthesis. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Dependency has a positive and significant association with the poverty level in the urban part of the province. The highest probability values were discovered in southern districts such as Muzaffargarh. On the other hand, the lowest probability values were observed in central Punjab districts such as Hafizabad. Moreover, in urban parts, the joint family system is being weakened, especially as a result of limited house space and as such families tend to be dispersed (Herald, 1997). Thus, the presence of each dependent member (e.g. mother/father or child) can limit the professional activities of a young member, which in turn can lead to a lower per capita income and higher poverty level. Also, due to higher literacy rate and cost of living in urban areas, the urban women have a tendenct to be employed. In urban areas, there are also some benefits such as pension fund, old age stipends, baby birth allowance etc., which are available to dependent members.

The educational attainments of HH heads play a more crucial role in reducing the poverty at the urban level. This is because in urban areas, people rely on jobs or on their own business. The table shows that for all urban parts of Punjab province, this variable has a highly significant impact on the dependent variable. The highest probability values were found in central Punjab districts such as Lahore and Gujranwala. Districts DG Khan and Mianwali are found to have the lowest probability values in this regard.

The variable age of HH head has a negative and significant relationship with urban HH poverty in 78 percent of urban districts. The lowest probability of being poor with respect to a yearly increase in age was found in south districts such as DG Khan and Rajanpur. The highest probability values were found in the central Punjab districts, such as Lahore and Faisalabad.

The results of male headed HHs reveal that in 61 percent of the districts, this variable has a significant and inverse relationship with HH poverty incidence. Male members usually have a number of employment opportunities and advantages compared to their female counterparts. In districts, Narowal and Jhelum, the male headed HHs have 48 and 26 percent less probability to be poor than those with a female head. Furthermore, districts DG Khan and Sahiwal are found to have the lowest probability of being poor due to the dominance of male headed HHs.

Table 7.13 summarizes the results of hypothesis tests for all the districts of Punjab province. The table shows that the null hypothesis of positive relationship between foreign remittances and HH poverty incidence is rejected in the whole province.

Table 7.13: District Wise Hypothesis Testing

No.	Variables	No. of Districts	Decision
1	RI → Pov	36	Reject H_0
		0	Do not reject
2	Dep → Pov	35	Reject H_0
		1	Do not reject
3	HHedu → Pov	36	Reject H_0
		0	Do not reject
4	HHage → Pov	26	Reject H_0
		10	Do not reject
5	MH → Pov	19	Reject H_0
		17	Do not reject

Source: Derived from Table 7.12.

b) Poverty severity – OLS regression

Table 7.14 presents the district-wise OLS results of poverty severity at the urban level. The results show that there is a significant negative relationship between remittances inflow and poverty severity in all 36 districts. The highest effect was seen in districts Mianwali and Rajanpur. The lowest effect was found in district Sargodha and Faisalabad. Although urban areas have a number of earnings sources besides remittances, remittances still play a role in reducing poverty severity.

Similar to the previous analysis, dependency has a positive and significant association with poverty severity in the whole urban part of the province. The highest coefficient values were found in the districts of Bhakkar and Nankana Sahib with the implication that an addition of one dependent member to a HH enhances the poverty severity by 0.0221 and 0.0192 in these districts respectively. On the other hand, the lowest values were observed in the districts of Rahim Yar Khan and Chiniot.

The educational level of the HH head has a negative and significant impact on the severity of poverty in all 36 urban areas. On the average, the coefficient values of the education factor are higher than those of the age factor, which demonstrates that an educated HH head plays more important role in lowering poverty severity than the age of the HH head. The highest effect of educational level of HH head on poverty severity was observed in district Gujranwala and Faisalabad. On the other hand, the lowest effect was found in district Mianwali and Bahawalnagar.

Table 7.14: District Wise OLS Results – Urban Region

No.	District	*RI*	*Dep*	*HHedu*	*HHage*	*MH*	Constant	No. of Obs.
North Punjab								
1	Attock	-0.0643*** (0.0237)	0.0118*** (0.0011)	-0.0228*** (0.0057)	-0.0016 (0.0011)	-0.0345* (0.0212)	-0.1765*** (0.0118)	293
2	Bhakkar	-0.0649* (0.0409)	0.0192* (0.0104)	-0.0267*** (0.0021)	-0.0025 (0.0047)	-0.0806* (0.0495)	-0.2464*** (0.0008)	229
3	Chakwal	-0.0801*** (0.029)	0.0077*** (0.0026)	-0.0231*** (0.0052)	-0.002*** (0.0005)	-0.0834* (0.0507)	-0.2285*** (0.0459)	374
4	Gujrat	-0.0394*** (0.0138)	0.0020* (0.0011)	-0.0606*** (0.0052)	-0.0019*** (0.0006)	-0.0134 (0.0791)	-0.1134*** (0.0421)	363
5	Jhelum	-0.0613* (0.0384)	0.0057** (0.0026)	-0.0216*** (0.0082)	-0.0017 (0.0011)	-0.0174 (0.0727)	-0.2094*** (0.0132)	244
6	Khushab	-0.0851*** (0.0065)	0.0125*** (0.0013)	-0.0212*** (0.0037)	-0.0028*** (0.0012)	-0.0428*** (0.0144)	-0.1948 (0.1311)	254
7	Mandi Bahaudin	-0.0679* (0.0404)	0.0101*** (0.0012)	-0.0332* (0.0186)	-0.0026*** (0.0004)	-0.0903* (0.0557)	-0.1301*** (0.0325)	227
8	Mianwali	-0.0956*** (0.0349)	0.0185*** (0.0035)	-0.0109* (0.0067)	-0.0064*** (0.0017)	-0.0595*** (0.0231)	-0.2238*** (0.0061)	253
9	Rawalpindi	-0.0591** (0.0291)	0.0017*** (0.0007)	-0.0627*** (0.0103)	-0.001*** (0.0004)	-0.0885* (0.0559)	-0.1546*** (0.0085)	263
10	Sargodha	-0.0252* (0.0156)	0.0056* (0.0033)	-0.0583*** (0.0103)	-0.0036*** (0.0006)	-0.0586* (0.0323)	-0.1508*** (0.0473)	440
Central Punjab								
11	Chiniot	-0.0316* (0.0192)	0.0014* (0.0008)	-0.0354** (0.0176)	-0.0023 (0.0042)	-0.0716* (0.0432)	-0.1274*** (0.0152)	265
12	Faisalabad	-0.0279** (0.0121)	0.0016* (0.0009)	-0.0730*** (0.0106)	-0.0064*** (0.0020)	-0.0607 (0.0536)	-0.1129*** (0.0129)	801
13	Gujranwala	-0.0341* (0.0192)	0.0018* (0.0010)	-0.0745*** (0.0212)	-0.0017* (0.0009)	-0.0139 (0.0186)	-0.1672 (0.1068)	685
14	Hafizabad	-0.0513* (0.0289)	0.0018** (0.0008)	-0.0309*** (0.0063)	-0.0021** (0.0009)	-0.0795* (0.0481)	-0.2744*** (0.0111)	242
15	Jhang	-0.0620** (0.0271)	0.0155*** (0.0036)	-0.0289*** (0.0035)	-0.0009* (0.0005)	-0.0892* (0.0539)	-0.1434*** (0.0017)	369
16	Kasur	-0.0441* (0.0269)	0.0090* (0.0049)	-0.0374*** (0.0123)	-0.0029 (0.0369)	-0.0830* (0.0508)	-0.1628*** (0.0416)	389
17	Lahore	-0.0285** (0.0136)	0.0019** (0.0009)	-0.0701*** (0.0204)	-0.0012* (0.0007)	-0.0388 (0.0322)	-0.0934 (0.0838)	1,186
18	Nankana Sahib	-0.0682** (0.0322)	0.0191*** (0.0070)	-0.0233*** (0.0068)	-0.0024*** (0.0009)	-0.0122** (0.0058)	-0.1677*** (0.0183)	209

Table 7.14 continued

19	Narowal	-0.0755* (0.0447)	0.0039* (0.0024)	-0.0334*** (0.0018)	-0.0024*** (0.001)	-0.0320*** (0.0088)	-0.1481*** (0.0389)	213
20	Okara	-0.0697* (0.0418)	0.0085* (0.0049)	-0.0338* (0.0209)	-0.0009*** (0.0003)	-0.0396* (0.0237)	-0.1512*** (0.0274)	187
21	Pakpattan	-0.0790*** (0.0245)	0.0066* (0.0035)	-0.0239*** (0.0066)	-0.0029*** (0.0008)	-0.0564* (0.0337)	-0.1371*** (0.0179)	276
22	Sahiwal	-0.0619*** (0.0203)	0.0155* (0.0089)	-0.0375** (0.0177)	-0.0014*** (0.0006)	-0.0455** (0.0227)	-0.1581*** (0.0281)	675
23	Sheikhupura	-0.0477*** (0.02)	0.0072*** (0.0029)	-0.0305*** (0.0103)	-0.0013*** (0.0002)	-0.0353* (0.0200)	-0.1267*** (0.0061)	426
24	Sialkot	-0.0441** (0.0222)	0.0043* (0.0023)	-0.0728*** (0.0215)	-0.001*** (0.0004)	-0.0334 (0.0304)	-0.1436*** (0.0342)	420
25	Toba Tek Singh	-0.0595* (0.0325)	0.0183** (0.0084)	-0.0266** (0.0121)	-0.0061*** (0.0025)	-0.0250*** (0.0058)	-0.1465*** (0.0227)	314
	South Punjab							
26	Bahawalpur	-0.0666* (0.0415)	0.0159* (0.0087)	-0.0165*** (0.0013)	-0.0046** (0.0020)	-0.0571* (0.0347)	-0.1326*** (0.0132)	417
27	Bahawalnagar	-0.0445*** (0.0131)	0.0059** (0.0029)	-0.0191*** (0.0042)	-0.0026*** (0.0006)	-0.0290*** (0.0126)	-0.1986*** (0.0233)	323
28	DG Khan	-0.0793*** (0.0058)	0.0151*** (0.0021)	-0.0356** (0.0165)	-0.0006 (0.0004)	-0.0593** (0.0288)	-0.0531 (0.0521)	253
29	Khanewal	-0.0431* (0.0269)	0.0050* (0.0029)	-0.0249** (0.0122)	-0.0024*** (0.0006)	-0.0183*** (0.0076)	-0.2735*** (0.1712)	324
30	Layyah	-0.0639 (0.0409)	0.0115** (0.0056)	-0.0225*** (0.0051)	-0.0023* (0.0012)	-0.1024* (0.0612)	-0.0601*** (0.0281)	234
31	Lodhran	-0.0856*** (0.0362)	0.0078** (0.0037)	-0.0232*** (0.0048)	-0.0022*** (0.0008)	-0.0373* (0.0227)	-0.1498*** (0.0468)	250
32	Multan	-0.0740** (0.0369)	0.0032* (0.0017)	-0.0494*** (0.0109)	-0.0008* (0.0005)	-0.0405* (0.0244)	-0.1529*** (0.0351)	579
33	Muzaffargarh	-0.0898*** (0.0313)	0.0166* (0.0091)	-0.0270* (0.0148)	-0.0031 (0.1221)	-0.0759* (0.0469)	-0.1438*** (0.0207)	317
34	Rahim Yar Khan	-0.0745** (0.0351)	0.0164*** (0.0012)	-0.0229*** (0.0061)	-0.0047*** (0.0010)	-0.0102* (0.0060)	-0.1648*** (0.0307)	432
35	Rajanpur	-0.0901*** (0.0292)	0.0148*** (0.0027)	-0.0228*** (0.0045)	-0.0032*** (0.0007)	-0.0571** (0.0262)	-0.2394*** (0.0374)	238
36	Vehari	-0.0838*** (0.0357)	0.0060*** (0.0024)	-0.0262*** (0.0034)	-0.0018* (0.0011)	-0.0394 (0.0645)	-0.0925*** (0.0043)	331

Note: Accounts for both remittance receiving and non-receiving HHs. The standard errors are given in the parenthesis. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Age of HH head has a negative association with poverty severity in all districts but statistically significant in 89 percent of the districts. However, the effect of the age of HH head is negligible. For instance, a yearly increment in the age of HH head can reduce poverty severity by only 0.0024 in the district Narowal and by 0.0003 in districts Layyah, Chiniot, and Vehari.

The effect of male HH head is significant in 86 percent of districts as compared to 72 percent in the case of the poverty incidence. It demonstrates that male HH heads play a more vital role in reducing poverty severity than pushing HHs above the poverty line. The highest coefficient values were found in the least developed districts, where males are expected to be more dominant.

Table 7.15 shows the summary of hypothesis validity.

Table 7.15: District Wise Hypothesis Testing

No.	Variables	No. of Districts	Decision
1	RI → Pov	35	Reject H_0
		1	Do not reject
2	Dep → Pov	36	Reject H_0
		0	Do not reject
3	HHedu → Pov	36	Reject H_0
		0	Do not reject
4	HHage → Pov	29	Reject H_0
		7	Do not reject
5	MH → Pov	29	Reject H_0
		7	Do not reject

Source: Derived from Table 7.14.

The results for goodness of fit are presented in Table 7.16. Pearson χ^2 results show that in all districts, the null hypothesis is failed to reject, which implies that the chosen model is

correctly specified. Similarly, Hosmer-Lemeshow (H-L) test also verifies the model fitness in 97 percent of all cases.

Table 7.16: Results of Goodness of Fit Tests

No.	District	H-L χ^2	Prob.	Pearson χ^2	Prob.
1	Attock	14.62	0.0672	289.16	0.4043
2	Bhakkar	7.75	0.4583	236.59	0.3008
3	Chakwal	9.35	0.3138	195.03	0.3859
4	Gujrat	8.1	0.4241	525.03	0
5	Jhelum	6.4	0.6029	272.18	0.3841
6	Khushab	4.88	0.7707	241.97	0.5066
7	Mandi Bahaudin	3.87	0.8689	233.43	0.4246
8	Mianwali	6.47	0.5946	223.46	0.6786
9	Rawalpindi	7.39	0.4951	626.43	0.5661
10	Sargodha	2.21	0.9741	434.86	0.4659
11	Chiniot	10.34	0.2421	252.26	0.4304
12	Faisalabad	3.78	0.8767	704.16	0.5864
13	Gujranwala	8.23	0.4109	722.25	0.0539
14	Hafizabad	6.76	0.5626	250.22	0.2966
15	Jhang	6.95	0.5424	344.97	0.5509
16	Kasur	13.19	0.1055	373.84	0.2593
17	Lahore	7.07	0.5293	1081.5	0.0617
18	Nankana Sahib	10.96	0.2039	192.89	0.3303
19	Narowal	5.42	0.7122	205.58	0.4362
20	Okara	8.72	0.3664	374.14	0.1795
21	Pakpattan	3.11	0.9272	250.16	0.1982
22	Sahiwal	4.96	0.7616	261.24	0.5365
23	Sheikhupura	4.13	0.8454	407.67	0.5509
24	Sialkot	7.06	0.5313	496.43	0.0876
25	Toba Tek Singh	5.63	0.6883	337.53	0.0969
26	Bahawalpur	6.53	0.5882	429.03	0.2949
27	Bahawalnagar	7.25	0.5102	306.34	0.6108
28	DG Khan	7.63	0.4706	273.11	0.3058
29	Khanewal	14.02	0.0813	290.36	0.7444
30	Layyah	8.3	0.4048	245.88	0.1984
31	Lodhran	2.11	0.9776	237.41	0.5352
32	Multan	6.68	0.5713	545.3	0.6304
33	Muzaffargarh	8.94	0.3476	323.47	0.3443
34	Rahim Yar Khan	6.8	0.5582	448.88	0.1433
35	Rajanpur	11.08	0.1973	229.96	0.5623
36	Vehari	3.25	0.2478	335.94	0.1682

Note: H_0: Model is correctly specified
Source: Author's own analysis.

7.5.3 Remittances and rural poverty

Table 7.17 shows the poverty level among rural migrant HHs at the provincial level. It can be seen that on the average, remittances have a significant effect to reducing poverty at the provincial level. For instance, remittances decrease poverty HCR, poverty gap and poverty square by 38 percent, 30 percent and 27 percent respectively.

Table 7.17: Provincial FGT Poverty Measures among Migrant HHs: Rural Region

Income without Remittances *(OI)*			Income with Remittances (*RI*+*OI*)		
HCR	PG	PGS	HCR	PG	PGS
0.4822	0.3394	0.2930	0.0974	0.0399	0.0236

Source: Calculated based on MICS (2014-15).

District-wise FGT poverty results are presented in Table 7.18. This table shows that the highest HCR among migrant HHs (without remittances) was observed in the district of DG Khan. Approximately, 73 percent of migrant HHs were below the poverty line in the district of DG Khan with the exclusion of remittances in total income. The district of Chakwal is ranked second in this regard with 64 percent of migrant HHs below the poverty line. Furthermore, the rural part of the district of Kasur is found to have a HCR value of zero among migrant HHs with only income from other sources.

Including remittances, a significant change is observed in the poverty level, poverty gap and poverty severity of migrant HHs. The highest improvement (55 percent) of the poverty level was seen in the districts of Attock and Chakwal. It was only in the district of Mianwali that the HCR got up to zero percent with the inclusion of remittances. Also, about 20 percent of rural parts of the province had HCR values up to 0.05 with the inclusion of remittances. However, the minimum difference was seen in the district of Okara (from 27 percent to 17 percent).

Table 7.18: District Wise FGT Poverty Measures among Migrant HHs: Rural Region

		Income without Remittances (*OI*)				Income with Remittances (*RI*+*OI*)			
No.	District	HCR	PG	PGS	Rank*	HCR	PG	PGS	Rank*
1	DG Khan	0.7281	0.5639	0.4964	1	0.3801	0.1555	0.0911	1
2	Chakwal	0.6434	0.4612	0.3942	2	0.0907	0.0499	0.0358	19
3	Attock	0.6283	0.4427	0.3995	3	0.0755	0.0338	0.0211	23
4	Rawalpindi	0.6107	0.4739	0.4278	4	0.1615	0.0681	0.0403	9
5	Multan	0.6037	0.3495	0.2612	5	0.1791	0.0755	0.0525	5
6	Muzaffargarh	0.6036	0.4493	0.3847	6	0.2290	0.0759	0.0361	4
7	Lodhran	0.5530	0.3008	0.2391	7	0.1596	0.0960	0.0720	10
8	Pakpattan	0.5520	0.3649	0.2825	8	0.0717	0.0028	0.0001	24
9	Narowal	0.5493	0.3786	0.3342	9	0.0292	0.0068	0.0019	33
10	Bahawalpur	0.5332	0.3259	0.2795	10	0.1362	0.0386	0.0134	12
11	Jhelum	0.5254	0.3828	0.3416	11	0.0436	0.0233	0.0131	30
12	Rajanpur	0.5154	0.3241	0.2812	12	0.2422	0.0716	0.0353	3
13	Layyah	0.5142	0.4502	0.4226	13	0.0936	0.0037	0.0001	17
14	Bhakkar	0.4855	0.2928	0.1768	14	0.3448	0.0780	0.0236	2
15	Hafizabad	0.4790	0.3253	0.2721	15	0.0520	0.0217	0.0094	28
16	Faisalabad	0.4739	0.3269	0.2819	16	0.0934	0.0428	0.0261	18
17	Sheikhupura	0.4729	0.3083	0.2596	17	0.1636	0.0698	0.0404	8
18	Gujrat	0.4670	0.3348	0.2887	18	0.0158	0.0072	0.0052	34
19	Khushab	0.4524	0.3143	0.2733	19	0.1402	0.1094	0.0861	11
20	Mandi Bahaudin	0.4510	0.2611	0.1983	20	0.0791	0.0375	0.0230	22
21	Sargodha	0.4475	0.2756	0.2118	21	0.0717	0.0266	0.0115	25
22	Sialkot	0.4299	0.3233	0.2882	22	0.0611	0.0157	0.0062	27
23	Mianwali	0.4254	0.2573	0.2132	23	0.0000	0.0000	0.0000	35
24	Bahawalnagar	0.4240	0.2789	0.2516	24	0.1014	0.0921	0.0837	16
25	Sahiwal	0.4025	0.2813	0.2368	25	0.0702	0.0294	0.0175	26
26	Nankana Sahib	0.3853	0.2959	0.2733	26	0.0323	0.0083	0.0022	32
27	Gujranwala	0.3815	0.2555	0.2239	27	0.0333	0.0134	0.0081	31
28	Toba Tek Singh	0.3796	0.2269	0.1832	28	0.0820	0.0167	0.0056	20
29	Chiniot	0.3782	0.2199	0.1617	29	0.1221	0.0431	0.0152	14
30	Khanewal	0.3781	0.1964	0.1584	30	0.0446	0.0066	0.0010	29
31	Lahore	0.3729	0.2828	0.2557	31	0.1721	0.1046	0.0698	6
32	Vehari	0.3710	0.2356	0.1873	32	0.1028	0.0318	0.0148	15
33	Rahim Yar Khan	0.2899	0.2302	0.1987	33	0.1316	0.0819	0.0541	13
34	Okara	0.2659	0.1266	0.1026	34	0.1690	0.0631	0.0191	7
35	Jhang	0.2437	0.1549	0.1205	35	0.0820	0.0089	0.0010	21
36	Kasur	0.0000	0.0000	0.0000	36	0.0000	0.0000	0.0000	36

Note: HCR – Headcount ratio; PG – Poverty gap; and PGS – Poverty gap square. Rank is based on HCR.
Source: Calculated based on MICS (2014-15).

Based on the the poverty gap ratio, the districts of DG Khan (0.56), Rawalpindi (0.47), and Chakwal (0.46) were ranked first, second, and third respectively with income from other sources than remittances. Remittances changed the status by 41 percent for all three aforementioned districts. Also, the minimum change (7 percent) was observed in the district of Okara (from 13 percent to 6 percent).

A look at the table shows that with exclusion of remittances, the districts of DG Khan (50 percent), Layyah (42 percent), and Attock (40 percent) have more prominent poverty severity values which are reduced by 9 percent for DG Khan, 2 percent for Attock and fully eradicated for the district of Layyah if remittances are available.

Poverty incidence – logit analysis

Table 7.19 presents the district-wise logit results of rural Punjab. The table shows that there is a significant inverse relationship between remittances inflow and poverty incidence in all districts. The highest probability to be non-poor due to remittances was found in rural parts of southern Punjab such as Layyah (41 percent less than non-remittance receivers), Muzaffargarh (36 percent), and Bahawalnagar (34 percent). The lowest probability values were found in central Punjab's districts such as Sialkot (-0.0450), and Lahore (-0.0589). The rural areas have a lower number of earning sources and as such, the marginal effects of foreign remittances are higher compared to urban parts. Notably, the highest effect was found in districts with low agricultural yield or less developed urban parts and as a result there is much dependency on remittances. Furthermore, the industrialized districts not only provide employment opportunities for urban population but also the rural parts.

Table 7.19: District Wise Logit Results for Punjab Province: Rural Region (Marginal Effects)

No.	Districts	*RI*	*Dep*	*HHedu*	*HHage*	*MH*	Constant	Obs
North Punjab								
1	Attock	-0.1617*** (0.0344)	0.0343*** (0.0094)	-0.0172* (0.0104)	-0.0049*** (0.0015)	-0.0883 (0.0784)	-0.1151*** (0.0232)	723
2	Bhakkar	-0.2168*** (0.0957)	0.0301*** (0.0102)	-0.0253* (0.0157)	-0.0020 (0.0017)	-0.0014 (0.1387)	-0.183*** (0.0122)	571
3	Chakwal	-0.2310*** (0.0960)	0.0301*** (0.0089)	-0.0335** (0.0157)	0.0001 (0.0013)	0.0404 (0.0887)	-0.1631*** (0.0573)	730
4	Gujrat	-0.0663*** (0.0248)	0.0122* (0.0077)	-0.0482*** (0.0137)	-0.0025** (0.0012)	-0.0959*** (0.0378)	-0.073 (1E+07)	682
5	Jhelum	-0.2075*** (0.0543)	0.0483*** (0.0107)	-0.0346* (0.0179)	-0.0026** (0.0015)	-0.1367* (0.0788)	-0.1401*** (0.0246)	637
6	Khushab	-0.3359*** (0.0636)	0.0197* (0.0119)	-0.0315* (0.0196)	-0.0009 (0.0019)	-0.1786* (0.1114)	-0.1334 (0.1324)	450
7	Mandi Bahaudin	-0.2512*** (0.0325)	0.0224** (0.0101)	-0.0436*** (0.0161)	-0.0043*** (0.0014)	-0.0450 (0.0633)	-0.0667 (0.0439)	554
8	Mianwali	-0.2076*** (0.0017)	0.0214** (0.0098)	-0.0257* (0.0137)	-0.0078*** (0.0017)	-0.0135 (0.1181)	-0.1584*** (0.0165)	523
9	Rawalpindi	-0.1447*** (0.0295)	0.0176* (0.0109)	-0.0508*** (0.016)	-0.0044*** (0.0015)	-0.0857 (0.0661)	-0.0872*** (0.0199)	460
10	Sargodha	-0.0801* (0.0490)	0.0192* (0.0102)	-0.0684*** (0.0149)	-0.0021* (0.0013)	-0.0196 (0.0658)	-0.0814 (0.0587)	764
Central Punjab								
11	Chiniot	-0.1315*** (0.0068)	0.0287** (0.0105)	-0.0427*** (0.0178)	-0.0030** (0.0015)	-0.1338 (0.1291)	-0.0656*** (0.0266)	473
12	Faisalabad	-0.0892*** (0.0301)	0.0245*** (0.0073)	-0.0607*** (0.0102)	-0.0022** (0.0010)	0.0610 (0.0519)	-0.0495 (0.0343)	1013
13	Gujranwala	-0.0697*** (0.0214)	0.0119* (0.0068)	-0.0651*** (0.0104)	-0.0017 (0.0011)	0.0385 (0.0413)	-0.1018 (0.0982)	747
14	Hafizabad	-0.1750*** (0.0633)	0.0131** (0.0076)	-0.0386** (0.0185)	-0.0042*** (0.0017)	-0.0405 (0.1034)	-0.2071*** (0.0225)	432
15	Jhang	-0.1824** (0.0925)	0.0412*** (0.0083)	-0.0428*** (0.0148)	-0.0022* (0.0012)	-0.0455 (0.1028)	-0.0742*** (0.0097)	677
16	Kasur	-0.0886* (0.0519)	0.0304*** (0.0087)	-0.0407*** (0.0145)	-0.0025* (0.0013)	-0.2070*** (0.0871)	-0.1014* (0.053)	731
17	Lahore	-0.0589*** (0.0171)	0.0108 (0.0072)	-0.0793*** (0.0121)	-0.0008 (0.0012)	-0.0390 (0.0775)	-0.0296 (0.0452)	593
18	Nankana Sahib	-0.2544*** (0.0472)	0.0243*** (0.0102)	-0.0421*** (0.0154)	-0.0042 (0.0014)	-0.0437 (0.0870)	-0.1023*** (0.0297)	537

Table 7.19 continued

19	Narowal	-0.1836*** (0.0236)	0.0191*** (0.0053)	-0.0487*** (0.0154)	-0.0018 (0.0013)	-0.2516*** (0.0459)	-0.0807 (0.0703)	646
20	Okara	-0.2521*** (0.0328)	0.0172* (0.0106)	-0.0606*** (0.0153)	-0.0009 (0.0014)	-0.0093 (0.0578)	-0.0818** (0.0388)	583
21	Pakpattan	-0.2689*** (0.0379)	0.0154** (0.0072)	-0.0483*** (0.0166)	-0.0022 (0.0015)	0.0171 (0.0726)	-0.0757*** (0.0293)	566
22	Sahiwal	-0.1287*** (0.0376)	0.0188** (0.0087)	-0.0447*** (0.0136)	-0.0015 (0.0012)	0.0620 (0.0561)	-0.0947*** (0.0394)	644
23	Sheikhupura	-0.0995* (0.0580)	0.0313*** (0.0081)	-0.0404*** (0.0137)	-0.0017 (0.0013)	0.1085 (0.0838)	-0.0613*** (0.0174)	683
24	Sialkot	-0.0540*** (0.0219)	0.0201*** (0.0053)	-0.0485*** (0.0092)	-0.0007 (0.0009)	0.0414 (0.0319)	-0.0762 (0.0656)	831
25	Toba Tek Singh	-0.3280*** (0.0438)	0.0216*** (0.0084)	-0.0531*** (0.012)	-0.0070*** (0.0013)	-0.1162* (0.0665)	-0.0771** (0.0341)	646
South Punjab								
26	Bahawalpur	-0.2501*** (0.0731)	0.0446*** (0.0097)	-0.0218* (0.0126)	-0.0038*** (0.0013)	0.0544 (0.0836)	-0.0712*** (0.0246)	771
27	Bahawalnagar	-0.3410*** (0.0459)	0.0508*** (0.0099)	-0.0299* (0.0165)	-0.0016 (0.0013)	0.0664 (0.0881)	-0.1352*** (0.0347)	759
28	DG Khan	-0.3223*** (0.0591)	0.0524*** (0.0092)	-0.0257* (0.0146)	-0.0001 (0.0013)	0.0118 (0.0626)	0.0124 (0.0435)	737
29	Khanewal	-0.2138*** (0.0463)	0.0329*** (0.0082)	-0.0445*** (0.0129)	-0.0020* (0.0012)	-0.0140 (0.0691)	-0.2061 (0.1826)	798
30	Layyah	-0.4117*** (0.0688)	0.0387*** (0.0105)	-0.0444*** (0.0182)	-0.0030* (0.0016)	0.1187 (0.0960)	0.0093 (0.0395)	618
31	Lodhran	-0.1949*** (0.0781)	0.0507*** (0.0101)	-0.0348** (0.0151)	-0.0016 (0.0015)	-0.1896** (0.0879)	-0.0884 (0.0582)	606
32	Multan	-0.1054*** (0.0367)	0.0349*** (0.0092)	-0.0595*** (0.0137)	0.0004 (0.0013)	0.0599 (0.0671)	-0.0895* (0.0465)	748
33	Muzaffargarh	-0.3601*** (0.0514)	0.0527*** (0.0082)	-0.0383*** (0.0151)	-0.0025** (0.0012)	0.2390*** (0.0729)	-0.0784*** (0.0321)	979
34	Rahim Yar Khan	-0.2507*** (0.0591)	0.0381*** (0.0081)	-0.0373*** (0.0157)	-0.0034*** (0.0012)	0.0930 (0.0842)	-0.0974** (0.0421)	915
35	Rajanpur	-0.2929*** (0.1104)	0.0321*** (0.0094)	-0.0303* (0.0192)	-0.0039*** (0.0016)	0.0311 (0.0952)	-0.1702*** (0.0488)	575
36	Vehari	-0.1583*** (0.0460)	0.0365*** (0.0079)	-0.0349*** (0.0131)	-0.0035*** (0.0012)	-0.0226 (0.0634)	-0.0311*** (0.0071)	797

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. In parenthesis standard errors are given

In all districts, the effects of remittances on the poverty level of rural parts are higher than those of their urban parts. In about 50 percent of districts, the marginal effect of remittances ranges from 0 percent to 21 percent. According to Quartey (2005), the members working abroad transfer funds to HHs at home to increase their revenue and as such, reduce the impact of poverty on such HHs. Similarly, lower rainfall diminishes the agricultural output which in turn affects the rural HHs directly in the sense that it will lead to consumption instability and lower welfare. Thus, remittances play a major role in such a situation.

The results for the educational level of HH head show that for whole rural province, this variable has a highly significant impact on the dependent variable. In this regard, the highest probability value was found in the districts of Lahore and Sargodha whereas; the districts of Attock and Bhakkar had the lowest probability values. The probability of being poor reduces by 2 percent and 3 percent due to the increasing level of education of HH head in Attock and Bhakkar respectively. Also, rural parts of developed districts have more opportunities of employment as their urban counterparts and as a result, education plays a vital role in getting a suitable job. Thus, this gives higher earnings and reduces the poverty level. We can therefore conclude that the effect of education is higher in developed districts of the province.

Unlike the urban analysis, the variable age of HH head has mixed results in terms of sign and significance level in the rural parts of the province. It has a positive relationship with poverty incidence in 7 out of the 36 districts but it is statistically significant in only 4 districts. This may be due to the agricultural involvement of rural workers who after a specific age are unable to use more physical power and as such agricultural yield becomes unpredictable. The districts with positive sign such as Chiniot, Gujranwala, Hafizabad, and Sargodha have

fertile lands which are readily available to HH heads for agricultural activities. The lowest probability of being poor in a yearly increment of age was found in the districts of Khanewal and Faisalabad, a year's increment in age of HH head reduces the probability of being poor by 0.20 percent in the district of Khanewal and by 0.22 percent in the district of Faisalabad. It is observed that in about 61 percent of districts, this variable is statistically significant. The highest probability values were found in the districts of Mianwali and Toba Tek Singh.

Similar to results for the urban analysis, dependency has a positive and significant association with poverty incidence in all rural parts of the province. In the districts of south Punjab namely Muzaffargarh and DG Khan, the highest probability values were found. An addition of a dependent member to HHs enhances the probability of being poor by 5 percent in the districts of Muzaffargarh and DG Khan. The lowest probability values were observed in the central Punjab districts such as Lahore and Gujranwala. Moreover, the effect of dependency is higher in rural areas than in urban areas.

The results of male head show a significant and inverse relationship with HH poverty incidence in only 8 out of the 36 districts. In the districts of Muzaffargarh and Narowal, the probabilities of being poor of male headed HHs are respectively 24 percent and 25 percent less than those headed by females. Furthermore, the districts of Gujrat and Toba Tek Singh have the least probability of being poor due to male head. Table 7.20 summarizes the hypothesis validity.

Table 7.20: District Wise Hypothesis Testing

No.	Variables	No. of Districts	Decision
1	RI → Pov	36	Reject H_0
		0	Do not reject
2	Dep → Pov	35	Reject H_0
		1	Do not reject
3	HHedu → Pov	36	Reject H_0
		0	Do not reject
4	HHage → Pov	21	Reject H_0
		15	Do not reject
5	MH → Pov	8	Reject H_0
		28	Do not reject

Source: Derived from Table 7.19.

b) Poverty severity – OLS regression

Table 7.21 presents the district-wise OLS results for the rural region of Punjab province. The results validate the finding of significant negative impact of remittances inflow on poverty severity in all 36 districts. The highest impact was seen in southern districts such as DG Khan, Rajanpur, and Bahawalpur. The lowest impact was found in the central Punjab districts namely Lahore, Kasur and Faisalabad. Due to having fewer earning opportunities, the rural areas rely more on remittances and as a result their coefficient values are higher on average than those for the urban region. This demonstrates that remittances are more important in reducing the poverty severity of rural areas than urban areas. Furthermore, the south Punjab region appears to have the highest coefficient values due to the fact that its agriculture system is not well-established as discussed previously so that their reliance on remittances is higher than in other regions of the province. Also, the rural parts of developed districts are better off than their counterparts in undeveloped districts. Thus, their dependence on remittances is lower than in south Punjab and this accounts for their lower coefficient values.

Table 7.21: District Wise OLS Results – Rural Region

No.	District	*RI*	*Dep*	*HHedu*	*HHage*	*MH*	Constant	No. of Obs.
North Punjab								
1	Attock	-0.1175*** (0.0203)	0.0127*** (0.0016)	-0.0151*** (0.0052)	-0.0011** (0.0005)	-0.0287** (0.0139)	-0.1551*** (0.0332)	667
2	Bhakkar	-0.1957*** (0.0349)	0.0195*** (0.0028)	-0.0103** (0.0048)	-0.0017 (0.0013)	-0.09** (0.0417)	-0.225*** (0.0222)	518
3	Chakwal	-0.1071*** (0.0093)	0.0085*** (0.0018)	-0.0147* (0.0078)	-0.0012 (0.0018)	-0.061* (0.0354)	-0.2071*** (0.0673)	661
4	Gujrat	-0.0826*** (0.0102)	0.0023* (0.0013)	-0.0392* (0.0211)	-0.0012*** (0.0001)	-0.0255*** (0.0023)	-0.119 (1E+07)	583
5	Jhelum	-0.1077*** (0.0301)	0.0068* (0.0037)	-0.0119* (0.0071)	-0.0014*** (0.0006)	-0.0592* (0.0368)	-0.1881*** (0.0346)	593
6	Khushab	-0.1878*** (0.0415)	0.0131*** (0.0011)	-0.0127* (0.0079)	-0.0018 (0.0017)	-0.0772* (0.0457)	-0.1734 (0.1424)	426
7	Mandi Bahaudin	-0.0869*** (0.0023)	0.0103* (0.0058)	-0.0148*** (0.0034)	-0.0016 (0.0011)	-0.0564* (0.0344)	-0.1087 (0.0539)	518
8	Mianwali	-0.1984*** -0.0233)	0.0194*** (0.0011)	-0.0011** (0.0005)	-0.0051* (0.0031)	-0.0879* (0.0498)	-0.2024*** (0.0065)	512
9	Rawalpindi	-0.0877*** (0.0175)	0.0019*** (0.0008)	-0.0361*** (0.0053)	-0.0004*** (0.0001)	-0.0461** (0.0231)	-0.1332*** (0.0299)	424
10	Sargodha	-0.0871*** (0.0099)	0.0065** (0.0029)	-0.0396* (0.0248)	-0.0026** (0.0012)	-0.0818 (0.0524)	-0.1294 (0.0887)	714
Central Punjab								
11	Chiniot	-0.1092** (0.0521)	0.0022*** (0.0006)	-0.0173*** (0.0061)	-0.0018*** (0.0005)	-0.0235* (0.0124)	-0.1056*** (0.0366)	441
12	Faisalabad	-0.0581*** (0.0139)	0.0019 (0.0070)	-0.0527* (0.0328)	-0.0045** (0.0022)	-0.0383 (0.491)	-0.0915 (0.0643)	970
13	Gujranwala	-0.1171*** (0.0303)	0.0021* (0.0012)	-0.0422*** (0.0180)	-0.0010*** (0.0004)	-0.0229* (0.0137)	-0.1458 (0.1082)	695
14	Hafizabad	-0.1387*** (0.0214)	0.0023* (0.0014)	-0.0220*** (0.0068)	-0.0012* (0.0007)	-0.0112** (0.0043)	-0.2531*** (0.0325)	405
15	Jhang	-0.1789*** (0.016)	0.0172*** (0.003)	-0.0128*** (0.0039)	-0.0005 (0.0005)	-0.0612*** (0.0003)	-0.1222*** (0.0197)	638
16	Kasur	-0.0556* (0.0348)	0.0097*** (0.0028)	-0.0319** (0.0154)	-0.0022* (0.0012)	-0.0562* (0.0328)	-0.1414*** (0.063)	673
17	Lahore	-0.0551*** (0.0053)	0.0026 (0.0035)	-0.0576* (0.0359)	-0.0006 (0.0089)	-0.0163 (0.0401)	-0.0716 (0.0552)	558
18	Nankana Sahib	-0.1172*** (0.025)	0.0192*** (0.0029)	-0.0075 (0.0053)	-0.0013*** (0.0005)	-0.0479*** (0.0163)	-0.1463*** (0.0397)	501

Table 7.21 continued

19	Narowal	-0.1033*** (0.0107)	0.0066*** (0.0019)	-0.0186* (0.0112)	-0.0009 (0.0041)	-0.0502 (0.0314)	-0.1267 (0.0903)	573
20	Okara	-0.1066*** (0.0043)	0.0088*** (0.0036)	-0.0218* (0.0125)	-0.0002 (0.0016)	-0.0921 (0.0574)	-0.1298*** (0.0488)	541
21	Pakpattan	-0.1176*** (0.0301)	0.0071** (0.0034)	-0.0195* (0.0123)	-0.0015 (0.0021)	-0.0843*** (0.0187)	-0.1157*** (0.0393)	519
22	Sahiwal	-0.1056*** (0.0337)	0.0169** (0.0078)	-0.0159* (0.0101)	-0.0007 (0.0056)	-0.0394** (0.0177)	-0.1367*** (0.0494)	586
23	Sheikhupura	-0.0675*** (0.0189)	0.0079*** (0.0027)	-0.0176*** (0.0044)	-0.0006** (0.0003)	-0.0496* (0.0276)	-0.1053*** (0.0274)	639
24	Sialkot	-0.0614*** (0.0032)	0.0049*** (0.0021)	-0.0397*** (0.0099)	-0.0002 (0.0071)	-0.06 (0.0423)	-0.1222** (0.0556)	753
25	Toba Tek Singh	-0.1077*** (0.0149)	0.0193*** (0.0027)	-0.0097*** (0.0032)	-0.0029*** (0.0010)	-0.0509* (0.0322)	-0.1251*** (0.0441)	618
South Punjab								
26	Bahawalpur	-0.2265*** (0.0237)	0.0175*** (0.0034)	-0.0119*** (0.0046)	-0.0031** (0.0014)	-0.0948*** (0.0361)	-0.1112*** (0.0346)	615
27	Bahawalnagar	-0.1729*** (0.0445)	0.0075* (0.0045)	-0.0144* (0.0081)	-0.0011 (0.0061)	-0.0535*** (0.0157)	-0.1772*** (0.0447)	653
28	DG Khan	-0.2617*** (0.0354)	0.0172*** (0.0042)	-0.0120* (0.0064)	-0.0001 (0.0006)	-0.150*** (0.0514)	-0.0316 (0.0535)	546
29	Khanewal	-0.1073*** (0.0194)	0.0057** (0.0029)	-0.0157*** (0.0044)	-0.0012*** (0.0004)	-0.0577* (0.0339)	-0.2521 (0.1926)	740
30	Layyah	-0.1779*** (0.0515)	0.0132*** (0.0042)	-0.0165*** (0.0061)	-0.0015** (0.0006)	-0.2175*** (0.0676)	-0.0387 (0.0495)	555
31	Lodhran	-0.1105*** (0.0212)	0.0085* (0.0048)	-0.0160* (0.0085)	-0.0011* (0.0006)	-0.0394*** (0.0118)	-0.1284 (0.0882)	521
32	Multan	-0.1292*** (0.0301)	0.0041* (0.0023)	-0.0309*** (0.0045)	-0.0002** (0.0001)	-0.0865* (0.0449)	-0.1315** (0.0565)	651
33	Muzaffargarh	-0.1575*** (0.0167)	0.0177*** (0.0018)	-0.0190* (0.0115)	-0.002 (0.003)	-0.1376** (0.0637)	-0.1224*** (0.0421)	794
34	Rahim Yar Khan	-0.1238*** (0.0282)	0.0169*** (0.0005)	-0.0165*** (0.0035)	-0.0014*** (0.0003)	-0.0841*** (0.0136)	-0.1434*** (0.0521)	698
35	Rajanpur	-0.2145*** (0.0455)	0.0162*** (0.0034)	-0.0144** (0.0062)	-0.002*** (0.0007)	-0.200*** (0.0784)	-0.2182*** (0.0588)	443
36	Vehari	-0.0966*** (0.0403)	0.0065** (0.0031)	-0.0163*** (0.0035)	-0.0009*** (0.0003)	-0.0643** (0.0309)	-0.0711*** (0.0171)	736

Note: Accounts for both remittance receiving and non-receiving HHs. The standard errors are given in the parenthesis. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Dependency enhances poverty severity in the rural part of the whole province. The largest effect was found in rural parts of the least developed districts such as Mianwali, DG Khan, Layyah and Rajanpur. These districts have less fertile land and under-developed urban areas and as a result a dependent person reduces HH resources and increases poverty severity. On the other hand, the lowest values were found in rural parts of developed districts that have good agriculture systems and more sources of employment in nearby urban areas. These include Faisalabad, Gujrat and Gujranwala.

The results of the educational level of HH head show a significant impact on the dependent variable for the whole rural part of the province. The highest effect was found in the central Punjab districts namely Lahore and Faisalabad. Noticeably, the rural areas with fertile land and good agricultural systems or surrounded by developed urban areas have higher coefficient values for educational level of HH head. It may be interpreted that the educated HH head can have better knowledge of new agricultural technology/machinery, proper use of pesticides & fertilizer and market demand for crops. Furthermore, educated HH heads in rural areas have more employment opportunities in nearby urban markets than those who are uneducated.

The age of HH head appears with a negative sign throughout the whole rural part of the province. However, it is statistically significant in 64 percent of districts as compared to 85 percent in urban areas. In rural areas, people are engaged in agriculture either directly or indirectly and an advancing age may not increase their earnings. However, the age factor proves more effective in reducing poverty severity than poverty headcount.

The male head being male had a negative and statistically significant impact on poverty severity in more than 80 percent of districts. The highest impact was found in rural areas of districts with fewer opportunities for women members. In developed and more literate districts, the impact of male HH head is comparatively lower as in central and some northern Punjab's districts. In south Punjab however, the male heads are more dominant and this actually reduces the poverty severity. Table 7.22 shows summary of hypothesis validity based on Table 7.21.

Table 7.22: District Wise Hypothesis Testing

No.	Variables	No. of Districts	Decision
1	RI → Pov	36	Reject H_0
		0	Do not reject
2	Dep → Pov	34	Reject H_0
		2	Do not reject
3	HHedu → Pov	36	Reject H_0
		0	Do not reject
4	HHage → Pov	22	Reject H_0
		14	Do not reject
5	MH → Pov	30	Reject H_0
		6	Do not reject

Source: Derived from Table 7.21.

Results of goodness of fit are presented in Table 7.23. Hosmer-Lemeshow (H-L) results show that in 35 out of 36 districts, the null hypothesis is failed to reject, which implies that the chosen model is correctly specified. Similarly, Pearson χ^2 results also validate the model fitness in all districts.

Table 7.23: Results for Goodness of Fit Tests

No.	District	H-L χ^2	Prob.	Pearson χ^2	Prob.
1	Attock	4.32	0.8273	519.96	0.3704
2	Bhakkar	8.48	0.3884	501.65	0.5586
3	Chakwal	5.63	0.6886	524.32	0.5248
4	Gujrat	4.95	0.7634	637.86	0.4606
5	Jhelum	10.29	0.2455	408.47	0.7093
6	Khushab	7.12	0.5239	433.52	0.3019
7	Mandi Bahaudin	16.5	0.0358	529.83	0.3162
8	Mianwali	3.23	0.9193	518.45	0.4123
9	Rawalpindi	9.71	0.2859	597.59	0.4395
10	Sargodha	6.62	0.5776	675.85	0.5378
11	Chiniot	13.2	0.1052	436.52	0.3393
12	Faisalabad	8.88	0.3521	900.51	0.3688
13	Gujranwala	3.48	0.9008	680.27	0.3936
14	Hafizabad	10.19	0.2516	418.9	0.1129
15	Jhang	7.25	0.5104	595.69	0.6097
16	Kasur	13.43	0.0978	641.67	0.4296
17	Lahore	7.5	0.4836	524.46	0.3769
18	Nankana Sahib	10.78	0.2142	488.84	0.5317
19	Narowal	3.15	0.9248	608.99	0.3473
20	Okara	7.72	0.4612	632.86	0.4382
21	Pakpattan	11.82	0.1593	569.61	0.3914
22	Sahiwal	6.9	0.5477	684.51	0.2919
23	Sheikhupura	3.96	0.8609	628.06	0.3488
24	Sialkot	5.9	0.6583	745.98	0.5855
25	Toba Tek Singh	9.32	0.3163	552.68	0.76
26	Bahawalpur	9.69	0.2876	657.72	0.3452
27	Bahawalnagar	6.62	0.5781	627.56	0.5088
28	DG Khan	4.76	0.7824	652.61	0.3255
29	Khanewal	10.3	0.2443	731.02	0.2496
30	Layyah	14.21	0.0764	550.44	0.3799
31	Lodhran	13.34	0.1007	527.33	0.2678
32	Multan	10.33	0.2424	623.33	0.3143
33	Muzaffargarh	5.41	0.7126	776.26	0.6007
34	Rahim Yar Khan	5.92	0.6558	729.08	0.4401
35	Rajanpur	10.94	0.2051	496.95	0.3797
36	Vehari	8.79	0.3605	695.59	0.2147

Source: Author's own analysis.

7.6 Summary

This chapter profiles the household-based poverty incidence at the district and intra-district level for Punjab using the recently announced poverty line of Pakistan, as well as estimates the poverty impact of foreign remittances. The poverty indices reveal that the poverty levels in Punjab vary across districts and within districts by urban and rural regions, and some parts of the province are better-off than other parts. One out of every four persons of Punjab province is surviving below the poverty line and that every third person is poor in rural Punjab. Furthermore, rural areas are twice as poor as their urban counterparts, and also significant intra-district variations are found in southern Punjab's districts. In addition, the most urbanized, industry-concentrated districts are the least poor.

Southern Punjab districts such as Bahawalpur, Bhakkar, DG Khan, Muzaffargarh, and Rajanpur are the poorest among the province. In central and north Punjab, the least poor districts include Gujranwala, Gujrat, Lahore, Rawalpindi, and Sialkot.

Foreign remittances have the potency to significantly reduce poverty incidence for the whole of Punjab province. The outcomes however, are based on the 'optimistic scenario'. Cessation of remittances can push many HHs of Punjab province into abject poverty. Remittances can definitely cause an improvement in per capita income that helps to lower the poverty level, thus validaings the growth-poverty model of Ravallion and Chen (1997), and is also in line with the 'new economics of migration', which suggests that migration is a HH strategy to minimize family income risks, or to control the capital constraints on HH production activities.

CHAPTER 8: CONCLUSION

8.1 Summary

Foreign remittances are indeed an important financial source for many HHs in developing countries such as Pakistan. Remittances recipients are observed to have higher living standards than their non-recipient counterparts. Remittances not only boost their socio-economic condition but also reduce financial hurdles and poverty. This thesis sheds light on the association between foreign remittances and receivers at the HH level by analyzing the impact of remittances on development and poverty reduction for Punjab province in Pakistan.

In the case of the Punjab province, the migration ratio of workers was highest in the last 5 years as compared to the last 4 decades. For instance, 84 percent of the migrants of district Nankana Sahib migrated from between 2011 to 2015. This ratio was 76 percent for district Hafizabad, 62 percent for district Mandi Bahaudin, and 60 percent for district Pakpattan and Lodhran within the period considered. In terms of remittances inflow, the districts Gujrat, Lahore and Sialkot respectively received 15 percent, 13 percent and 11 percent of remittances to the province. The districts Bhakkar, Layyah and Lodhran had the lowest shares. Furthermore, 64 percent of the remittances were received by rural areas. The rural areas of districts Lodhran, Layyah and Lahore respectively received 87 percent, 87 percent and 85 percent of remittances as compared to their urban counterparts. On the other hand, the districts Chiniot, Kasur and Okara were observed to have more shares in urban parts.

The thesis is a cross-sectional study using a survey data set, "Multiple Indicator Cluster Survey (MICS) (2014-15)," collected by Government of Punjab. The data set covers 41,413 households (HHs) from all 36 districts of Punjab province. The study examines two essential aspects of the research problem, which are remittances – household development nexus, and remittances – poverty nexus.

To estimate the first aspect, a household-based development index (HHDI) is constructed in line with the UNDP 1990 and 2010 indices, and a number of studies such as Harttgen and Klasen (2012), Campos-Vázquez & Vélez-Grajales (2012) and Lopez-Calva & Ortiz-Juarez (2012) among others. To analyze the remittances and poverty association, the poverty incidence and severity are measured with the latest poverty line announced for Pakistan.

Diverse econometric techniques were used and the HHDI was constructed using the Principal Component Method, which provided additional insight into the significance of the elements. The Ordinary Least Square method was used to check the impact of remittances on HH development, its different sub-elements, and on poverty severity. To investigate the overall and quartile-wise HHDI advantage of remittance receivers over non-receivers with the same characteristics, the Propensity Score Matching and Treatment Effects Approaches were employed. The poverty incidence was measured by the head count ratio (HCR) and the logit regression was found to be appropriate for the analysis. The logit regression was applied with marginal effects, with robustness checked using the Odd ratios.

The key empirical findings were that;

- All districts of Punjab province had distinct values of HHDI. Districts Lahore and DG Khan were prominent with the highest and lowest HHDI values respectively. Collectively, districts from the south Punjab region had low HHDI values and those of central Punjab had high values.
- Following the UNDP classification, not even a single district was found in the high development category, only 3 out of 36 districts of Punjab province were in the medium development category and the rest were in the low development category. The calculation of the HHDI also showed that the south Punjab region was the least developed, while central Punjab was the most prosperous.
- The scenario among remittance receivers was significantly different. Among them, almost 40 percent of the districts of Punjab province were in the medium development category, while the rest were in the low development category. More than 60 percent of medium development districts were from central Punjab and the remaining belonged to north Punjab. Thus for this group of the population, the results also indicated that the south Punjab region was the least developed while central Punjab was the most prosperous.
- Considering the elements of the HHDI for remittance receivers, it was observed that the elements such as education index, health index, and housing index did not necessarily follow the same ranking as HHDI. For instance, the district Lahore had the highest HHDI value, whereas many districts such as Chiniot, Gujrat, Nankana Sahib and Rawalpindi had higher health index values than Lahore. Similarly, the district DG Khan had the lowest HHDI but in terms of the health index, the districts Rajanpur, Rahim Yar Khan, and Khushab were lower than DG Khan. Based on the

education index among remittance receivers, 3 out of the 36 districts were in the medium development category and it was three times higher than non-receivers. For the housing index, 39 percent of the districts were in the medium development category as compared to 0 percent among non-receivers. As per health index, 83 percent of the districts lied in the very high development category as compared to 61 percent among non-receivers.

- The remittance receivers of urban Punjab were more prosperous than their rural counterparts but the effect of remittances or developmental change due to remittances was more visible for rural receivers than for their urban counterparts.
- Educational achievements and housing status as well as the health index were higher among urban remittance receivers than for their rural counterparts. Housing was found to receive more attention from remittances than education and health care. This was because education and health related facilities were mainly provided by government whereas housing was fully a function of households' economic condition.
- In most of the districts, remittances made the receivers better-off in terms of HHDI than non-receivers. The 'superiority' ratio varied from district to district as well as from region to region based on the dependence on remittances and the spending patterns among HHs. The superiority ratio ranged from 0.0398 percent to 0.117 percent. The largest effect was found in south Punjab while the lowest was in the central Punjab region.
- More urbanized/industrial districts were found to have the lowest or insignificant relationship between remittances and HH development, and *vice versa.*

- Remittances did not make any significant impact on the lower quartile HHs that received them. In addition, Poorer HHs were also affected by remittances in terms of spending pattern as in upper quartiles but with a slightly higher magnitude.
- In terms of poverty, one out of every four persons of Punjab province was living below the poverty line. However, in rural Punjab, every third person was found to be poor and rural areas were twofold poorer than their urban counterparts. The south Punjab region was found to be poorer than central and north Punjab. Furthermore, disparity was also found within the urban and rural parts especially in south Punjab.
- Remittances were observed to reduce the poverty of migrant HHs by 38 percent at provincial level. Remittances resulted in greater poverty reduction in districts with lower employment opportunities and it was observed that urban regions relied less on remittances to reduce poverty. Thus, remittances eradicated the average urban poverty for many districts up to 100 percent. However, the major effect of remittances was found in rural areas and highest effect of remittances on the poverty level and poverty severity was seen in districts of south Punjab as compared to the other two regions.
- The education level of HH head resulted in a higher development of HH and reduced poverty at both the urban and rural areas. The age of HH head had a more positive impact on urban' HH development than rural in reducing poverty. The male HH head proved to be more vital for HH development especially in rural areas of Punjab. The growing number of dependent members was observed to cause a reduction in HH development and enhance poverty but more severely in rural areas.
- The findings of this thesis are in line with the 'relative deprivation hypothesis', which posits that rural HHs, being the most deprived, are more likely to migrate and as such

receive remittances. Furthermore, a lower effect in industrialized and urbanized districts was observed in this thesis.

8.2 Policy Recommendations

On the basis of the empirical evidence, the following policies are recommended. The government needs to balance its focus on education and health with housing since remittances inflow is most likely to increase inequalities in the development of housing between migrant and non-migrant HHs in all the districts. Thus, new policy interventions related to housing are needed in this regard to improve the quality of life and living conditions.

The data shows that though 64 percent of remittances was received by the rural areas of the Punjab province in 2014, the rural folks remained poor. The poverty gap and poverty severity indices support that the income of the rural folk are far below the poverty line. The rural areas of Punjab have lower financial facilities such as banking, non-banking financial institutions and money transfer operators. So, it would be beneficial to spread the branch network of such facilities to the rural areas to encourage savings and investments among rural remittance receivers.

In order to provide better policies related to remittances, more studies are required to understand the perceptions and activities of both remitters and receivers. Remittances form a significant portion of the incomes of those receiving it, and can cause a reduction in poverty. Authorities can facilitate remittances inflow and enhance their developmental impact through the application of appropriate policies. The appropriate authorities should

identify the target groups of HHs with low development and high poverty (see Figure 8.1) so as to allocate resources to more needy districts, especially of the south Punjab region.

The outer part of Figure 8.1 shows the HHDI and poverty levels of districts with no remittances. For instance, the upper left box shows low HHDI (<55%) and high poverty (26-50%) levels, of which 23 lie in this category. The upper right box is for districts with medium HHDI (56-70%) and high poverty (26-50%) levels. Not a single district falls in this category. A total of 10 districts is in the category of low HHDI and low poverty (0-25%). Most of these districts are from central Punjab. The lower right box of medium HHDI (56-70%) and low poverty (0-26%) levels comprise 3 districts. The inner segments represent the same categories for districts with remittances. Remittances lifted most of the districts out of the categories of low poverty (segment-3) and medium HHDI, and low poverty (segment-4). The districts like DG Khan (south Punjab) and Bhakar (north Punjab) showed no change in development after the receipt of remittances. So, an appropriate policy is required for districts in segment-1 more specifically.

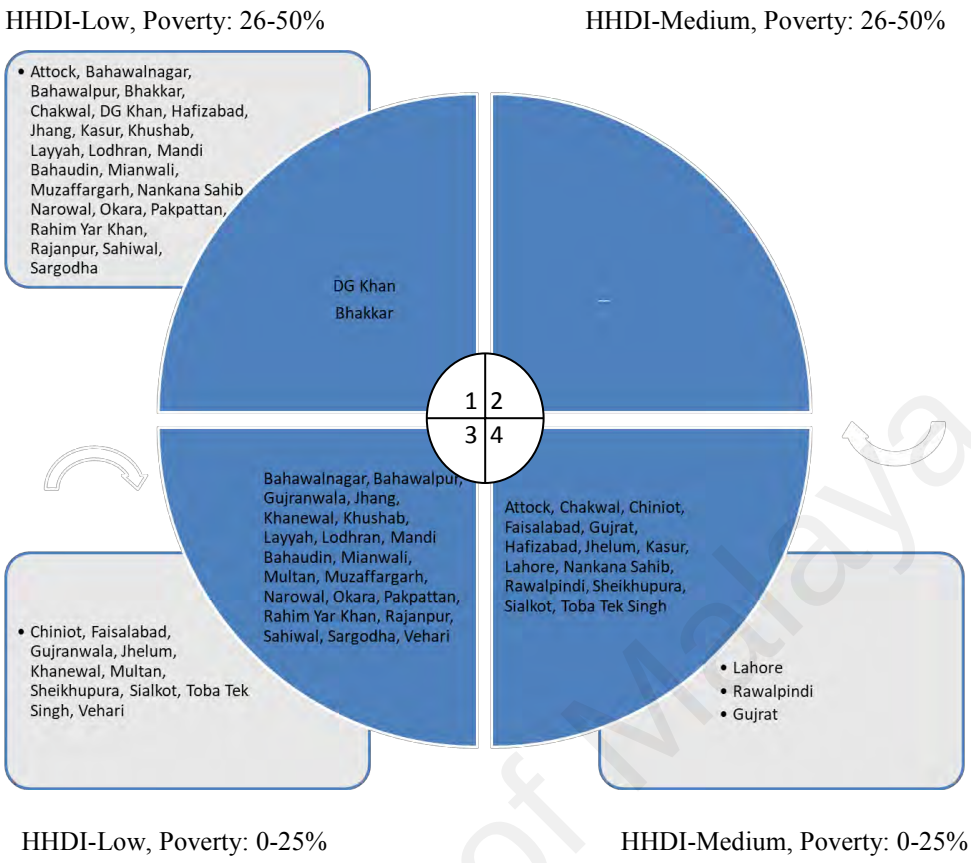

Figure 8.1: Distribution of Districts by Development Levels

An agreement with labour shortage countries should be made and proper guidance to potential migrants should be provided to assist in choosing a suitable country that matches their abilities at the district level. Authorities should also organize technical training for potential migrants to boost their wage rate and to facilitate potential migrants from least developed districts. Furthermore, investment opportunities should be provided to migrant HHs to rapidly eradicate poverty at the community level and workers, especially of rural areas, should be encouraged with lower cropping opportunities.

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APPENDIX

Appendix-A

Elements for Amenities

Amenity Type	Calculation
Source of drinking water	$w_j^h = \frac{w_j - w_{min}}{w_{max} - w_{min}}$ $\quad 0 \leq w_j^h \leq 1$ where w_j^h = water value at HH level w_j = actual score of HH ***j*** w_{max} = 4 w_{min} = 0 If the HH uses mineral bottled water, maximum score of 4 was given, while if the water from the stream or pond is being used, a zero score was assigned.
Fuel used for cooking	$f_j^h = \frac{f_j - f_{min}}{f_{max} - f_{min}}$ $\quad 0 \leq f_j^h \leq 1$ where f_{max} = 3 f_{min} = 1 The maximum value of 3 was given to the HHs who use gas as fuel for cooking, and 1 for users of solid fuels like wood, straw/shrubs/grass, agricultural crop residue, and animal dung.
Floor material	$fl_j^h = \frac{fl_j - fl_{min}}{fl_{max} - fl_{min}}$ $\quad 0 \leq fl_j^h \leq 1$ where fl_j^h= floor material value for each household fl_j= actual score of household *j* fl_{max} = 4 fl_{min} = 0 The HHs with ceramic/marble/chip floors got the highest score, while the HHs with the mud/dung floor were assigned zero scores.
Roofing material	$r_j^h = \frac{r_j - r_{min}}{r_{max} - r_{min}}$ $\quad 0 \leq r_j^h \leq 1$ where r_j^h= roof material value for each HH r_j = actual score of HH *j* r_{max} = 4 r_{min} = 0 The roof material ranges from palm/bamboo (minimum score) to reinforced cement concrete (maximum score).
Type of external wall	$ew_j^h = \frac{ew_j - ew_{min}}{ew_{max} - ew_{min}}$ $\quad 0 \leq ew_j^h \leq 1$ where ew_{max} = 5 ew_{min} = 0 Score five was assigned to the HHs with cemented external wall and zero to HHs without any external wall.

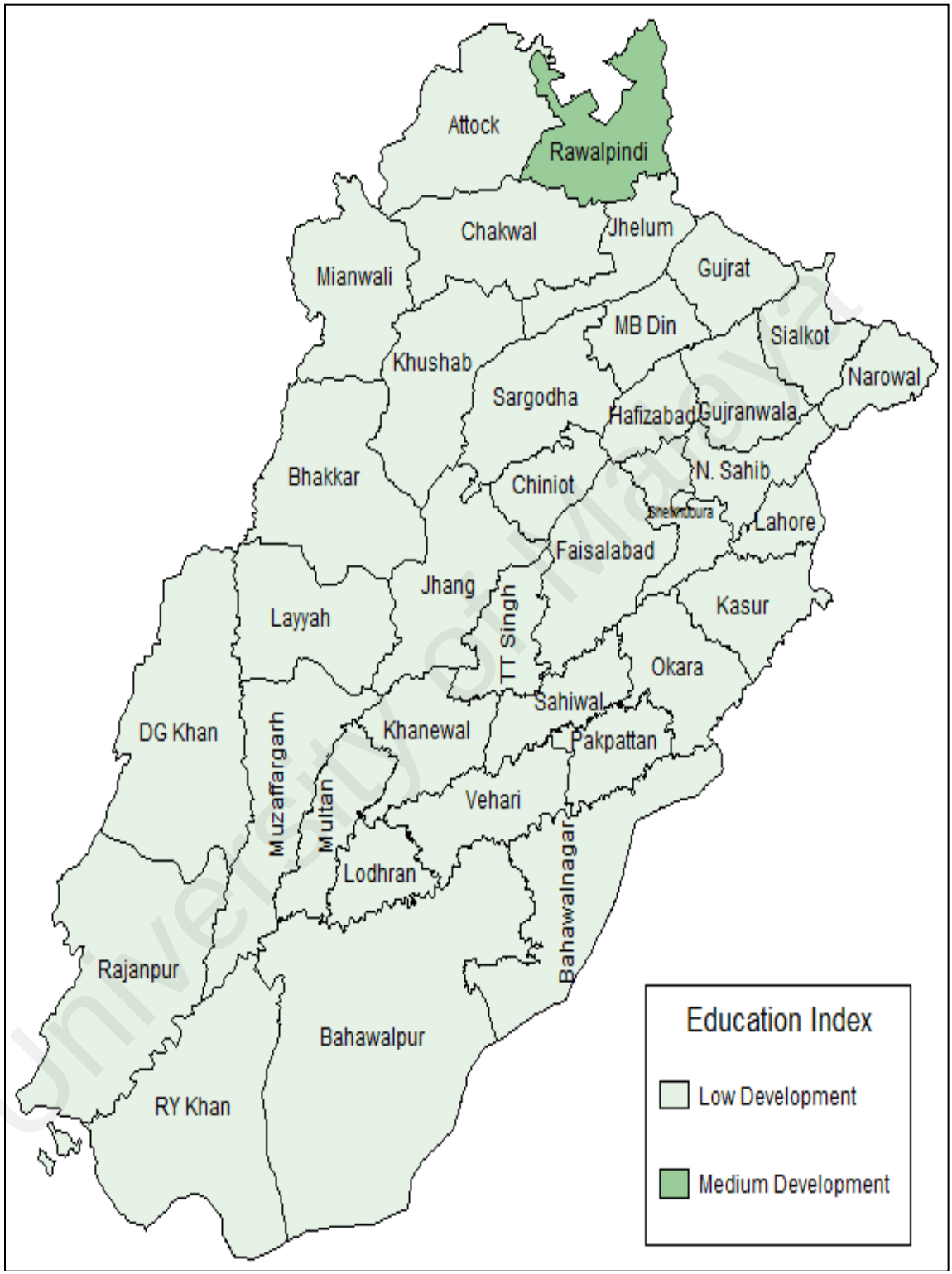
Appendix-B

Comparison of Current HHDI with Previous Indices

No.	Study	Education Index		Health Index		Housing/Income Index	
1	NHDR (2003)	i). Literacy ratio	- Literacy rate at district level - 2/3th weight	i). Infant survival rates (available only at the provincial level)	- 70 percent weight - Respective province value used for its own district	- Cash value of crop output and the manufacturing value added at the district level. - Its ratio to the national value of the crop output and the manufacturing value added was multiplied into Pakistan's Real GDP per Capita	
		ii). Enrollment ratio	- 1/3th weight - Enrollment only for primary level	ii). Immunization rates (at District level)	- 30 percent weight		
2	Jamal and Khan (2007)	i). Literacy ratio	- 2/3th weight - Literacy rate at district level for 15 years and above	i). Life expectancy at birth	- Respective province value used for its own district	- Cash value of crop output and the manufacturing value added at the district level. - Its ratio to the national value of the crop output and the manufacturing value added was multiplied into Pakistan's Real GDP per Capita	
		ii). Enrollment ratio	- 1/3th weight - Enrollment ratio at district level between 5-24 years of age				
3	Current thesis	i). Literacy ratio	- ½ weight - To every HH member assigned a value with respect to his/her education	i). Stunting	- Weight assigned through PCA	i). No. / types of Utilities	- Weight assigned through PCA
				ii). Wasting	- Weight assigned through PCA	ii). Home type	- Weight assigned through PCA
		ii). Enrollment ratio	- ½ weight - To every HH member assigned a value with respect to his/her enrolled level	iii). Underweight	- Weight assigned through PCA	iv). No./types of home appliances	- Weight assigned through PCA
						v). Type of vehicle	- Weight assigned through PCA

Source: NHDR (2003), Jamal and Khan (2007), Author's calculations based on MICS (2014-15).

Appendix-C



District-Wise Education Index of Non-Remittance Receivers of Punjab, 2014

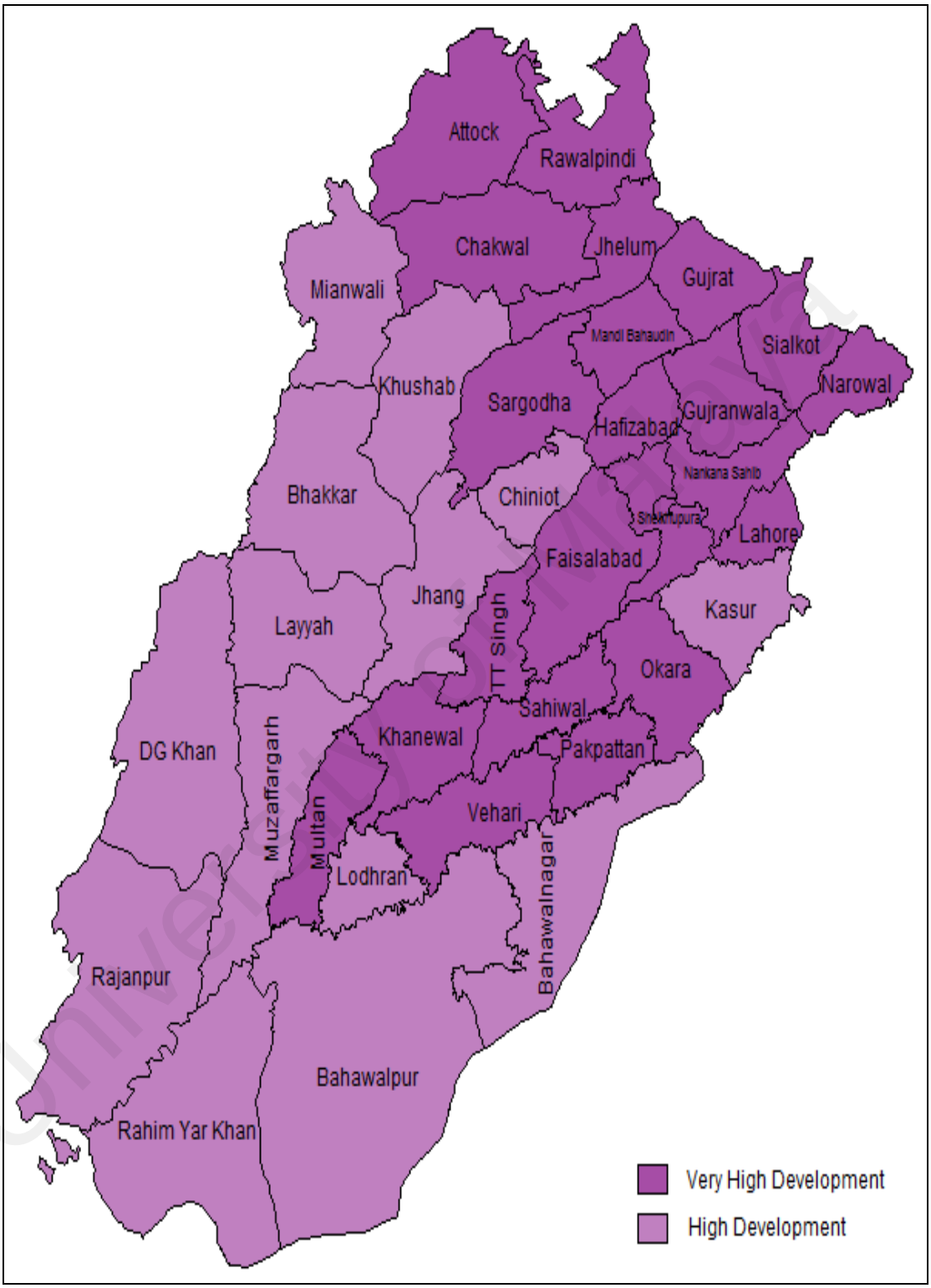
Source: Based on author's calculations.

Appendix-D

District-Wise Education Index of Remittance Receivers of Punjab, 2014

Source: Based on author's calculations.

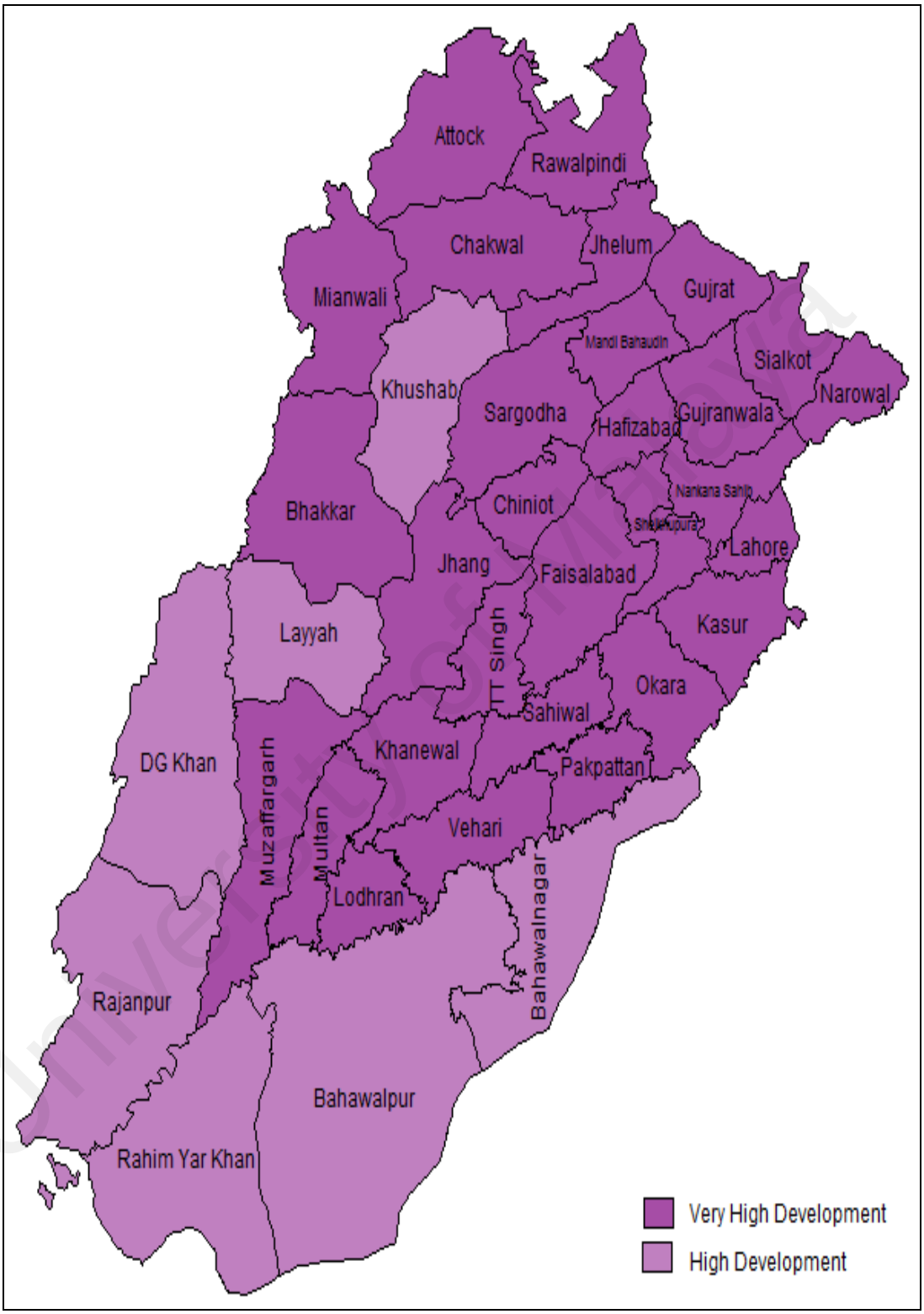
Appendix-E



District-Wise Health Index of Non-Remittance Receivers of Punjab, 2014

Source: Based on author's calculations.

Appendix-F



District-Wise Health Index of Remittance Receivers of Punjab, 2014

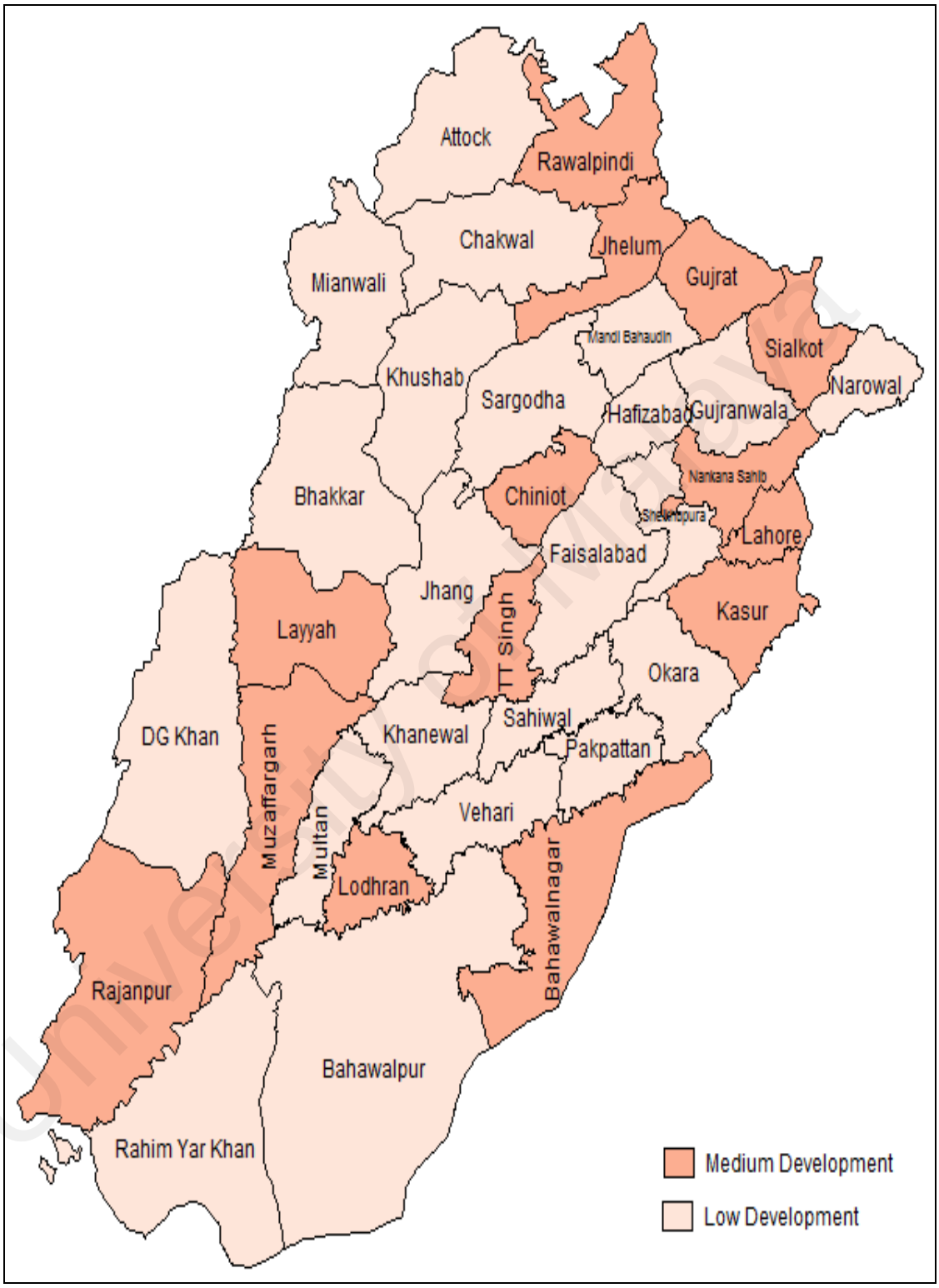
Source: Based on author's calculations.

Appendix-G

District-Wise Housing Index of Non-Remittance Receivers of Punjab, 2014

Source: Based on author's calculations.

Appendix-H



District-Wise Housing Index of Remittance Receivers of Punjab, 2014

Source: Based on author's calculations.

Appendix-I

District-Wise Change of HHDI at Rural and Urban Basis: Remittance Receivers vs. Non-Receivers, 2014

Districts	Remittance Receivers HHDI		Non- Receivers HHDI		Urban change	Rural change
	Urban	Rural	Urban	Rural		
Attock	0.5875	0.5413	0.5870	0.4418	0.0005	0.0995
Bhakkar	0.5261	0.5171	0.5131	0.3787	0.0130	0.1384
Chakwal	0.6835	0.5318	0.5455	0.4126	0.1380	0.1192
Gujrat	0.6394	0.5876	0.6062	0.5102	0.0332	0.0774
Jhelum	0.6264	0.5688	0.5521	0.4081	0.0743	0.1607
Khushab	0.5862	0.3998	0.5212	0.3872	0.0650	0.0126
Mandi Bahaudin	0.6323	0.5013	0.5554	0.4809	0.0769	0.0204
Mianwali	0.5965	0.5336	0.5515	0.4336	0.0450	0.1000
Rawalpindi	0.6422	0.5307	0.5982	0.5052	0.0440	0.0255
Sargodha	0.5528	0.5312	0.5445	0.4366	0.0083	0.0946
Chiniot	0.6756	0.4738	0.5076	0.3923	0.1680	0.0815
Faisalabad	0.6332	0.5144	0.5804	0.4645	0.0528	0.0499
Gujranwala	0.5772	0.5217	0.5365	0.4975	0.0407	0.0242
Hafizabad	0.6396	0.5513	0.5253	0.4458	0.1143	0.1055
Jhang	0.5579	0.4919	0.5337	0.4039	0.0242	0.0880
Kasur	0.6104	0.5049	0.538	0.4202	0.0724	0.0847
Lahore	0.6287	0.5637	0.5907	0.482	0.0380	0.0817
Nankana Sahib	0.6375	0.5515	0.535	0.4521	0.1025	0.0994
Narowal	0.5826	0.5191	0.5511	0.461	0.0315	0.0581
Okara	0.6116	0.5492	0.5950	0.5300	0.0166	0.0192
Pakpattan	0.6655	0.4968	0.5625	0.4776	0.1030	0.0192
Sahiwal	0.6169	0.5383	0.599	0.5375	0.0179	0.0008
Sheikhupura	0.6231	0.4911	0.5286	0.4674	0.0945	0.0237
Sialkot	0.6514	0.5256	0.6006	0.5121	0.0508	0.0135
Toba Tek Singh	0.6245	0.5623	0.5915	0.4682	0.0330	0.0941
Bahawalpur	0.5539	0.458	0.5087	0.3841	0.0452	0.0739
Bahawalnagar	0.5073	0.4915	0.4931	0.3808	0.0142	0.1107
DG Khan	0.5484	0.3581	0.5365	0.3450	0.0119	0.0131
Khanewal	0.5633	0.4457	0.5435	0.4174	0.0198	0.0283
Layyah	0.5298	0.4585	0.5293	0.3798	0.0005	0.0787
Lodhran	0.6112	0.4489	0.4854	0.4017	0.1258	0.0472
Multan	0.5914	0.4596	0.5431	0.4254	0.0483	0.0342
Muzaffargarh	0.5573	0.3798	0.5004	0.3699	0.0569	0.0099
Rahim Yar Khan	0.5606	0.3926	0.5476	0.3601	0.0130	0.0325
Rajanpur	0.4961	0.3735	0.4902	0.3158	0.0059	0.0577
Vehari	0.5921	0.4989	0.5637	0.4152	0.0284	0.0837
Average change					0.0500	0.0600

Notes: Urban change = Remittance receiver's (urban HHDI) – Non-receiver's (urban HHDI)
Rural change = Remittance receiver's (rural HHDI) – Non-receiver's (rural HHDI)

Source: Calculated based on MICS, 2015.

Appendix-J
Results Based on Robust Regression for Punjab Province

Districts	*RI*	*Dep*	*lnOI*	*HHedu*	*HHage*	*MH*	Constant	Obs.
North Punjab								
Attock	0.0565** (0.0264)	-0.0013** (0.0006)	0.0224*** (0.0069)	0.0732*** (0.0052)	0.0004 (0.0005)	0.0234 (0.0299)	-0.3395*** (0.0891)	960
Bhakkar	0.1423*** (0.0450)	-0.0014*** (0.0003)	0.0211*** (0.0041)	0.0724*** (0.0037)	0.0012*** (0.0003)	0.0190*** (0.0063)	-0.4494*** (0.0608)	747
Chakwal	0.0467** 0.0225	-0.0011*** (0.0003)	0.0034 0.0053	0.0680*** 0.0050	0.0008** 0.0004	0.0200*** (0.0040)	-0.1340* (0.0739)	1,035
Gujrat	0.0368*** (0.0106)	-0.0009** (0.0004)	0.0121*** (0.0044)	0.0570*** (0.0035)	0.0008*** (0.0003)	0.0256 (0.0184)	-0.0278 (0.0567)	946
Jhelum	0.0681*** 0.0183	-0.0009*** (0.0003)	0.0332*** 0.0068	0.0752*** 0.00513	0.0009 0.0007	0.0171 (0.0241)	-0.4713*** (0.0850)	837
Khushab	0.1294*** (0.0332)	-0.0032** (0.0016)	0.0338*** (0.0060)	0.0771*** (0.0051)	0.0013*** (0.0005)	0.0154* (0.0093)	-0.6458*** (0.0776)	680
Mandi Bahaudin	0.0258 (0.0314)	-0.0013*** (0.0003)	0.0163*** (0.0047)	0.0704*** (0.0046)	0.0009** (0.0004)	0.0491** (0.0225)	-0.1558*** (0.0663)	745
Mianwali	0.0638*** (0.0152)	-0.0056*** (0.0023)	0.0269*** (0.0053)	0.0591*** (0.0043)	0.0006** (0.0003)	0.0208 (0.0359)	-0.4233*** (0.0725)	765
Rawalpindi	0.0113* (0.0058)	-0.0019* (0.0012)	0.0231*** (0.0042)	0.0611*** (0.0034)	-0.0004** (0.0002)	0.0208 (0.0186)	-0.1049* (0.0556)	687
Sargodha	0.0972*** (0.0231)	-0.0088*** (0.0027)	0.0176*** (0.0049)	0.0759*** (0.0038)	0.0015*** (0.0003)	0.0225* (0.0118)	-0.3539*** (0.0618)	1,154
Central Punjab								
Chiniot	0.1339*** (0.0386)	-0.0024** (0.0012)	0.0147*** (0.0067)	0.0912*** (0.0048)	0.0006 (0.0004)	0.0173 (0.0326)	-0.0662 (0.0856)	706
Faisalabad	0.0119 (0.0111)	-0.0041** (0.0019)	0.0303*** (0.0040)	0.0650*** (0.0027)	0.0006** (0.0003)	0.0202 (0.0157)	-0.3253*** (0.0500)	1,771
Gujranwala	0.0104 (0.0121)	-0.0027* (0.0016)	0.0124*** (0.0043)	0.0598*** (0.0028)	0.0007 (0.0005)	0.0204* (0.0114)	-0.0218 (0.0551)	1,380
Hafizabad	0.0863*** (0.0327)	-0.0048** (0.0023)	0.0102 (0.0070)	0.0677*** (0.0049)	0.0007* (0.0004)	0.0269 (0.0360)	-0.1471* (0.0911)	647
Jhang	0.0584*** (0.0148)	-0.0026** (0.0012)	0.0344*** (0.0063)	0.0694*** (0.0042)	0.0009** (0.0004)	0.0166*** (0.0031)	-0.5325*** (0.0796)	1,007
Kasur	0.1409*** (0.0413)	-0.0011* (0.0006)	0.0111*** (0.0044)	0.0751*** (0.0037)	0.0011*** (0.0003)	0.0280 (0.0257)	-0.1036* (0.0605)	1,062
Lahore	0.0555 (0.0392)	-0.0024* (0.0014)	0.0136*** (0.0030)	0.0579*** (0.0019)	0.0006*** (0.0002)	0.0245 (0.0216)	0.1415*** (0.0376)	1,744

Appendix-J continued ..

Nankana Sahib	0.0812*** (0.0262)	-0.0014 (0.0009)	0.0148*** (0.0061)	0.0722*** (0.0042)	0.0004 (0.0004)	0.0301 (0.0267)	-0.2510*** (0.0778)	710
Narowal	0.0258*** (0.0105)	-0.0022* (0.0012)	0.0129*** (0.0052)	0.0674*** (0.0038)	0.0008 (0.0005)	0.0207 (0.0175)	-0.0728 (0.0691)	786
Okara	0.0722** (0.0355)	-0.0012** (0.0006)	0.0297*** (0.0055)	0.0862*** (0.0043)	0.0012*** (0.0004)	0.0297*** (0.0055)	0.0989*** (0.0274)	728
Pakpattan	0.0572** (0.0277)	-0.0026* (0.0016)	0.0244*** (0.0058)	0.0869*** (0.0042)	0.0007*** (0.0003)	0.0235* (0.0121)	-0.2732*** (0.0722)	795
Sahiwal	0.0858*** (0.0258)	-0.0017*** (0.0006)	0.0272*** (0.0057)	0.0871*** (0.0041)	0.0010 (0.0007)	0.0371* (0.0234)	-0.4629*** (0.0695)	1,261
Sheikhupura	0.0480** (0.0239)	-0.0032* (0.0019)	0.0225*** (0.0052)	0.0660*** (0.0034)	0.0006** (0.0003)	0.0379* (0.0234)	-0.2767*** (0.0698)	1,065
Sialkot	0.0120 (0.0112)	-0.0017* (0.0009)	0.0147*** (0.0043)	0.0591*** (0.0031)	0.0005 (0.0004)	0.0246 (0.0195)	-0.0836 (0.0582)	1,173
Toba Tek Singh	0.1255*** (0.0198)	-0.0094*** (0.0029)	0.0218*** (0.0066)	0.0653*** (0.0040)	0.0004 (0.0003)	0.0366* (0.0228)	-0.3196*** (0.0829)	932
South Punjab								
Bahawalpur	0.0707** (0.0356)	-0.0019* (0.0012)	0.0295*** (0.0060)	0.0999*** (0.0043)	0.0013*** (0.0004)	0.0297 (0.0259)	-0.5501*** (0.0738)	1,032
Bahawalnagar	0.0944*** (0.0335)	-0.0019* (0.0012)	0.0334*** (0.0052)	0.0839*** (0.0038)	0.0007*** (0.0003)	0.0272 (0.0242)	-0.5715*** (0.0663)	976
DG Khan	0.0879*** (0.0219)	-0.0101*** (0.0026)	0.0327*** (0.0061)	0.0967*** (0.0045)	0.0024*** (0.0004)	0.0388 (0.0270)	-0.7034*** (0.0767)	799
Khanewal	0.0499*** (0.0145)	-0.0026* (0.0014)	0.0151*** (0.0062)	0.0860*** (0.0039)	0.0013*** (0.0004)	0.0279 (0.0258)	-0.3236*** (0.0788)	1,064
Layyah	0.0631 (0.0447)	-0.0043* (0.0026)	0.0374*** (0.0059)	0.0771*** (0.0041)	0.0013*** (0.0004)	0.0239* (0.0129)	-0.5494*** (0.0755)	789
Lodhran	0.0940* (0.0519)	-0.0008 (0.0031)	0.0258*** (0.0068)	0.0847*** (0.0049)	0.0013*** (0.0004)	0.0280 (0.0316)	-0.4592*** (0.0876)	771
Multan	0.0320 (0.0383)	-0.0028** (0.0013)	0.0265*** (0.0060)	0.0937*** (0.0040)	0.0018*** (0.0004)	0.0288 (0.0240)	-0.5953*** (0.0748)	1,230
Muzaffargarh	0.0727** (0.0335)	-0.0031* (0.0017)	0.0185*** (0.0048)	0.1000*** (0.0037)	0.0014*** (0.0003)	0.0293** (0.0136)	-0.4285*** (0.0629)	1,111
Rahim Yar Khan	0.0645*** (0.0206)	-0.0045* (0.0025)	0.0331*** (0.0062)	0.1089*** (0.0040)	0.0006** (0.0003)	0.0314 (0.0279)	-0.6129*** (0.0771)	1,130
Rajanpur	0.0865*** (0.0342)	-0.0068*** (0.0023)	0.0260*** (0.0064)	0.0892*** (0.0042)	0.0008** (0.0004)	0.0183 (0.0311)	-0.5050*** (0.0791)	681
Vehari	0.0507** (0.0243)	-0.0035* (0.0022)	0.0214*** (0.0062)	0.0808*** (0.0040)	0.0008** (0.0004)	0.0216 (0.0230)	-0.4994*** (0.0765)	1,067

Appendix-K

District Wise Results Based on Robust Regression for Urban Punjab

District	*RI*	*Dep*	*lnOI*	*HHedu*	*HHage*	*MH*	Constant	No. of Obs.
North Punjab								
Attock	0.0293* (0.0181)	-0.0016 (0.0036)	0.0470*** (0.0083)	0.0452*** (0.0052)	0.0021*** (0.0003)	0.0280 (0.0274)	0.1311 (0.1028)	293
Bhakkar	0.0714* (0.0422)	-0.0064 (0.0045)	0.0424*** (0.0095)	0.0637*** (0.0067)	0.0011 (0.0008)	0.0262*** (0.0086)	0.4052*** (0.1302)	229
Chakwal	0.0630** (0.0297)	-0.0033 (0.0040)	0.0037** (0.0018)	0.0775*** (0.0065)	0.0025*** (0.0006)	0.0242** (0.0109)	0.2782 (0.2009)	374
Gujrat	0.0116** (0.0059)	-0.0038* (0.0024)	0.0138*** (0.0048)	0.0497*** (0.0035)	0.0006 (0.0004)	0.0308 (0.0270)	0.3141*** (0.0621)	363
Jhelum	0.0222* (0.0124)	-0.0010 (0.0042)	0.0465*** (0.0085)	0.0544*** (0.0063)	0.0006** (0.0003)	0.0247 (0.0271)	-0.1616 (0.1081)	244
Khushab	0.0688* (0.0370)	-0.0081* (0.0050)	0.0677*** (0.0112)	0.0635*** (0.0071)	0.0005 (0.0007)	0.0228 (0.0349)	-0.5315*** (0.1334)	254
Mandi Bahaudin	0.0761* (0.0258)	-0.0016 (0.0049)	0.0166*** (0.0059)	0.0668*** (0.0069)	-0.0006** (0.0003)	0.0587* (0.0347)	0.1448* (0.0869)	227
Mianwali	0.0501** (0.025)	-0.0031 (0.0047)	0.0395*** (0.0104)	0.0685*** (0.0078)	0.0010 (0.0009)	0.0259 (0.0232)	0.2395** (0.1409)	253
Rawalpindi	0.0254 (0.0247)	-0.0038 (0.0029)	0.0125*** (0.0036)	0.0510*** (0.0027)	0.0010*** (0.0003)	0.0247* (0.0147)	-0.3385*** (0.0457)	263
Sargodha	0.0629 (0.0487)	-0.0027 (0.0036)	0.0388*** (0.0070)	0.0533*** (0.0049)	0.0004** (0.0002)	0.0248 (0.0159)	-0.0784 (0.0844)	440
Central Punjab								
Chiniot	0.0778* (0.0435)	-0.0041 (0.0052)	0.0000 (0.0096)	0.0779*** (0.0068)	0.0013* (0.0008)	0.0235 (0.0487)	0.2280* (0.1313)	265
Faisalabad	0.0071 (0.0302)	-0.0050*** (0.0019)	0.0298*** (0.0044)	0.0551*** (0.0028)	0.0004** (0.0002)	0.0275 (0.0252)	0.0798 (0.0529)	801
Gujranwala	0.0103 (0.0150)	-0.0058 (0.0043)	0.0256*** (0.0055)	0.0582*** (0.0034)	0.0007* (0.0004)	0.0289 (0.0261)	0.1299* (0.0685)	685
Hafizabad	0.0727** (0.0371)	-0.0046 (0.0048)	0.0340*** (0.0115)	0.0472*** (0.0064)	0.0007* (0.0004)	0.0313** (0.0154)	0.0033 (0.1416)	242
Jhang	0.0170* (0.0098)	-0.0038 (0.0038)	0.0447*** (0.0095)	0.0483*** (0.0057)	0.0006** (0.0003)	0.0226* (0.0124)	-0.1617 (0.1145)	369
Kasur	0.1178 (0.0885)	-0.0012 (0.0039)	0.0177*** (0.0058)	0.0651*** (0.0052)	0.0008 (0.0005)	0.0252 (0.0157)	0.1643** (0.0826)	389
Lahore	0.0450 (0.0327)	-0.0040 (0.0034)	0.0218*** (0.0027)	0.0454*** (0.0018)	0.0005*** (0.0002)	0.0336 (0.0301)	0.2503*** (0.0340)	1,186

Appendix-K continued								
Nankana Sahib	0.0537* (0.0339)	-0.0086 (0.0062)	0.0382*** (0.0096)	0.0679*** (0.0066)	0.0021 (0.0018)	0.0369 (0.0371)	0.2422** (0.1209)	209
Narowal	0.0242 (0.0317)	-0.0036 (0.0043)	0.0242** (0.0116)	0.0785*** (0.0066)	0.0014** (0.0007)	0.0222* (0.0131)	-0.0823 (0.1422)	213
Okara	0.0371** (0.0189)	-0.0012 (0.0030)	0.0384*** (0.0070)	0.0554*** (0.0047)	0.0009* (0.0005)	0.0325** (0.0153)	0.0663 (0.0884)	187
Pakpattan	0.0197** (0.0098)	-0.0111* (0.0070)	0.0452*** (0.0123)	0.0739*** (0.0067)	0.0005 (0.0007)	0.0275** (0.0135)	0.2789* (0.1446)	276
Sahiwal	0.0394* (0.0210)	-0.0038 (0.0030)	0.0135** (0.0069)	0.0640*** (0.0043)	0.0009* (0.0005)	0.0379* (0.0234)	0.1678** (0.0847)	675
Sheikhupura	0.0430 (0.0463)	-0.0008 (0.0031)	0.0207*** (0.0066)	0.0615*** (0.0039)	0.0002** (0.0001)	0.0434* (0.0251)	0.1654* (0.0871)	426
Sialkot	0.0112 (0.0231)	-0.0024 (0.0018)	0.0239*** (0.0053)	0.0427*** (0.0033)	0.0003*** (0.0001)	0.0273 (0.0249)	0.2382*** (0.0659)	420
TT Singh	0.0645*** (0.0175)	-0.0115*** (0.0032)	0.0293*** (0.0064)	0.0465*** (0.0039)	0.0008* (0.0005)	0.0419* (0.0256)	-0.0623 (0.0816)	314
South Punjab								
Bahawalpur	0.0404** (0.0191)	-0.0040 (0.0043)	0.0408*** (0.0084)	0.07706*** (0.0060)	0.0007 (0.0005)	0.0317 (0.0354)	-0.2230** (0.1037)	417
Bahawalnagar	0.0923* (0.0522)	-0.0001 (0.0043)	0.0764*** (0.0108)	0.0752*** (0.0066)	0.0008* (0.0005)	0.0364 (0.0386)	0.6284*** (0.1305)	323
DG Khan	0.0422** (0.0212)	-0.0032 (0.0046)	0.0236** (0.0102)	0.0609*** (0.0062)	0.0022 (0.0018)	0.0424 (0.0365)	0.0286 (0.1298)	253
Khanewal	0.0196*** (0.0064)	-0.0034 (0.0048)	0.0587*** (0.0111)	0.0630*** (0.0065)	0.0004** (0.0002)	0.0345 (0.0469)	-0.3996*** (0.1375)	324
Layyah	0.0388 (0.0685)	-0.0034 (0.0051)	0.0228** (0.0103)	0.0759*** (0.0065)	0.0013 (0.0010)	0.0280* (0.0143)	-0.0158 (0.1312)	234
Lodhran	0.0856* (0.0501)	-0.0040 (0.0053)	0.0322*** (0.0126)	0.0688*** (0.0081)	0.0017* (0.0009)	0.0298** (0.0145)	-0.1279 (0.1576)	250
Multan	0.0297*** (0.0053)	-0.0044 (0.0032)	0.0304*** (0.0054)	0.0618*** (0.0037)	0.0015*** (0.0004)	0.0350* (0.0221)	-0.0063 (0.0696)	579
Muzzafargarh	0.0422* (0.0238)	-0.0059 (0.0046)	0.0699*** (0.0087)	0.0714*** (0.0061)	0.0003*** (0.0001)	0.0317*** (0.0044)	-0.6211 (0.4092)	317
RY Khan	0.0662* (0.0390)	-0.0104*** (0.0032)	0.0417** (0.0210)	0.0692*** (0.0048)	0.0004*** (0.0001)	0.0331* (0.0203)	-0.1688* (0.0958)	432
Rajanpur	0.0461** (0.0213)	-0.0007 (0.0045)	0.0599*** (0.0103)	0.0592*** (0.0060)	0.0002** (0.0001)	0.0234 (0.0520)	-0.3716** (0.1318)	238
Vehari	0.0023*** (0.0001)	-0.0050 (0.0047)	0.0654*** (0.0111)	0.0673*** (0.0065)	0.0006 (0.0008)	0.0331 (0.0301)	-0.4025*** (0.1398)	331

Appendix-L

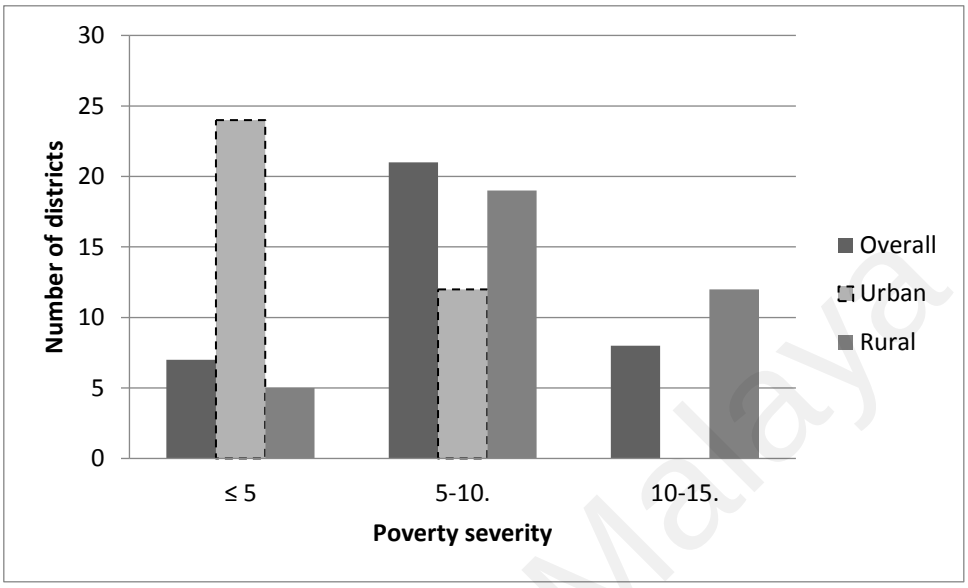
District Wise Results Based on Robust Regression for Rural Punjab

District	*RI*	*Dep*	*lnOI*	*HHedu*	*HHage*	*MH*	Constant	No. of Obs.
North Punjab								
Attock	0.0970*** (0.0354)	-0.0031 (0.0046)	0.0285*** (0.0082)	0.0646*** (0.0070)	0.0006** (0.0003)	0.1109*** (0.0412)	0.1992* (0.1095)	667
Bhakkar	0.1627*** (0.0490)	-0.0014 (0.0023)	0.0312*** (0.0044)	0.0626*** (0.0041)	0.0012* (0.0007)	0.0627* (0.0375)	-0.3295*** (0.0642)	518
Chakwal	0.0767*** (0.0167)	-0.0014 (0.0034)	0.0202*** (0.0055)	0.0565*** (0.0054)	0.0007* (0.0004)	0.1104*** (0.0253)	0.0886 (0.0767)	661
Gujrat	0.0626*** (0.0133)	-0.0048* (0.0025)	0.0207*** (0.0059)	0.0502*** (0.0048)	0.0011*** (0.0004)	0.0543*** (0.0169)	0.0385 (0.0750)	583
Jhelum	0.0986*** (0.0213)	-0.0046 (0.0042)	0.0405*** (0.0083)	0.0718*** (0.0063)	0.0013** (0.0006)	0.0424 (0.0322)	0.3053*** (0.1036)	593
Khushab	0.1375*** (0.0412)	-0.0077*** (0.0032)	0.0146*** (0.0056)	0.0579*** (0.0055)	0.0012* (0.0007)	0.0660*** (0.0355)	0.1625** (0.0776)	426
Mandi Bahaudin	0.0691*** (0.0156)	-0.0046 (0.0032)	0.0240** (0.0121)	0.0548*** (0.0051)	0.0015 (0.0010)	0.0864*** (0.0240)	-0.1593** (0.0778)	518
Mianwali	0.0723*** (0.0333)	-0.0019 (0.0020)	0.0319*** (0.0048)	0.0448*** (0.0040)	0.0001 (0.0003)	0.0627* (0.0362)	-0.2115*** (0.0673)	512
Rawalpindi	0.0560*** (0.0157)	-0.0004 (0.0039)	0.0498*** (0.0073)	0.0683*** (0.0062)	-0.0004** (0.0002)	0.0799*** (0.0330)	0.3222*** (0.0975)	424
Sargodha	0.0982*** (0.0264)	-0.0132*** (0.0031)	0.0141*** (0.0054)	0.0656*** (0.0045)	0.0018*** (0.0004)	0.0655*** (0.0216)	0.1238* (0.0694)	714
Central Punjab								
Chiniot	0.0156 (0.0327)	-0.0017 (0.0034)	0.0222*** (0.0073)	0.0697*** (0.0056)	0.0002 (0.0005)	0.0066 (0.0348)	0.1129 (0.0896)	441
Faisalabad	0.0207 (0.0294)	-0.0026*** (0.0013)	0.0296*** (0.0048)	0.0577*** (0.0034)	0.0012*** (0.0003)	0.0567*** (0.0197)	-0.1610*** (0.0612)	970
Gujranwala	0.0405* (0.0253)	-0.0049** (0.0025)	0.0256*** (0.0057)	0.0564*** (0.0038)	0.0009** (0.0004)	0.0165 (0.0199)	0.0048 (0.0730)	695
Hafizabad	0.0939*** (0.0356)	-0.0080* (0.0041)	0.0271*** (0.0079)	0.0673*** (0.0063)	0.0010* (0.0006)	0.0755 (0.0454)	-0.1926* (0.1045)	405
Jhang	0.0804*** (0.0201)	-0.0006 (0.0023)	0.0462*** (0.0057)	0.0523*** (0.0041)	0.0004 (0.0003)	0.0180 (0.0305)	-0.3998*** (0.0738)	638
Kasur	0.1552*** (0.0274)	-0.0049* (0.0027)	0.0117** (0.0054)	0.0605*** (0.0044)	0.0008** (0.0004)	0.0982*** (0.0293)	0.0341 (0.0737)	673
Lahore	0.0813 (0.0664)	-0.0065* (0.0034)	0.0290*** (0.0081)	0.0722*** (0.0053)	0.0009* (0.0005)	-0.0176 (0.0344)	0.0029 (0.1053)	558

Appendix-L continued

Nankana Sahib	0.0911*** (0.0212)	-0.0036 (0.0031)	0.0205*** (0.0068)	0.0620*** (0.0046)	0.0004 (0.0004)	0.0833*** (0.0317)	0.0681 (0.0870)	501
Narowal	0.0531*** (0.0163)	-0.0054*** (0.0021)	0.0082* (0.0050)	0.0509*** (0.0041)	0.0005 (0.0003)	0.0110 (0.0177)	0.1419** (0.0683)	573
Okara	0.0855*** (0.0284)	-0.0041 (0.0028)	0.0315*** (0.0059)	0.0719*** (0.0050)	0.0009** (0.0004)	0.0791*** (0.0321)	0.3125*** (0.0779)	541
Pakpattan	0.0608*** (0.0230)	-0.0049* (0.0027)	0.0201*** (0.0054)	0.0581*** (0.0046)	0.0006 (0.0004)	-0.0014** (0.0007)	0.0509 (0.0686)	519
Sahiwal	0.0901*** (0.0269)	-0.0025 (0.0027)	0.0295*** (0.0058)	0.0695*** (0.0045)	0.0012 (0.0007)	0.0442 (0.0253)	0.2369*** (0.0714)	586
Sheikhupura	0.0586*** (0.0083)	0.0074*** (0.0027)	0.0395*** (0.0062)	0.0497*** (0.0043)	0.0006*** (0.0002)	0.0820*** (0.0335)	0.2513*** (0.0847)	639
Sialkot	0.0394*** (0.0132)	-0.0042* (0.0023)	0.0226*** (0.0051)	0.0494*** (0.0039)	0.0021*** (0.0003)	0.0419** (0.0197)	0.0763 (0.0717)	753
TT Singh	0.1427*** (0.0238)	-0.0082*** (0.0031)	0.0275*** (0.0075)	0.0611*** (0.0045)	0.0006*** (0.0002)	0.0928*** (0.0323)	0.2146*** (0.0937)	618
South Punjab								
Bahawalpur	0.0753** (0.0379)	-0.0012 (0.0030)	0.0270*** (0.0066)	0.0775*** (0.0050)	0.0008 (0.0006)	0.0293** (0.0135)	0.2724*** (0.0823)	615
Bahawalnagar	0.0999*** (0.0376)	0.0029** (0.0014)	0.0316*** (0.0052)	0.0670*** (0.0042)	0.0011* (0.0006)	0.0196 (0.0268)	0.0302 (0.0681)	653
DG Khan	-0.1011*** (0.0169)	-0.0063*** (0.0024)	0.0279*** (0.0058)	0.0766*** (0.0047)	0.0023* (0.0014)	0.0695*** (0.0275)	0.3912*** (0.0741)	546
Khanewal	0.0560*** (0.0128)	-0.00006 (0.0028)	0.0139*** (0.0062)	0.0712*** (0.0042)	0.0014 (0.0011)	0.0171 (0.0089)	0.0632 (0.0796)	740
Layyah	0.0691*** (0.0023)	-0.0022 (0.0028)	0.0435*** (0.0067)	0.0568*** (0.0049)	0.0005 (0.0004)	0.0595 (0.0332)	-0.3865*** (0.0860)	555
Lodhran	0.1047** (0.0480)	-0.0007 (0.0032)	0.0309*** (0.0068)	0.0679*** (0.0054)	0.0006** (0.0003)	-0.0052 (0.0029)	0.2291*** (0.0899)	521
Multan	0.0538* (0.0337)	-0.0039 (0.0036)	0.0399*** (0.0081)	0.0871*** (0.0052)	0.0007* (0.0004)	0.0539 (0.0310)	-0.4029*** (0.1000)	651
Muzaffargarh	0.0784* (0.0408)	-0.0005 (0.0022)	0.0213*** (0.0051)	0.08459*** (0.0043)	0.0003*** (0.0001)	0.0511** (0.0245)	-0.2115*** (0.0675)	794
RY Khan	0.0656** (0.0311)	-0.0048*** (0.0024)	0.0274*** (0.0061)	0.0696*** (0.0046)	0.0005 (0.0004)	0.0272* (0.0148)	-0.1946*** (0.0775)	698
Rajanpur	0.1157*** (0.0386)	-0.0053** (0.0024)	0.0275*** (0.0072)	0.0776*** (0.0055)	0.0006 (0.0004)	0.0934*** (0.0333)	-0.3440*** (0.0874)	443
Vehari	0.0524*** (0.0204)	-0.0079*** (0.0023)	0.0208*** (0.0056)	0.0569*** (0.0038)	0.0008* (0.0005)	0.0133* (0.0081)	0.1059 (0.0695)	736

Appendix-M



Classification of Districts by Poverty Severity