Does Nonfarm Enterprise offer Pathways for Upward Mobility in Pakistan? Evidences from Panel Dataset

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IN THE NAME OF

ALLAH

The Most Beneficent

The Most Merciful

“In all that Allah has provided for you, seek the higher value
and don’t forget to seek your share of this world. Do good as
Allah have done well to you; and don’t spread corruption in the world. Allah loves not the agent of corruption.”

(Al-Qasas, Surah no. 28)

DEDICATED

TO

MY BELOVED PARENTS

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

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ABSTRACT

Rural non-farm economy has mostly been remained unobserved; however, now it is gaining attention due to rising risks of poverty and vulnerability. This dissertation has three specific objectives, a) analysis of dynamics and structure of rural non-farm economy, b) evaluation of the profile of rural enterprise and c) analyze the impact of non-farm enterprise on a wide range of household welfare indicators. The study has used various data resources including Pakistan Labor Force Survey, Pakistan Social and Living Standards Measurement Survey (PSLM)-2010 and 2012 and two waves of Pakistan Panel Household Survey (PPHS) which are 2001 and 2010. The Regression model has been applied to estimate the determinants of value addition while the logistic and multinomial logistic regression is utilized to estimate the impact of rural non-farm enterprise on poverty and dynamics of poverty.

The findings reveal that 20 per cent of the rural Pakistani households own some sorts of non-farm enterprise. Most of the enterprise are informal and they have poor asset endowments. Households own more enterprise in those districts that have good physical and human infrastructure. The PPHS panel survey reveals that rural non-farm enterprise declined during 2001 and 2010 period with a decline of around 45 per centage points.Women participation as the manager is quite low but is improving overtime. More than half of the rural non-farm enterprise are located in homes. Asset and sale base is small but it improved during 2001-10 period. Presently this sector is providing jobs to around 58 per cent of the rural population.

The micro level determinants of value addition suggests that both the labor and capital has the positive impact to improve sales of the firms. Similarly education of manager also lead to improve sales of rural enterprise. Huge regional variation can be found with more concentration of enterprise in North and Central Punjab. The dynamics analysis reveal that 74 per cent of the rural households not own non-farm enterprise in both the rounds while 5 per cent of the households own in both the rounds. Households headed by male have more ownership in both the rounds. Education of head of household has also a positive impact on the survival of these enterprise. Ownership of livestock does not make any difference, however, access to land is negatively associated with ownership.

The richest households own more enterprise while the poorer households are reliant for employment to these enterprise. Non-farm enterprise have a positive association with household welfare, as these households are facing less issues of headcount poverty, multidimensional poverty and have more per capita consumption expenditures and their children are more enrolled in school compared to their counterparts who does not own enterprise.

CHAPTER 1

INTRODUCTION

1.1 Background and Introduction:

With industrialization process, the transfer of economy from agriculture to industry has resulted with structural movement of labor from farm to off-farm sector all around the globe as argued by Lewis Dual Sector Model(1954). Such shift of economy and labor commenced in mid 50s of 20th century in developed countries while it proceeded later in developing countries, depending on their socio-economic development conditions as highlighted by various studies conducted in developing countries including the Asian countries.[1] From a policy point of view, the rural non-farm economy or non-farm enterprise has mostly been remained unobserved especially in the developing countries including Pakistan; however, its importance is growing now when some less developing countries especially the poor agrarian countries have been facing rising risks of poverty, vulnerability and food insecurity where still a significant population is residing in rural areas. The importance is further attributed because these off-farm activities in rural areas could be a potential substitute to stimulate economic growth and rural well-being.

The 'non-farm' enterprise includes all the economic activities in rural areas except agriculture, livestock, forestry, fishing and hunting. In majority of the developing

[1] Huffman, 1980; Weersink et al., 1998; Escobal, 2001; Old enhanna and Oskan, 2001; Lamb, 2003; Joliffe, 2004

countries it is comprises of heterogeneous activities, however they are generally quite small in terms of assets, employment size, poor human capital, lack of access to finance and other technologies, limited forward and backward linkages, un-experienced managers and higher closure rates (Sur and Jian, 2006).

Traditional economic theories have linked up the rural development primarily with agricultural growth, due to its predominance in rural life. The governments and policy makers have also stressed to focus on agricultural growth in a number of developing countries to alleviate rural poverty and hunger. However, during 1980s and onward various socio-demographic and economic surveys conducted in a number of developing countries have revealed the rising dependence of rural population on non-farm sector (Malik, 2008). This emergence largely cropped up due to the positive effects of globalization and liberalization policies starting from the late 1980s and early 90s in various developing countries including the South Asian countries which opened new economic opportunities for the private sector and foreign investors to expand domestic markets and access new markets. As a result, agribusiness firms, large exporters, and supermarket chains penetrate in rural areas, by altering the scale and structure of rural supply chains as they do. The enormous increase in the availability of information and communication technology facilitated this potential boon (Haggblade et al., 2007).

Non-farm enterprise can potentially contribute to economic growth both directly and indirectly. The direct channel depends on its size and its receptiveness to agricultural growth, urban population and type of exports and export markets while the indirect channel largely depends on the financing, processing, and marketing structure of an economy through which both the agriculture and non-agriculture growth could be

reserved. Policy makers can also view the rural non-farm enterprise as a potential breakwater, valuable for stemming the tide of rural-urban migration, curbing urban congestion, and dipping pressure on over-stretched urban public service delivery systems. The rural population can adopt these non-farm activities as a potential source to diversify their incomes and smoothing their consumption in case of various agricultural shocks including price failure, droughts, floods and many others which can hamper agricultural productivity. Amid growing landlessness and poor households largely depend on non-farm earnings for their survival.

Compared to agriculture sector, rural non-farm sector is growing rapidly in a number of developing countries, therefore, it can play a key role to alleviate rural poverty and improve equality and equity (Lanjouw, 1999;Arif et al., 2000). There exists a positive relationship between non-farm activity and household welfare because it provides jobs opportunities, more income and even improve agricultural productivity through better resources (Lanjouw and Lanjouw, 2001). In addition, employment provision through non-farm sector could be a key remedy to overcome the pressures of growing rural labor force by absorbing surplus rural labor. Beside it, it can slow down rural-urban migration and overall can contribute to national income and productivity (Lanjouw and Feder, 2001).

In agricultural developing countries, non-farm enterprise also stimulate seasonal labor migration from agriculture to non-agriculture, handicraft production, processing and trading of agricultural products and provision of various agricultural services. All these host of benefits gathered from non-farm enterprise usually off-set the vulnerable and poverty risks and uncertainties associated with agricultural price fluctuations and

crop failure (Lanjouw and Lanjouw, 1995). In addition, the rural non-farm businesses comprises on variety of heterogeneous activities, including usually small manufacturing units, services and wholesale & retail activities, are an important source to overcome income variabilities especially in drought years and they not only tackles the issues of food security but also finance the farm inputs (Gordon and Craig 2001; Walker and Ryan, 1990). The rural nonfarm economy has grown too large to ignore, the average share of rural non-farm economy in total rural household income is varying across the regions; it is 42 percent in Africa, 40 percent in Latin America and 32 percent in Asia (Haggblade et al., 2007).

1.2 Importance: The Rural Non-farm Economy in Pakistan

The dominant growth-centric development paradigm in Pakistan has long been looking to the farm sector for rural poverty alleviation while the non-agricultural activities have widely been ignored. The importance of rural non-farm sector cannot be ignored due to many reasons. First, poverty in Pakistan is predominately a rural phenomenon with almost its 80 percent concentration in rural areas. It is worth mentioning that the higher agricultural zones in Pakistan including rural Sindh and Southern Punjab are facing the higher incidences of poverty compared to some *barani* are as i.e. north Punjab and north KP. The high differences in poverty and other human development are the resource diversification as households and regions of north Punjab have more access to diversified income resources than the southern Punjab. The stimulation of non-farm economy in these deprived regions can improve them.

Second, Agriculture is the still the main livelihood source in rural areas by providing jobs to more than 50 percent rural masses; however, around 63 percent of the

rural households are landless so agricultural impact on these households may be small. Majority of these landless, especially the poorer households are dependent on the rural non-farm sector for employment and income. It might be possible that non-farm households in Pakistan are comparatively poorer than the farm households but these non-farm activities are their basic livelihoods. Non-farm activities also contribute significantly even to farm households as agricultural crop income in overall rural Pakistan accounted for only about 50 percent of the total income (World Bank, 2007). In presence of such high skewed land distribution, higher volatility in agricultural productivity and prices, non-farm sector is an important pathway to help households to move out of poverty by providing employment opportunities and contributing in their incomes in Pakistan (Arif and Munir, 2001).

The supply of labor to non-farm sector in rural areas is perhaps the best understood in the context of households' decision making based on their livelihood strategies. Those households are more exposed to risks who have less diversified resources especially the pure agricultural households as they face fluctuations in agricultural output and prices and to climate risks as mentioned earlier. In Pakistan, the high agricultural growth has benefited mainly to large and medium farmers only than to small farmers or/and landless households (Malik, 2005). Therefore, the incidences of poverty are much high in those regions which are the pure agricultural zones of Pakistan i.e. Southern Punjab, Rural Sindh (Malik, 2005) and the resources in these regions are comparatively less diversified as compared to the other regions (Arifand Shujaat, 2014).

The rural non-farm economy in Pakistan is not performing well due to its small manufacturing base as compared to the other countries of the region. Manufacturing

share is only 9 percent for Pakistan, compared to 40 percent in Sri Lanka and 27 percent in Bangladesh (World Bank, 2007). Majority of the poor rural households in non-farm sector are engaged in low productive laborer activities. Majority of them are unskilled and they mainly derive their income from construction sector where nearly half of them are under-employed. The better-off households in the non-farm sector are the employer and entrepreneur, they derive their income from the services and manufacturing/mining and trade sector (Malik, 2005).

Like other developing countries, the rural nonfarm sector in Pakistan is heterogeneous in nature by covering a variety of retail, manufacturing and services activities. The pursuit of this diversified variety leads one to explore the potentials of rural non-farm activities. A considerable body of literature has discussed the issues of poverty in Pakistan; however, majority of the studies have ignored the importance of rural non-farm economy in poverty alleviation and pushing households out of poverty. Few studies, however, have analyzed but in a limited range. For example, Adams and Janes (1995) examined the sources of non-farm income inequality in Pakistan while the study of Nasir (1999) analyzed the link of poverty with formal and informal labor employment. Arif et al., (2000) has viewed the level of poverty among the various farm and non-farm income groups and also estimated the determinants of individuals to be engaged in farm and non-farm activities. Arif and Shujaat (2014) found the higher incidences of poverty and mobility of poverty in southern Punjab. The study of Malik (2005; 2008) and World Bank (2007) have reviewed the importance of non-farm sector, however, none of the study has analyzed the diversified livelihood labor strategies due to rural non-farm sector and its role household welfare and poverty alleviation. Another

contribution of the present study is to use the panel dataset to observe the upward household mobility due to non-farm activities which was ignored in the earlier studies as majority of the above mentioned studies were conducted by using the cross-sectional dataset In the light of this importance, such type of assessment is prerequisite for to establish targeted policies for poverty alleviation and rural development in Pakistan.

1.3. Objectives of the Study

Being a potential key role of rural non-farm economy in poverty alleviation and employment generation, the present study aims to investigate the role of rural non-farm enterprise that how they offer a pathway to pull the households out of poverty with the following three objectives;

i. To analyze the dynamics of structure of rural non-farm economy including its profile, asset value and role in employment provision;
ii. To evaluate the real worth of these rural enterprise and the determinants of value addition; and
iii. To analyze the impact of non-farm enterprise on a wide range of household welfare indicators including poverty, child school enrollment, multi-dimensional poverty and dynamics of poverty

The study has used various data resources including the secondary and primary datasets. The secondary datasets include Pakistan Labor Force Survey, Pakistan Social and Living Standards Measurement Survey (PSLM)-2010 and 2012 while the primary dataset includes the two rounds of Pakistan Panel Household Survey (PPHS) which are 2001 and 2010.

1.4 Organization of the Study

The organization of this thesis is as follows. Chapter 2 has discussed a detailed literature review of non-farm enterprise including their role in employment provision and poverty alleviation. Data description and methodological framework has been detailed in Chapter 3. Chapter 4 details the results over the profile of rural non-farm enterprise including type of businesses, place of business, wage rate, type of employment, detailed profile of firm and manager and the factors which determine the value addition in of rural non-farm enterprise. In chapter 5, the impact of rural non-farm enterprise over the various household level welfare indicators including poverty, child school enrollment, multi-dimensional poverty and dynamics of poverty have been given. Chapter 6 concludes the overall dissertation with some policy implications and recommendations.

CHAPTER 2

A REVIEW OF LITERATURE

2.1 Introduction

The importance of agriculture sector cannot be denied in developing and especially in agrarian countries; however, evidences from various regions and countries reveal that it alone cannot mitigate rural poverty and improve household well-being in rural areas. Non-farm activities and enterprise provide an alternative way for rural households to be less dependent on agriculture as well as smoothening their consumption and income over time. These rural activities can also help to reduce income uncertainty and shocks by diversification in resources, employment and spreading the natural and non-natural risks across several income activities (Gordon, 1999). Various socio-demographic household survey reveals that rural agricultural households have also now been attempting to diversify their income sources in response to rising climatic uncertainties, they aim to work both in farm and non-farm activities (Stifel, 2010).Participation in non-farm activities may be the one type of activity in which rural households can generate money which could be invested in farm output by adopting modern technology (Zhu and Luo, 2006). The study of Arif et al., (2000) in Pakistan showed that even a low return from non-farm participation would contribute to enhance household income and welfare. This chapter has highlighted all this by covering the importance, structure and potential constraints of rural non-farm economy.

2.2. Role of Rural Non-farm Economy in Employment Provision

In contrast to traditional image of farm household, economic progression has now included many non-farm activities and found that the share of non-farm income in rural areas has grown significantly from 35 per cent to 50 per cent in various developing countries. In Latin American countries, this share is about 40 per cent of the total rural income, in Sub-Saharan African countries, it is in the range of 30 to 42 percent while in Asian countries, the share is around 29 to 32 percent and is lower as compared to the other regions (Haggblade et al., 2007). There is growing interest to observe the role of rural non-farm enterprise as a source of employment and income provision across the developing world.

Table 1:***Composition of Rural Non-farm Employment by Continent (in %)***

Employment Provision	Africa	Asia	Latin America	West Asia and North Africa
Nonfarm share of rural labor	19	30	30	24
Women share of total rural non-farm labor	35	25	40	8
Share of rural non-farm employment by sector				
Manufacturing	21	22	23	22
Commerce and transport	31	28	22	24
Personal financial and community services	36	34	35	32
Construction, utility and mining	12	15	20	21

Source: Haggblade et al. 2007

The primary employment shares of rural non-farm sector in total employment emphasize the importance of this sector in various continents as shown in Table 1 that suggests the rural non-farm economy accounts for about 19 per cent employment provision share in Africa, 30 per cent in Asia and Latin America and 24 per cent in West Asia and North Africa. A significant share of women in all the continents in rural non-farm sector can also be seen in Table 1. Services sector dominates in employment provision while all the continents are close in role of manufacturing sector in employment provision. Though secondary employment could be another contribution

because of seasonal pursuit, however the results reveal only the primary occupation thus they may understate the importance of rural non-farm activities.

The establishment of rural non-farm activities not only led to increase household's income but it also improve agricultural household income overtime. The non-farm income share in rural households increase from 26 per cent to 46 per cent in India during 1968 to 2000 period while it increase 45 per cent to 65 per cent in Taiwan (Malik, 2008). The empirical evidences from various South and East Asian countries suggests that higher agricultural production spur the expansion of rural non-farm economy, commencing usually near cities, spread eventually to include a broad spectrum of rural economy (Ranis and Stewart, 1993; Yusuf and Kumar,1996). For example, the late 1970s agricultural reforms in China gave much freedom to Chinese farmers to diversify their agricultural production strategies. In corresponding the restricted urban migration called "*hukou*"[2] and massive public investment especially the agricultural R & D led to establish Township and Village Enterprise (TVEs) and specialized households (Ravallion, 2009).It led three important consequences for the Chinese labor market: first, it absorbed surplus rural labor and facilitated rural industrialization comprises of small industries, second, it lower down rural-urban migration pressures, and third, the free entry of TVEs increased competition in the production market and created pressure on government for SOEs reform (ADB, 2007).

Overseas remittances also stimulate rural economy by raising rural investment, construction activities and agricultural inputs. In some cases, migrants contribute to common funds for local public investments—thus creating jobs for local masons and

[2] Under the hukou system, a rural migrant cannot avail urban services without obtaining registration there, which can be difficult and costly—particularly for the poor (Ravallion 2009)

carpenters (Adams, 1998, Ellis and Freeman, 2004). The return Pakistani migrants from Middle East have been establishing their small level businesses by utilizing the saved money and gained experiencedat abroad (Arif, 1998).

A number of studies have identified the reasons that why people engage in non-farm employment activities. The absence of land or poor quality of agricultural land as well as the lower land productivity are the key push factors for individuals and households to be engaged in non-farm activities. On the other hand, higher wages in the non-farm sector as well as lower risk of wages could be the major pull factors. These pull factors become more persuasive if agricultural income is not sufficient to fulfill family needs (Barrett et al., 2001). The pull factors may also become more powerful when healthy growth in agricultural productivity stimulate employment generation in the rural non-farm sector through its linkage effects (Mellor, 1976; Haggblade and Hazell, 1989).

Man and Sadiya (2009) found that age of the head of the household and dependency ratio were the key determinants to participate in non-farm employment. Lebo and Schelling (2001) argued that better physical infrastructure in rural areas including metallic roads, efficient communication and rural electrification are the important factors to inspire households to establish non-farm activities. Mduma and Wobst (2005) found that human capital, availability of land and access to economic centers including the credit facilities were the most important factors in determining the number of households that participated in off-farm works. A similar findings were made by Bezu et al. (2009) by adding the role of gender and its mobility factors as well. Using the propensity matching score method, Owusu and Abdulai (2009) estimated that non-farm employment had a positive and robust effect on farm household income.

During late 1980s and early 1990s, the liberalization idea has launched new economic opportunities for both the private sector and foreign investors to invest in rural areas. In parallel, it also lower down the government involvement especially in the production sector and relaxed the excessive government control on foreign exchange and tariff. As a result, massive foreign investment occurred in Asia, Africa and Latin America with rising share of rural non-farm enterprise in household income and labor. This new era endowed new economic opportunities for some rural suppliers to access new markets in the non-farm sector. They were also exposed others to new threats of competition from cheap manufactured imports and by imposing quantity quality standards that risk excluding undercapitalized rural enterprise on which the rural poor often depend (Haggblade et al., 2007).

In Bangladesh, liberalization of agricultural inputs in 1980s created a huge demand of small diesel engines for tube wells. After some period, the farmers realized that during the offseason they could use these engines for other purposes i.e. river boats and rice dehullers. As a result, these small engines launched a revolution in rural riverboat transport, transforming it from an old-fashioned, cheap-and-slow to a modern, cheap-and-fast mode of transportation (Jansen et al., 1989).

Regarding the Asian economies including Pakistan, agriculture is the major source to improve employment in rural areas. However, additional potential to create new jobs in agriculture has been declining due to a host of factors i.e. land division, insufficient capital and investment incentives, poor farm infrastructure, limited markets and stagnant prices of agricultural products (APO, 2004). Unequal distribution of land and access to water are the major factors for keeping a significant proportion of small

farmers and rural non-farm households poor in Pakistan. Agricultural growth alone cannot counter the increasing poverty in rural areas, for two reasons which limit the impact of agriculture growth on poverty. Gains in rural incomes are spent on urban goods and services and gains to non-agricultural rural incomes are shared among a large number of rural poor (World Bank, 2007).The increasing landlessness in rural Pakistan has basically pushed a great proportion of the rural labor force out of agriculture into probably low productivity activities in the non-farm sector (Arif et al., 2000).

2.3.Role of Non-farm Economy in Poverty Alleviation

Traditional rural insight, developed in colonial era has motioned the non-farm sector as a low productivity sector compared than the farm sector. Hymerand Resnick (1969) explained the decline of non-farm activities in colonial era. Their model reveals that peasants allocate labor to produce only two types of commodities to serve their needs that are food and non-food goods. The non-agricultural commodities—defined as Z-goods consists of the production of handicrafts and services including textiles, garments and food processing for village consumption. With passage of time, as the rural economy got linkages with the world economy, labor was induced to move out of the production of Z-goods and into the production of cash crop goods for exports. As a consequence, there was a decline of non-farm sector with the expansion of both exports and imports of cash crops. The later studies, however, not support this idea due to its non-applicability to the post-colonialera. Ranis and Stewart (1993)revealed that both the micro and macro policies of a country will determine the future path of its economy whether it should produce Z goods or balance sectoral growth or Z goods will be displaced by imported goods or by subsidized domestic goods.

A number of studies have shown that the high share of non-farm income has a positive correlation with income and negative correlation with poverty in a number of countries. In case of Ethiopia, such diversification not only offers higher income but also better nutrition as well (Barett et al., 2001). In case of Tanzania, it has a positive association with per capita food consumptions (Lanjouw and Feder, 2001). A similar finding was made by Barrett et al., (2000) for Côte d'Ivoire and Kenya. In another dimension, Zhu and Luo (2006) found that non-farm income was an important source to reduce income inequality in rural China. In a number of countries, non-farm jobs lead to equity enhancement among rural population and to improve the absolute income levels especially of the poorer laborer (Table 2).

Table 2:***The Estimated Equity Impact of Non-Farm Incomes***

Household Type	**Rural Non-Farm Income as Share of Total**					
	Equity Enhancing		Neutral		Inequitable	
	Kenya	Pakistan	India	Ethiopia	Ecuador	Vietnam
Poorest	82	75	32	32	22	40
Middle	45	36	38	30	37	50
Riches	40	21	31	31	64	82

Source: Malik (2008)

There are two major types of rural non-farm activities: high labor productivity and lower labor productivity activities. A common view is that rural off-farm employment is a low productivity sector producing low quality goods (Lanjouw and Lanjouw 2001). From a social welfare perspective, employment creation is important even in lower labor productivity sector, especially when fast growing rural labor force can not be much absorbed in over-crowded agriculture sector or agricultural employment is not an option for certain sub-groups i.e. landless households and ethnic minorities(Lan jouw 1999,Arif et al. 2000). The evidence suggests that non-farm activities have the potential to improve rural well-being by absorbing surplus labor, especially for the poor agrarian economies

(Barrett et al. 2001). In Pakistan, high agricultural growth has benefited mainly to large and medium farmers, therefore, the incidences of poverty are much higher in pure agricultural zones i.e. Southern Punjab, Rural Sindh (Malik 2005, Arif and Shujaat 2014). It is expected that rising landlessness along with bulk of potential working youth has generated low productive rural non-farm activities in Pakistan; however, the low return may also enhance household income and consequent rural welfare. In short, the contribution of rural non-farm economy is highly appropriate for those agrarian economies that have high risk of poverty, vulnerability and unfavorable labor-land-ratio (AdmasandHe,1995; Stifel, 2010). Finding part-time local non-farm employment is vital for the welfare of small farmers and their families.

2.4. Constraints of Rural Non-farm Enterprise

In Pakistan, the data on rural non-farm activities is limited as there is no official specific number of rural non-farm enterprise. Some recent studies have estimated that there are about 3.8 million non-farm enterprise in rural areas. The rich household usually owns these enterprise while the poor households are contingent for employment. About 27 percent of the income for poorest households comes from non-agricultural wages in rural Pakistan. Like other South Asian countries, the non-farm sector in both rural villages and small towns in Pakistan primarily consists of family based micro-enterprise where more than half of the rural non-farm activities are related to the trading sector (World Bank, 2007).

Different constraints at different stages hamper the entrance of households to non-farm economy or engaged in low activities in non-farm economy. Missing markets especially the financial markets can also discourage diversification (Barrett et al., 2000).

Gender, caste and social status also hinder the process of entering into non-farm economy no matter how much profitable they are. In South Asia, the presence of children reduces the mobility of married women as children being considered as the primary priority to be look after. Caste and social restrictions may also force specific poor household groups into traditionally reserved low-productivity rural non-farm activities. In India, these include pottery, weaving and tanning among many others (Lanjouw and Shariff, 2000). Living far from transportation hub also reduces the chances of participation in non-farm activities as (Zhu and Luo, 2006). Another important factor is the demand of non-farm goods, slower the demand of non-farm goods, slow the growth would be.

In Pakistan, rural non-farm economy has been facing sever constraints. Some of the constraints has been highlighted by 2000 Agriculture Census of Pakistan including; small size of enterprise, predominantly sole proprietorship, primitive business practices and attitudes, lack of standards and quality in all aspects of transactions, limited information flow, human capital inability to access market, limited forward and backward linkages outside of geographic area, lack of access to finance, lack of contracts and enforcement. The findings of World Bank (2005) shows that the most significant constraint for rural non-farm economy is access to formal finance, the cost of finance and the complicated loan procedure. Beside this, poor infrastructure also ranks as a serious constraint as well in villages while the taxation system is a severe issue in towns.

Very few of them use the modern business services i.e. accounting, marketing, insurance and information technology (Table 3). The review suggests that these rural non-farm enterprise are poorly equipped to provide sustained high rural growth, decent job opportunities and poverty reduction as required by these enterprise to cope with the

rising risks and competitions of associated with globalizations. Relatively fewer shares of production enterprise in Pakistan highlight the missed potential for value addition including the forward and backward linkages. There seems absence of essential agricultural support services and linkages, necessary to stimulate the growth of non-farm sector. With poor equipment including the human, physical and financial margins along with regional disparities, often restrict low income households to run low productivity enterprise with higher labor intensity and lower financial returns.

Table 3:***Enterprise Using Modern Practice/Services in Pakistan (in %)***

Service	**Retail**	**Wholesale**	**Storage**	**Transport**	**Overall**
Engineering	13.4	11.8	33.2	42.4	16.7
Management	3.9	7.2	21.4	8.1	7.0
Marketing	15.5	21.0	26.5	23.2	18.7
Accounting	6.7	8.2	25.5	6.1	9.1
Legal	5.4	9.6	21.9	25.3	9.5
Insurance	3.6	3.4	12.2	21.2	5.5
Information Technology	5.1	5.2	15.3	2.0	6.1

Source: Malik (2008, table 13)

2.5. Way Forward

A rising trend of rural economy including manufacturing, trade and services can be seen in South Asian countries. It implies that not only the links between agriculture and rural poverty should be examined, but also the rural on-farm sector should receive attention by government and policy makers. A dynamic labor-intensive agriculture combining with a modernizing on-agricultural sector in Pakistan can provide diversified employment opportunities to the rural households, resulting rapid growth, classless distribution, diminishing rural unemployment and under employment and lowering the pressure on rural-urban migration. It can help to reap the benefits from ongoing demographic transition. Special policy orientated attention is required to eradicate rural

poverty and hunger by promoting non-farm activities in rural Pakistan. The ongoing the sisexplores the linkages between non-farm activities and rural welfare in Pakistan that how this sector offer the households to improve their well-being.

CHAPTER 3

DATA DESCRIPTION AND METHODOLOGY

3.1. Introduction

As discusses in chapter 1, the aim of the present study is to analyze the importance of rural non-farm economy in Pakistan in terms of employment provision, the way that how the rural masses diversify their employment portfolio in various farm and non-farm activities and the impact of rural non-farm economy on household welfare including poverty, child school enrollment and dynamics of poverty. The following sub-sections provide detailed on the utilized data sources and detailed methodology as according to the objectives of the study.

3.2. Data Description

The followings types of information are required to accomplish the three objectives of this study;

- Panel dataset is required to observe the dynamics of rural non-farm economy including its value, employment provision, contribution in income, risks of closure,
- Employment related information in the various sectors of rural labor market are required to analyze the second objective of this study;
- The information related to the structure of employment in farm and non-farm sector including the nature of work activity along with the primary and secondary work activities are required. In addition, the information on socio-demographic and economic characteristics are needed to estimate the determinants of these livelihood strategies;

- The information on the nature of work activity as well as some indicators of household welfare i.e. poverty, income, per capita expenditure and school enrollment etc. are required to estimate the impact of rural non-farm economy on household welfare; and

Not a single national dataset envelop all these types of information, therefore, this study has used various data sources including the cross-sectional and panel datasets. Various rounds of Pakistan Labor Force Survey (LFS) have been used to evaluate the employment distribution in the various sub-sectors of the rural economy i.e. agriculture, manufacturing, construction, trading and services. Pakistan Social and Living Standards Measurement (PSLM)-2010 and 2012 rounds have also been used to analyze the household's livelihood strategies and its determinants. It is worth mentioning that both the LFS and PSLM are nationally representative datasets conducted by the Pakistan Bureau of Statistics (PBS) since 1963 with some breaks as well as changes in name overtime. The various modules of PSLM collect a wide range of information on household socio-demographic and economic characteristics including; household demographic characteristics, education, health, employment, household assets, household amenities, population welfare and water supply & sanitation which cover the information at national, provincial and district levels.

However, one key objective of this study is to analyze the dynamics of rural non-farm economy by linking it with its dynamic structure overtime and its role to pull households out of poverty. The above mentioned cross-sectional datasets cannot cope these objectives. Keeping in view the data limitation, the study has used Pakistan Panel Household Survey (PPHS), a panel dataset conducted by the Pakistan Institute of

Development Economics (PIDE). It's a three waves of a panel dataset; the first round, named as the 'Pakistan Rural Household Survey' (PRHS) was carried out in 2001 in 16 rural districts from all the four provinces of the country. The second round of the PRHS was carried out in 2004 but restricted to 10 districts of Punjab and Sindh only due to security concerns. The third round, which was conducted in 2010, covered all the above-mentioned 16 panel districts from all the four provinces. An urban sample was also added in the third round, and it was re-named as the 'Pakistan Panel Household Survey' (PPHS). The sample of the panel survey may have over representation of the poor regions because it not cover any major urban district including Karachi, Lahore, Hyderabad and Peshawar. The size of sample for each round is shown in Table 4. The total size varies from 2721 households in 2001 to 4142 households in 2010. For detail please see the study of Nayab and Arif (2014).

Table 4: ***Households Covered During the three waves of the Panel Survey***

Waves of Panel	Pakistan	Punjab	Sindh	KP	Baluchistan
PRHS 2001	2721	1071	808	447	395
PRHS 2004					
Panel households	1614	933	681	-	-
Split households	293	146	147	-	-
Total	**1907**	**1079**	**828**	**-**	**-**
PPHS 2010					
Panel households	2198	893	663	377	265
Split households	602	328	189	58	27
Total Rural households	2800	1221	852	435	292
Urban households	1342	657	359	166	160
Total Sample	**4142**	**1878**	**1211**	**601**	**452**

Source: Nayab and Arif (2014)

This study has used 2001 and 2010 rounds to observe the dynamics and structure of rural non-farm economy including its value, employment provision, contribution in

income, risks of closure, forward and backward linkages, value addition and its impact on poverty and poverty dynamics. Both these rounds (2001 and 2010) have detailed modules on non-farm enterprise including type of enterprise, place of business, type of employment (paid, unpaid) along with number of workers, value of various assets (capital, machines, vehicles) and sales etc. Both these rounds have detailed consumption information on the basis of headcount poverty can be calculated.

3.3. Methodological Framework

It is worth mentioning again that the present analysis on non-farm enterprise is carried out only in rural Pakistan. Before explaining detailed methodology, clarification on three concepts is necessary: 'non-farm', 'rural' and'poverty' .Rural non-farm activities lie on or between the boundaries of usual rural-urban and agricultural and non-agricultural categories. The ongoing study has followed the 2007 official industrial classification where agriculture including the crops, livestock, fishery, forestry has been considered as the farm activities while the non-farm activities include all the other activities except agriculture. Regarding 'rural' clarification, both the PSLM and LFS follow rural-urban definition of 1998 census in which the 'rural towns' fall under administrative status are treated as the urban areas, therefore, these towns are not included in the present analysis. Regarding 'poverty' measurement, the study has adopted the poverty series from Arif and Shujaat (2014), they have followed the official methodology as defined by The Planning Commission of Pakistan which can be called as Cost of Basic Needs approach. The basket of 'basic needs' consists of food, education, clothing, health, housing, transportation and recreation. The cost of this basket is poverty line (Rs. 723.4 for 2001 year), as defined to impart 2,350 calorie intake per adult per

equivalent per day with an adjustment of non-food minimal requirement. Arif and Shujaat (2014) has inflated the official poverty line for 2010 period (it ws Rs. 1671.9 for 2010 year)by using the Consumer Price Index and applied it on PPHS 2010 rounds to measure headcount poverty.

3.3.1. Analysis of Enterprise Profile

As mentioned in section 1.3 that the ongoing study have four key objectives, revolves around non-farm rural enterprise, employment and poverty. Regarding the first objective, a descriptive analysis has been carried out to observe the profile of rural non-farm enterprise including their location, growth rates, type of businesses, detailed profile of manager including his/her sex, age and education, place of businesses, detailed profile of sale, assets and workers. All this analysis has been carried out for both the 2001 and 2010 rounds of PPHS.

Since PPHS coverage is limited to only 16 districts, therefore, the study has used PSLM 2010 dataset in which only one question related to non-farm enterprise is asked "During the last 12 months was any HH member proprietor of or partner in a non-agricultural, non-financial establishment, business or shop (fixed or mobile) which employed no more than 9 persons on any day during the last 12 months?". Using this question, the study has estimated the proportion of non-farm enterprise at district level and has linked this proportion with the district level soft and physical infrastructure including literacy rate, distance to high school, distance to metallic road and distance to commercial banks. These district level information on soft and physical infrastructure are taken from 2008 Mouza Statistics.

3.3.2. The Determinants of Value Addition

The study has estimated the determinants of value of addition for 2001 and 2010 rounds as the detailed enterprise profile is given in both the rounds. The following three equations have been estimated for both the 2001 and 2010 rounds in which log of sale is taken as the dependent variable.

$$\ln Y_{i01}=\alpha_0 + \alpha\, L_{i01} + \beta K_{i01} + \alpha_3 I_{i01} + \alpha_4 E_{i01} + \alpha_5 Rg_{i01} + u_{i01} \quad (1)$$

$$\ln Y_{i10}=\alpha_0 + \alpha\, L_{i10} + \beta K_{i10} + \alpha_3 I_{i10} + \alpha_4 E_{i10} + \alpha_5 Rg_{i10} + u_{i10} \quad (2)$$

$$\ln Y_{i10}=\alpha_0 + \alpha\, L_{i01} + \beta K_{i01} + \alpha_3 I_{i01} + \alpha_4 E_{i01} + \alpha_5 Rg_{i01} + \alpha_6 \Delta S_{i01\text{-}10} + u_{i01} \quad (3)$$

In equation 1 to 3, $Y_i$is sale value for 2001 and 2010 year. $L_i$is the number of full time and part time workers and $K_i$the value of fixed assets, $I_i$is avector of enterprise characteristics including type of business (manufacturing, retail and services), age and age-square of enterprise and tax registration (whether the enterprise has paid tax or not),$E_i$is avector of manager characteristics such as his/her sex, age and education and Rg_i represents regional dummies of provinces. The study has split the Punjab intro further two categories: North and South Punjab due to lot of socio-development variations across this province. In equation 1 and 3, all the explanatory variables have been taken from 2001 round while in equation 2, the explanatory variables have been taken from 2010 rounds. In equation 3, the objective to adopt explanatory variables from 2001 is to observe the potential impact of 2001 characteristics on 2010 performance. The detailed definition and measurement of variables is given in below table.

Indicator	Definition in 2001 and 2010	Measurement
Annual sale	Value of annual sale during last year	It is measured in rupees
Number of workers	Number of full time and part time workers	It is measured in numbers
Value of fixed assets	The value of building, machinery and equipment (in rupees)	It is measured in rupees
Tax registration	Tax is paid or no during last one year (only for 2010)	A dummy variable is added, tax paid=1 otherwise, 0
Age of enterprise	Age of enterprise was calculated on the basis of that when enterprise was established	It is measured in years
Type of business	Manufacturing, retail and services	Two dummy variables are added, where manufacturing serve as reference category
Manager characteristics	Gender, age, age square and education	• A dummy variable is added for sex, male=1, female=0 • Age is measured in years • Education is distributed into three categories, up to primary, 6-9 and 10 & above, the first category serve as the reference category
Region	We have four provinces, the stud has divided Punjab into North and South	4 dummies have been added to capture provincial variation in which North Punjab serve as reference category

Two points are worth to mention here. First, the tax registration question was not asked in 2001 round, this variable has only been questioned for 2010, and therefore, it has been added only in equation 3. Second, equations 1 and 2 have been estimated by using the cross-sectional datasets of 2001 and 2010 round while equation 3 covers the panel households' analysis, of only those households which own enterprise in both 2001 and 2010 rounds. In equation 3, the dependent variable is taken from 2010 round while

following Arif and Shujaat (2014) technique, the explanatory variables have been taken from 2001 round to observe that how much the ten years earlier characteristics influence the firm's current production. In equation 3, ΔS represents the change variables during 2001 and 2010 rounds which includes change in education of manager, fulltime labor and capital assets. The Regression model has been applied to estimate the above four equations. The critic assumptions of regression models relevant to cross-sectional analysis were also checked including normality of residuals and Homoscedasticity.

3.3.3. The Diversification of Labor in Farm and Off-farm Activities

The ongoing study has also observed the distribution of workers in various non-agricultural activities in rural Pakistan. In PSLM dataset, since both the primary and secondary nature of work activities of age 10 and above workers are reported, therefore, the study has defined labor diversification both at individual and at household level. At individual level, we have constructed five categories of workers by using their primary and secondary work of activities, as detailed in below table. At household level, the households have been divided into three categories by using their working member's primary nature of work activities, which are; farm households (all the members are working only in agricultural activities), non-farm households (all the members are working only in non-agricultural activities) and mix households (members are working in both agriculture and non-agriculture). Being limited coverage of PPHS, the analysis is only carried out on PSLM 2012 dataset.

Activity Status	Definition
Main Agriculture	In which the primary sector of activity is agriculture
Main Non-farm	In which the primary sector of employment is non-farm activity
Only Agriculture	It which primary sector of employment is agriculture and have no secondary sector of employment or the secondary is also agriculture
Only Non-farm	It which primary sector of employment is non-farm and have no secondary sector of employment or the secondary is also non-farm
Mix activity	In which the primary sector of employment and secondary sector of employment are varying

3.3.4. Dynamics of Non-farm Enterprise and its Impact on Dynamics of Poverty

Regarding the third objective over the analysis on the impact of rural non-farm enterprise on household welfare, the study has taken various indicators to define household welfare including headcount poverty, dynamics of poverty, status of child school enrollment (whether child of age 5-15 is currently going school or not) and multi-dimensional poverty index (MPI).MPI is calculated by following the Alkaire and Foster methodology by taking 3 dimensions and 15 weights. The detailed definition along with indicators is given in Appendix 2. PSLM 2010 is taken to link non-farm enterprise with school enrollment and multi-dimensional poverty index while PPHS is taken to observe its relation with headcount poverty and dynamics of poverty.

Initially two types of variables have been established by using the 2001 and 2010 waves of PPHS panel dataset. First is the dynamics of rural-farm enterprise which has been construed by using the status whether households own some non-farm enterprise in 2001 and 2010 or not. The variable has four outcomes which are; household have non-farm enterprise only in 2001, only in 2010, have in both periods and don't have in both the periods. The second variable is the dynamics of poverty which has been constructed

by following Arif and Shujaat (2014) on the basis of poverty status of households in 2001 and 2010. Using the headcount poverty status, the dynamics also have four outcomes which are: never-poor, chronic poor (poor in both periods), moved out of poverty (poor in 2001 and non-poor in 2010), and fell into poverty (non-poor in 2001 and poor in 2010. The construction of both the variables is only carried out on panel households.

The following series of equations have been estimated to analyze the impact of non-farm enterprise on poverty, dynamics of poverty and child school enrollment;

$$Pov_{01\,i} = \alpha_{01i} + \alpha_1 I_{01i} + \alpha_2 Hd_{01i} + \alpha_3 NF_{01i} + \alpha_4 Rg_{01i} + \mu_{01i} \quad (4)$$

$$Pov_{10\,i} = \alpha_{10i} + \alpha_1 I_{10i} + \alpha_2 Hd_{10i} + \alpha_3 NF_{10i} + \alpha_4 Rg_{10i} + \mu_{10i} \quad (5)$$

$$PD_{\,01\text{-}10\,i} = \alpha_{01i} + \alpha_1 I_{01i} + \alpha_2 Hd_{01i} + \alpha_3 NF_{01i} + \alpha_4 Rg_{01i} + \alpha_5 \Delta S_{\,i01\text{-}10} + \mu_{1i} \quad (6)$$

Equation 4 and 5 measure the impact of non-farm enterprise on rural poverty for 2001 and 2010 where dependent variable Pov_i is the poverty status of household i. On right hand side, vector I_i measures the characteristics of the household head including his/her sex, age and education, vector Hd_i measures the household characteristics including dependency ratio, household size, status of remittances received, livestock and land ownership. NF_i represents whether households own non-farm enterprise or not, Rg_i represents provincial dummies. Since the dependent variable in both equation 4 and 5 is dichotomous in nature therefore Logistic Regression model is applied.

In equations 6, the dependent variables $PD_{01\text{-}10i}$ represent the change in poverty status between two rounds (2001 and 2010) with four outcomes (never-poor, poor in two periods, moved out of poverty, and moved into poverty). On the right hand side, vector I_i measures the characteristics of the head of household (gender, age, education), vector Hd_imeasures the household characteristics (household size, dependency ratio, household

structure, agriculture, remittances and livestock ownership) and Rg_i measures the province of residence. NF_{01i} variable measures the ownership of non-farm enterprise by households in 2001 period while $\Delta S_{i01\text{-}10}$represents the vector of change variables during 2001 and 2010 which are; change in household size, dependency ratio, education of head, land and livestock. For detail please see the study of Arif and Shujaat (2014). Equations 6 measures the dynamic analysis of poverty where the dependent variable has more than two outcomes; therefore, the multinomial logistic regression has been applied.

3.4. Summary

The objective of present study is to analyze the role of rural non-farm economy in employment provision, poverty reduction and overtime lift up the households out of poverty. Two major datasets have been used by the present study which are PSLM and PPHS. PSLM is used to link the existence of rural non-farm enterprise with district level infrastructure. Labor diversification both at the individual and household level is also observed through PSLM dataset. It is also used for MPI estimation.

To analyze the dynamics of rural non-farm economy, the study has used two waves of PPHS panel datasets. Using PPHS, the study has estimates series of models. The first model is to estimate the determinants of value addition of rural enterprise through regression analysis. Second model measures the impact of non-farm enterprise on 2001 and 2010 poverty status of households. The third model measures the impact of non-farm enterprise and dynamics of non-farm enterprise on poverty dynamics of households during 2001 and 2010.

CHAPTER 4

RESULTS: PROFILE OF RURAL NON-FARM ENTERPRISE IN PAKISTAN

4.1 Introduction

Following objective 1 and objective 2 of the study as detailed in chapter 1, this chapter has discussed the results over the profile of rural non-farm enterprise including type of businesses, place of business, wage rate, type of employment, detailed profile of firm and manager and the factors which determine the value addition in of rural non-farm enterprise. In addition, the study has also discussed the role of non-farm enterprise in employment provision in the rural areas of Pakistan. All the analysis has been carried out by using both the PPHS panel dataset with its two waves (2001 and 2010) as well as PSLM 2010.

The configuration of this chapter is as follow. Section 4.2 explains the results of profile of rural non-fam enterprise including their proportion, types of business, real worth of including assets, sale and profit value and role of these enterprise in employment generation including the labor diversification both at the individual and household level. Section 4.3 discusses the micro level determinants of value addition as well as the macro level factors which effects their proportion at the district level.

4.2. Profile of Rural Non-Farm Enterprise in Pakistan

4.2.1. Type of Business Owned by Non-farm Enterprise

There is no precise number that how much rural non-farm enterprise are located in Pakistan due to limited data information in this regard but extrapolation from PSLM 2010[3]dataset reveals that there are around 5 million rural non-farm enterprise located in all the four provinces of Pakistan.[4] The PSLM survey indicates that on average 20 percent of the rural Pakistan households are the proprietor or partner of non-farm enterprise. Across the provinces, there is huge regional variations as rural households in Punjab own 25 per cent, followed by 21 per cent in Khyber Pakhtunkah (KP), 16 per cent in Baluchistan and the lowest 15 per cent in Sindh province (Table 5).

Contrary to PSLM, PPHS has reported almost similar provincial variations but overall have reported very lower percentage of ownership especially for 2010 year with only 11 per cent. It could be due to the representation of PPHS from relatively poor districts of Pakistan and limited geographic coverage as the data of PPHS is carried out from 16 districts compared to district level of coverage of PSLM from 114 districts of Pakistan. Another point is noteworthy from Table 5 that rural non-farm enterprise declined during 2001 and 2010 period among the rural sampled households covered in PPHS 2001 and 2010 wave with a decline of around 46percentage points. Both the KP and Baluchistan provinces have witnessed the highest decline of these business compared to the other two provinces though they also have the alarming decline rate

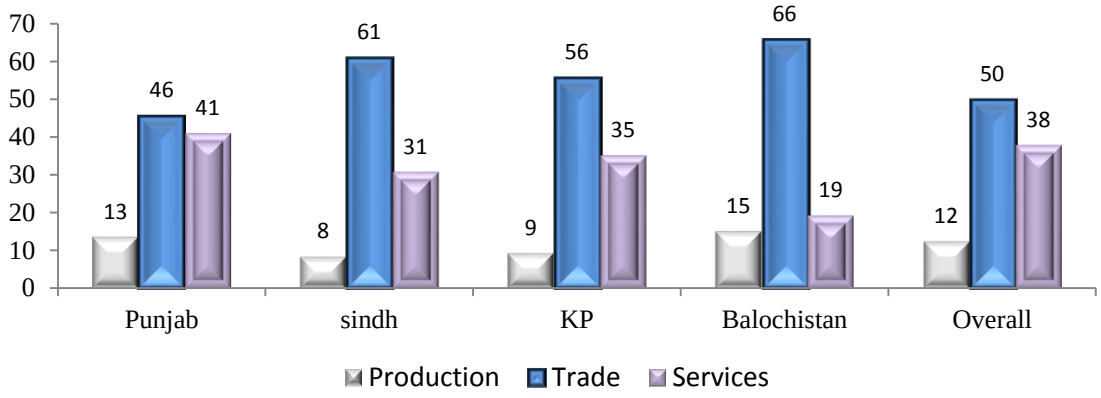
[3] No such information are given in PLSM 2012 dataset
[4] Since PSLM not covers AJK, FATA, GB areas, so the information are limited to only 4 provinces

Table 5: ***Percentage of Rural Sampled Households Who Own Business and Enterprise***

Province	PPHS			PSLM 2010
	2001	2010	Growth Rate	
Punjab	25.9	16.6	-35.9	24.4
Sindh	12.8	8.8	-31.3	14.8
KP	22.2	5.8	-73.9	20.5
Baluchistan	20.6	4.1	-80.1	15.9
Overall	**20.6**	**11.2**	**-45.6**	**19.8**
N	**2,737**	**2,742**	**-**	**49,730**

Source: Calculated from the PSLM 2010, PPHS 2001 & 2010 micro dataset

Figure 1: ***Sectoral Distribution of Rural Nonfarm Enterprises (in %)***



Source: Authors' estimation from PSLM 2010 micro dataset

As shown in Figure 1, majority of these rural enterprise are mainly engaged in wholesale, retail, trade and services related activities. The enterprise involved in manufacturing and production activities account for only 12 per cent of the total enterprise, whereas trade account for 50 per cent and services activities account for the remaining 38 per cent. These shares also varies across the provinces as one can see little manufacturing base in Sindh and KP provinces (Figure 1). Similar trends were found from PPHS panel dataset with limited manufacturing activities and more retail and services activities but it shows a rise in the share of manufacturing and retail activities during 2001 and 2010 period as shown in Table 6. Overall the share of manufacturing

sector is also less in Pakistan compared to the other South Asian countries as it accounts 27 per cent for Bangladesh and 40 per cent for Sri Lanka (World Bank 2005).

Table 6: ***Sectoral Distribution of Rural Nonfarm Enterprise (in %)***

Type of Business	**PPHS 2001**	**PPHS 2010**	**Difference**
Agricultural processing	2.4	5.6	3.2
Other manufacturing	4.2	8.2	4.0
Other retail	55.5	58.2	2.7
Services	37.9	28.1	-9.8
Total	100	100	-

Source: Calculated from the PPHS 2001 & 2010 micro dataset

4.2.2. Profile of Manager

Majority of the non-farm enterprise in Pakistan are owned and operated by men with limited participation from women. Table 7 shows that 98 per cent of the enterprise are run by men in 2001 while this percentage was 94 for 2010 year, reflecting more women participation as manager overtime. This lower women participation is not surprising as female labor force participation in Pakistan for non-agricultural activities is only 14 percent, the lowest in South Asian countries.

Table 7:***Profileof Manager Running Rural Non-Farm Enterprise in Pakistan***

Profile Over time	**Punjab**	**Sindh**	**KP**	**Baluchistan**	**Overall**
2001 (Cross-sectional Analysis)					
Manager is male (%)	97.8	98.3	98.2	100.0	98.2
Average age (years)	38.7	37.1	38.2	41.5	38.7
Manager Education (in grades) by category					
Illiterate	38.0	39.5	25.2	72.9	40.8
1-5 grade	26.8	33.3	16.2	14.1	24.4
6-8 grade	15.0	7.0	11.7	3.5	11.4
9-10 grade	15.7	10.5	29.7	8.2	16.2
11 and above	4.5	9.7	17.1	1.2	7.2
2010 (Cross-sectional Analysis)					
Manager is male (%)	92.4	97.3	96.0	100.0	94.1
Average age of manager (years)	39.5	35.7	45.8	38.9	38.4
Manager Education (in grades) by category					

Illiterate	36.7	31.1	20.0	58.3	34.9
1-5 grade	23.5	35.1	20.0	8.3	25.4
6-8 grade	23.0	10.8	20.0	8.3	19.2
9-10 grade	11.2	14.9	32.0	25.0	14.3
11 and above	5.6	8.1	8.0	0.0	6.2

Source: Calculated from the PPHS 2001 & 2010 micro dataset

Average age of manager has remained almost same during 2001 and 2010 period with around 38 year age but a slight shift an education can be seen that overtime the share of illiterate managers have declined among the PPHS sampled rural households. The share of highly educated (11 and above grade educated) has also declined while the share of medium educated manager improved during this period. About one-fifth of the managers have completed secondary education while more than one-third had no schooling as revealed by PPHS 2010 dataset, reflecting the poor human capital and business vision. Being the poor education, it is likely that very few of them would use the modern business services i.e. accounting, marketing, insurance, registration, information technology and good forward and backward linkages.

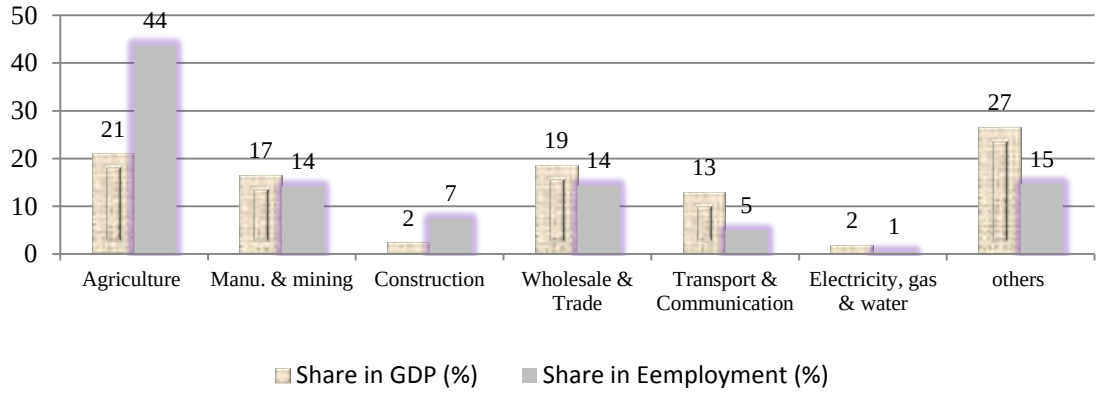
4.2.3. Role of Rural Non-farm Enterprise in Employment Provision

The poor access to land and limited as well overtime along with rising education, awareness are prompting the jobs in non-farm sectors in Pakistan. Pakistan has also faced a structural shift of economy moving from agriculture to non-agricultural sector as proposed by various development theories i.e. Rostow's Stages of Growth, Structural-Change Models of Lewis theory of development and Chenery's patterns of development. Presently more than half of the share goes to services sector while agriculture share is only one-fifth of the total economy. The industrial sector had witnessed a rising share in 50s and 60s; however, its share is almost stagnant over the last four decades with about

25 percent share in total GDP of Pakistan (See details in Appendix 1). Despite the lowest share of agriculture in national income, it is still the largest source of employment as around 45 per cent of the total employment is due to agriculture sector. An impressive rural employment growth in trade and construction activities can be seen overtime with some marginal increase in services sector, especially the professional services.

Functionally, rural non-farm economy is supposed to play a central role in the process of structural transformation, during which the agricultural share in national income declines and transfers to manufacturing and services sector. One major realization, however in Pakistan is that the share of labor associated with agriculture has not declined at the same pace as the share of agriculture has declined overtime. Non-farm sector is providing jobs to around 58 per cent of the rural population at present. Within non-farm employment, four sub-sectors manufacturing, construction, commerce and service are the more important for employment provision in rural Pakistan (Figure 2). Overseas migration and return migration seems to be one of the major factors to prompt employment in non-farm activities. Arif and Irfan (1998) found significant movement of labor due to return migration business activities. Unequal land distribution could be another reason as only 37 per cent of the rural households own land. Other reasons of establishing the non-farm activities could be the education, public investment in rural areas, and higher agricultural income for landholder households.

Figure 2: ***Share of Major Sectors in GDP and in Employment, 2013-14***



Note:'others' include finance & insurance, housing, private and government services
Source: GoP, Government of Pakistan, 2014

Like other developing countries, rural non-farm enterprise primarily operate as sole-proprietorships in Pakistan with more involvement of family workers and part time jobs. Table 8 shows that around one-fourth of the rural non-farm enterprise have engaged full time family workers while around 15 per cent of them have hired full time paid worker. The two waves of panel dataset shows that overtime, on average, these enterprise have been hiring more paid worker; they hired full time 2.2 worker in 2001 and 3.2 in 2010 on average. There is also more involvement of full time family workers as well overtime. Part time workers have also improved their share overtime. Overtime they are now engaging more workers in their operations as near three-fourth of the enterprise hire only one worker, either paid or unpaid, while near to 10 percent employee more than 5 workers (Table 8).

Table 8: ***Province-wise Employment Size of Rural Non-Farm Enterprise in Pakistan***

Employment Type	**2001**	**2010**
Average full time paid workers (in numbers)	1.41	1.99
Average full time family workers(in numbers)	0.68	1.24
Average full time total workers(in numbers)	2.19	3.23
Average part time paid workers (in numbers)	0.17	0.72
Average part time family workers(in numbers)	0.35	0.22
Average part time total workers(in numbers)	0.52	0.94
Enterprise hiring full time paid workers (%)	12.8	15.3
Enterprise hiring full time family workers (%)	26.0	26.1
Enterprise hiring part time paid workers (%)	1.9	4.2
Enterprise hiring part time family paid workers (%)	23.6	13.4
Employment size distribution of enterprise (full time only)		
Less than 2 workers	86.0	74.3
2-5 workers	11.8	16.0
More than 5 workers	2.2	9.7

Note: Manager is not included in employment calculation
Source: Calculated from the PPHS 2001 & 2010 micro dataset

Labor productivity in these non-farm enterprise varies widely across the sectoral activities and by gender as well. A comparison of rural non-agricultural daily wages in Table 9shows that rural services sector offers the highest wage rate in Pakistan while the rural manufacturing offers the lowest wage to both the male and females in Pakistan. Agriculture sector also have a good wage rate close to the services sector. Across the gender there are higher wage differential among men and women as male, on average, earns 2 to 3 times higher wages than their female counterparts in all these sectors. Similar trend can be found for Sudan as well.

Table 9: ***Average Daily Wage in Rural Non-farm Sector by Type of Activity***

Type of Industry	**Pakistan** (in Rupees)			**Sudan**
	Both sexes	**Male**	**Female**	(in Sudani Pounds)
Agriculture	327	357	90	-
Manufacturing	232	238	89	21 - 23
Trade/Commerce	321	323	177	75 - 80
Services	350	365	202	150 - 180

Source: Authors' estimation from PSLM 2012 for Pakistan, Haggblade et al. (2007) for Sudan

Both the micro and macro level socio-economic factors determine the allocation of labor in farm and off-farm activities. These factors may vary across the individuals, households and regions as *per* available opportunities. Non-farm employment can further be classified into four major categories; employer, paid employed, self-employed, and unpaid family helper. Table 10 shows that majority of the workers in non-farm sector are engaged either in paid or self-employment as both these provides around 93 percent employment, while employer and unpaid family worker share only 0.8 per cent and 6 per cent, respectively. Near to two-third of the self-employed workers are engaged in trade and transport sector while manufacturing and service are other important sectors to provide jobs in this category. Services and construction activities account around two-thirds of rural non-farm employment for wage employees. Government employees, especially in education and health account for significant proportion of rural services sector.

Though not disused in Table, rural females have a quite different labor allocation with their significant share in unpaid family worker (18%) category, while 64 per cent are self-employed and 18 per cent fall in paid category. Only the services (social and personal) and manufacturing sector contributes to 83 per cent in non-farm employment with their shares of 58 per cent and 25 per cent, respectively. Both the production (20%) and services (71%) only contributes to 91 per cent employment for paid employed females while production (26%), trade (20%) and services (53%) are the main employment sources for self-employed females.

Table 10: ***Rural Non-farm Employment in Pakistan by Employment Type and Status (in %)***

Type of Industry	1996-97			2012-13		
	All non-farm workers	Self employed	Paid employees	All non-farm workers	Self employed	Paid employees
Mining	0.5	0.4	2.9	1.7	0.4	1.7
Manufacturing	13.4	13.2	11.9	11.3	8.7	11.4
Electricity gas & water	1.5	0.1	1.9	1.2	0.3	1.6
Construction	24.1	2.5	31.7	22.4	2.0	31.4
Whole sale & retail trade	19.3	55.7	6.4	23.1	54.7	9.6
Transport &communication	12.1	12.4	12.8	11.7	14.7	11.1
Professional services	0.9	0.5	1.0	1.03	1.2	1.0
Social & personal services	28.3	15.2	31.4	27.6	18.2	32.2
% share	100	20.2	73.6	100	24.3	68.9
Total	100	100	100	100	100	100

Source: Calculated from the PSLM 2012 micro dataset, Arif et al. (2000) for 1996-97 numbers

Though results not listed in Table, the distribution of females in rural non-farm activities is quite differ with a major share of unpaid family helper (18%), while 64 per cent women are the self-employed and 18 per cent fall in paid wage category. Only the services (social and personal) and manufacturing sector contributes to 83 per cent in non-farm employment with their shares of 58 per cent and 25 per cent, respectively. Both the production (20%) and services (71%) sector contributes to 91 per cent employment for paid employed females while production (26%), trade (20%) and services (53%) are the main employment sources for self-employed females.

PSLM 2012 survey provides the information on both the primary and secondary nature of work activities. Rural males have almost equal distribution in farm and off-farm activities on primary activities than females, while both the sexes are mostly involved in

farm activities in their secondary occupations. As detailed in methodology, the ongoing study has estimated the labor diversification both at individual and household level, where the former diversification has been classified into five categories on the basis of individual's primary and secondary nature of work activity while the later has three categories: only farm household, non-farm household and mixed households. As given in Table 11, the individual level employment diversification shows that majority of the rural workers have only primary sector of employment, either agriculture (53%) or non-agriculture (40%) while only 3 per cent of the workers have reported their secondary occupations. Only 5 percent of the workers are differ over their primary and secondary work activities—called mix activity. The female's distribution is highly skewed toward only the farm activities with a very lower percentage in off-farm and mix activities.

Table 11: **Distribution of Rural Employed Worker by Employment Diversification (%)**

Activity Type	Male	Female	Both Sexes
Only Agriculture	46.7	81.2	52.9
Only Non-farm	44.9	15.5	39.6
Both Agriculture	1.8	2.5	2.0
Both Non-farm	0.7	0.3	0.6
Mix activity	5.9	0.6	5.0
Total	100	100	100

Source: Author's calculation from PSLM, 2012 micro dataset

The household level employment diversification presents an interesting picture as given in Table 12. There are more pure non-farm households than the farm households at national level with a significant representation of mix households (20%) as well. Around 6 per cent of the households are not involved in any employment activity. Heterogeneity prevails across the provinces with more agricultural households in Punjab and Sindh, while more mix households in Punjab and KPK, reflecting more resource diversification in KP and Punjab than the other provinces. However, more households in KP are doing

'nothing' as compared to other provinces which might be due to the worse law and order situation in this province.

Table 12: ***Distribution of Rural Households by Employment Diversification (in %)***

Province	Only Farm Households	Only Non-farm Households	Mix Households	Doing Nothing	Total
National	36.3	38.1	19.9	5.7	100
Punjab	35.0	34.0	24.0	7.0	100
Sindh	44.9	34.7	18.9	1.5	100
KPK	20.3	42.0	24.4	13.3	100
Baluchistan	44.2	46.5	8.5	0.7	100

Source: Author's calculation from PSLM, 2012 micro dataset

4.2.4. Place and Worth of Business

More than half of the rural non-farm enterprise are located in homes either inside or outside the residence, with a minor percentage at road side, main commercial area or industrial sides. Based on panel information a shift of business were found from home to market/bazar during 2001 and 2010 period. Majority of these rural enterprise are the micro enterprise with poor backward and forward linkages and they sale their product mainly in their surrounding locations. A few of them export their products to other provinces and cities. No significant changes was witnessed overtime as detailed in Table 13 except that overtime they have captured some nearer cities market to sale their product.

Table 13: ***Distribution of Product by Main Market of Sale (%)***

Place of Sale	Start	2001	2010
Within village	60.2	65.2	87.1*
Other rural areas within province	22.0	20.6	5.3
Cities/towns within province	16.1	12.8	6.9
Other Province	1.7	1.4	0.6
Total	100	100	100

* also include cities

Source: Calculated from the PPHS 2001 & 2010 micro dataset

Like other countries of the region, majority of the rural non-farm enterprise are micro-enterprise and are run by single owner (95.1%). They are fairly young with an

average age of 11 years but are also improving their maturity with rising age, experience and operational working capacity, as now more percentage is running their business over the 12 month spans of a year. PPHS panel dataset reveals that majority of the enterprise are informal, not only do they employee few of the workers, but also that very few of them pay taxes (11%). Around two-third of the enterprise consume some part of the product in their homes. The real value of this consumption has remained around Rs. 9 thousand (base year of 2001 prices). It suggests that they have significant contribution in the home inputs either in food or in non-food items (Table 14).

Table 14:***Profileof Rural Non-Farm Enterprise in Pakistan***

Profile overtime	**2001**	**2010**
Single Owner (%)	92.5	95.1
Pay any tax to govt. (%)	-	10.5
Average age of enterprise (years)	9.3	11.3
Enterprise operated 12 months (%)	61.1	86.9
Consumed part of commodity by HH (%)	59.6	66.1
Annual real value of consumption (in 000 Rs.)*	9.1	9.3
Annual real profit (in 000 Rs.)	29.6	63.9
Annual Real Sale (in 000 Rs.)	138.3	191.4
Real value of inventory (in 000 Rs.)	40.5	27.9
Real value of raw material (in 000 Rs.)	7.9	12.7
Real value of building and land (in 000 Rs.)	101.3	105.1
Real value of capital assets (tools/equipment/machinery) (in 000 Rs.)	22.7	66.5
Have to pay some debt (%)	18.3	19.9

Note: For Real value, Base 2001 is used
Source: Calculated from the PPHS 2001 & 2010 micro dataset

Asset and sale base is small but it improved during 2001-10 period. Though real value of inventory of these rural enterprise have declined during 2001-10 period, however, they have improved their asset base, raw material, value of land, sale and profit overtime. As revealed by panel survey, they are progressing by improving their operational capacity with more assets and sale returns overtime. (Table 14).

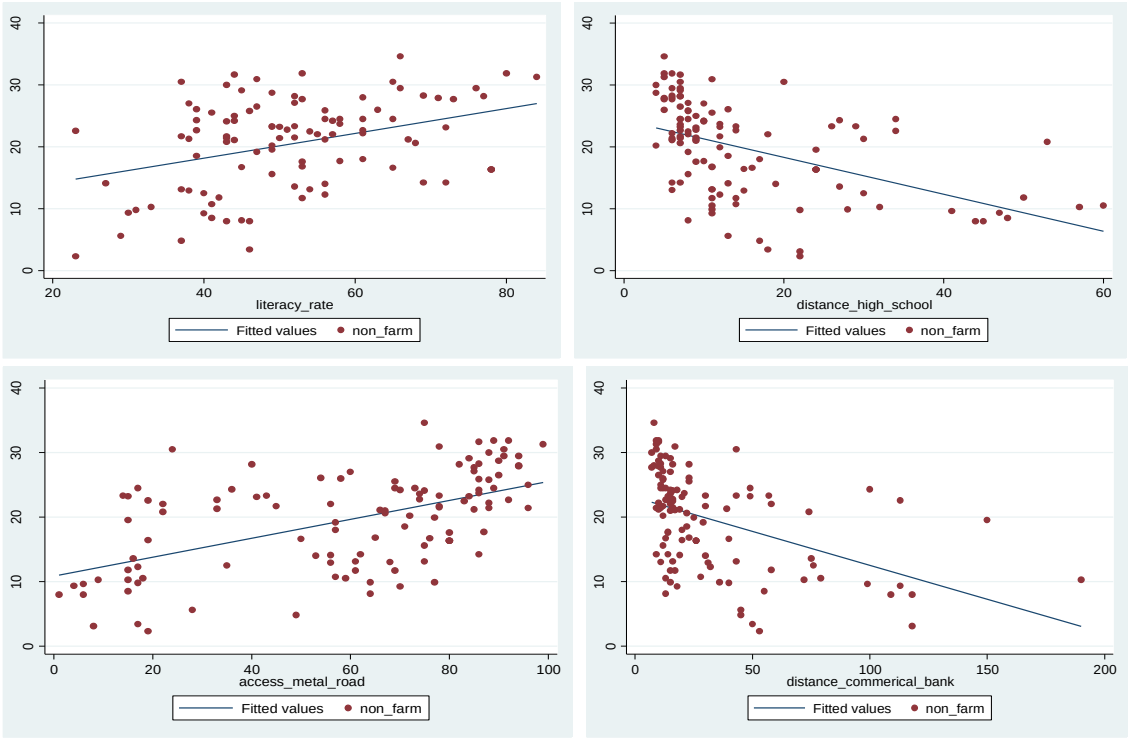
4.3. How can the Enterprise Survive?

The present section has discussed the district level factors which influence the establishment of these rural non-farm enterprise. The multivariate analysis through regression has also been carried out to determine the value addition of these enterprise. The ongoing study has taken the district level four types of rural infrastructures which include district level average literacy rate (%), district level average distance to high school (in km), district level access to metallic road[5], and district level average access to commercial banks (in km)[6]. As shown in Figure 3, on y-axis percentage of rural households who own non-farm enterprise has been plotted with all these soft and physical infrastructure indicators at district level.

The results suggest that rural infrastructure seems to be one of the major obstacles for non-farm enterprise in Pakistan to their operation and growth. The trend reveals that rural households in those districts, who have, on average, higher literacy and less distance to secondary schools, own more non-farm enterprise. Similarly, households with easy access to metallic road and commercial banks own more non-farm businesses in their districts. Overall this profile suggests that with poor human, financial and technical along with limited financial margins, often restrict low income households to run low productivity enterprise with higher labor intensity and lower financial returns.

[5]Percentage of villages who have access to metallic road with less than 1 km
[6] The data is taken from 2008 Mouza Statistics.

Figure 3: ***District level Rural Infrastructure & Households own Non-farm Enterprise (in %)***



Source: District level rural infrastructure data has been taken from Mouza Statistics, GoP (2008)

4.4. The Determinants of Value Addition

Following detailed methodology in section 3.3.2 over the determinants of value addition, using the 2001 and 2010 waves of panel households the study has run 4 regression models to estimate the determinant of value addition in which the dependent variable is log of sale value. The results of all these four models are discussed in Table 15. A summary of the detailed variables over the year of dependent and independent variables of all these models is given in below table.

Model	Wave of Dependent Variable	Wave of Independent variables	Type of Model
Model 1	2001 wave	2001 wave	Cross-sectional
Model 2	2010 wave	2010 wave	Cross-sectional
Model 3	2010 wave	2010 wave	Cross-sectional
Model 4	2010 wave	2001 wave	Panel households

The results in table 15 show that full time labor has a significant positive impact to improve the sale of firms both in 2001 and 2010 period as support by Model 1 to 3. While it is not significant for panel households (Model 4) suggesting that used labor in 2001 period has no impact on 2010 sale of the firms. It is worth to mention that Model 4 has been run only on those households which own non-farm enterprise in both the 2001 and 2010 period. All the models suggest that part time labor has no significant impact on value addition of the firms. Capital assets comprises of value of tools, machinery and vehicles have a significant positive impact on value addition. Both the labor and capital suggests the holding of Traditional Microeconomic Theory of Production (Cobb-Doglous Production Function) that production is dependent on labor and capital. Compared to manufacturing enterprise, services sector offer the high value addition both in 2001 and 2010 (Model 1 to 3) to cross-sectional households whereas the wholesale and retail activities offer high value addition to panel households while taking manufacturing as reference category.

The results over the age of enterprise are mixed. It has significant impact for 2001 year but not for 2010 year (Model 2 & 3). However an interesting finding is from Model 4 where the panel firms who sustained during 2001 to 2010 period hold a positive and significant impact on value addition suggesting that maturity of the firms along with gaining experience contribute in their sales. Regarding the manager characteristics, male manager are more likely to add more sale for their enterprise while age has also a positive significant effect for 2001 and panel households. Reference to up o primary educate managers, more educated managers are deriving more sale for their firms. These findings hold for both cross-sectional and panel households.

Table 15:***The Determinants of Value Addition—Regression Analysis***

Correlates	**Model 1**		**Model 2**		**Model 3**		**Model 4**	
	Coeff.	**Std. Error**	**Coeff.**	**Std. Error**	**Coeff.**	**Std. Error**	**Coeff.**	**Std. Error**
Labor full time (in No.)	0.008**	0.004	0.072*	0.021	0.071*	0.020	0.129	0.111
Labor part time (in No.)	0.130	0.097	-0.008	0.011	-0.012	0.011	0.099	0.097
Capital asset (in Rs.)	0.003*	0.001	0.004*	0.001	0.003**	0.001	0.003*	0.001
Business type (manufacturing as ref.)								
Retail	0.053	0.268	0.239	0.196	0.282	0.191	0.613**	0.267
Services	0.654**	0.276	0.427**	0.218	0.404***	0.212	-0.165	0.293
Age of enterprise (years)	0.015**	0.006	-0.006	0.007	-0.004	0.007	0.012*	0.002
Pay tax (yes=1	-	-	-	-	0.857*	0.235	-	-
Sex of manager (Male=1)	1.799*	0.466	1.600*	0.306	1.571*	0.297	1.273**	0.637
Age of manager (years)	0.051**	0.021	0.035	0.027	0.027	0.027	0.068***	0.037
Age square of manager (years)	-0.001*	0.000	0.002	0.002	0.000	0.000	-0.001***	0.000
Education of manager (up to primary as ref.)								
6-9 grade	0.421**	0.182	0.441**	0.180	0.297***	0.177	0.206	0.265
10 and above	0.872*	0.165	0.561*	0.190	0.412**	0.187	0.723*	0.240
Province (Central and North Province Punjab as ref.)								
South Punjab	-0.541*	0.178	-0.378**	0.165	-0.516*	0.175	-0.342	0.243
Sindh	-0.440**	0.200	-0.485*	0.184	-0.431**	0.196	-0.396	0.281
KP	0.418	0.274	-0.907*	0.219	0.395	0.268	0.835**	0.427
Baluchistan	-0.021	0.386	-0.879*	0.199	0.003	0.378	-0.922**	0.492
Constant	8.314*	0.662	8.611*	0.623	8.784*	0.613	8.277*	0.962
Difference in manager education	-	-	-	-	-	-	0.513	0.167
Difference in fulltime labor	-	-	-	-	-	-	0.165	0.093
Difference in capital asset	-	-	-	-	-	-	0.966	0.321
R-squared	0.251		0.32		0.35		0.21	
N	533		299		298		179	

Denote * significant at 1per cent, **significant at 5 per cent, *** significant at 10 per cent
Source: Calculated from the PPHS 2001 & 2010 micro dataset

Model 3 shows that firms paying tax also have more sale values. Across the provinces, while taking Central and North Punjab as reference category, the results are quite mixed and interesting as well in cross-sectional and panel analysis. While taking Model 1, the 2001 period, rural enterprise located in Southern Punjab and Sindh were contributing less in their sales compared to the Central and North Punjab, while the results for KP and Baluchistan were insignificant. However, for 2010 period (Model 2 and 3), rural enterprise in all these provinces were contributing less in sale while comparing them with Central and North Punjab. Analysis for panel households given in Model 4 displays another scenario where the provinces KP and Baluchisstan have lower value addition compared to Central and North Punjab for the panel firms. Two reasons are noteworthy for all these findings. First Central and North Punjab have comparatively good rural infrastructure both the soft (access to education and health services) and physical (access to metallic road, markets and banks) compared to the other regions of Pakistan including the South Punjab. The region has also advantage on the other provinces with good industrialization, good resource diversification, offering jobs in both the industrial and services sector and receiving overseas remittances as well. All this could led to good value addition of rural enterprise in this area. Second, law and order situation could be another reason for lower and particularly declining value addition for province KP and Baluchistan during 2001 to 2010 period. Both these provinces have witnessed worse law and order which might roll out a lot of enterprise in these regions.

CHAPTER 5

RESULTS: ROLE OF NON-FARM ENTERPRISE IN HOUSEHOLD WELFARE

5.1 Introduction

The previous chapter has discussed the structure of rural non-farm economy including its profile and role in employment provision as well as has evaluated the real worth of these rural enterprise and the determinants of value addition. The present chapter has discussed the dynamics of rural non-farm enterprise and their role of non-farm rural enterprise in household welfare. It is worth to mention here that the ongoing study has defined household welfare by various indicators including headcount poverty, child school enrollment, multi-dimensional poverty index and dynamics of poverty. The structure of this chapter is as follows. Section 5.2 details the dynamics of rural non-farm enterprise followed by the role of non-farm in equity enhancement in section 5.3 while the impact of rural non-farm enterprise on various household indicators including poverty, dynamics of poverty, child school and multidimensional poverty index in section 5.4. It also details the multivariate analysis in which impact of non-farm enterprise on poverty and dynamics of poverty was observed.

5.2. Dynamics of Rural Non-farm Enterprise

As detailed in section 3.3.4 that the ongoing study has defined the dynamics of rural non-farm enterprise by using the 2001 and 2010 waves of PPHS panel dataset. The dynamics variable has four outcomes which are; household have non-farm enterprise only in 2001, only in 2010, own in both periods and don't own in both the periods. The

results from panel dataset as given in Table 16 shows that 74 per cent of the rural households not own non-farm enterprise in both the rounds while 5 per cent of the households own in both the rounds. High closure rate can be found (percentage of the households who own in 2001 but not own in 2010) than the new addition (percentage of the households who not own in 2001 but own in 2010) of these enterprise among the panel households. Across the provinces, more households in Punjab including the north and south own enterprise compared to the other three provinces. Sindh province has the highest closure rate while Punjab has the highest addition rate of these enterprise.

Table 16: ***Dynamics of Rural Non-farm Enterprise in using two-wave Dataset (2001 & 2010)***

Dynamics	North and Central Punjab	Southern Punjab	Sindh	KP	Baluchistan	Overall
Not own in both rounds	64.6	66.2	81.6	75.9	76.3	73.5
Own in 2001 but not in 2010	15.9	18.3	10.3	17.2	20.2	15.4
Own in 2010 but not in 2001	8.7	7.3	4.9	4.2	2.7	5.7
Own in both rounds	10.8	8.2	3.2	2.8	0.8	5.4
All	100.0	100.0	100	100.0	100.0	100
N	415	438	651	361	262	2,127

Source: Calculated from the PPHS 2001 & 2010 micro dataset

Table 17 sets out data on dynamics of rural non-farm enterprise from the PPHS 2001 AND 2010 panel datawith various household socio-demographic variables. The results reveal that households headed by male have more ownership in both the rounds, they also have less closure rate compared to female headed households. However female headed households are getting relatively more addition during the panel period. Education of head of household has also a positive impact on the survival of these enterprise, more the education more are the chances to hold in both the periods.

Remittances receiving households own more enterprise, they also have more addition during the two waves. Various household indicators i.e. structure of house, toilet availability and TV reveals that access to all these indicators have a positive association with the ownership of rural enterprise. Interestingly ownership of livestock does not make any difference, however, absence of land make difference and it may push households to be engaged in off-farm activities.

Table 17:***Dynamics of Rural Non-Farm Economy—Panel Households Only***

Characteristics (2001)	Not own in both rounds	Own in 2001 but not in 2010	Not own in 2001 but own in 2010	Own in both rounds
Sex (Head of Household)				
Female	69.4	18.4	10.2	2.0
Male	73.5	15.4	5.6	5.5
Education of Head of Household				
0- 5 grades	75.2	15.1	5.2	4.6
6-10 grades	73.3	17.4	3.5	5.8
11 and above	64.5	17.0	9.1	9.4
Status of Remittances Receiving				
No	75.3	16.3	5.3	3.2
Yes	73.2	15.4	5.8	5.6
Structure of House				
Katcha	78.2	14.1	4.5	3.2
Pacca	66.3	17.1	7.4	9.2
Mix	65.4	18.3	7.9	8.5
Toilet Facility				
No	75.7	14.0	5.7	4.6
Yes	67.7	19.1	5.8	7.5
TV				
No	76.0	14.8	5.1	4.1
Yes	64.6	17.7	7.9	9.8
Livestock ownership (only large animals)				
No	73.2	16.2	5.4	5.3
Yes	73.5	15.1	5.9	5.5
Land ownership				
No	71.4	15.5	6.0	7.1
Yes	75.1	15.5	5.5	4.0
N	2127			

Source: Calculated from the PPHS 2001 & 2010 micro dataset

5.3. Non-farm Enterprise and Equity Enhancement

The possession of rural enterprise and share of income sources in households by household expenditure quintiles are given in Table 18 in which the household's sources of income has been given by farm-income (agricultural wage and total farm income excluding agricultural wages) and off-farm income (business income and non-agricultural wages). The results shows that wealthier households in Pakistan have more percentages to own non-farm enterprise in rural Pakistan. Regional variation also prevails with more ownership in province KP and Punjab. In all the four provinces, enterprise ownership tends to increase monotonically with the per capita household expenditures/quintile (see appendix 4). Though the richest households own more enterprise and also earn their income from farm sources, the poorer households are reliant for employment in these enterprise and earn significant share of their income from non-farm sources as the share of non-farm wage in household income is 46 percent with an aggregate of 57 per cent for the lowest quintile.

Table 18: ***% of Rural Households with their Sources of Income***

Ownership and income sources	Household's Per capita Expenditure Quintile					Overall
	Poorest quintile	Quintile 2	Quintile 3	Quintile 4	Richest quintile	
Households own enterprise (%)	14.2	17.3	20.4	23.6	27.8	19.8
Household's source of income						
Agricultural wages	11.3	8.4	5.3	4.3	1.2	7.3
Total Farm (excl. agric. wages)	31.4	34.6	43.8	48.6	55.5	44.8
Net Business Income	11.1	13.1	14.6	15.6	16.2	13.8
Non-agricultural Wages	46.2	43.9	36.3	31.5	27.1	34.1
Total Non-farm	57.3	57	50.9	47.1	43.3	47.9

Source: Calculated from HIES 2010 micro dataset

Since majority of poorer households earn their income from non-farm sources, especially the non-farm wages, therefore, the non-farm income sources for the poorer reflects equity enhancing in Pakistan. In some developing countries, non-farm income sources are inequitable as they have less contribution for the poorer households i.e. Ecuador and Vietnam or neutral equitable i.e. India and Ethiopia. In absolute terms, the poorest rural households in Pakistan earn near to four times as much income from non-agricultural wage employment (Rs. 65,846.7 annually) as from agricultural wage employment (Rs. 17,452.3 annually). The results suggests that even a low return from non-farm enterprise may contribute to enhance household income and consequent increase in the welfare of poorer rural households who are landless and are mostly engaged in low productive agricultural activities.

5.4. Role of Rural Non-farm Enterprise in Household Welfare

Pakistan has not succeeded to reduce poverty on permanent basis, it fluctuated across the decades Poverty rates in Pakistan are considerably higher in rural areas, with a gradual more shift to rural areas than urban areas. Two questions emerge here: First, *how does non-farm enterprise make difference to other households in terms of poverty, education and multidimensional poverty (MPI)*?Second, *how does non-farm enterprise effect the movements of poverty across the time*? To answer these questions, PPHS panel survey (conducted in 2001 and 2010) is used to observe the impact on poverty and dynamics of poverty whereas PSLM 2010 is used to observe the impact on child schooling status and multidimensional poverty index. As shown in Table 19, the incidences of headcount poverty rates are considerably lower among those households who own some non-farm enterprise in both the 2001 and 2010 rounds of panel survey.

The farmer households also have higher real per capita consumption expenditures in both the rounds. The findings from PSLM 2010 has stated that households having rural non-farm enterprise are facing the less incidences of multidimensional poverty index. The incidences of MPI in rural areas asserts these rural households having some enterprise have lower level of deprivation (11.9%) compared to those who don't own enterprise (17.1%). More children of these households are going to school as well. Another interesting finding as given in table 6 is

Table 19: ***Household Welfare by the Status of Non-farm Enterprise in Rural Areas***

Household Welfare	**2001**	**2010**
Headcount Poverty (in %)		
HH Having Enterprise	21.1	19.4
HH Not having Enterprise	28.8	22.6
Overall	26.9	22.2
Real Per capita monthly expenditures (in Rs.)		
HH Having Enterprise	1290.3	1318.4
HH Not having Enterprise	1090.2	1121.3
Overall	1137.2	1197.7
Currently Enrolled Children of age 5-14 (in %)*		
HH Having Enterprise	-	66.1
HH Not having Enterprise	-	58.2
Overall	-	59.8
Multidimensional Poverty Index**		
HH Having Enterprise	-	11.9
HH Not having Enterprise	-	17.1
Overall	-	16.0

* Calculated from 2010 PSLM dataset
Source: Calculated from the PPHS 2001 & 2010 micro dataset

Raw headcounts of MPI are reported in Table 20 which can be defined as the percentage of households who are deprived in each one of the 15 indicator by status of rural non-farm enterprise. Table 19 concluded that households having non-farm enterprise are comparatively better off than the others, while Table 20 shows that rural non-farm enterprise are a potential cause to reduce long term deprivation including good

performance in education, health and assets. All the indicators of raw headcount portrait that households having non-farm enterprise are comparatively less deprived, their more children are going to school, their children are getting more quality of education, they are giving vaccination to their children and using safe drinking water.

Table 20:***National Raw Headcount in Rural Areas by Status of Non-farm Enterprise***

Dimension	**Indicator**	**Overall Raw Headcount**	**Own Enterprise**	**Not own Enterprise**
Education	Male Education	31.4	23.0	33.7
	Female Education	62.0	54.1	64.2
	Child School Attendance	21.9	18.3	22.8
	Educational quality	14.0	11.8	14.6
Health	Access to health care facility	12.0	12.0	12.0
	Immunization	11.6	9.4	12.3
	Prenatal care	17.3	16.5	17.5
	Institutional delivery	8.3	8.5	8.2
Housing	Overcrowding	44.3	45.5	43.9
	Housing	34.4	26.1	36.7
	Water	15.1	11.6	16.1
	Sanitation	43.7	33.0	46.6
	Clean Energy	88.8	85.2	89.8
	Electricity	12.1	7.0	13.5
	Assets	9.9	7.1	10.7

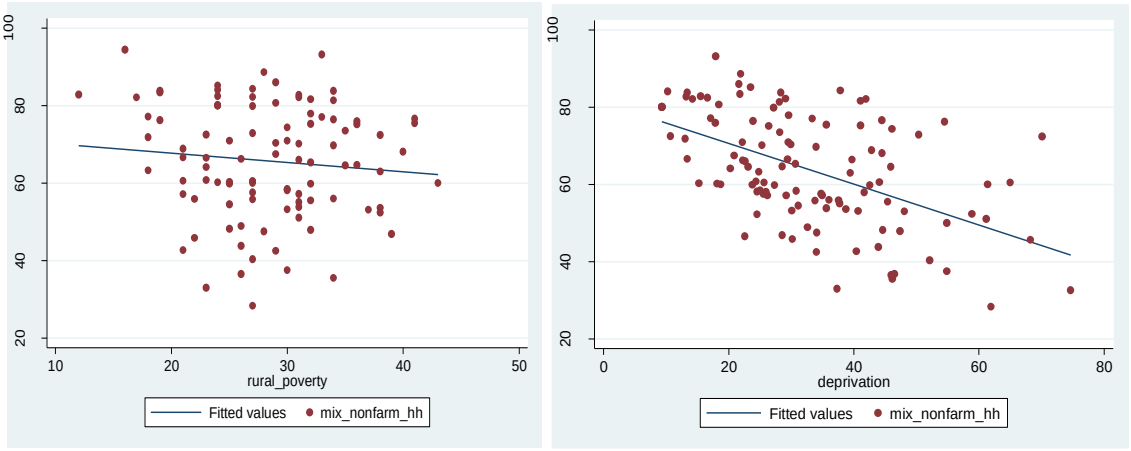
Source: Calculated from the PSLM 2010 micro dataset

The above discussion concludes that rural non-farm enterprise have a clear pattern not only to reduce rural poverty but also to reduce deprivation along with improvement in child enrollment. Access to non-farm jobs does also lead to equity enhancement and to improve the absolute income levels of the poorer laborer. In Figure 4, the district level rural poverty and rural multiple deprivation has been plotted with the district level average of non-farm households.[7] No clear trend can be seen with the rural poverty;

[7] The district level rural poverty and deprivation data has been taken from Jamal (2011), deprivation includes education, health, housing quality, housing services and economic wellbeing.

however, rural deprivation has a clear negative trend, suggesting that the districts with larger share of non-farm activities have the lower deprivation rates.

Figure 4: ***District level Rural Poverty and Deprivation by Share of Non-Farm Enterprise***



The impact of non-farm enterprise on rural headcount poverty through multi-variate analysis is reported in Table 21 where the logistic regression is applied. For 2001 model the correlates have been taken from 2001 wave while for 2010 they are taken from 2010 waves. It is worth to mention that the analysis is carried out only for rural households. The analysis reveals that households with more educated heads are less likely to face incidences of poverty. Age and gender of head of household not make any significant contribution to rural poverty.

Regarding the key target variable the status of rural non-farm enterprise, the logistic analysis shows that households having rural non-farm enterprise are less likely to be poor as compared to those who not own rural enterprise. Both the household size and dependency ratio has a positive impact on head count poverty while assets including land and livestock ownership has a negative impact on poverty. Across the provinces, households in KP are facing lower incidences of poverty while the other

regions/provinces including Southern Punjab, Sindh and Baluchistan are facing more incidences of poverty while comparing all of them with North and Central Punjab.

Table 21:***Impact of Rural Non-farm Enterprise on Rural Headcount Poverty—Logistic Regression Model—PPHS Panel Dataset***

Correlates	**PPHS 2001**		**PPHS 2010**	
	Coeff.	**Std. Error**	**Coeff.**	**Std. Error**
Head of Household (male=1)	0.153	0.378	-0.128	0.330
Age of Head (years)	0.024	0.019	0.026	0.022
Age Square of Head (years)	0.000	0.000	0.000	0.000
Education of Head (up to five as reference)				
6-10 grade	-0.645*	0.164	-0.312**	0.166
11 and above	-1.010*	0.336	-1.241*	0.336
Dependency ratio	0.224*	0.058	0.391*	0.070
Household size (No.)	0.165*	0.014	0.155*	0.015
Received remittances (yes=1)	-1.162*	0.363	0.351	0.422
Large animals (No.)	-0.283*	0.031	-0.253*	0.034
Small animals (No.)	-0.028**	0.013	-0.019	0.016
Land (acres)	-0.033*	0.007	-0.032*	0.010
Non-farm enterprise (yes=1)	-0.322**	0.129	-0.192**	0.102
Province (North and Central Punjab as ref.)				
South Punjab	0.446**	0.181	1.462*	0.214
Sindh	1.319*	0.164	1.277*	0.212
KP	-1.478*	0.260	-0.862*	0.306
Baluchistan	0.933*	0.191	0.613**	0.275
Constant	-3.120*	0.610	-3.640*	0.649
Pseudo R-square	0.193		0.184	
N	2746		2603	

Denote * significant at 1percent, **significant at 5 percent, *** significant at 10 percent
Source: Calculated from the PPHS 2001 & 2010 micro dataset

Two multinomial logit models have been estimated using the two-wave data and results are presented in Tables 22 which covers the 2001-10 period. In model 1, gender of the head of household has not shown a significant association with poverty dynamics. Age of the head, however, has turned out to be negatively associated with movement into poverty, while age^2 is positively associated with it. Education of the head of household has a significant and negative association with all three poverty states, suggesting, on the

one hand, that households headed by literate persons are less likely than illiterates to be in chronic poverty or falling into poverty. On the other hand, they are also less likely to escape poverty.

The results reveal that households who own non-farm enterprise in 2001 are less likely to be chronic poor or moved into poverty. Two household-level demographic variables, family size and dependency ratio have a positive and statistically significant association with the chronic poverty and the probability of falling into poverty. The household-level economic variables including the ownership of land and livestock, housing structure *(pacca)* and availability of room have a significant and negative association with both chronic poverty and falling into poverty. But these variables also have a significant and negative association with the movement out of poverty. Apparently this association is also difficult to explain. The possible explanation could be that households with a better economic position in terms of land, livestock and housing are less likely to be in poverty for long duration or fall into poverty than staying in the non-poor status. In other words, they were relatively more likely to be in the non-poor status between the given two rounds (2001-10).

Table 22: ***Multinomial Logit Model: Effects of 2001 Socio-economic Characteristics on Rural Poverty Dynamics (2001-10)***

Correlates (2001)	Model 1			Model 2		
	Chronic Poor/Non-poor	Moved out /Non-poor	Moved into /Non-poor	Chronic Poor/Non-poor	Moved out /Non-poor	Moved into /Non-poor
Sex of the head (male=1)	-0.951	-0.695	0.500	-1.210**	-0.814**	0.221
Age of the Head	-0.031	0.031	-0.045**	-0.006	0.037	-0.032
Age^2 of Head	0.000	0.000	0.001**	0.000	0.000	0.000
Education of the Head	-0.090*	-0.039**	-0.050*	-0.093*	-0.041**	-0.083*
HH own non-farm enterprise (yes=1)	-0.110*	-0.085	-0.134	-0.120*	0.088	-0.126
Household size	0.140*	0.138*	0.038**	0.219*	0.124*	0.119*
Dependency Ratio	0.240*	0.084	0.134**	0.560*	0.171	0.380*
Household having member abroad(yes=1)	-2.690	-0.246	-0.671	-2.823	-0.203	-1.224
House Structure (*Pacca*=1)	-0.940*	-0.443*	-0.452*	-0.881*	-0.454*	-0.468*
Electricity Connection (yes=1)	-0.560*	0.096	0.161	-0.402**	0.162	0.122
Toilet facility (yes=1)	-0.620**	-0.778*	-0.202	-0.629**	-0.766*	-0.158
Animals (Nos)	-0.04*	-0.118*	0.002	-0.156*	-0.120*	-0.067*
Land Holdings (acres)	-0.120*	-0.034*	-0.029*	-0.119*	-0.036*	-0.041*
Number of rooms per person	-2.110*	-2.295*	0.137	-3.607*	-2.402*	0.099
Presence of disable person (yes=1)	0.210	0.057	-0.404	0.222	0.047	-0.491
South Punjab/North Punjab	1.550*	0.139	1.469*	1.392*	0.218	1.501*
Sindh/North Punjab	1.940*	0.744*	1.397*	1.466*	0.814*	1.140*
KP/North Punjab	-1.06**	-1.147*	-0.649**	-1.424*	-1.064*	-0.853*
Baluchistan/North Punjab	1.52*	0.993*	0.865*	1.586*	1.101*	0.780*
Constant	-1.81	-1.477**	-2.112*	-2.113**	-1.436	-2.602*
Difference in Household Size	-	-	-	0.130*	-0.031	0.139*
Difference in Dependency Ratio	-	-	-	0.372*	0.094	0.290*
Difference in Education of Head	-	-	-	0.022	-0.013	-0.074*
Difference in Land Holdings	-	-	-	-0.017	-0.006	-0.030*
Difference in Animals	-	-	-	-0.141*	0.000	-0.085*
Pseudo R^2	0.1568			0.1950		
N	2,124			2,080		

*denote significant at 5 per cent, **denote significant at 10 per cent

Source: Authors' estimation from the micro-data of PRHS 2001and PPHS 2010

Regional dummies have some interesting features. During the 2001-10 period, holding other things constant, the population of Southern Punjab were more likely than their counterparts in North/Central Punjab to be in the state of chronic poverty or falling into poverty. The dummies of Sindh and Baluchistan provinces are similar to Southern Punjab except that they also have a significant and positive association with making a transition out of poverty. The KP population is less likely than North/Central Punjab to be in chronic poverty or making a transition into or out of poverty (Table 22). It supports bivariate analysis, which has shown larger poverty movement in Southern Punjab and Sindh than in North/central Punjab. It further shows the vulnerable situation in Baluchistan.

In model 2, differences in the values of five correlates (household size, dependency ratio, education, landholding and animals) between the 2001 and 2010 period are added in the multinomial log it model. There is no major change in results when compared to model 1 except that the sex of the head of household which was insignificant in Model 1 turned out to be significant in model 2. The reverse is the case for the age (age^2) of the head of households. Male headed households are less likely than households headed by females to be in chronic poverty or to move out of poverty. However, all the new entered variables – difference in two periods – have shown a significant and expected relation with poverty dynamics. The difference in household size for example has a positive relation with chronic poverty or falling into poverty. Its relation with moving out of poverty is not significant. The same is the case for the dependency ratio. Difference in both the landholding and education has a negative and significant association with moving into poverty. The difference in livestock ownership

has also shown a negative association with chronic poverty as well as falling into poverty. It suggests that not only the initial socio-demographic conditions of households but also a change in these conditions overtime has correlation with the poverty dynamics. Thus, the message is that a positive change in socio-demographic and economic conditions of households can lead to some positive outcomes in terms of improving the well-being of households. Our findings are to some extent consistent with Davis (2011) who shows that the tangible assets i.e. land, livestock are the important protective assets as compared to the less tangible assets i.e. education and social networks. The present analysis, however, shows the importance of both types of assets for poverty reduction.

CHAPTER 6

CONCLUSIONS AND POLICY IMPLICATIONS

6.1 Introduction

Non-farm enterprise includes all the economic activities in rural areas except agriculture, livestock, forestry, fishing and hunting. Rural non-farm economy has mostly been remained unobserved; however, now it is gaining attention due to rising risks of poverty and vulnerability. The developing world is realizing its contribution not only to promote agricultural growth and employment provision but also to lower down the urban migration pressures. The dominant development paradigm in Pakistan has also long been looking to the agricultural sector to alleviate rural poverty while the non-agricultural activities have widely been ignored.

This dissertation has three specific objectives, a) analyze the dynamics and structure of rural non-farm economy, b) evaluate the real worth of these rural enterprise and c) analyze the impact of non-farm enterprise on a wide range of household welfare indicators including poverty, child school enrollment, multi-dimensional poverty and dynamics of poverty. The study has used various data resources including the cross-sectional and panel datasets. The cross-sectional datasets include Pakistan Labor Force Survey, Pakistan Social and Living Standards Measurement Survey (PSLM)-2010 and 2012 while the panel dataset includes the two rounds of Pakistan Panel Household Survey (PPHS) which are 2001 and 2010. The Regression model has been applied to estimate the determinants of value addition while the logistic and multinomial logistic

regression is utilized to estimate the impact of rural non-farm enterprise on poverty and dynamics of poverty.

The findings reveal that 20 percent of the rural Pakistani households own some sorts of non-farm enterprise where 96 percent of the non-farm enterprise are micro-enterprise. Most of the enterprise are informal and they have poor asset endowments and are highly influenced by the available soft and physical capital and infrastructure. Households, on average, own more enterprise in those districts that have good physical and human infrastructure i.e. literacy, schools, access to banks and metallic roads. The PPHS panel survey reveals that rural non-farm enterprise declined during 2001 and 2010 period with a decline of around 45 percentage points.

Rural non-farm economy is missing the manufacturing base in Pakistan and mainly depends on trade activities. Women participation as the manager is quite low but is improving overtime, still more than one-third of the managers had no schooling as revealed by PPHS 2010 dataset, reflecting the poor human capital and business vision. More than half of the rural non-farm enterprise are located in homes either inside or outside the residence. Asset and sale base is small but it improved during 2001-10 period. Though real value of inventory of these rural enterprise have declined during 2001-10 period, however, they have improved their asset base, raw material, value of land, sale and profit overtime.

Like other developing countries, rural non-farm enterprise primarily operate as sole proprietorships in Pakistan with more involvement of family workers and part time jobs. Presently this sector is providing jobs to around 58 per cent of the rural population at present. Within non-farm employment, four sub-sectors manufacturing, construction,

commerce and service are the more important for employment provision in rural Pakistan.

The micro level determinants of value addition suggests that both the labor and capital has the positive impact to improve sales of the firms. Similarly education of manager also lead to improve sales of rural enterprise. Huge regional variation can be found with more concentration of enterprise in North and Central Punjab whereas the worse law and order situation in province KP and Baluchistan has resulted to decline of value addition in these two provinces overtime.

The dynamics analysis of these enterprise reveal that 74 per cent of the rural households not own non-farm enterprise in both the rounds while 5 per cent of the households own in both the rounds. High closure rate can be found than the new addition of these enterprise among the panel households. Similarly households headed by male have more ownership in both the rounds. Education of head of household has also a positive impact on the survival of these enterprise. Ownership of livestock does not make any difference, however, access to land is negatively associated with ownership.

The richest households own more enterprise while the poorer households are reliant for employment in these enterprise and earn significant share of their income from non-farm sources. Non-farm enterprise have a positive association with household welfare, as these households are facing less issues of headcount poverty, multidimensional poverty and have more per capita consumption expenditures and their children are more enrolled in school compared to their counterparts who does not own enterprise.

6.2. Policy Implications and Recommendations

The present analysis suggests following policy recommendations;

- Despite non-farm sector's large contribution in rural economy of Pakistan, data information on non-farm enterprise is very limited. There is a need to add a module on non-farm activities in national datasets i.e. PSLM and LFS.
- Inefficiency of institutions could be one major barriers for the establishment and development of rural non-farm economy in Pakistan. An easy, smooth and equitable functioning of a market can be facilitated and supported through the public institutes. It can attract foreign and private investment as well as can promote economic activity by reducing transaction costs and other business obstacles.
- Increasing competition requires sound institutions having quality control along with reducing disputes, defining property rights, and increasing healthy competition. It is recommended that public investment along with technical training is required to improve the productivity and size of this sector, especially to improve poor manufacturing base. Targeted policies are required to overcome the regional disparities by diverting resources toward the deprived and remote areas.
- The lower participation of poor households in non-farm activities can be improved through social and economic resource mobilization. Microfinance schemes along with training programs can include the poor.
- For rural development, a dynamic labor-intensive agriculture along with a modern non-agriculture sector can provide better employment and income to rural

households, with egalitarian income distribution and elimination of rural poverty. Policy intervention to promote rural non-farm employment is also justified to stop, to some extent, migration to cities. The design of rural development pro-agricultural policies needs to be revisited to address to needs of local non-farm activities. In particular, the growth and concentration of such activities in rural towns and villages raises substantially the demands for physical and soft infrastructure services.

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APPENDIX

*Appendix 1:**Sectoral Share in Gross Domestic Product Overtime in Pakistan***

Year	Agriculture and Livestock	Industry	Services
1950s	48.8	12.9	38.4
1960s	40.7	19.1	40.2
1970s	33.7	22.6	43.7
1980s	28.6	23.3	48.2
1990s	26	24.6	49.3
2000s	23	22.5	54.4

Source: Various editions of Pakistan Economic Survey, Ministry of Finance, Islamabad

Appendix 2:***Dimensions, Indicators, Weight and Definitions***

Dimension	Indicator	Weight	Definition
Education	Male Education	1/12	No male over 11 years of age has completed 5 years and above of schooling
	Female Education	1/12	No female over 11 years of age has completed 5 years and above of schooling
	Child School Attendance	1/8	Any school-aged child (6-11) is not attending school
	Educational quality	1/24	If any person of age 6-16 does not attend school because of quality (not enough teachers, far away, too costly, no male/female teacher, substandard school), or is attending but dissatisfied with service (shortage of teacher, books, substandard education, far away, education costly, latrine/water not available)
Health	Access to health care facility	1/6	If does not use health care facility because is costly doesn't suit, lacks tools, not enough facilities, or uses and is not satisfied
	Immunization	1/18	
	Prenatal care	1/18	If any women 15-49 who gave birth in last three years did not have antenatal care
	Institutional delivery	1/18	If any women 15-49 who gave birth in last three years did not have a safe delivery (born at home and is not facilitated by some skilled health person)
Living Standards	Housing	1/36	If deprived in wall: mud, uncooked/mud bricks, wood/bamboo, other
	Overcrowding	1/36	If more than 3 people per room are residing
	Water	1/18	If water source does not meet MDG standards (unprotected well, surface water, tanker truck, other)
	Sanitation	1/18	If toilet facility does not meet MDG standards (digged ditch, other, no facility)
	Clean Energy	1/18	If solid fuels are used for cooking (wood, coal/charcoal, agricultural dung, crop residue, other)
	Electricity	1/18	If there is no access to electricity
	Assets	1/18	If HH doesn't have 2 small assets (iron, fan, TV) or has no large asset (motorcycle or refrigerator, car or tractor) or does not own land or does not have no large animal or less than 3 goats/sheep. If deprive in all then it is deprived

Appendix 3:***Percentage Distribution of Employed Persons of 10 Years Age and Above By Major Industry, 1974-2011***

		Agriculture Forestry, Hunting and Fishing	Mining and Quarrying	Manufacturing	Electricity, Gas and Water	Construction	Wholesale, Retail Trade, Restaurant and Hotels	Transport, Storage and Communication	Financing, Insurance Real Estate and Business Services	Community, Social and Personal Services	Activities Not Adequately Defined
2011-12	Total	48.05	0.18	13.65	0.48	6.95	15.25	5.11	1.42	14.65	-
	Rural	43.15	0.15	6.19	0.20	4.98	7.00	2.81	0.36	10.06	-
	Urban	1.89	0.03	7.47	0.28	1.97	9.11	2.30	1.08	23.00	-
2007-08	Total	44.65	0.12	12.99	0.70	6.29	14.62	5.46	1.41	13.66	0.10
	Rural	60.94	0.14	8.37	0.42	6.09	9.19	4.42	0.44	9.96	0.03
	Urban	6.21	0.07	23.89	1.36	6.75	27.45	7.92	3.70	22.39	0.26
2001-02	Total	42.09	0.07	13.84	0.81	6.05	14.85	5.90	0.89	15.50	-
	Rural	59.01	0.07	8.68	0.57	6.23	9.20	4.81	0.29	11.13	-
	Urban	5.18	0.06	25.10	1.34	5.66	27.19	8.27	2.19	25.03	-
1990-91	Total	47.85	0.15	12.23	0.83	6.62	13.24	5.24	0.89	13.27	0.06
	Rural	63.79	0.14	8.08	0.54	6.63	7.77	3.68	0.34	8.97	0.06
	Urban	7.63	0.17	22.35	1.55	6.59	26.57	9.07	2.25	23.75	0.07
1982-83	Total	52.73	0.10	13.44	1.13	4.80	11.94	4.69	0.82	10.19	0.27
	Rural	67.69	0.11	9.38	0.96	4.12	7.14	3.09	0.26	6.94	0.31
	Urban	6.70	0.08	25.94	1.65	6.88	26.70	9.20	2.54	20.17	0.13
1974-75	Total	54.80	0.15	13.63	0.49	4.20	11.90	4.87	0.67	9.78	0.33
	Rural	72.08	0.13	9.32	0.23	3.41	5.81	2.94	0.09	5.70	0.29
	Urban	6.20	0.19	25.74	1.23	6.41	25.93	10.30	2.31	21.26	0.44

Source: Various editions of Economic Survey of Pakistan and Labor Force Survey of Pakistan

Appendix 3: ***Percentage of Rural Households in Pakistan by Expenditure Quintile that Own Shops and/or other Businesses***

Expenditure Quintile	**National**	**Punjab**	**Sindh**	**KP**	**Baluchistan**
Poorest quintile	18.2	19.5	13.1	19.1	13.4
Quintile 2	22.3	24.5	15.4	23.8	15.5
Quintile 3	23.4	24.6	15.3	24.2	15.9
Quintile 4	27.6	28.7	16.3	27.7	19.8
Richest quintile	31.8	33.6	23.5	35.6	26.5
Overall	23.0	25.5	15.2	24.0	18.4

Source: Authors 'estimation from HIES 2010 micro dataset