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Demand for Credit among Small Farmers: A Case Study of District Mandi Bahauddin, Pakistan

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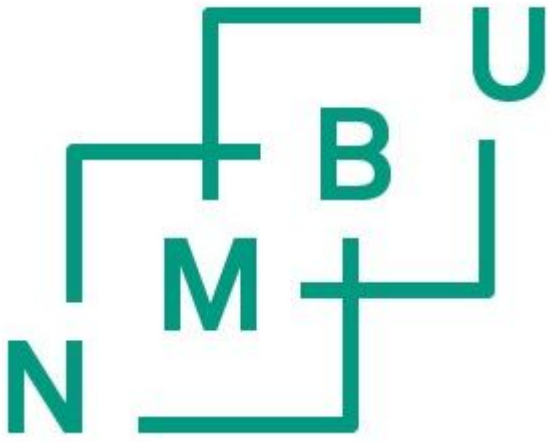

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in Development and Natural Resource Economics.

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"In the name of Allah, most Gracious, most Compassionate".

DEDICATION:

I humbly dedicate this work to Allah (the Almighty), who knows everything.

ACKNOWLEDGEMENT:

I am grateful to my supervisor Mette Wik, who tolerated my mistakes and guided me persistently to finish this work. I am thankful to my parents whom prayers always kept me up, especially father for his unprecedented support. I would also extend my appreciation to the Norwegian University of Life Sciences for offering me admission and for providing peaceful study environment throughout this program.

In the end, I also acknowledge help of my 3 years old nephew (Muhammad Mosa), who taught me lesson that library is better option for study than home.

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LIST OF ACRONYMS:

AKRSP	Agha Khan Rural Support Program
BA	Bank Al-falah
BOP	Bank of Punjab
DAMEN	Development Action for Mobilization & Emancipation
DFID	Department for International Development
FS	Financial System
GoP	Government of Pakistan
HBL	Habib Bank Limited
HHH	Head of Household
M.B.DIN	Mandi Bahauddin
MCIB	Microfinance Credit Information Bureau
MFIs	Microfinance Institutions
MFPs	Microfinance Providers
NBP	National Bank of Pakistan
NGO	Non-Governmental Organization
NRSP	National Rural Support Programme
OPP	Orangi Pilot Project
PMN	Pakistan Microfinance Network
PPAF	Pakistan Poverty Alleviation Fund
SAFWCO	Sindh Agricultural and Forestry Workers Coordinating Organization
SBP	State Bank of Pakistan
SRSP	Sarhad Rural Support Programme
UBL	United Bank Limited
ZTBL	Zarai Taraqiati Bank Limited

ABSTRACT:

In this research, I investigated the determinants of demand for credit and consumption of credits among small farmers of district Mandi Bahauddin, Pakistan.

For this purpose, I interviewed 123 households of six villages of this district. Both qualitative and quantitative techniques were employed to examine factors that affect demand for credits. Seven hypotheses were devised and tested and probit and OLS models were used to analyze the effects of education, household size and income on demand for credit. For sake of clear understanding, income variable was further decomposed into three types of income i.e. livestock income, agricultural production income and other sources of income.

I found that informal borrowing (from friends and relatives), higher interest rate and high transaction costs crowded out formal lending. However, consumption smoothing was not a major reason for demand for formal loans. A positive correlation was found between education and demand for credit. Household size and all types of incomes did not significantly correlate with demand for credit. Moreover, being residents of villages Lakhnewala and Badshahpur showed higher probability of demand for credit than being resident of Kangsahali, whereas being residents of Shahidanwali, Wara Alam Shah and Chak Abdullah did not affect demand for credit.

Key words: credit demand, credit consumption, probit, interest rate, education, household size, income, Mandi Bahauddin, Pakistan.

1. INTRODUCTION:

A light purse is a heavy curse. People living in rural areas of Pakistan are very familiar with this saying. These are people mostly having small lands and fewer opportunities to earn livelihoods. Pakistan has population of 182.1 million, of which 63 percent live in rural areas (World Bank 2013). Poverty incidence is higher in rural areas than in urban areas since rural households rely mostly on agriculture as their main source of income (Akhtar 2012). More than one billion people globally live in a household with per capita incomes of less than $ 1.25 per day (World Bank 2010). The policymakers and others trying to improve the lives of this one billion are having a hard time. The main aim of microcredit programs is to help people overcome financial constraints. Households with access to credit are often more able to increase their income and food consumption than those who do not have access to credit (Sharma and Zeller 1998).

1.1 Importance of Microcredit:

The federal and provincial governments of Pakistan and non-governmental organizations (NGOs) are responsible for credit disbursement to support small farmers by providing financial services. Among small and big financial institutions, the most prominent are ZTBL (Zarai Taraqiati Bank Limited), BoP (Bank of Punjab), and NBP (National Bank of Pakistan) and among NGOs the most prominent are AKRSP (Agha Khan Rural Support Program), NRSP (National Rural Support Program) and OPP (Orangi Pilot Project). Considerable amounts of research have compared incomes and overall living standards of borrowers and non-borrowers in different areas of Pakistan. Some of these showed positive signs of improvement in living standards. For instance, micro credit significantly improved households' income (Waheed 2009). Similarly, institutional credits in Pakistan not only effect determinants of the agricultural output, but also effect household consumption and other household welfare indicators (Khandker and Faruqee 1999). Credit disbursements by PPAF (Pakistan Poverty Alleviation Fund) decreased the poverty level of borrowers from 6.61% to 3.07% (Ali and Alam 2010).

1.2 Demand for Credit:

The effectiveness of microcredits among small farmers depends on demand and supply of microcredits. The scope of this study is limited to the demand side of microcredits in Mandi

Bahauddin (M.B.Din) district. It is a plain area situated in the heart of Pakistan and very suitable for agricultural production. This district is enriched with vast irrigation facilities as bounded by the country's two big rivers i.e. Chenab and Jhelum. For this reason, it was named Mandi Bahauddin (or Market Bahauddin) after establishment of a grain market in the early 20th century (District Courts, 2011). Along with geographic reason, other important factor behind choosing this district for study is high concentration of small farmers living in this area. The majority of farmers own less than 13 acres of land.

Demand for credits depends on many factors such as education, households' size, interest rate, collateral, assets, households' income and so forth. For instance, interest rates charged on the microcredit loans were higher than other loans (Fernando 2006). This happened because the credit services provided were for small sums of money and the administrative costs of these small loans made the interest rates high. The distance from the rural borrower to the bank, was a major determinant affecting access to credit (Bakhshoodeh and Karami 2008). A positive correlation was found between demand for credit and family size (Shah et al. 2008). Group based lending also released needs for collateral for households that had previously limited access to loans from conventional commercial banks (Kausar 2013).

1.3 Objective of Study:

The objective of this study is to identify important factors in decision making of small farmers of Mandi Bahauddin regarding microcredits. For this purpose I conducted interviews with farmers in different villages to find answers to the following primary and secondary questions:

- **What are the determinants of demand for credits among small farmers?**

This is basically a comparison between farmers who had never applied for any type of formal loan and farmers who had got such loans.

- **How do the farmers use the loans - for consumption smoothing or for production activities?**

Consumption purposes could be expenditures on marriage, renovation of house, repayment for formal or informal loan etc. Examples of production activities are: purchase of any agricultural inputs and machinery and other small business purchases.

Based on these research questions and respective literature review, I develop different research hypotheses in chapter 3. These hypotheses will be tested using the data I collected.

1.4 Structure of Thesis:

The next chapter gives background information about Pakistan and its district Mandi Bahauddin in particular. In the same chapter I also discuss the history of microfinance in Pakistan.

In chapter 3, I discuss previous studies on demand for credits in other parts of the world. Based on this literature review, I develop seven different hypotheses.

Chapter 4 is comprised of two main parts i.e. research strategy and econometric and statistical models.

The research questions and hypotheses will be analyzed and discussed thoroughly in chapter 5. This chapter will mainly comprise of two parts i.e. descriptive and quantitative analysis.

Chapter 6 is the conclusion of the study.

2. BACKGROUND:

Figure1. Map of Pakistan

Figure2. Map of District Mandi Bahauddin.

2.1 Description of Mandi Bahauddin (M.B.Din):

Pakistan is one of the developing countries of South Asia, which got independence on 14th August, 1947 from British India. Bordering India on the east, Afghanistan on the west, China on the north and Iran on the south-western side, making its geo-political importance inevitable as shown in figure 1. District Mandi Bahauddin is one of the 34 districts of the Punjab province. Other provinces are Sindh, Baluchistan and Khyber Pakhtunkhwa. The estimated population of the district is 1.41 million (Punjab Bureau of Statistics 2013). The Federal government has not conducted national census since 1998. It is bounded on the north-west by the river Jhelum, on the south-east by the river Chenab which separates it from District Gujranwala and Gujrat and on the south west by District Sargodha as shown in figure2. Tehsil Malalwal, Phalia and Mandi Bahauddin divide it administrative and territorially, which are further divided into 65 Union Councils. Major characteristics are shown below in the table.1.

Table1. Important figures

Population	1.41 million
Population growth	1.87%
Area	2673 sq. km
Number of Tehsils	3
Number of Union Councils	65
Population density (pop. per sq. km)	530
Literacy rate (above 10 years old)	65%
Unemployment	7.8%
Mean Household size	6.4
Members working outside village/town/overseas	25.9%
Agricultural land-owners household percentage	45.7%
Percentage of households receiving remittances from abroad	12.8%
Cultivated area	226000 Hectares
Main crops	Wheat, sugarcane and rice
Average rain fall	50cm
Percentage of households possessing bank accounts	24.1%

Sources: Bureau of Statistics, Punjab (2011&2013) & Directorate of Industries, Punjab (2009)

Being an agriculture-dominant economy of Pakistan, the majority of the population in the district is also involved in agriculture. Agricultural workers are around 40.7 per cent, elementary occupations (laborers, helpers, street vendors etc.) 40 per cent; service workers 6.5 per cent,

crafts and related trade 4.2 per cent; professionals 3.1 per cent and machine operators 2.4 per cent (District Courts, 2011).

2.2 Study Areas:

The reasons for selecting this district is that majority of the farmers are small farmers. The interviews have been conducted from 6 villages of all three Tehsils and from each tehsil 2 villages were selected. Villages were selected in such a way that no corner of the district should be left unattended. Names of villages are Lakhnewala and Shahidanwali from Tehsil M.B.Din; Wara Alam Shah and Badshahpur from Tehsil Malakwal; and Chak Abdullah and Kang Sahali from Tehsil Phalia.

2.3 Microfinance Evolution in Pakistan:

Agricultural credit concept is not new, but rather dates back to early 1960s when Agricultural Development Bank (now ZTBL) was established (in 1961) by federal government to meet credit needs of rural areas of Pakistan. Like other agricultural banks, ZTBL also faced many losses due to low rates of lending and political lending which resulted in major write offs (Ahmad 2008). In 1982, the Orangi Pilot Project (OPP) was developed to lend Karachi urban slums by targeting small entrepreneurs. In the same year, the Aga Khan Rural Support Program (AKRSP) launched its credit operations in the North. In 1990s, the model of AKRSP was implemented in the whole country with the establishment of National Rural Support Program (NRSP) and the Sarhad Rural Support Program (SRSP). These institutions were the general support institutions that provided a wide range of social services, including financial services. Financial services provided to the poor were often socially driven and were highly subsidized and little efforts were made to recover delinquent loans (Shah et al. 2008). To address these shortcomings in 1996 the RSPs established specialized microfinance NGO called as Kashf Foundation. In 1998, this precursor of the Pakistan Microfinance Network (PMN) began to play a role in representing emerging Micro Finance Providers (MFPs). Further developments followed in 2000, when the Pakistan Poverty Alleviation Fund (PPAF) made its first loan to MFPs, and SBP opened a microfinance unit. In 2001, the government of Pakistan (GoP) helped to create a major retail institution, the Khushhali Bank, dedicated to serve the poor (Ahmad 2008).

In 2001, Microfinance Institutions Ordinance (MFI) was issued to regulate the operations of Microfinance institutions. Ordinance states that micro-loan cannot exceed Rs. 100,000 and microfinance client income must be below the taxable amount. This was to assure the focus of MFIs must remain with the poor target market (Ghalib 2010).

Other private NGOs belonging to the so-called 'civil society' emerged in 1990s. These multi-sector NGOs are working on the lines of RSPs with interest in microfinance, such as Sungi Foundation, SAFWCO, Taraqi Foundation and DAMEN. These NGOs, as champions of socio-economic development goals, engaged in microfinance from a pure poverty alleviation philosophy and did not include the financial system (FS) (Khan 2011).

A brief timeline of emergence of MFIs is as followed:

Timeline of Microfinance in Pakistan

The development of microfinance in Pakistan through different times:

1960s *Comilla Project* (look for more information)

1961 *Agriculture Development Bank* (now ZTBL) started its operation to meet the credit need of agriculture sector (rural area of Pakistan).

1982 *Orangi Pilot Project* (OPP), started by a social scientist and activist Akhtar Hameed Khan in Orangi, Karachi, Pakistan. This was the first NGO in microcredit involving locals to solve their own sanitation problems.

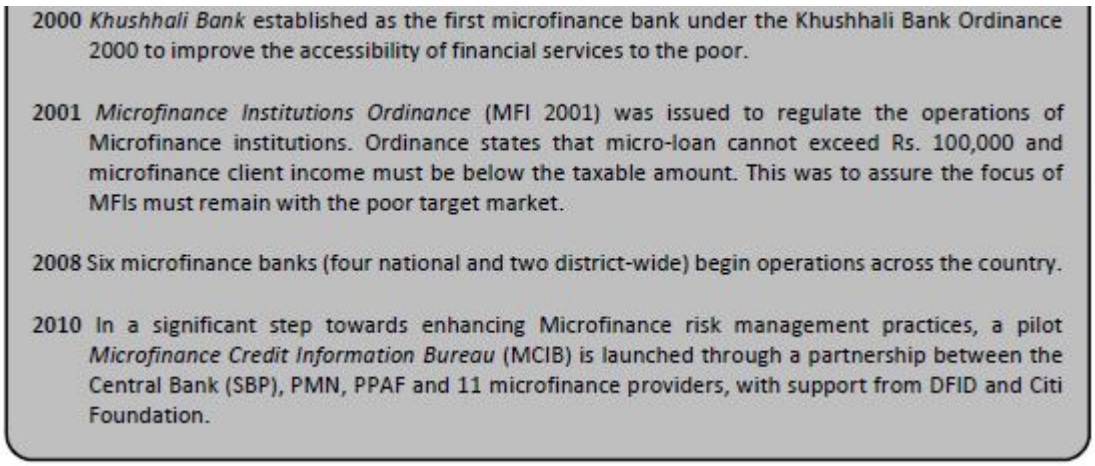
1982 *Agha Khan Rural support Program* (AKRSP) seeks sustainable solutions to the poor people of Northern areas of Pakistan.

1991 Start of Rural Support Programmes by establishing *National Rural Support Program* (NRSP).

1996 *KASHF Foundation* is the first established Microfinance Institution of Pakistan with focus on providing the quality and cost effective microfinance services to the low income households especially to women.

1997 *Pakistan Microfinance Network* (PMN) was established to support retail Microfinance providers (MFPs) to improve their outreach. The idea was to have one forum to share experience and disseminate the learning from the practionars.

1999 GoP established a *Pakistan Poverty Alleviation Fund* (PPAF) to give financial and non-financial support to civil society organizations with a goal to assist the rural and urban community in poverty alleviation especially for gender and empowerment of women.



Source: (Ghalib, 2010).

3. REVIEW OF LITERATURE:

This chapter discusses different factors that affect three types of lending i.e. micro-lending, other formal lending and informal lending, mentioned in different studies of the world. Micro-lending is a very small loan given to poor people for helping them to be self-employed (Fernando 2006). Poor people receive such loans to increase their living standard by investing in income generating activities. Commercial banks are the main sources of other formal financial services. Zarai Taraqiati Bank Limited (formerly known as *Agricultural Development Bank Ltd*) was established to serve such financial services to farmers only. Informal lenders are friends, relatives, local traders, shopkeepers etc. This chapter will also discuss studies about relationship between demand for loans and consumption smoothing.

3.1 Factors Affecting Credit-demand:

3.1.1 Effects of interest rates:

Among the determinants of demand for loan, the interest rate carries much weight with respect to importance. Higher interest rates decreased the probability of borrowing from formal credit markets in China and this negative effect was statistically significant (Tang et al. 2010). Interest rates are high due to high microcredit program running costs (Nawai 2010). In an Asian Development Bank report about interest rates on microcredit in Asia and Pacific regions, it was

argued that the interest rates charged on the microcredit loans was higher than other loans. This happened because the credit services provided were for small sums of money and the cost of these small loans made the interest on them very high. Furthermore, mostly the microfinance lending institutions in the region charged the nominal interest rate from 30-70% a year. For instance, Microcredit Regulatory Authority (MRA), Bangladesh, has fixed interest rate of 27% and Dhaka Bank limited offer personal loam at 18%. Other factors that affect the interest rate were; the repayment frequency of loans; systems used for collecting the repayment; and the necessary deposit required for getting the loan. All these factors raised the effective rate of interest (Fernando 2006).

Holding other factors constant, the higher the interest rate charged, the lower the demand for credit. This is a plausible assumption because at high interest rates, the returns from an activity must be high enough to enable the investor to retain a profit after paying the loan plus the interest (Mpuga 2004). A percentage change in a given interest rate is met by nearly the same percentage change in the quantity demanded (Salazar et al. 2010). The main reasons that discourage the respondents include high interest rate, inability to repay the loan from high interest rate and shocks faced from drought, illness, long waiting time and others (Ferede 2012). As a contrast to the above results, Balogun and Yusuf (2011) found, in South-Western states of Nigeria, that irrespective of distance or interest rate, households would pursue credit, because of their dire need and shortage in supply, in the case formal lending but found negative relationship between interest rate and demand for credit in case of informal lending. Dehejia et al. *(*2007) argued that higher interest rate on one hand would improve the financial permanence of microfinance organizations. However, on the other hand, their results also supported those who argue that the poor, and particularly the poorest, do consider prices and reduced loan demand accordingly.

Based on this, I expect to find interest rate as one of the driving forces that discourages farmers to apply for such loans.

Other factors that could influence the demand for loans among small farmers are religious restriction, households' characteristics (size, age, education, occupation etc.), no or limited knowledge of loans schemes, transaction cost, income, total value of assets, formal borrowing procedure and payback failure fear and informal lending.

3.1.2 Religion:

No doubt, according to Islam, God has forbidden to give loans based on interest. To make profits from giving loans is moral corruption. In the Holy Quran, Allah (God) says that "Those who consume interest cannot stand [on the Day of Resurrection] except as one stands who is being beaten by Satan into insanity. That is because they say, "Trade is [just] like interest." But Allah has permitted trade and has forbidden interest. So whoever has received an admonition from his Lord and desists may have what is past, and his affair rests with Allah. But whoever returns to [dealing in interest or usury] - those are the companions of the Fire; they will abide eternally therein." (Holy Quran: Chapter 2: Verse 275).

It is generally thought that paying interest too is prohibited in the same manner as consuming interest is. In reality, there is no basis of this opinion in the Quran and Hadith. Not at one place has the Quran condemned people who pay interest; it has, in fact, regarded them to be the oppressed; it has also urged the lenders to give respite to such borrowers if they are facing some financial constraint (Ghamdi 2009).

Moreover, in Pakistan a researcher used 'profit' word instead of 'interest' in an effort to make interest more acceptable to rural people but, even then, 39% of the respondents believed that this kind of 'profit' was not allowed according to Islam. Conventional banking systems (including MFIs) offer only interest-based saving accounts; there is no inherent incentive for this segment of the population to have saving accounts in banks at all (Akhtar 2012). Similarly, in Ethiopia, a negative relationship was found between demand for microcredit and religion in case of Muslims (Frede 2012).

3.1.3 Households' Characteristics:

Size of household: It is plausible to say that increasing household size would increase demand for credit due to higher overall consumption and investment demands. But on the other hand, a big family also means having more earning people in the household. This would decrease demand for credit in such case. The demand for credit was significantly affected by household's production capacity as supported by the fact that household size, agricultural land, and head's education all significantly increased households' probability to borrow (Tang et al. 2010). Similarly, in case of bigger families, demand for credit got raised (Shah et al. 2008). To the

contrary, Cheng (2006), in China, found an insignificant effect of the large family on demand for micro-loans.

Unlike Cheng (2006), I expect that household size might play an important role in case of Pakistan. Because for large family sizes, head of the households have to take loan for education and marriage purposes of their children, at least. Their income from farming might not be sufficient to bear costs of enrolling children in better private schools and to spend considerable sums of money on marriages to follow general customs of the society.

Age: According to the life cycle theory (Life Cycle Hypothesis), individuals smooth consumption over their life-cycle by borrowing when young, saving when in middle age and running down their assets in old age and at death (Modigliani 1966). In line with this theory, loan amount of household was positively correlated with the age at younger age, in the case of Greek households' demand for loans. In particular, the loan amount reached a maximum at 42 years of age. The loan amount decreased in case respondents were over 42 years old (Pastrapa and Apostolopoulos 2014).

Similarly, in case of the US, the persons aged between 20 and 30 were more passionate. They continued taking on risk and hence experienced rapid increase in earnings. These energetic households actively took more part in borrowing programs than elder people (Lehnert 2004). Those at the medium age had positive and significant demand while the old were less inclined to demand for credit (Mpuga 2008).

I expect that age will have a significant effect on demand for credits among farmers and that middle age people would be demanding more than old people, as found in above studies.

Education: Education is an important variable affecting households demand for credit, one additional year of education by head of household increased the probability of borrowing by another 2.5 percent. However, the impact of education was not the same for formal or informal institutions. For example, while the level of education increased households' probability to borrow from formal credit markets, it decreased or did not affect the informal credit demand at all (Tang et al. 2010). In addition, education at primary and secondary level may affect positively, but at four-year university level, education has a negative, but insignificant effect. This could imply that highly educated individuals already enjoy high income and wealth and

have little need to borrow (Chen and Chiivakul 2008). Better-educated heads are likely to use credit from formal financial services (Bendig et al. 2009). Similarly, based on a household survey in Madagascar, the probability of applying for credit significantly increased with the number of years of schooling (Zeller 1994). Being socially and culturally different from Madagascar, in case of Pakistan, low literacy created problems in acquiring formal loans and use of such loans in more productive way (Waheed 2001).

Indeed education is another important demand side factor that might influence access to credit since educated individuals can better understand the loan regulations as well as the borrowing procedures of the formal financial institutions and thereby reduce costs of gathering information.

3.1.4 Income and assets:

At the household level, the level of income is an important factor that would determine the demand for financial services. The total revenue and acreage had positive effects on credit accessibility among farmers in Kohgiloieh-Bovirahmad province in southern Iran. By increasing total revenue and acreage, ability of farmers in providing collateral and costs of receiving credit increased and therefore probability of access to credit increased too (Bakhshoodeh and Karami 2008). Moreover, doubling land endowment increased the probability of borrowing by 5.6 percent (Tang et al. 2010). A similar effect was observed on probability of applying for credit, when income of the households was increased (Zeller (1994).

In six provinces of Indonesia, the probability of borrowing rose steadily from 14 percent for poor households with per capita income up to three times the poverty line. They used 36 cents per day in rural areas as a benchmark for poverty line (Johnston and Morduch 2007). In case of Bosnia and Herzegovina, the relationship between net wealth and probability of credit participation followed a hump-shaped pattern. From a low net wealth level, individuals wanted to borrow as their net wealth became higher. One explanation could be that individuals are more likely to borrow once they acquire some assets to use as collateral. However, as wealth increased beyond a certain point, individuals had less need to borrow as their wealth could generate enough income for consumption. Similarly, the relationship between the probability of credit market participation and the log of income followed a hump-shaped pattern. When income was very

low, the marginal utility of consumption was very high. Once income was higher, individuals could spend it to consume and needed less to borrow (Chen & Chivakul 2008).

I expect the same positive and concave relationship in the case of Pakistan. People need access to credit for investments, such as, for example, to go to abroad as skilled labor. But when they start sending remittances to Pakistan, they do not need credits from formal or informal sources anymore. In addition, the flow of workers' remittances to Pakistan has more than quadrupled in the last eight years and it shows no sign of slowing down and one of the major reasons for this continuous increase in remittances is an increase worker's migration (Knock & Sun 2011).

3.1.5 Transaction costs:

Transaction costs are also one of the major factors that keep farmers away from loans. Transaction costs are the costs of travelling to the lender, opportunity costs of labor for the time lost in lengthy application procedures, administrative costs such as paying for loan application forms and expenses of updating or organizing legal documents used as collateral and running after guarantors (Zander 1994).

The transaction cost also includes the boring and lengthy paper work, practice loan process connected with formal loans, securities risk, incomplete information, the political reasons and the accessibility of formal credit institutions (Foltz 2004; Boucher et al. 2007 and Zander 1994). Moreover, formal loans involve a lot of paper work, which causes late release of credit in addition to administrative charges, which increases the cost of loans to borrowers (Balogun and Yusuf 2011).

In rural Sri Lanka, when people asked why people use credit sources other than formal banks, 30 percent in the semi-urban village and 20 percent in the remote location explained this with delayed credit disbursals and lengthy application procedures for institutional loans. And when the villagers were asked why they preferred informal credit sources to banks, 30 percent of the respondents in the remote village and 25 percent in the semi-urban village cited the difficulty of finding guarantors acceptable to banks, as a central issue (Zander 1994). An extra km of distance between the village and the nearest bank reduced the probability of borrowing from the bank by 1% (Tang et al. 2010).

According to Cheng (2006), demand for micro-loan in China can be raised by simplifying loan application and approval procedures and tailoring the loan terms to the need of the applicants according to their loan uses.

3.1.6 Informal lending:

It is plausible to think that informal lending crowd out formal and micro-finance lending in developing countries because of easy access and lending procedures and easier access to informal loans for consumption smoothing reasons. In Sargodha district (next to M.B.Din district), only 12 percent loans were from formal sector, and among informal sources, 82 percent of borrowings were from friends and relatives alone. The explanation was that friends and relatives offer loan for every reason and they were better aware of the personal characteristics of households. They knew very much about the borrower's credibility so the fudging rates were minimized. The rate of interest was minimal on such loans. Perhaps this was the biggest reason of taking loan from this sector (Shah et al. 2008).

Formal (banks and microfinance) institutions provided credit only for reproduction or manufacturing, whereas informal institutions' offerings were varied in four provinces of Vietnam. The formal lenders adopt severe collateral pre requisites to minimize evasion, thus separating out poor from the process. The low level of returns, asset growth and limited formal lending for consumption smoothing, made the poor households unattractive and render a high-risk contour for formal lenders. So they moved to the informal credit market to meet their credit demands (Barslund and Tarp 2007).

Literature on rural financial markets revealed that in most developing countries the rural dwellers were primarily served by the informal and semiformal financial institutions, including individual money lenders, relatives and friends and rotating savings and credit associations. In the case of Uganda, the major sources of credit in the rural areas were relatives and friends, self-help savings and credit associations, non-governmental organizations and cooperatives, and to some extent, government programs (Mpuga 2004).

In addition, in India, landlords and commission agents gave loans not only for production but also for many other purposes. They did not document the contracts and did not involve

borrowers in paper work. These things make borrowing easy and gorgeous (Gill 2003). I also expect to find higher concentration of informal loans than formal loans in the district M.B.Din.

3.1.7 Consumption smoothing:

According to *the permanent income hypothesis*: any change in consumption caused by shocks to income (transitory income) could be smoothed sufficiently by borrowing under perfect capital markets, because households will try to maximize their utility over the life cycle by borrowing when having transitory low income and by saving when having transitory high income (Friedman 1957). Thus, demand for household credit is partly derived from the demand for smoothing consumption against income shocks (Conning & Udry 2007 and Morduch, 1995). In Vietnam, the main purpose of the loans taken by the poor in peri-urban areas was for non-production (73.4%). Consumption expenditure such as food, school fees and healthcare accounted for about 64% of total loans. On the other hand, only a quarter was used for small production and businesses (Doan et al 2010).

Similarly in the case of Urban Ethiopia, 27.6% formal loan was used for expanding or setting up a business and rest was used for consumption purposes (Ibrahim et al 2007). In addition, in many developing countries, a significant proportion of the population is not insured or is inadequately insured. Many governments are not able to afford safety nets for their citizens to help them mitigate adverse shocks. Therefore, adverse health shocks to non-working members of households, which do not directly affect household income, will still generate credit demand if the households have inadequate savings to pay healthcare bills (Kochar 1995). Previous study in Pakistan indicated that villagers used credit, especially informal credit, as the most important mechanism to cope with adverse income shocks (Kurosaki 2006).

Like aforementioned studies, I also expect to find that formal loans are mainly used for non-production activities.

3.2 Research Questions & Hypotheses:

Based on previous studies of different researchers, I formulated the following objectives and hypothesis:

- What are the determinants of demand for credits among small farmers?
- How do the farmers use the loans - for consumption smoothing or for production activities?

3.2.1 Hypotheses:

1. Informal lending crowds out formal lending.
2. High interest rates discourage farmers from applying for loans.
3. High transaction costs result in less demand for loans.
4. The majority of loans are taken for consumption smoothing rather than for production activities.
5. Higher educated households demand more credit.
6. Large family size tends to increase demand for loans.
7. Income and demand for credits have a negative correlation.

4. METHODOLOGY:

Methodology is mainly about how data is collected, organized and interpreted with the help of quantitative and qualitative methods. This chapter is comprised of two main sections. In Research strategy (section 4.1), different issues related to data will be discussed. These issues are site selection, background information of study area, method of data collection (i.e. interviews) and its components, quality and reliability of data and challenges while collecting data. In the subsequent Econometric section (section 4.2), I discuss theoretical models and statistical methods to interpret and analyze data.

4.1 Research Strategy:

In order to analyze demand for credits among small and marginal farmers while considering aforementioned factors, I collected cross-sectional data. If I had access to secondary household data for this area, a lot of time and finances would have been saved. However, secondary data might not have given in-depth information about sensitive issues.

Site selection:

To gather information pertaining to demand for credits among farmers, I chose the district Mandi Bahauddin for data collection for several reasons. Being resident of this area, I knew the social and cultural background. Furthermore, it also saved time and finances which I had to bear in case of any other area. I targeted 6 villages from all three tehsils of district M.B.Din in such a manner that majority of the lands should be owned by small farmers. Chak Abdullah and Wara Alam Shah villages are little far away from nearest local city than Kang sahali, which is nearest among all villages. All the households, who were interviwed, owned at least some land but there were some households who had rented out their land and earned their income from other activities than farming.

Background information and sample selection:

Before I could start the actual interviews, I had to find the households who owned less than 14 acres of land. One way of doing this was to go to the local revenue department, which keep land records of every household. But to access such information is a long and time wasting procedure. Another method, which I devised, was to ask the interviewed households to help me to identify other small landowners in the village. Meanwhile, I also took sample randomization into account so that it should not make data biased. After identification of households by interviewed household, I used to write the names of other head of households of whole village on small piece of papers and used to ask interviewed head of household to pick up one piece of paper for the interview of next household. I repeated same procedure in all six villages.

Being a male-dominant society, women are usually not involved in the financial matters of the households. Therefore I interviewed only males as only men could give complete information about financial matters.

It was one of the social norms of the society that extreme importance was given to women's *pardah*. It is the practice of preventing men from seeing women. They were only allowed to go out with big shawls covering their body and sometimes, a family member or a relative should also go with her for respect and to avoid any inconvenience to her. The honor of a household was the second most sacred thing for every household after religion and women of a household were considered to be symbols of honor. Even a man was not allowed to pronounce name of a young girl or women of any other household publically. Some villages had their own local laws related to marriage ceremonies, funerals, festivals, crimes etc. The social system was very much complex. More or less, every household had basic information about all other households e.g. numbers of members, approximate ages, education and their occupation etc. because men used to visit men of other households and women used to visit women of other households frequently.

Due to this strong definition of honor, information about sisters and daughters of head of the household was considered to be a sensitive issue and so was information about formal and informal loans. So, it was important that they had full confidence in the interviewer. For this purpose, in the beginning of the interview I assured them of every kind of confidentiality by introducing my family background and objective of this research. Because if they faced any disrespect in the society due to information leaked by interviewer, they could complaint to the head of the interviewer's household.

Data collection:

The data was collected from 123 households. I spent 9 weeks interviewing the farmers of different villages with the help of a questionnaire (see appendix 1). I also translated the questionnaire into Urdu - the national language (see appendix 2) because I had to seek help from Urdu speaking enumerators to save time. The first part of the questionnaire collected information about household characteristics, such as gender, age, marital status, education, occupation etc. The second part was about the households' assets and properties. Assets included land, livestock

and machinery. The third part was about farmers' last year production activities. All types of commonly cultivated crops, fruits, vegetables and pasture were included. Second last part was about other sources of income, for example, income from rented out land, selling of milk, jobs, remittances etc. The last part was about credit and borrowing. It was further divided into 3 parts; applied and got loan (both formal and informal), applied but could not get and never applied for any loan. Those who never applied for loans, they were asked further about their preferences to the loans with varying attributes e.g. interest rate, less collateral, payback period, group lending etc. with the help of hypothetical loan packages.

Quality and reliability of data:

It is possible that respondents might have over or underestimated their production and assets' values, as their production activities do not involve minute measurements. Sometimes they sell some kinds of productions in bulks and sometimes sell them standing in the fields. For example, in the case of vegetables and fruits, they sell them in bulks at a whole-sale price to the retailers. Similarly, in the in case of pasture crops, they do not harvest it rather sell it when it is standing in the fields. In case of fruits and vegetables, we used to ask them average weight of a bulk and multiplied it with number of bulks to get total production. Similarly, in case of pasture crop, sometimes they exchange a small part of one type of pasture crop with another type of pasture crop without monetizing them. So in such cases, we had to use standard pasture crop production per acre benchmark to find approximate production and income. For instance, we had standardized that one [*]bigha of pasture crop production used to give 8000kg of yield and its market value was PKR. 10,000.

When it came to the loan sections, we also asked hypothetical questions in which they were offered different packages of loans with varying attributes like interest rate, collateral, repayment period and group lending (see appendix 1) in order to elicit their true preferences. Some respondents might not have understood this section well and might not have revealed their true preferences.

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[*] 1 bigha = 4 kanal and 8 kanal = 1 acre of land

Challenges in data collection:

One of most common challenge I faced was that these households had never been interviewed before, except for the national census in 1998. Therefore, most of the respondents were afraid and reluctant in the beginning of interview. Another major challenge was the lengthiness of the interview, they used to get bored because of calculations and having to try to remember last year's activities. In order to make them continuously involved in the interview, we used to discuss other non-interview matters with them.

Furthermore, we had to do the interviews with each head of household without other people present, because they would not reveal personal information in front of other people from the community. For this reason, initially, some thought I was a journalist and some believed that I came from the tax department. In such cases, we had to give our complete family background and home address. They got agreed for interview when they came to know about father and grandfather of the interviewer.

12 households refused to give complete interviews and did not reveal their preferences in case of hypothetical loan offers. Some argued that remittances are enough for livelihood and others argued that because they had decided that they would never go to the bank to take a loan for religious reasons, therefore, it did not make sense to answer these questions. Most household heads were busy working in the fields or doing labor work, so I often had to visit several times and wait for them for long periods of time. To go to some distant villages, there was also a conveyance problem.

4.2 Econometric and Statistical Models:

To estimate demand for credit and to know effect of factors on credit demanded, I will use probit and OLS models. Using these models, I will be able to predict the demand for credit given the characteristics of the households. I will explain difference between both models and also why the probit model is better than OLS. With the help of probit model, I will determine the characteristics of those who demand for credit in comparison to those who do not. I will also examine probabilities of demand for credit among six villages.

I assume that every household faced two choices, either to take credit from formal lending institution or not. Thus the general model is represented as:

$$D_i = f(\ Age_i, Edu_i, T\_Mem_i, Total\_Y_i, T\_Assets\_value_{\ i,}\ lakh_i, shah_i, bads_i, wara_i, chak_i, kang_i\ ) \quad (1)$$

Where D_i is a dummy variable taking value 1 if the individual took credit and 0 otherwise. Age_i and Edu_i represents head of the households' age and education while T_Mem_i, $Total\_Y_i$ and $T\_Assets\_value_i$ represents household size, total income and total value of household's assets. The variables $lakh_i$, $shah_i$, $bads_i$, $wara_i$, $chak_i$, and $kang_i$ are location dummies representing residents of six villages. In the probit model 5 location dummies will be included than 6 dummies to avoid perfect multicollinearity.

Model assumes that the error term is a normally distributed random variable, so the estimated model is then stated thus;

$$Got\_loan_i = \alpha_0 + \alpha_1 Age_i + \alpha_2 Edu_i + \alpha_3\ T\_Mem_i + \alpha_4\ Total\_Y_i + \alpha_5\ T\_Assets\_value_i + \alpha_6\ lakh_i + \alpha_7 shah_i + \alpha_8 bads_i + \alpha_9 wara_i + \alpha_{10} chak_i + \varepsilon_i \quad (2)$$

Got_loan represents demand for credit (binary outcome) variable. I will decompose total income variable into three types of incomes i.e. livestock income, agricultural production income and other sources of income. I will explain reason for doing so in the succeeding chapter.

By the replacement of separate income variables with total income variable, the estimated model (2) changes to equation (3):

$$Got\_loan_i = \alpha_0 + \alpha_1 Age_i + \alpha_2 Edu_i + \alpha_3\ T\_Mem_i + \alpha_4\ Live\_Y + \alpha_5 Prod\_Y + \alpha_6 Oth\_sou\_Y + \alpha_7\ T\_Assets\_value_{i,} + \alpha_8\ lakh_i + \alpha_9 shah_i + \alpha_{10} bads_i + \alpha_{11} wara_i + \alpha_{12} chak_i + \varepsilon_i \quad (3)$$

It is worth mentioning here that all types of incomes are last year (annual) incomes. I will use statistical software Stata12 (special edition) for both econometric and qualitative analysis. For

descriptive data analysis, I will also take help of different types of charts, tables and figures to show different statistical distributions and relationships.

5. RESULTS AND DISCUSSION:

I will use econometric models (2) and (3) to see significant effect of different factors on the demand for credits among small farmers. Below are all variables and their labels (Table 2).

Table 2: Variables.

Variables	***Labels***
Age	Head of household's age
Edu	Head of household's Education (years of schooling)
T_Mem	Total members in each household
Live_Y	Livestock income (annual)
Prod_Y	(Agricultural) production income (annual)
Oth_sou_Y	Other sources of income (annual)
Total_Y	Total income (annual)
T_Assets_value	Value of total assets of households
lakh	resident of Lakhnewala (Dummy)
shah	resident of Shahidanwali (Dummy)
bads	resident of Badshahpur (Dummy)
wara	resident of Wara alam shah (Dummy)
chak	resident of Chak abdullah (Dummy)
kang	resident of Kangsahali (Dummy)
Got_loan	Demand for credit (binary dependent variable)

According to hypotheses based on the previous studies, I expect the coefficients to have the following signs:

Table 3: Expected signs of the predictors.

Variables	***Expected Signs***
Edu	(+)
T_Mem	(+)
Total_Y	Non-linear (+/-)
Live_Y	Non-linear (+/-)
Prod_Y	Non-linear (+/-)
Oth_sou_Y	Non-linear (+/-)
Interest rate*	(-)
Transaction Cost*	(-)

* These two variables (i.e. interest rate and transaction cost) will be discussed in the descriptive analysis and the rest will be examined in econometric analysis section.

Due to expected nonlinear correlation of income with demand for credit, I will take square of all types of income and total income and will include these variables in the probit model.

LiveY_sq	Square of livestock income
ProdY_sq	Square of (agricultural) production income
OthY_sq	Square of other sources of income
TotalY_sq	Square of total income

5.1 Descriptive Analysis:

Initially, we distinguish data on the basis of households' characteristics. Before analyzing data descriptively, it is important to take local customs and traditions in social and financial matters into account. In this area it is the head of household (HHH) who makes decision without (or

sometimes with) consultation of other family members. Therefore, when I will discuss characteristics of households, I will be actually discussing characteristics of HHH.

Only five households are found to be headed by widows and all other households are headed by husbands. No women are household heads in the presence of a husband. The average age of HHHs is 54 years. In addition, average household size is six persons, ranging from two persons to 16 persons in a household.

5.1.1 Definitions of 'household':

Previous studies have shown that it is difficult to standardize one definition of household in the presence of different social and economic customs prevailing in the world (Beaman and Dillon, 2010). In their paper from rural Mali, Beaman and Dillon (2010) studied the effects of different household definitions. They used four different definitions; the first definition requires only that members of the household live in the same lodging and acknowledge a common household head. The second includes the criteria of the first definition but adds the criterion that households eat commonly prepared food together. The third definition includes the criteria from the first definition and adds the stipulation that members must work together on at least one agricultural plot or in one revenue-generating activity. The fourth definition combines the eating and production requirements of the second and third definitions with the criteria from the first definition. While taking into account social, economic and traditional customs of this district in Pakistan, I have used the second definition of household.

5.1.2 Education statistics:

Regarding education, 41 HHHs have never been to school and 19 HHHs got only primary education (up to 5^{th} grade). 40 HHHs completed secondary education (10^{th} grade class) and only 25 out 123 HHHs had the opportunity to continue their education after passing secondary school. There was no college in this district 40 years ago. For this reason, the majority of HHHs could not get more education than secondary school. To get further education, they had to go to other districts, which was not financially possible for most of them. Maximum attained education by a HHH is 20 years of education, shown in figure 3.

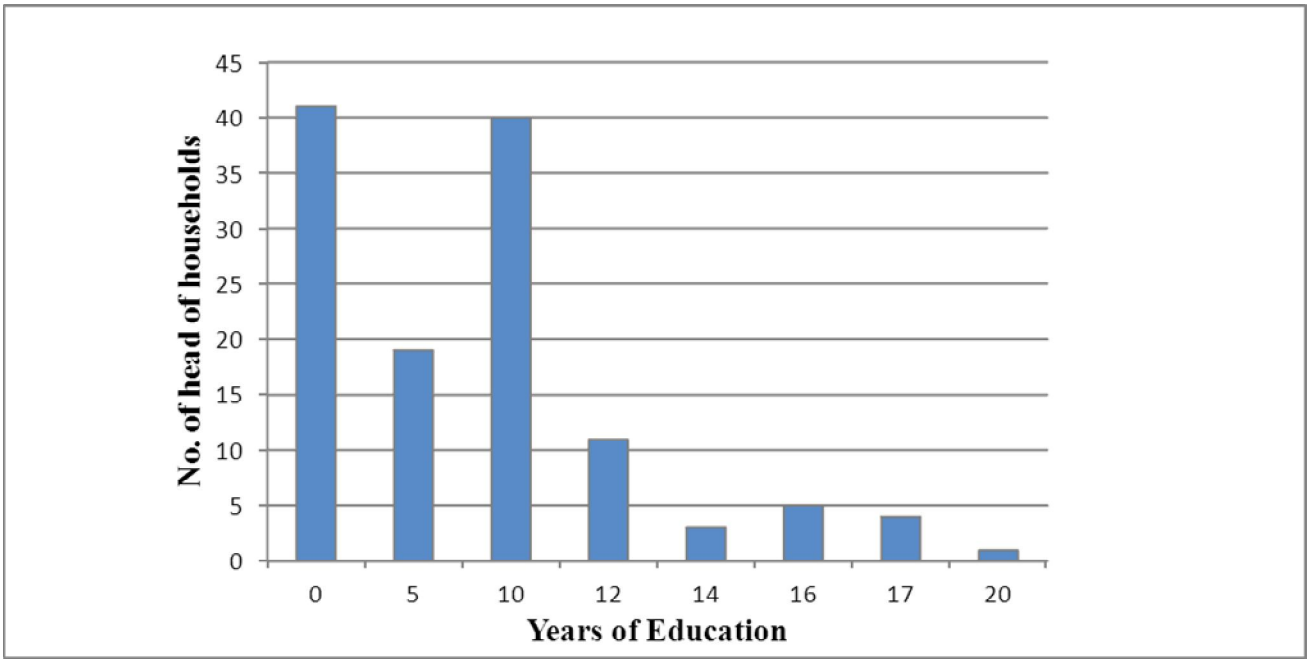

Fig 3: Education of Head of the Households (HHHs).

5.1.3 Occupations:

When it comes to occupation, 85 (68.55%) HHHs are involved in agricultural farming solely and 12 (9.68%) are doing different jobs along with agricultural farming. The same numbers of HHHs (i.e. 12) are doing nothing. Among these 12 HHHs, 5 are widows and it is the local custom that women don't do agricultural farming in spite of death of their husbands. Either any of their sons or relatives does it or they rent out their land. The remaining 7 HHHs have rented out their land and do some businesses or rely on remittances and pension.

5.1.4 First hypothesis: Informal lending crowds out formal lending.

Among 123 HHH, 79 HHH (64.22%) never applied for any kind of formal loans and 44 (35.78%) applied for loans. When the respondents (who never took loan) were asked to rank the stated reasons for never applying for any loan, they ranked reason '*borrow from friends and relatives*' as their most likely reason (see Table 7). This showed that majority of them were borrowing from informal sources instead of formal sources. The rankings of other stated reasons are discussed in next hypothesis.

It can be seen that credit rationing is a minimal factor here because among 44 households who applied for any loan, 43 (97.72%) got same amount for which they applied for and only one

HHH could not get it (2.28%). Carrying dual nationality by this HHH was the reason reported for rejection of his application. Because according to eligibility conditions for acquiring agricultural loan, given by SBP (2014), the first condition was that the applicant should be genuine farmer and for this reason the applicant might had been rejected as he spent most of his time in Canada. These figures are shown in Table 4.

Table 4: Distribution of HHH based on demand for credit.

				Applied		
	Applied	***Not Applied***	***Total***	***Got Loan***	***Rejected***	***Total***
No. of Households	44	79	123	43	1	44
Percentage	35.78%	64.22%	100%	97.72%	2.28%	100%

The average loan size from formal institutions was 2870 USD. The minimum and maximum loans were 261 and 20070 USD respectively.

During the interview, the farmers were given a list of prominent banks in the area and were asked to give information about how many times they got loan in last 5 years, interest rate, installment, collateral etc. Results showed that altogether the HHHs took loans 72 times from formal institutions and out of 72; most of loans were taken from ZTBL (i.e. 40 times), shown in Table 5.. ZTBL (formerly Agricultural Development Bank) was only meant for agricultural financial assistance to the farmers.

Table 5: Formal loans distribution.

	How many times in last 5 years?
ZTBL	40
BOP	3
NBP	18
BA	0
MEEZAN BANK	0

UBL	1
HBL	9
FAYSAL BANK	1
Total times	72
Average formal loan (USD)	2870
Minimum – Maximum (USD)	261 - 20070

Out of 43 HHH, who got formal loans, more than half i.e. 56.81% (25) households also got loans from informal sources (i.e. informal lending, friends, relatives and inter-linkages). These people borrowed money from informal sources 141 times, which is almost twice as often as formal loans. Not surprisingly, the majority of these loans were taken from friends and relatives i.e. 59 and 69 times respectively. One important thing to keep in mind is that average loan size from informal sources was considerably smaller in size (one tenth-i.e. 286 USD) than formal loans, which seemed obvious because banks could easily arrange bigger amounts for farmers than friends and relatives. On the other hand, friends and relatives offered more convenient, free of cost and easily accessible loans.

So this proves that formal lending crowds out informal lending, which could be due to the reason that loans from friends and relatives are interest-free.

Table 6: Informal loans distribution.

	How many times in last 5 years?
Informal lending	1
Friends	59
Relatives	69
Inter-linkage	12
Total times	141
Average informal loan (USD)	286
Minimum – Maximum (USD)	20 - 10538

5.1.5 Second hypothesis: High interest rates discourage farmers from applying for loans.

To test whether high interest rates discourage farmers from taking loans, I asked respondents to rank the reasons for not applying for credit.

Ranking of the reasons for not applying for credit: In this sub-section, we asked the head of households, who never applied for loan, to rank their reasons for not applying for loan. Out of 79 households, who did not apply for any loan, 77 households helped to fill out this section and 2 households kept on insisting that remittances are enough to meet basic needs of life and in case of emergency, they borrow from friends and relatives but would not talk more about this section. The respondents were given 9 possible reasons and were also allowed to give any other reason apart from stated reasons. The ranking was based on the following principle i.e. Rank1= most likely to Rank9 = most unlikely. To get average score earned by each reason, we calculated mean values of each reason. We found that '*borrow from friends and relatives*' was the most likely reason and' *I don't know about such loans'* was found to be most unlike reason for not taking loans from formal sources. This also shows that the respondents were well aware of the possibility of loaning from banks. The second most common reason was high rate of interest. The ranking of the other reasons is shown in Table 7.

Table 7: Ranking of reasons.

Reasons	***Rankings***	***Points***
Borrow from relatives and friends	1	2.94
Interest rate is high	2	3.37
Fear of payback failure	3	3.50
Sell my asset	4	3.87
It is against religion	5	4.66
Not sure about loan approval	6	5.80
Don't have much land for	7	6.03

collateral		
Get loan from moneylenders	8	8.03
I don't know about such loans	9	8.06

Choice of preference:

In the last sub-section of the questionnaire, we wanted to examine true preferences of the respondents who had never applied for loans. We gave the 79 respondents who had never applied for loans different hypothetical packages and asked them to choose one of two different packages. There were 4 different packages in total, and by comparing each offer with all other packages, I created 6 different scenarios. These packages are different when it comes to interest rate, installment, collateral and group lending as shown in Table 8 and 9.

Table 8: Detail of all packages.

Packages	***Amount (USD)***	***Interest rate (%)***	***Payback period (Years)***	***Collateral (Acres of land)***	***Payback installment (USD per year)***	***Group lending (Number of persons)***
Package 1	2000	10	2	5	-	-
Package 2	2000	17	2	3	-	-
Package 3	2000	10	2	3	1000	-
Package 4	2000	10	2	-	-	4

Table 9: Scenarios.

Scenarios	**Packages**	**Your preferences**
Scenario 1	Package 1 vs Package 2	
Scenario 2	Package 1 vs Package 3	
Scenario 3	Package 1 vs Package 4	

Scenario 4	Package 2 vs Package 3	
Scenario 5	Package 2 vs Package 4	
Scenario 6	Package 3 vs Package 4	

The total loan amount (2000 USD) and payback period was the same in all packages except in package 3, where borrowers were supposed to return half of the amount with interest to the bank after one year and the remaining half in the next year.

Before discussing the results, it is worth mentioning that 67 households helped to complete this sub-section out of 79 households. Among those who did not cooperate in this part, a majority of them failed to understand the hypothetical nature of the questions and instead they got scared and asked questions like whether the interviewer was from the tax office or a journalist? Others claimed that they were against all types of banks. They argued that they had never felt any need to take loan from a bank and that they would not fill out this part.

Scenario 1: Package 1 vs Package 2

In case of scenario 1 (shown in Table 10.1), 57 (85.07%) households elected to choose package 1 rather than package 2. Here I compared low interest rate with low collateral. Respondents showed that they would like to take the loan which would offer low interest rate rather than less collateral. To test whether respondents were indifferent between two packages, I tested hypothetical mean value (i.e. 1.5) of scenario 1 against actual mean. How did I get 1.5 as hypothetical mean value? We know that in this scenario, respondents were asked to choose either 1 or 2. So if we add all 1s and 2s and divide them by total number of observations, respondents to be significantly indifferent, mean value should be equal or very near to 1.5 (i.e. 1+2=3/2=1.5). The test for significance of this frequency distribution showed that mean value of scenario1 was statistically significantly smaller than 1.5. The p-values for two-tailed and left tailed test were significant (shown in result below). Meaning that majority of respondents were not indifferent, but significantly chose package 1 against package 2.

Table 10.1: Scenario 1.

Package 1 vs. Package 2	***Frequency***	***Percentage***
1	57	85.07
2	10	14.93

T-test for scenario 1.

```
. ttest sce1=1.5

One-sample t test

Variable |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
    sce1 |      67    1.149254    .0438622    .3590278     1.06168    1.236827

    mean = mean(sce1)                                         t =  -7.9965
Ho: mean = 1.5                                  degrees of freedom =       66

   Ha: mean < 1.5               Ha: mean != 1.5                 Ha: mean > 1.5
 Pr(T < t) = 0.0000         Pr(|T| > |t|) = 0.0000          Pr(T > t) = 1.0000
```

Scenario 2: Package 1 vs Package 3

In scenario 2, interest rate is same (at 10%) in both packages. Package 3 offered loan at lower collateral (3 acres of land) but contained an additional condition of installment. Meaning that borrower had to return half the loan with interest after one year. 56.72% of households chose package 1 against package 3 (chosen by 43.28%). Here I compared high collateral (package 1) with installment condition (package 3). To test whether respondents were indifferent between two packages, I tested hypothetical mean value of 2 of scenario 2 (i.e. 1+3=4/2=2) against actual mean. The test for significance showed that I could not reject the null hypothesis that hypothetical mean is equal to actual sample mean. Meaning that respondents were indifferent between the two packages.

Table 10.2: Scenario 2.

Package 1 vs. Package 3	*Frequency*	*Percentage*
1	38	56.72
3	29	43.28

T-test for scenario 2.

```
. ttest sce2=2

One-sample t test

------------------------------------------------------------------------------
Variable |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
    sce2 |      67    1.865672    .1219759    .9984158    1.622139    2.109204
------------------------------------------------------------------------------
    mean = mean(sce2)                                             t =  -1.1013
Ho: mean = 2                                     degrees of freedom =       66

    Ha: mean < 2                 Ha: mean != 2                 Ha: mean > 2
 Pr(T < t) = 0.1374         Pr(|T| > |t|) = 0.2748          Pr(T > t) = 0.8626
```

Scenario 3: Package 1 vs Package 4

In this scenario I compared high collateral with group lending, given same interest rate in both packages and no collateral in group lending. Respondents were informed about basic requirements of group lending e.g. at least 4 people would be required to make a group and could apply for loan, each member of the group was guarantor of other 3 people so if any member defaulted, other 3 members would repay defaulter's loan. Frequency distribution showed that 28 respondents chose package 1 and rest 39 chose package 4. To check significance, I tested null hypothesis that hypothetical mean of 2.5 was equal to sample mean and I found that p-value was greater than 0.05, which meant that the null hypothesis could not be rejected. It suggests that given the same interest rate in group lending as in other kinds of loans, group lending might not be able to increase credit participation in this area.

Table 10.3: Scenario 3.

Package 1 vs. Package 4	*Frequency*	*Percentage*
1	28	41.79
4	39	58.21

T-test for scenario 3.

```
. ttest sce3=2.5

One-sample t test

Variable |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
    sce3 |      67    2.746269    .1821318    1.490813    2.382631    3.109907

    mean = mean(sce3)                                         t =   1.3521
Ho: mean = 2.5                                  degrees of freedom =       66

   Ha: mean < 2.5               Ha: mean != 2.5                 Ha: mean > 2.5
 Pr(T < t) = 0.9095         Pr(|T| > |t|) = 0.1809          Pr(T > t) = 0.0905
```

Scenario 4: Package 2 vs Package 3

In scenario 4, I compared high interest rate (17%) with low interest rate (10%) but additional installment condition (i.e. return half amount after one year). 68.66% of respondents chose package 3 against package 2 (31.34% chose it). The T-test showed that the null hypothesis was rejected that hypothetical mean (i.e. 2.5) was equal to the sample mean. The right-tailed test was also significant and therefore I can conclude that actual sample mean was greater than 2.5, as shown in test below. It clearly showed that the majority of households preferred loans which offered lower interest rate even when they had to pay back half of the amount after one year instead of high interest rate loans which had to be returned after 2 years. This scenario shows the importance of low interest rate for respondents, while making decisions regarding participation in the credit market.

Table 10.4: Scenario 4.

Package 2 vs. Package 3	***Frequency***	***Percentage***
2	21	31.34
3	46	68.66

T-test for scenario 4.

```
. ttest sce4=2.5

One-sample t test

Variable |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
    sce4 |      67    2.686567    .0571007    .4673898    2.572562    2.800572
---------+--------------------------------------------------------------------
    mean = mean(sce4)                                         t =   3.2673
Ho: mean = 2.5                                 degrees of freedom =       66

   Ha: mean < 2.5               Ha: mean != 2.5                 Ha: mean > 2.5
 Pr(T < t) = 0.9991         Pr(|T| > |t|) = 0.0017          Pr(T > t) = 0.0009
```

Scenario 5: Package 2 vs Package 4

Similarly, in scenario 5, package 2 had high interest rate (17%) with 3 acres of land as collateral and package 4 offered low interest rate (10%) with no collateral (group lending). Result showed that 77.61% preferred package 4 and remaining (22.39%) preferred package 2. It was a slightly easier choice for respondents compared to scenarios 2 & 3. But it is difficult to tell whether low interest rate or no collateral was the most important factor when choosing. We have already discussed this in scenario 2 and 3 where we saw that when interest rate was same in two offers, respondents were almost equally divided. It implies that interest rate could be the main factor determining the choices of respondents.

Table 10.5: Scenario 5.

Package 2 vs. Package 4	*Frequency*	*Percentage*
2	15	22.39
4	52	77.61

T-test for scenario 5:

```
One-sample t test
------------------------------------------------------------------------------
Variable |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
    sce5 |      67    3.552239    .1026196    .839978    3.347352    3.757126
------------------------------------------------------------------------------
    mean = mean(sce5)                                             t =   5.3814
Ho: mean = 3                                     degrees of freedom =       66

    Ha: mean < 3                 Ha: mean != 3                 Ha: mean > 3
 Pr(T < t) = 1.0000         Pr(|T| > |t|) = 0.0000          Pr(T > t) = 0.0000
```

Scenario 6: Package 3 vs Package 4

In scenario 6, 25 households (37.31%) preferred to choose package 3 and majority (62.69%) of them chose package 4. Package 3 demanded collateral of 3 acres of land and an additional condition of installment repayment after one year. Package 4 had no collateral requirement other than guarantee of each member in the group towards other 3 members. It showed that when it came to make a choice between returning half amount after one year and group lending, the majority preferred group lending.

Another important point is that in these scenarios, it seems like collateral requirement becomes less important, which could be due to the reason that the collateral requirement is small relative to land holdings in these areas. Because in scenario 3, where comparison was between collateral and group lending, we saw that 41.79% of households chose collateral and 58.21% chose group lending. Keep in mind that package 3 even demanded less collateral (i.e. 3 acres) than package 1.

So it implied that returning half amount after one year was more difficult for households than becoming guarantor of other members in group lending (see Table 10.6). The succeeding T-test also verified the statistical significance of frequency distribution of this scenario.

Table 10.6: Scenario 6.

Package 3 vs. Package 4	***Frequency***	***Percentage***
3	25	37.31
4	42	62.69

T-test for scenario 6:

```
. ttest sce6=3.5

One-sample t test

Variable |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
    sce6 |      67    3.626866    .0595316    .4872875    3.508007    3.745724
---------+--------------------------------------------------------------------
    mean = mean(sce6)                                             t =   2.1311
Ho: mean = 3.5                                  degrees of freedom =       66

   Ha: mean < 3.5               Ha: mean != 3.5                 Ha: mean > 3.5
 Pr(T < t) = 0.9816         Pr(|T| > |t|) = 0.0368          Pr(T > t) = 0.0184
```

Moreover, I also wanted to know whether households who got loans would like to take more loans from banks in future. Out of 43, 17 (38.6%) households responded ‘yes’ and remaining 26 (61.40%) households said ‘no’. Out of these 26 respondents, 20 (77%) households gave high interest rate as the main reason. The second most common reason (4 respondents) was ‘I don’t need formal loans anymore’.

While concluding this sub-section, I can say that households give first priority to low interest rate. The second important thing is installment condition. It implies that returning half loan after one year is more difficult for them than returning full amount after two years. This could be because farmers usually do not have other sources of income and they do not earn and save much

from agriculture so that they could repay loan. Another reason could be that their discount rates are higher than the interest rates, so that paying back after two years give them a higher net present value than paying back after one year. The collateral condition is the third in the list of priorities. They prefer smaller collateral conditions in the requirements list for a loan. Group lending is the least important. If it is correct that group lending is not an important factor for the households, this requires further research by policy makers to understand the reasons behind this. There might be social and cultural factors involved, which is beyond scope of this research.

5.1.6 Third hypothesis: High transaction costs result in less demand for loans.

It was also hypothesized that high transaction costs result in less demand for loans. Apart from stated reasons in the questionnaire; 20 respondents out of 79 also stated other reasons, such as corruption, remittances and no need (to get loan). Not surprisingly, 40% described corruption as one reason for them not to apply for any loan. Other reasons included difficult to find guarantor who is acceptable to banks, lengthy and difficult procedural works and administrative charges. This shows a possible impact of transaction costs on the households' decision.

5.1.7 Fourth hypothesis: Loans are taken for consumption smoothing rather than production activities.

The data showed that out of the 43 households who took formal loans, 20 (46.52%) used their loans for consumption purposes such as marriage of son or daughter, house construction or renovation, to repay private and formal loans etc.. The other 23 (53.48%) households used the loans for agricultural purposes like to purchase seeds, fertilizers, tractor, fuel etc. as shown in Table 11.1.

Table 11.1: Loan spending distribution.

Total formal loans got (Agricultural + Non-agricultural loans)	***Loans spent on agricultural activities***	***Loans spent on non-agricultural activities***
43	23	20

In table 11.2, I decomposed the loans further. Out of the 43 households who received formal loans, 37 households applied for agricultural loans from different banks but only 24 respondents (64.86%) used these loans for agricultural purposes. The remaining 13 households spent these loans on consumption purposes. 6 households out of 43 households applied for loans for other purposes than agriculture. All of these loans were spent on activities for which they were taken.

Table 11.2. Further decomposition of Loan spending distribution.

No. of agricultural Loans.	***No. of households used loan on agricultural activities.***	***Percentage***	***No. of non-agricultural loans.***	***No. of households used loan on non-agricultural activities.***	***Percentage***
37	24	64.86%	6	6	100%

My data did not verify the hypothesis that the majority of the loans were for consumption smoothing. On the contrary, I found that 54.55% were spent on production activities while 45.45% of respondents spent their loans on non-agricultural activities.

5.2 Econometric Analysis:

In this chapter, I will report the regression results on individual demand for credit. I will test the following hypotheses in this chapter:

5. Higher educated households demand more credit.
6. Large family size tends to increase demand for loans.
7. Income and demand for credits have a negative correlation.

I will test both total income and three different decomposed income variables; livestock income; agricultural production income; and other sources of income. The reason for decomposing

income is to elicit a correlation between income and demand for credit. For instance, it could be possible that demand for credit might have a positive relation with production income and negative or no relation with livestock income, which could result in no clear significant relationship between demand for credit and overall income. I will also look at demand for credits in six different villages (or locations) of the same district.

Following table 12 shows summary of variables used in probit model.

Table 12: Summary

Variable	Obs	Mean	Std. Dev.	Min	Max
Got_loan	123	.3577236	.4812906	0	1
Age	123	54.21138	14.32941	25	98
Edu	123	6.95935	5.563933	0	20
T_Mem	123	6.130081	2.512132	2	16
Live_Y	123	101699.2	150745.5	0	889000
LiveY_sq	123	3.29e+10	9.73e+10	0	7.90e+11
T_Assets_v~e	123	606011	904131.3	0	5466500
Prod_Y	123	747546.2	2069128	0	1.96e+07
ProdY_sq	123	4.81e+12	3.57e+13	0	3.85e+14
Oth_sou_Y	123	624192.4	765089.2	0	4136000
OthY_sq	123	9.70e+11	2.41e+12	0	1.71e+13
lakh	123	.2195122	.4156091	0	1
shah	123	.1788618	.384804	0	1
bads	123	.1707317	.3778133	0	1
wara	123	.1626016	.370511	0	1
chak	123	.1300813	.3377687	0	1

The overall probit model was statistically significant at 95% of confidence interval, showing that at least one of the regression coefficients was not equal to zero (Table 13).

Table 13: Stata results

```
Iteration 0:   log likelihood = -80.207951
Iteration 1:   log likelihood = -66.383425
Iteration 2:   log likelihood = -66.060185
Iteration 3:   log likelihood = -66.058765
Iteration 4:   log likelihood = -66.058757
Iteration 5:   log likelihood = -66.058757

Probit regression                                 Number of obs   =        123
                                                  LR chi2(12)     =      28.30
                                                  Prob > chi2     =     0.0050
Log likelihood = -66.058757                       Pseudo R2       =     0.1764
```

Got_loan	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
Age	.0027861	.0115131	0.24	0.809	-.0197792	.0253515
Edu	.0739946	.0284053	2.60	0.009	.0183213	.129668
T_Mem	.0784539	.0601792	1.30	0.192	-.0394953	.1964031
Live_Y	-9.26e-07	2.08e-06	-0.45	0.656	-4.99e-06	3.14e-06
LiveY_sq	9.32e-13	3.43e-12	0.27	0.786	-5.79e-12	7.66e-12
T_Assets_value	-5.14e-08	2.22e-07	-0.23	0.817	-4.87e-07	3.84e-07
Prod_Y	3.20e-07	2.39e-07	1.34	0.181	-1.49e-07	7.90e-07
ProdY_sq	-1.91e-14	1.86e-14	-1.03	0.303	-5.55e-14	1.73e-14
Oth_sou_Y	-1.22e-07	5.12e-07	-0.24	0.811	-1.13e-06	8.81e-07
OthY_sq	4.24e-14	1.72e-13	0.25	0.806	-2.96e-13	3.80e-13
lakh	.947805	.4939645	1.92	0.055	-.0203476	1.915958
shah	.7268329	.5093706	1.43	0.154	-.2715151	1.725181
bads	.8474189	.501578	1.69	0.091	-.1356558	1.830494
wara	.4655901	.5432051	0.86	0.391	-.5990723	1.530253
chak	-.8992208	.6413299	-1.40	0.161	-2.156204	.3577628
_cons	-2.064577	.8331172	-2.48	0.013	-3.697457	-.4316974

```
. test  Edu T_Mem Live_Y Prod_Y Oth_sou_Y T_Assets_value lakh shah bads wara chak

 ( 1)  [Got_loan]Edu = 0
 ( 2)  [Got_loan]T_Mem = 0
 ( 3)  [Got_loan]Live_Y = 0
 ( 4)  [Got_loan]Prod_Y = 0
 ( 5)  [Got_loan]Oth_sou_Y = 0
 ( 6)  [Got_loan]T_Assets_value = 0
 ( 7)  [Got_loan]lakh = 0
 ( 8)  [Got_loan]shah = 0
 ( 9)  [Got_loan]bads = 0
 (10)  [Got_loan]wara = 0
 (11)  [Got_loan]chak = 0

           chi2( 11) =   21.05
         Prob > chi2 =    0.0329
```

5.2.1 Marginal effects:

The marginal effects measure the ceteris paribus effects of changes in the regressors affecting the features of the outcome variable. I need to look at marginal effects of all regressors, that is, how much the (conditional) probability of the demand for credit would change when one unit of a regressor is changed, holding other regressors constant (Table 14).

Table 14: Marginal effects.

	Delta-method dy/dx	Std. Err.	z	P>|z|	[95% Conf.	Interval]
Age	.000847	.0034978	0.24	0.809	-.0060085	.0077024
Edu	.0224942	.0078857	2.85	0.004	.0070386	.0379498
T_Mem	.0238498	.0178972	1.33	0.183	-.011228	.0589276
Live_Y	-2.81e-07	6.29e-07	-0.45	0.655	-1.51e-06	9.52e-07
LiveY_sq	2.83e-13	1.04e-12	0.27	0.786	-1.76e-12	2.33e-12
T_Assets_value	-1.56e-08	6.75e-08	-0.23	0.817	-1.48e-07	1.17e-07
Prod_Y	9.74e-08	7.13e-08	1.37	0.172	-4.23e-08	2.37e-07
ProdY_sq	-5.81e-15	5.58e-15	-1.04	0.298	-1.67e-14	5.13e-15
Oth_sou_Y	-3.72e-08	1.55e-07	-0.24	0.811	-3.42e-07	2.68e-07
OthY_sq	1.29e-14	5.24e-14	0.25	0.806	-8.98e-14	1.16e-13
lakh	.2881309	.1430919	2.01	0.044	.0076758	.5685859
shah	.2209558	.1506164	1.47	0.142	-.074247	.5161585
bads	.2576137	.1468548	1.75	0.079	-.0302165	.5454438
wara	.1415385	.1635748	0.87	0.387	-.1790622	.4621391
chak	-.2733614	.1920579	-1.42	0.155	-.6497879	.1030652

5.2.2 Fifth hypothesis: Higher educated households demand more credit

I found a significant positive impact of *education* on demand for credit. However, interpretation of the coefficients in probit regression is not as straightforward as the interpretations of coefficients in linear regression or logit regression. The increase in probability attributed to a one-unit increase in a given predictor is dependent both on the values of the other predictors and the starting value of the given predictors. The stata results in Table 13 showed that increase in years of schooling would increase the predicted probability of demand for credit (with 0.009 p-value), as expected in table 3. The marginal effects in table 14 showed that one unit change in the education variable increases the probability of demand for credit by 0.022. This might be because higher education reduces the costs of gathering information and makes it easier to

understand loan regulations. It could also imply that higher educated respondents had higher income to repay loans.

5.2.3 Sixth hypothesis: A large family size tends to increase demands for loans.

Surprisingly, *household size* showed no significant impact on the demand for credit. The twoway graph showing demand for credit (Got_loan) on the y-axis and households size (T_Mem) on the x-axis revealed a positive pattern in the data (Figure 4). The shaded area above and below the fitted values prediction line is the confidence interval area. The closer this shaded area is to the prediction line; the more statistically significant is the coefficient. Figure 4 shows that the relation between demand for credit and household size is positive, but it is not significant because the data points are not close enough to the prediction line. A small data set could be the reason for the insignificance.

It was plausible to use consumer/worker ratio variable instead of household size variable in line with the intuition that higher consumer/worker ratio could lead to increase in demand for credit. The result showed that (like household size) consumer/worker ratio also did not affect the demand for credit.

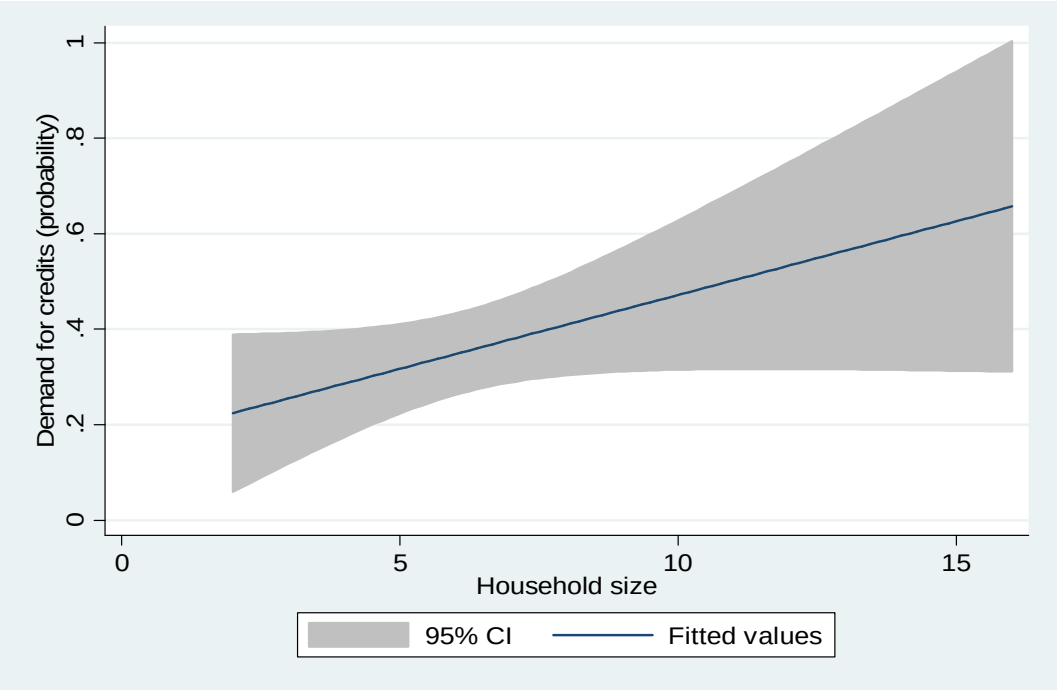

Figure 4: Households size and demand for credit.

5.2.4 Seventh hypothesis: Income and demand for credits have a negative correlation.

All (decomposed) incomes:

The probit model showed insignificant relationships between all sources of income and demand for credit. I also expected a possible non-linear relationships between all income variables and demand for credit. Because, it was plausible that increase in income could increase demand for credit first as farmer might want to enhance agricultural production or to start a small business along with agricultural farming. After a period of time, the farmer could be self-reliant and need no further financial assistance, which might result in decrease in demand for credits with further increase in income. I generated variables by taking square of all sources of income variables (i.e. LiveY_sq, ProdY_sq and OthY_sq). When included in the probit model, these variables were also insignificant.

Livestock income:

However, the quadratic fitted values graph between demand for credit and (squared) *livestock annual income* variable showed a convex relation. This could imply that increase in livestock income first lead to a decrease in demand for credit, then after a certain point an increase in livestock income would increase demand for credit. However, I cannot rely on this result because of insignificance of this variable. Again, a small data set could be the reason for the insignificance. The intuition behind this convexity could be that when livestock income is increasing, farmers needs for loans decrease. After a certain amount of increase in livestock income, they might think about taking loans for enhancement of their livestock or to start other production activities along with livestock farming.

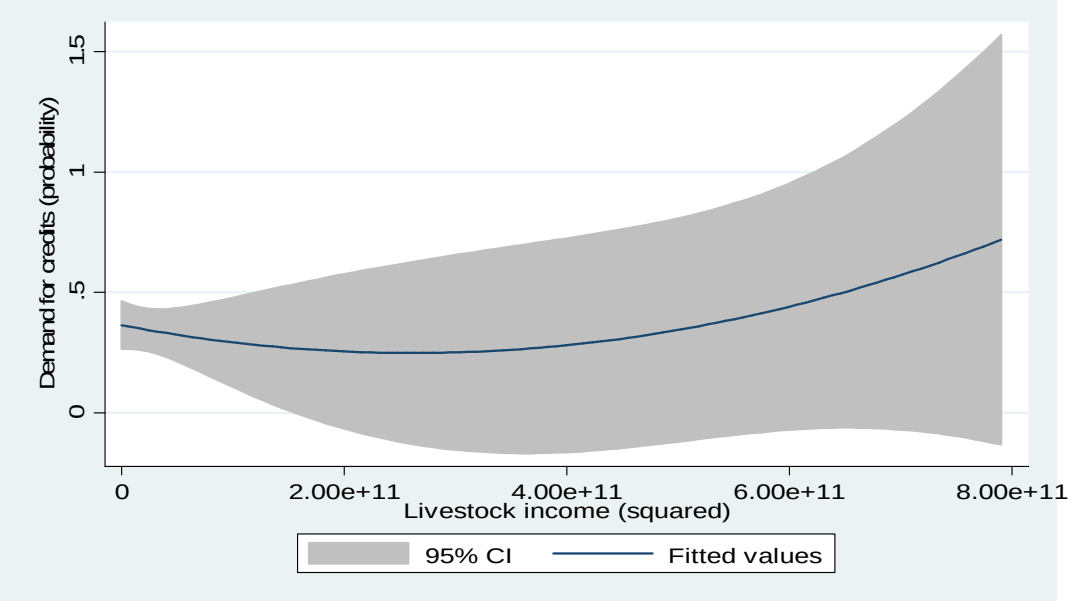

Figure 5: Quadratic fitted-values graph between (squared) annual livestock income and demand for credit.

Production income:

In the case of *agricultural production income*, the quadratic fitted values graph (Figure 6) showed a concave relationship between demand for credit and agricultural production income. The intuition could be that at lower level of agricultural production income credit is needed to enhance production activities for instance by renting more land or buying agricultural inputs such as improved seed and fertilizer. At higher levels of agricultural production income, they might not need as much credits anymore. This could be because of management problems of big lands, unavailability of more lands to rent etc. Again, since the coefficient on this variable was insignificant, I cannot trust this result either.

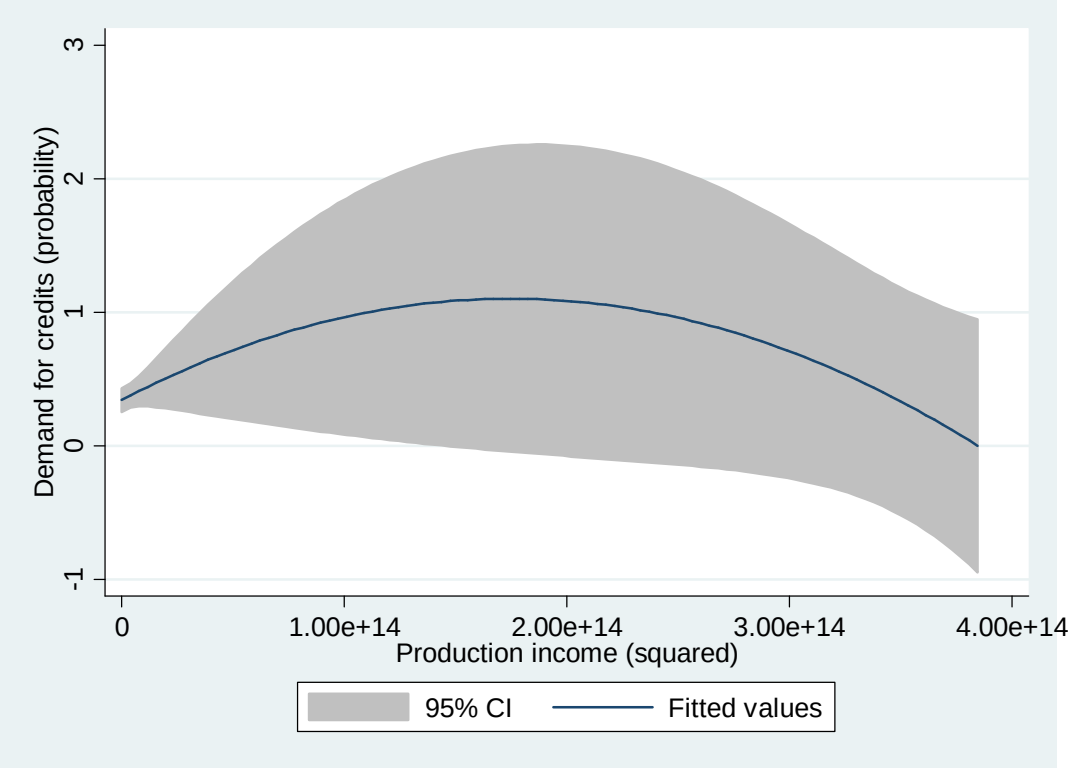

Figure 6: Quadratic fitted-values graph between (squared) annual (agricultural) production income and demand for credit.

Other sources of income:

Like the livestock income variable, the quadratic fitted *other sources of income* variable also showed a convex relationship with demand for credit (Figure 7). Other sources of income included *selling of milk, salary, business, land rents, remittances and pension. The reasons behind this convex relationship could be the same as in the case of livestock income. For instance, if a household's income increased due to job, promotion in job, land rents, remittances etc. then at first demand for credit could decrease. After sometime, when they have savings in the banks, it might be possible that they could take loans by relying on these savings, which would result in increased demand for credit.

---

*It is worth mentioning here that livestock income was the last year income generated from selling of small and big animals. Selling of milk was categorized as a small business (i.e. other source of income).

It implies that the relationship between demand for credit and all incomes also depends on other things e.g. availability of land for rent, rents on lands, different crops and livestock markets, etc., but these elements are beyond the scope of the current study.

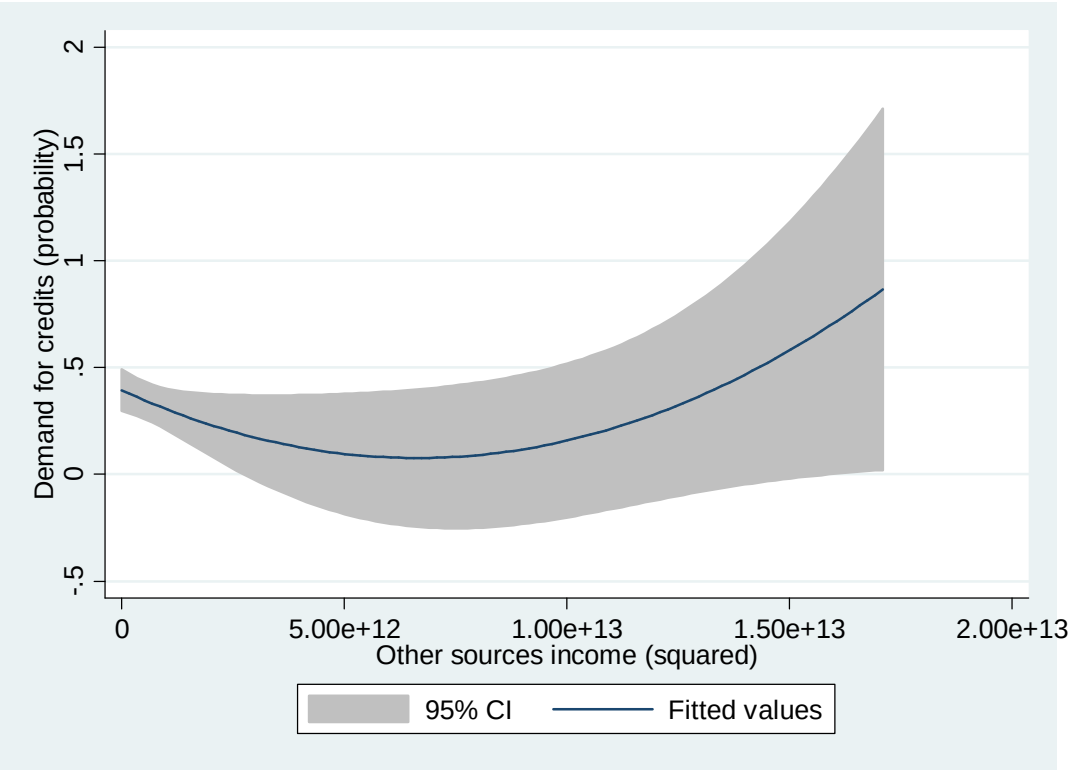

Figure 7: Quadratic fitted-values graph between (squared) annual other sources of income and demand for credit.

Total income:

In Table 15 I ran the same regression, but with total income instead of decomposed income sources. The regression analysis did not yield any significant results for the income variables. Figure 8 shows a concave relationship between demand for credit and total income, which might imply that increase in total income would eventually decrease demand for credit (fig. 8). It might imply that at first when income increased, farmers demanded credits to enhance agricultural activities like taking land on rent, buying of new livestock or establishing a small business, and then afterwards they might not need any loan for financial support. However, this result is not significant, as can be seen by the heavy shaded area around the fitted line.

Table 15: Probit model with total income.

Probit regression

Number of obs	=	123
LR chi2(10)	=	26.60
Prob > chi2	=	0.0030
Pseudo R2	=	0.1658

Log likelihood = -66.908959

Got_loan	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
Age	.0020704	.0110039	0.19	0.851	-.0194969	.0236376
Edu	.0732032	.0282085	2.60	0.009	.0179156	.1284909
T_Mem	.0810273	.0579864	1.40	0.162	-.0326239	.1946786
T_Assets_value	-3.64e-08	2.19e-07	-0.17	0.868	-4.66e-07	3.93e-07
Total_Y	1.54e-07	1.69e-07	0.92	0.360	-1.76e-07	4.85e-07
TotalY_sq	-9.75e-15	1.40e-14	-0.70	0.487	-3.72e-14	1.77e-14
lakh	.9853027	.4765527	2.07	0.039	.0512766	1.919329
shah	.7272286	.480091	1.51	0.130	-.2137325	1.66819
bads	.907113	.4784342	1.90	0.058	-.0306008	1.844827
wara	.6078988	.5156215	1.18	0.238	-.4027008	1.618498
chak	-.8337853	.6295006	-1.32	0.185	-2.067584	.4000132
_cons	-2.200826	.8197308	-2.68	0.007	-3.807469	-.5941832

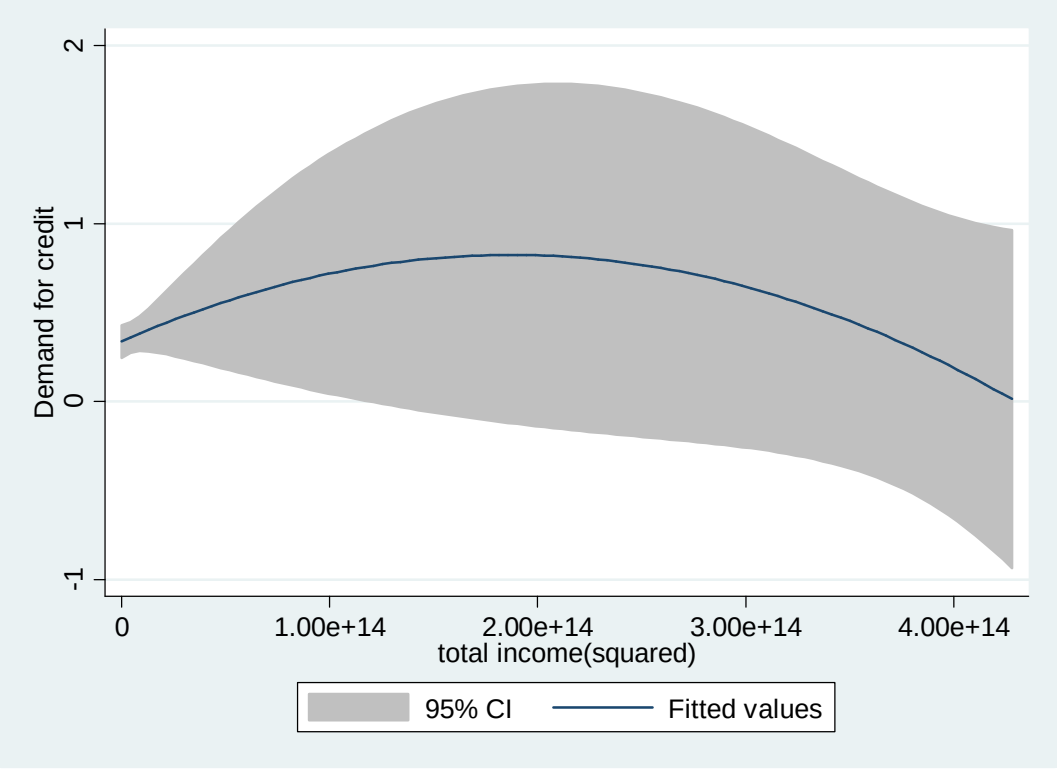

Fig 8: Quadratic fitted-values graph between (squared) annual total income and demand for credit.

Location (villages):

In case of location (villages) dummies, being resident of village *Lakhnewala* compared with being resident of Kang Sahali, would have higher probability of taking a loan by 0.29 (with 0.04 p-values) which is statistically significant at 95% of confidence interval. Local customs of the people of this area could be a factor that encourages people to take loan from banks. Other factors could be relatively high literacy rate, better roads and transportation system, convenient access to and short distance to banks etc. Also residents of *Badshahpur* village had 0.26 higher probability of taking loans than residents of Kang sahali, with p-values 0.08. This dummy coefficient was statistically significant at 90% of confidence interval. Surprisingly, being resident of Shahidanwali did not show any significant effect on demand for credit. Although Shahidanwali is situated on the same road connecting Lakhnewala to the main city and it was the nearest village to Lakhnewala. Low literacy rate and higher assets value could be reasons for low demand for credit in this village. The other two villages, *Wara Alam Shah* and *Chak Abdullah* did not show any significant difference from Kang Sahali. These two villages are situated relatively far away from a main city and also village Wara Alam Shah has a relatively low literacy rate. This could be a reason for less demand for credits. Since Kang Sahali is a relatively well established village compared to the other five villages, and is also situated on the Grand Trunk road which connected two districts. Being relatively high income earners as shown in table 16, the majority of the households were involved in non-agricultural activities, and also access to remittances could be a reason for lower demand for credits.

Table 16: Characteristics of villages.

	Lakh	***Shah***	***Bads***	***Wara***	***Chak***	***Kang***
Obs.	27	22	21	20	16	17
Household size (mean)	7.6	5.22	5.95	5.4	6.5	5.64
Edu (HHH)	11	10	12	9	11	11

≥10th grade						
Assets value. USD (mean)	5114.38	5837.72	4767.14	2644.20	5750.81	13756.94
Total income. USD(mean)	13159.02	10508.57	15385.03	6487.18	16317.49	30113.95

5.3.1 Test for Multicollinearity:

Multicollinearity is the existence of a linear relationship between some or several explanatory variables of a regression model. Apart from multicollinearity tests in stata, there are some signs of possible existence of multicollinearity for example if R-square is very high and few or none of the regression coefficients are statistically significant. The primary concern is that as the degree of multicollinearity increases, the regression model estimates of the coefficients become unstable and the standard errors for the coefficients can get wildly inflated (Jelstad, 2001). The "vif" command is used in stata to check for multicollinearity. VIF stands for variance inflation factor. This command can only be used after ordinary least square (OLS) regression is run. I ran the regression quietly. The VIF command result is given below (see Table 17.1a). Similarly I also applied same command to test for multicollinearity in OLS model with total income instead of separate income variables (see Table 17.1b).

Table 17.1a: Multicollinearity test (with squared income variables)

```
. vif
```

Variable	VIF	1/VIF
OthY_sq	9.87	0.101364
Prod_Y	9.75	0.102539
Oth_sou_Y	8.92	0.112116
ProdY_sq	8.68	0.115225
LiveY_sq	6.96	0.143625
Live_Y	5.92	0.169044
lakh	2.54	0.393771
wara	2.51	0.398639
shah	2.41	0.415732
bads	2.21	0.451840
T_Assets_v~e	2.08	0.480491
chak	1.91	0.522614
Age	1.63	0.613838
T_Mem	1.42	0.705595
Edu	1.38	0.726174
Mean VIF	4.55	

Table 17.1b: Multicollinearity test (with squared total income)

```
. vif
```

Variable	VIF	1/VIF
Total_Y	7.07	0.141371
TotalY_sq	5.81	0.172249
lakh	2.37	0.421475
wara	2.22	0.451422
shah	2.15	0.466199
bads	2.04	0.491306
T_Assets_v~e	1.90	0.527191
chak	1.82	0.550472
Age	1.53	0.652071
Edu	1.35	0.741361
T_Mem	1.34	0.748717
Mean VIF	2.69	

As a rule of thumb, a variable whose VIF value is greater than 10 may merit further investigation. Tolerance, defined as 1/VIF, is used to check on the degree of collinearity. A tolerance value lower than 0.1 is comparable to a VIF of 10. It shows that the variable could be considered as a linear combination of other independent variables.

In above result, no variable has VIF value greater than 10 but income variables and their squared variables have considerably higher VIF values. The reason is that income variables and their squared variable measure same thing (i.e. income) so this means that squared variables are redundant here.

So to solve this problem, I did centering of income variables by subtracting the mean of income variables from each value. I called these new variables as “prodymean”, “liveymean” and “othymean”, and then I took square of these new variables. I named these quadratic variables as c1, c2 and c3 respectively. After inclusion in the probit model, the quadratic variables coefficients did not change. (Table 17.2).

Table 17.2: Probit model after centering income variables.

Probit regression — Number of obs = 123
LR chi2(12) = 28.30
Prob > chi2 = 0.0050
Log likelihood = -66.058757 — Pseudo R2 = 0.1764

Got_loan	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
Age	.0027861	.0115131	0.24	0.809	-.0197792	.0253515
Edu	.0739946	.0284053	2.60	0.009	.0183213	.129668
T_Mem	.0784539	.0601792	1.30	0.192	-.0394953	.1964031
Live_Y	-7.36e-07	1.50e-06	-0.49	0.623	-3.67e-06	2.20e-06
c1	9.32e-13	3.43e-12	0.27	0.786	-5.79e-12	7.66e-12
T_Assets_value	-5.14e-08	2.22e-07	-0.23	0.817	-4.87e-07	3.84e-07
Prod_Y	2.92e-07	2.19e-07	1.33	0.182	-1.37e-07	7.20e-07
c2	-1.91e-14	1.86e-14	-1.03	0.303	-5.55e-14	1.73e-14
Oth_sou_Y	-6.95e-08	3.27e-07	-0.21	0.831	-7.10e-07	5.70e-07
c3	4.24e-14	1.72e-13	0.25	0.806	-2.96e-13	3.80e-13
lakh	.947805	.4939645	1.92	0.055	-.0203476	1.915958
shah	.7268329	.5093706	1.43	0.154	-.2715151	1.725181
bads	.8474189	.501578	1.69	0.091	-.1356558	1.830494
wara	.4655901	.5432051	0.86	0.391	-.5990723	1.530253
chak	-.8992208	.6413299	-1.40	0.161	-2.156204	.3577628
_cons	-2.080053	.8303477	-2.51	0.012	-3.707505	-.4526016

Now the VIF values were much better than Table 17.1a.

Table 17.3a: Multicollinearity test after centering income variables.

vif

Variable	VIF	1/VIF
Prod_Y	8.37	0.119495
c2	7.35	0.136145
c3	4.21	0.237725
c1	3.76	0.266104
Oth_sou_Y	3.68	0.271550
Live_Y	3.06	0.326619
lakh	2.54	0.393771
wara	2.51	0.398639
shah	2.41	0.415732
bads	2.21	0.451840
_Assets_v~e	2.08	0.480491
chak	1.91	0.522614
Age	1.63	0.613838
T_Mem	1.42	0.705595
Edu	1.38	0.726174
Mean VIF	3.23	

Similarly, after centering of total income variable, I called this new variable ‘c4’. I ran OLS regression quietly and tested it for multicollinearity.

Table 17.3b: Multicollinearity test after centering total income.

. vif

Variable	VIF	1/VIF
Total_Y	5.37	0.186100
c4	4.21	0.237628
lakh	2.37	0.421475
wara	2.22	0.451422
shah	2.15	0.466199
bads	2.04	0.491306
T_Assets_v~e	1.90	0.527191
chak	1.82	0.550472
Age	1.53	0.652071
Edu	1.35	0.741361
T_Mem	1.34	0.748717
Mean VIF	2.39	

These VIF values were even better than Table 17.1b.

It implied that there was no possibility of multicollinearity among independent variables.

5.3.2 Endogeneity:

Endogeneity refers to the fact that an independent variable included in the model is correlated with unobservables relegated to the error term. Endogeneity can arise as a result of measurement error, autoregression with autocorrelated errors, simultaneity and omitted variables (Reichstein nd).

It is plausible that I might have possible endogeneity problem in my data due to following variables:

Education

I suspect that education variable could be an endogenous variable. It could be correlated with caste of respondent (because high caste people could be more educated than low caste people), availability of school facility in a village, level of educational institution (i.e. school, college or university) near villages, tuition fees difference between private and government schools and availability of transport facilities. These factors might have no direct relationship with demand for credit but these factors could influence level of education of a head of household. For example, more people would be highly educated in a village due to easy access to school, college and university.

Livestock income:

Livestock income could also be endogenous variable because following factors could influence income from livestock; types of animals, animals' mortality rate, proper vaccinations, distance from livestock market and structure of livestock market (monopoly, oligopoly or competitive). It is plausible that these factors might not have direct relation with demand for credit, but would possibly affect livestock income.

Production income:

In case of agricultural production income, factors such as area under cultivation, quality of seed, quality of soil, type of crop (cash crop, food crop or pasture crop), irrigation facility and social

contact with wholesaler (who buys crops from farmers) could possibly influence production income.

Other sources of income:

The other source of income includes; land rents, selling of milk, job, labor, pension, remittances and business income. The factors such as location of rented out land (high rent on land near road or canal), selling of high or low fat milk, remittances from different countries and years in abroad might not have direct impact on demand for credit but could possibly influence the income from other sources.

Due to lack of information, I could not use any variable as an instrumental variable for education, livestock income and other sources of income to solve for possible endogeneity problem. But I have shown an example to illustrate how I could have solved endogeneity problem in case of production income.

To eradicate endogeneity, there is no perfect complete solution. The possible solutions are; do nothing and accept endogeneity, find a suitable proxy for the unobserved - which then is not unobserved anymore or apply instrumental variable two stage least square regression (Antonakis et al, 2014). In my case, I would have used an instrumental variable probit model because ivprobit model is more appropriate in case of continuous endogenous variable (e.g. other sources of income and production income variables).

Possible solution:

If production income had significant impact on demand for credit (which is not the case in my analysis) then it would have been plausible to think that the variable ‘cultivation’ (area under cultivation) could be used as an instrumental variable, because more area under cultivation means more production income. For the sake of understanding, I tested and found a significant relationship between production income and the cultivation variable. Using cultivation as an instrumental variable, I could eradicate endogeneity as shown by Wald test in the end of stata result (Table 18.1).

Table 18.1: Probit model with endogenous regressor.

Probit model with endogenous regressors — Number of obs = 123
Wald chi2(11) = 23.26
Log likelihood = -1994.4733 — Prob > chi2 = 0.0162

	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
Got_loan						
Prod_Y	2.96e-07	1.72e-07	1.72	0.085	-4.07e-08	6.33e-07
Age	-.0054475	.0105101	-0.52	0.604	-.0260469	.0151519
T_Mem	.086479	.0566368	1.53	0.127	-.0245271	.1974851
Live_Y	2.38e-09	9.45e-07	0.00	0.998	-1.85e-06	1.85e-06
T_Assets_value	-3.48e-07	3.01e-07	-1.16	0.247	-9.39e-07	2.42e-07
Oth_sou_Y	7.60e-08	1.84e-07	0.41	0.679	-2.84e-07	4.36e-07
lakh	.6166269	.4458497	1.38	0.167	-.2572223	1.490476
shah	.6129542	.4617309	1.33	0.184	-.2920217	1.51793
bads	.721762	.479492	1.51	0.132	-.218025	1.661549
wara	.3361076	.4937424	0.68	0.496	-.6316097	1.303825
chak	-.7460202	.5791667	-1.29	0.198	-1.881166	.3891256
_cons	-.9986565	.6167686	-1.62	0.105	-2.207501	.2101877
Prod_Y						
Age	-14266.51	10716.51	-1.33	0.183	-35270.48	6737.464
T_Mem	-7724.184	63491.14	-0.12	0.903	-132164.5	116716.2
Live_Y	-1.520579	1.048549	-1.45	0.147	-3.575697	.5345382
T_Assets_value	1.072104	.1925008	5.57	0.000	.6948095	1.449399
Oth_sou_Y	-.2111114	.2138102	-0.99	0.323	-.6301716	.2079489
lakh	190912.5	510491.5	0.37	0.708	-809632.4	1191457
shah	40516.19	537750.7	0.08	0.940	-1013456	1094488
bads	100267.4	529787.4	0.19	0.850	-938096.8	1138632
wara	231931.8	566750	0.41	0.682	-878877.7	1342741
chak	177269.8	546383.4	0.32	0.746	-893622	1248162
cultivation	63672	15619.8	4.08	0.000	33057.75	94286.25
_cons	442939.7	710265.7	0.62	0.533	-949155.6	1835035
/athrho	-.5330666	.3556465	-1.50	0.134	-1.230121	.1639878
/lnsigma	14.22844	.0637577	223.16	0.000	14.10348	14.3534
rho	-.4877217	.271048			-.8426144	.1625334
sigma	1511240	96353.13			1333714	1712396

Instrumented: Prod_Y
Instruments: Age T_Mem Live_Y T_Assets_value Oth_sou_Y lakh shah bads wara chak cultivation

Wald test of exogeneity (/athrho = 0): chi2(1) = 2.25 Prob > chi2 = 0.1339

The insignificance of the Wald test shows that there is not sufficient information in the sample to reject the null that there is no endogeneity.

This test also showed that it might be appropriate to use regular probit regression.

5.3.3 Why not OLS?

The essence of any prediction model is the fitness function, which quantifies the optimality (goodness or accuracy) of a solution (predictions) (Ratner, 2014). I could have used the Ordinary Least Square (OLS) model in place of binary outcome (probit) model. The stata result of the OLS model is given below in Table 19.

Table 19: OLS regression

Source	SS	df	MS		
Model	5.68282386	15	.378854924	Number of obs =	123
Residual	22.5773387	107	.211003166	F(15, 107) =	1.80
				Prob > F =	0.0444
Total	28.2601626	122	.231640677	R-squared =	0.2011
				Adj R-squared =	0.0891
				Root MSE =	.45935

Got_loan	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
Age	.0003272	.0037043	0.09	0.930	-.0070162	.0076706
Edu	.0224513	.0087713	2.56	0.012	.0050633	.0398393
T_Mem	.0266975	.0197081	1.35	0.178	-.0123714	.0657665
Live_Y	-2.35e-07	6.71e-07	-0.35	0.726	-1.57e-06	1.09e-06
LiveY_sq	1.72e-13	1.13e-12	0.15	0.879	-2.06e-12	2.41e-12
T_Assets_value	-1.02e-08	6.64e-08	-0.15	0.879	-1.42e-07	1.21e-07
Prod_Y	8.27e-08	6.28e-08	1.32	0.191	-4.17e-08	2.07e-07
ProdY_sq	-4.43e-15	3.43e-15	-1.29	0.199	-1.12e-14	2.37e-15
Oth_sou_Y	-5.01e-08	1.62e-07	-0.31	0.758	-3.72e-07	2.72e-07
OthY_sq	1.92e-14	5.42e-14	0.35	0.724	-8.82e-14	1.27e-13
lakh	.299142	.1594621	1.88	0.063	-.016973	.615257
shah	.2271552	.1676171	1.36	0.178	-.1051262	.5594367
bads	.2882378	.1637551	1.76	0.081	-.0363877	.6128633
wara	.1411676	.1777762	0.79	0.429	-.211253	.4935883
chak	-.1926652	.1703157	-1.13	0.260	-.5302963	.1449658
_cons	-.1367676	.2605162	-0.52	0.601	-.6532106	.3796753

The magnitude of coefficients estimates are different than for the probit model, but their respective p-values do not change much, which means that the same regressors are statistically significant in both models (except constant term). The important concern is the difference in standard errors. The OLS model has higher standard errors than the probit model. The reason for this could be that OLS is not restrained to between 0 and 1 as shown in the following figure 9. The figure shows a linear prediction line between demand for credit (on y-axis) and annual

production income (on x-axis). It can be seen that some prediction crossed 0 and 1 of demand for credit variable.

The probit model is always restrained to range between 0 and 1 which makes it more accurate in predicting the probability- that a household would demand credit- than OLS. The OLS measures changes in expected value of demand for credit while probit coefficients measures changes in probabilities. In addition, the probit estimates are more closely aligned with observed probabilities than OLS.

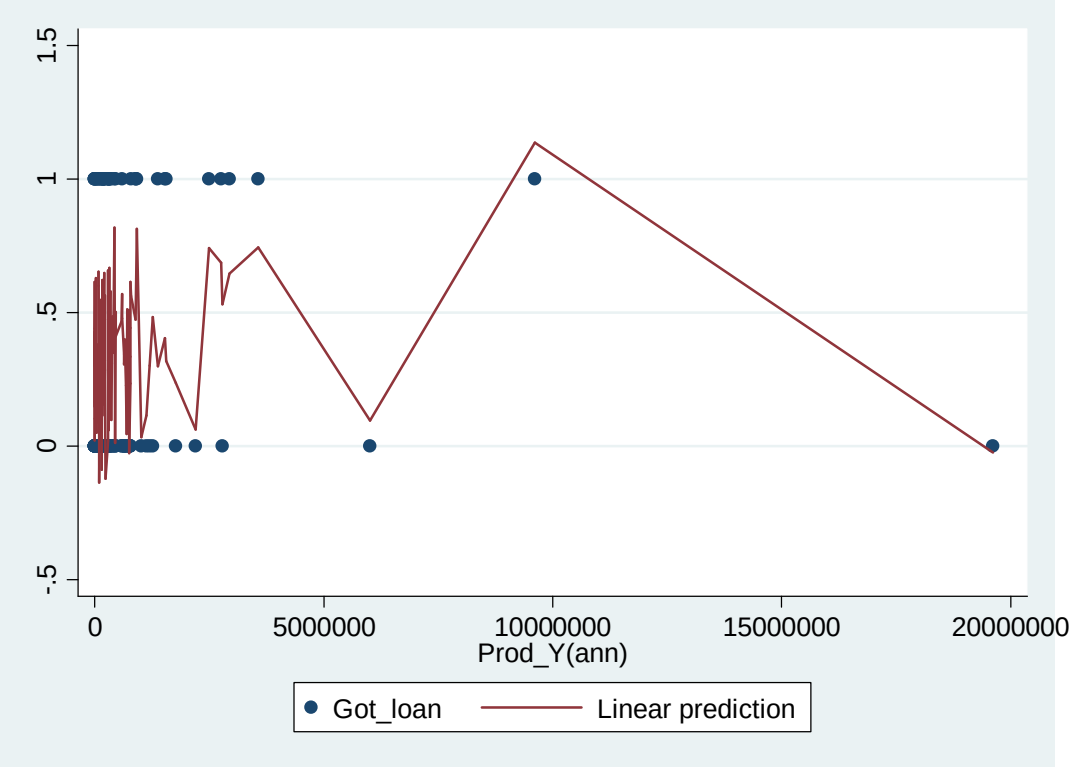

Fig 9: Demand for loan (y-axis) and linear prediction line (x-axis) of production income.

6. CONCLUSION:

In this study, I identified factors and the magnitudes of influence of these factors, on demand for credit among small farmers in Mandi-Bahauddin district in Pakistan. Federal and provincial governments and NGOs are responsible for credit disbursement in Pakistan. Agricultural credit concept is not new, but rather dates back to early 1960s when Agricultural Development Bank (now ZTBL) was established (in 1961) by federal government to meet credit needs of rural areas of Pakistan. Both federal and provincial governments and private organizations are well aware of the importance of credits. For instance, Ali & Alam (in 2010) found that credit disbursements by PPAF decreased the poverty level of borrowers from 6.61% to 3.07%. The success of microcredit partly depends on demand for credit among the general public. In addition, demand for credit depends on many different factors, such as education, households' size, interest rate, collateral, assets, income etc.

To identify the impact of these factors on demand for credit, I conducted interviews with 123 small farmers in six villages of the district Mandi Bahauddin. With the help of this dataset, I tested seven hypotheses, of which three were tested by quantitative method and the other four were tested by qualitative methods.

In the qualitative analysis, I first tested the hypothesis that informal lending crowds out formal lending. Out of 123 households, I found that 79 (64.22%) never applied for any formal loans and 44 (35.78%) households did apply for loans. Out of the 44 households applying for loans, only one household's application was rejected and the other 43 households got the same amount for which they applied. Altogether, the 43 households had gotten formal loans 72 times during the last five years and informal loans 141 times. Furthermore, those who never applied for formal loans ranked '*borrow from friends and relatives*' as the most likely reason for not applying for such loans. Thus, my results indicate that informal lending crowds out formal lending.

Moreover, their second most likely reason for not applying for loan was the high interest rates. To double check, the farmers were presented with six scenarios comprising comparison of four different hypothetical loan packages and were asked to choose one package in each scenario,

They ALWAYS preferred the loan package that offered lower interest rate. This confirmed the second hypothesis that high interest rates discourage farmers from applying for loans.

Apart from the above stated reasons, 20 respondents out of 79 also indicated other reasons, such as corruption, remittances and no need (to get loan). Not surprisingly, 40% described corruption as a reason for them not applying for any loan. This indicates that high transaction costs could also result in less demand for loans.

The data could not verify the fourth hypothesis that the majority of formal loans were taken for consumption smoothing rather than for production activities. On the contrary, out of 43 respondents, I found that 53.48% of respondents spent their loans on production activities and 46.52% spent their loans on non-agricultural activities.

In the quantitative analysis, I used a probit model to analyze the impact of education, household size and income on demand for credit. I decomposed income into three different categories of income i.e. livestock income, agricultural production income and other sources of income. To test the fifth hypothesis, that higher educated households demand more credit, I found that one year of education of head of household increased the probability of demand for credit by 0.022.

I found no significant impact of household size on demand for credit. However, the coefficient had the expected positive sign. A small data set could be the reason for the insignificance.

Furthermore, I found no significant correlation between all types of income and demand for credit. However, in the case of livestock income, I found a convex (but insignificant) relationship with demand for credit. The agricultural production income had insignificant concave relationship. The relationship between other sources of income and demand for credit was convex like livestock income. I also tested the impact of total income on demand for credit and found an insignificant concave relationship.

In case of location dummies, being resident of villages Lakhnewala and Badshahpur would have higher probability (i.e. 0.28 and 0.25 respectively) to demand for credit than being resident of village Kangsahali. The villages Shahidanwali, Wara Alam Shah and Chak Abdullah did not show any significant probabilities.

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APPENDIX 1: ENGLISH QUESTIONNAIRE

QUESTIONNAIRE

Questionnaire Number	
Date	
Household code	
Household Tehsil	
Household Village	
Name of person interviewed	
Head of Household	

1. HOUSEHOLD CHARACTERISTICS

a) People living in the household:

Head of the Household: Husband…… Wife…….. Grandfather…….. Uncle……Eldest son……. Other (specify)……

Sex	Age	Relation to HHH	Civil status	Years of education	Studying	Occupation/main skills

Age: years

Sex: 1= feminine, 2=masculine.

Relation to household head: 1=wife, 2=husband, 3=child, 4=grandchild, 5=brother, 6=sister, 7=cousin, 8=uncle, 9=Aunt, 10=daughter-in-law.

Civil status: 1=married, 2=single or separated, 3=divorced, 4=widowed

Studying: 1=yes, 0=No

Occupation/main skills: 1=student, 2=housewife, 3=hired labor, 4=Job, 5=farm activity, 6=student & Job, 7=student&farm activity, 8=business, 9=Job&farm activity, 10= do nothing, 11=others (specify)

b) Does any member of the household live outside the household you live in? If yes, then

Name	Place	Purpose	How long	When coming back	Monthly money sends hh.

2. HOUSEHOLD'S ASSETS & PROPERTIES:

a) Animals

Type	Number	Quantity sold the last year	Price	Comments
Poultry				
Cows				
Sheep & goats				
Buffaloes				
Horse				
Donkey				
Fishes				

b) Area of land.

	Total (Acres)	Cultivation	Residence (Marlas)	Business (Marlas)	Idle	Rented in	Rented out	Other
Land								

Idle land: decided not to use in near future.

1 acre=8 kanals=160 Marlas

c) Other Assets

Type	Number	Approx. Price	Comments
Car			
Tractor			
Rotavator			
Combine Harvester			
Trolley			
Motorcycle			
Bicycle			

Plow			
Tractor blade			
Spray machine			
Tractor-spray machine			
Thresher			

3. PRODUCTION ACTIVITIES LAST YEAR (INCOME):

Crop	**Size (Acre)**	**Total quantity**	**Quantity sold**	**Quantity consumed**	**Price**	**Comments**
Rice						
Wheat						
Sugarcane						
Cotton						
Vegetables						
Pulses						
Orange(kinnow)						
Banana						
Mango						
Lemon						
Guava						
Pasture						
Melon						
Watermelon						
Bamboo						

*****4 kanal=1Bigha, 1Bigha=8000kg pasture

4. OTHER SOURCES OF INCOME (LAST YEAR)

Source	**Quantity**	**Price**	**Comments**
Rent out land			
Traded items			
Gifts			
Milking			
Fish farms			
Labor			

Remittances			
Job			
Business			
Pension			
Land sold			

5. LOAN/BORROWING:

Have you ever applied for any loan from the bank or any financial institution?

----- If yes and got loan as well then **go to sub-section (a).**

----- applied but could not get it, **go to sub-section (b).**

----- If no, then **go to sub-section (c).**

a) Formal borrowers/lenders:

Have you ever got any loan from the bank or any financial institution? If yes, then

Source	How many times in last 5 years?	Amount in Rs. last time	For how many months last time	Interest rate	Payment frequency (Installm-ent)	Collateral	Commen ts
ZTBL							
BoP							
NBP							
BA*							
Meezan Bank							
UBL							
HBL							
Faysal Bank							

*ZTBL = Zarai Taraqiati Bank Limited
*BoP = The Bank of Punjab
*NBP = National Bank of Pakistan.
*BA = The Bank Al-Falah.
*UBL= United Bank Limited

For what purpose do you apply or get loan or borrow money, generally?

.....

Where do you use them, generally? .....

Would you take another loan (after this) if it is possible? Yes...../ No.....

If yes, what would you use it for? .....

If no, why not? .....

Any other comment or suggestion……...

Informal borrowers:

Source	How many times in last 5 years?	Amount in Rs. last time	For how many months last time	Interest rate	Payment frequency (Installm-ent)	Collateral	Commen ts
Informal lending							
Friends							
Relatives							
Inter-linkages							

Inter-linkage: Getting loan from supplier or seller.

For what purpose do you apply or get loan or borrow money, generally?

.....

Where do you use them, generally? .....

Would you take another loan (after this) if it is possible? Yes...../ No.....

If yes, what would you use it for? .....

If no, why not? .....

Any other comment or suggestion……...

b) Applied but could not get loan:

If you applied and could not get, what could be reason(s)? .....

……

Do you want to apply for another time? .....

If no, why not? …….

(c) Never applied:

Why did you never apply for any loan from a Bank or any financial institution?
.....

Rank the following reasons: (Rank 1=most likely to Rank 10=most unlikely)

a. I don't know about such loans……
b. Interest rate is high……
c. Fear of payback failure…….…….
d. It's against religion…….……..
e. Borrow from relatives and friends…..……...
f. Get loan from moneylender……..……
g. Sell my asset ……..
h. Not sure about loan approval…….
i. Don't have much land for collateral…..….
j. Other (specify)……

Please choose one offer from each group:

Package 1	**Amount (Rs)**	**Interest rate**	**Payback period**	**collateral**
	0.2 Million	10.00%	2years	5 acres land

Package 2	**Amount (Rs)**	**Interest rate**	**Payback period**	**collateral**
	0.2 Million	17.00%	2years	3 acres land

Package 3	**Amount (Rs)**	**Interest rate**	**Payback period**	**collateral**	**Payback installment (per year) Rs.**
	0.2 Million	10.00%	2 year	3 acres land	Rs. 0.11 million

Package 4	**Amount (Rs)**	**Interest rate**	**Payback period**	**collateral**	**Number of persons in a**

					Group
	0.2 Million	10.00%	2years	----	4

Offers	**Your preferences**
Package 1 vs Package 2	
Package 1 vs Package 3	
Package 1 vs Package 4	
Package 2 vs Package 3	
Package 2 vs Package 4	
Package 3 vs Package 4	

6. COMMENTS:

APPENDIX 2: URDU QUESTIONNAIRE

سوالنامہ

سوالنامہ نمبر	
تاریخ	
گھرانہ کا کوڈ	
گھرانہ تحصیل	
گھرانہ کا گاؤں	
انٹرویو دینے والے کا نام	
گھرانہ کے سربراہ کا نام	

ا۔ گھرانہ کے خوائص۔

(الف) گھرانہ کے افراد۔

گھرانہ کا سربراہ :شوہر..... بیوی..... دادا/نانا.....چچا/ماموں..... سب سے بڑا بیٹا.....دیگر.....

جنس	عمر	سربراہ کے ساتھ رشتہ	ازدواجی حیثیت	تعلیم	زیر تعلیم	پیشہ / بنیادی مہارت

عمر: سال۔

جنس:ا = عورت , مرد = ۲۔

سربراہ کے ساتھ رشتہ:ا= بیوی, ۲= شوہر, ۳= بچہ, ۴= چچا / ٹواسا, ۵= بھائی, ۶= بہن, ۷= کزن, ۸= چچا/ماموں, ۹= چچی / خالہ, ۱۰=بہو, ۱۱= دیگر۔

ازدواجی حیثیت: ا= شادی شدہ, ۲= کنوارہ یا خلع, ۳= طلاق یافتہ, ۴= بیوہ / رنڈوا۔

زیر تعلیم: ۱= ہاں, ۰= نہیں۔

پیشہ / ذیادی معاملت: ۱= طالب علم, ۲= خاتون خانہ, ۳= مزدور, ۴= ملازمت, ۵= کاشتکاری, ۶= طالب علم اور ملازمت, ۷= کاشتکاری اور طالب علم, ۸= کاروبار, ۹= کاشتکاری اور ملازمت, ۱۰= فارغ, ۱۱= دیگر۔

(ب) کیا گھرانہ کا کوئی فرد گھرانہ سے باہر رہتا ہے ؟ اگر ہاں, تو

نام	مقام	کام کی نوعیت	کتنا عرصہ سے باہر ہے؟ (سال)	مستقل واپسی کب متوقع ہے؟	ماہانہ کتنا خرچہ گھر بھیجتا ہے؟

۲۔ گھرانہ کے اثاثے اور جائیداد۔

(الف) مویشی

اقسام	تعداد	گذشتہ سال جانور فروخت کیے (تعداد)	قیمت / مالیت	رائے
مرغی				
گائے				
بھیڑ اور بکری				
بھینس				
گھوڑا				
گدھا				
مچھلی				
دیگر				

(ب) اراضی

	کل زمین (ایکڑ)	زیر کاشت اراضی (بشمول اراضی بذریعہ ٹھیکہ) (ایکڑ)	زیر رہائش رقبہ (مرلہ)	رقبہ برائے کاروبار (مرلہ)	بے کار اراضی	اراضی بذریعہ ٹھیکہ (ایکڑ)	ٹھیکہ پر دی گئی اراضی (ایکڑ)	دیگر
اراضی								

۱ ایکڑ= ۸ کنال = ۱۸۰ مرلہ

(ج) دیگر اثاثے:

اقسام	تعداد	اندازِ قیمت	رائے
گاڑی			
ٹریکٹر			
روٹاویٹر			
کمبائن ہارویسٹر			
ٹرالی			
موٹر سائیکل			
سائیکل			
ہل			
ٹریکٹر بلیڈ			
سپرے مشین (ہاتھ والی)			
ٹریکٹر سپرے مشین			
تھریشر			
پیٹر انجن			
پانی والا پمپ (گھر کے علاوہ)			

۳۔ گذشتہ سال کی پیداواری سرگرمیوں کی تفصیل (آمدن):

فصل	رقبہ (ایکڑ)	کل پیداوار (کلوگرام)	پیداوار فروخت (کلوگرام)	پیداوار استعمال (کلوگرام)	قیمت فی کلوگرام	رائے
چاول						
گندم						
گنا						
کپاس						
سبزی						
دال						
مالٹا						
آم						
کیلا						
لیموں						
امرود						
چارہ						
خربوزہ						
تربوز						
بانس						
تمباکو						
درخت برائے ایندھن						

۴ کنال = ایکھا = ۸۰۰۰ کلوگرام چارہ

۴۔ دیگر ذرائع آمدن (گذشتہ سال):

ذریعہ	تعداد	قیمت / مالیت	رائے
ٹھیکہ پر دی گئی اراضی			
سودابازی			
تحفہ			
بیچا گیا دودھ			
مچھلی فارم			
مزدوری			
بیرون ملک سے بھیجی گئی رقم			
ملازمت			
کاروبار			
پینشن			
بیچی گئی اراضی			

۵۔ قرض / ادھار:

کیا آپ نے کبھی کسی بینک یا مالیاتی ادارے سے کسی قسم کا قرض لینے کے لیے درخواست دی ہے؟

.....اگر ہاں اور آپ قرض لینے میں کامیاب رہے تو سب سیکشن (الف) کو پر کریں۔

.....اگر آپ نے درخواست دی تھی مگر قرض لینے میں کامیاب نہیں رہے تو سب سیکشن (ب) کو پر کریں۔

.....اگر درخواست ہی نہیں دی تو سب سیکشن (ج) کو پر کریں۔

(الف) باقاعدہ قرضہ (بینک وغیرہ):

ذریعہ	گذشتہ ۵ سالوں میں کتنی دفعہ؟	آخری بار لیا گیا قرضہ (روپے)	آخری بار قرض کتنے عرصے کے لیے لیا گیا؟	شرح سود	اقساط کی تعداد	رہن (اراضی/سونا) (تعداد)
زیڈ۔ٹی۔بی۔ایل						
بی۔او۔پی						
این۔بی۔پی						
بی۔اے						
میزان بینک						
یو۔بی۔ایل						
ایچ۔بی۔ایل						
فیصل بینک						

عموماً آپ کس مقصد کے لیے بینک سے قرض لیتے ہیں؟

.....

عموماً آپ حاصل شدہ قرض کو کہاں استعمال کرتے ہیں؟

.....

کیا آئندہ بھی قرض لینے کی خواہش رکھتے ہیں؟

ہاں...../ نہیں.....

اگر ہاں تو کہاں استعمال کرنا چاہیں گے؟.....

اگر نہیں تو وجہ بیان کیجیے.....

کوئی رائے یا تجویز بینک کے قرضوں کے حوالے سے.....

بے قاعدہ قرض:

ذریعہ	گذشتہ ۵ سالوں میں کتنی دفعہ؟	آخری بار لیا گیا قرضہ (روپے)	آخری بار قرض کتنے عرصے کے لیے لیا گیا؟	شرح سود	اقساط کی تعداد	رہن (اراضی/سونا)	رائے
فرد سے سود پر لیا گیا قرض							
دوست							
رشتہ دار							
سپلائر							

عموماً آپ کس مقصد کے لیے ایسا قرض لیتے ہیں؟

.....

عموماً آپ حاصل شدہ قرض کو کہاں استعمال کرتے ہیں؟

.....

کیا آئندہ بھی قرض لینے کی خواہش رکھتے ہیں؟

ہاں...../ نہیں.....

اگر ہاں تو کہاں استعمال کرنا چاہیں گے؟.....

اگر نہیں تو وجہ بیان کیجیے.....

کوئی رائے یا تجویز ایسے قرضوں کے حوالے سے.....

(ب) درخواست دی گئی مگر قرض لینے میں کامیاب نہیں رہے۔

قرض نہ ملنے کی وجوہات بیان کیجیے۔

.....

کیا آئندہ بھی آپ درخواست دینے کا ارادہ رکھتے ہیں؟

ہاں...../ نہیں.....

اگر نہیں تو وجہ بیان کیجیے.....

(ج) کبھی بھی درخواست نہ دینے کی صورت میں۔

حصول قرض کی درخواست نہ دینے کی خاص وجہ بیان کیجیے۔

.....

درج ذیل وجوہات کی درجہ بندی بالحاظ ترجیح کیجیے۔(۱تا۹)

مجھے ایسے قرضوں کا علم نہیں.....

شرح سود زیادہ ہے.....

قرض ادا نہ کر سکنے کا خوف.....

سود والا قرض مذہباً حرام ہے.....

دوستوں اور رشتہ داروں سے ادھار لیتا ہوں.....

سود کا کاروبار کرنے والے سے قرض لیتا ہوں.....

اثاثہ جات فروخت کر لیتا ہوں.....

قرض کی درخواست کی منظوری کا یقین نہیں.....

قرض کے حصول کے لیے مناسب اراضی نہیں.....

دیگر وجوہات.....

برائے مہربانی درج ذیل ہر ایک گروپ میں سے ایک آفر کا انتخاب کیجیے۔

آفر نمبر ا	رقم	شرح سود	واپسی کی عرصہ	رہن
	۲ لاکھ	۱۰ فیصد	۲ سال	۱۵ ایکڑ اراضی

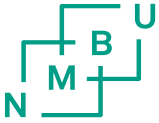
آفرنمبر۲	رقم	شرح سود	واپسی کی عرصہ	رہن
	۲لاکھ	۷افیصد	۲سال	۱۳ایکڑاراضی

آفرنمبر۳	رقم	شرح سود	واپسی کی عرصہ	رہن	قسط(فی سال)
	۲لاکھ	۱۰فیصد	۲سال	۱۳ایکڑاراضی	۱لاکھ+سود

آفرنمبر۴	رقم	شرح سود	واپسی کی عرصہ	رہن	گروپ میں افراد کی تعداد
	۲لاکھ	۱۰فیصد	۲سال	---	۴

آفر	آپ کی ترجیحات
آفرنمبر۱بمقابلہ آفرنمبر۲	
آفرنمبر۱بمقابلہ آفرنمبر۳	
آفرنمبر۱بمقابلہ آفرنمبر۴	
آفرنمبر۲بمقابلہ آفرنمبر۳	
آفرنمبر۲بمقابلہ آفرنمبر۴	
آفرنمبر۳بمقابلہ آفرنمبر۴	

۶۔رائے:



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