
CHAPTER – V

SUPPLY OF AND DEMAND FOR FARM

CREDIT IN NEPAL

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5.1 Introduction

The purpose of this chapter is to explain the major sources of supply of farm credit to farmers with the help of existing available secondary data. An attempt is made to project the supply of credit by major sources and match with the total requirement of credit by the farmers at the national level. The relationship between price of inputs and demand for short-term farm credit is studied on the basis of secondary data. Factors influencing the demand for farm credit are discussed in detail. A separate study is made on the basis of field survey data to study the relationship between rate of interest and demand for short-term farm credit.

5.2 Sources of Agricultural Credit in Nepal

In general, households resort to borrowing when their earnings or incomes do not meet their consumption and investment needs. Two sources of credit – formal and informal – have co-existed in varying extent in Nepal, as elsewhere in Asia (Ghate P. et al: 1993)

Agriculture in Nepal is financed through different sources. These can be broadly classified into:

- a. Institutional sources, and
- b. Non-Institutional sources.

During 1997/98, the total rural credit requirement was estimated at Rs. 18 billion. The total credit supplied by the formal sector in 1997/98 was around Rs. 5 billion (Chatterjee and Agrawal: 2000). This indicates that only about 28 percent of rural credit demand was fulfilled by the formal sector. The lion's share of rural credit is still provided by the exploitative informal sector. There exists a considerable gap between demand and supply for rural credit in Nepal.

Institutional sources of credit are the Agricultural Development Bank, commercial banks and cooperative societies, while non-institutional sources are professional

moneylenders, village moneylenders, landlords, traders, friends, relatives, and others.

Table 5.1 shows the share of formal financial institutions in total outstanding credit of formal financial institutions in total rural credit. For commercial banks, it is less than 10 percent. This means that commercial banks sector has not been able to meet the NRB directive of 12 percent priority sector loans of total credit disbursed by these banks. The Agricultural Development Bank has been playing the dominant role by providing 72 percent of its total loan as rural credit. So are Regional Rural Development Banks and NRB recognized NGOs, which provide 65 percent of total credit as rural credit mainly to non-farm sector. Reliable data are not available to assess the role of Cooperatives in rural credit.

Table 5.1: Share of Rural Credit in Total Credit of Formal Financial Institutions

(Rs. million)

	Total credit		Rural credit		Rural credit as percent of total credit	
	July 1997	Oct 2001	July 1997	Oct 2001	July 1997	Oct 2001
Commercial Banks	20,974	115,707	1,930	11,194	9.2	9.7
ADB/N	12,034	21,149	8,840	15,208	73.5	71.9
RRDB and NGOs	296	-	193	-	65.2	-
Cooperatives (licensed by NRB)	-	1,270	-	-	-	-

Source: *Banking and Finance Statistics, Oct. 2002, No. 38, NRB, pp. 3-23*

Note: -RRDB = Regional Rural Development Banks

However, in Nepal the non-institutional sources have dominated agricultural credit sector. They usually charge high rates of interest, which, vary from place to place. A moneylender's method of lending business is very simple, yet elastic; he is easily accessible any time during the day and develops a close business relationship with his borrowers. A moneylender can accommodate them even without tangible security and yet protects himself against a possible loss because of his local knowledge and experience of his borrowers who stay in his neighbourhood. It is an undisputed fact

that bulk of agricultural finance in Nepal is still supplied by these non-institutional services.

Among these sources of non-institutional credit, the moneylender still practices several questionable methods of lending. However, the institutional lenders have so far not been able to dislodge them from the money lending trade despite the comparative merits that they command. This is clearly brought out in their operations as displayed in table 5.2 below.

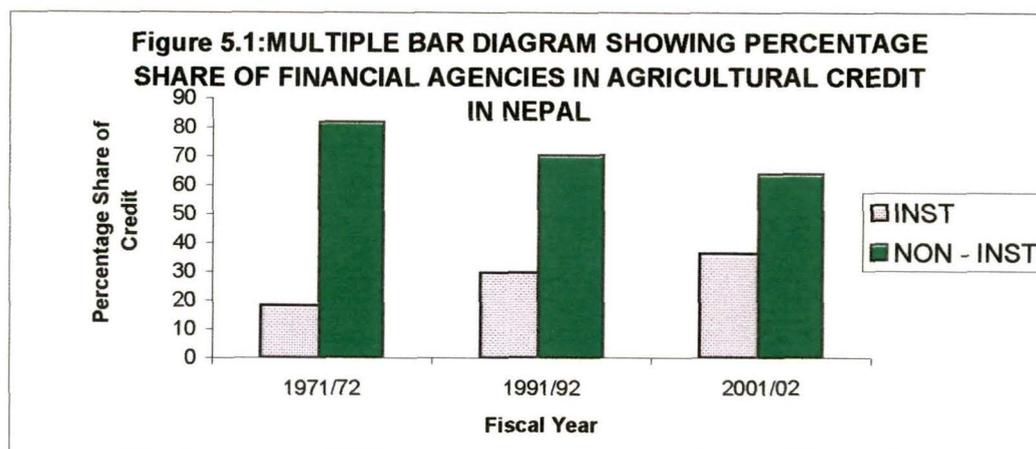
Table 5.2: Percentage Share of Different Financing Agencies in Agricultural Credit in Nepal

(1971/72–2001/02)

(Percentage)

Credit	Agency	1971/72	1991/92	2001/02
A	Institutional Agency	18.08	29.64	36.28
1.	Agricultural Development Bank	0.24	15.93	28.34
2.	Commercial Banks	2.54	11.6	3.88
3.	Others -	-	-	-
	Ward/Village Committee	12.35	-	-
	Cooperative Societies/Sajha	2.95	-	4.05
B	Non-Institutional Agencies	81.92	70.36	63.72
4.	Money Lenders	43.42	28.45	-
5.	Land lords	2.78	0.93	-
6.	Traders	3.27	16.53	-
7.	Friends and Relatives	30.9	24.35	-
8.	Others	1.55	-	-
	Total (A+B)	100	100	100

Source: National Census of Agriculture, 2001/02, Nepal



It may be observed from the table 5.2 and figure 5.1 that the share of institutional agencies in the total agricultural credit increased from 18 per cent in 1972 to about 30 per cent in 1991-92. Among the institutional sources; ADB/N's role has significantly changed from 0.24 per cent in 1972 to 16 per cent in 1991-92 and 28 per cent in 2001/02. It has emerged as a major source of institutional credit recently. The share of commercial banks, which was 2.54 per cent in 1972, went up to about 12 per cent in 1991-92 and decreased to 3.88 per cent in 2001/02. They are the second major institutional credit suppliers. But the share of cooperative societies is almost stagnant.

The share of the non-institutional agencies declined from 82 per cent in 1972 to 70 per cent in 1991-92 and 63.72 per cent in 2001/02. Among the private agencies, share of money-lenders was the highest, about 44 per cent in 1972 which came down to 28 per cent in 1991-92, followed by friends and relatives. Their share declined from about 31 per cent in 1972 to 24 per cent in 1991-92.

From the Table 5.2 we may conclude that in Nepal private money lending system has played a vital and predominant role. Most of the villages in Nepal are fully affected by this private source of credit facility even today. The private money-lending process is the oldest and most popular throughout Nepal. In some villages, the private money-lending process is so convenient and reliable that no villager likes to request funds from the institutional credit agencies.

5.2.1 Role of Informal Source of Credit in Rural Economy of Nepal

It is generally known that in the unorganised sector, village moneylenders, merchants and traders and to some extent big landowners are providing credit to the

marginal and small farmers at exorbitant rates of interest. Even today, these private credit agencies are the chief sources of agricultural finance in rural economy.

Not only in the farming sector, it is of the same nature in other sectors also. In addition to availing finance from the financial institutions, entrepreneurs frequently access some amount of credit from private moneylenders and indigenous bankers. Though a system of financing in the rural sector is in vogue today, it is constrained by a host of problems (Rhyne and Otero: 1994). Financing problems not only differ according to the characteristics of the small establishment, but also depending on the stage of development, type of capital required, existing policy frame work, complexities in lending processes and others. When there is lack of familiarity of financial institutes with farmers, it is difficult and expensive for a formal lender to identify the risks of the projects, especially when documentation is deficient (Fischer: 1995).

In all developing countries, the share of the informal sector in credit/finance is higher than 50 percent on average (Pareek, 1978). Interestingly, those farmer borrowers, who have received loans from financial intermediaries (FIs), also have accessed moneylenders (MLs) and friends/relatives. In Nepal, the informal money market is fragmented and has very weak base due to its illegality and is inadequate, in addition to high interest charged. Money lending business in the Terai is more organized as compared to hills and mountains. The Indian moneylenders visit the rural people on the bordering VDCs of Nepal regularly and learn about the needs of villagers and their financial problems. In other parts of the country, lending is more demand based. The needy go to the MLs and ask for credit. It is observed despite the lack of financial intermediation; the MLs play a very important role in rural life. Distinct private money lending and borrowing culture has set in. As the business is illegal and the cultural barrier is strong, it will be quite impossible to break this practice. Here are few statements of MLs in relation to their business "Money-lending is a good business. You make 100 percent profits. If you have money, there is a big market. It is better to lend in smaller amount as you can serve more borrowers and the risk is less."

In financial intermediation, the informal sector, especially the moneylender has played an important role. Many studies Aleem (1993), Hossain (1988), Siamwalla (1993), Hook (1995) and others have brought up repeatedly the issues of MLs in the rural credit system and their weaknesses and the interest rates charged by them. but

none have published any details studies on it. Here we try to analyze why rural people prefer moneylenders to banks for borrowing despite the very high interest rates charged by moneylenders.

It is generally known that farmers find it much easier to access loan from moneylenders rather than from the financial institutions. The most important factor is the personal relation between borrowers and MLs. The borrowers, who is known to ML, does not need to put up any application or fill up forms or put the assets as collateral. The ML disburses the loan either immediately or within the next two days. Quick accesses with relatively ease makes borrowers go to MLs although the interest rates charged by MLs are sky high, averaging more than 80 percent per annum. Often as regular borrowers, borrowers bargain for interest rates and MLs do grant a few percent less also making the borrowers happy about the transaction.

Since, most of the farmers have little time and also hold low reserves in hand, the MLs greatly facilitate the farmers because the entire transaction to concluding the deals takes only a few hours followed by release of loan.. Unlike the borrowing from FIs the transaction cost and the time are saved through such a quick service of the MLs and, therefore, the borrowers do not bother of such high interest rate charged by MLs.

Borrowers also have easy mode of repayment when they take loan from the MLs. If they are unable to pay in time, which is often negotiable with a short notice. The cash needs of the farmers are often mixed with their production needs and consumption needs; the loan is used for both the purposes. The borrowers do not have to justify the need for the loans nor are they restricted to use it only in farms. It enables them to be flexible with the utilization of the loan. Unlike FIs, the poor borrowers stand a good chance for borrowing from MLs. The equation for the poor is: Poor borrowers = needy person, trustworthy, closely known. There is no compulsion that borrowers need collateral of 1.5 to 2 times the loan amount, project report, credit rating or other documents in case of borrowing from MLs. MLs function on face-to-face relation, which probably is the most advantageous point in favor of MLs.

Although money lending is called a social evil, yet it cannot be wiped out unless the formal financial sector comes into addressing the needs of the poor in the rural sector. Even the most effective operation in the rural sector by the Grameen Bank in

Bangladesh, the money lending business is still prevalent among the poorer section of the society (Chhetri: 2001).

5.3 Nature of Institutional Credit

Ordinarily credit is classified into various forms viz., period-wise, purpose-wise, security-wise and creditor-wise. But our discussion is based on only three types of credits namely, period-wise, term-wise and purpose-wise according to the availability of secondary data.

Period wise Institutional Credit

The general basis of classifying agricultural credit is the length of time for which credit is required. Of course, the length of the period of the loan is closely related to the purpose and the degree of performance or fixity of the capital required to be financed. In other words, it is also related to the anticipated gestation period of the proposed investment.

According to the basis of the period, agricultural credit has been classified as:

- (i) Short-term credit
- (ii) Medium-term credit and
- (iii) Long-term credit.

Short-Term Credit

This type of credit is one, which provides farmers with the working capital to run their farm efficiently, to raise the crop in the best possible manner and to hold the produce until it is marketed. The period of this type does not normally exceed 15 months.

Medium-Term Credit

Medium-term credit is one which provides the farmer with capital to purchase livestock and farm machinery, as also to carry out improvements which usually involve an investment period longer than one year. Such credits are given normally for a period longer than 15 months but not more than seven years.

Long-Term Credit

Long-term credit is one which offer farmers the means required for purchasing small and medium holdings, or to effect permanent improvement e.g., reclamation of new land, purchase of machines, drainage, construction of wells, embankments and the

erection of livestock-quarters, store-houses and other farm buildings and liquidation of old debts etc. The period of such debt varies from country to country and place to place. Such loans are repayable after 7 years but not exceeding 20 years.

5.4 Supply of Institutional Credit in the Agricultural Sector

Adequate and timely supply of credit is necessary for the development of agriculture in a developing country like Nepal. Obviously, the supply of agricultural credit depends upon the level of savings, the degree of risk and uncertainty, the alternative opportunities for investment and the perspective angle of the lending institutions. In most of the developing countries including Nepal, large farmers generally claim a lion's share of institutional credit. The principal objective of the Government is the progressive institutionalisation of agricultural credit and thereby reducing the dominance of the non-institutional credit agencies already existing in the agrarian structure. However, this objective centres mainly on the fact that the supply of credit disbursed by institutional agencies would be adequate to meet the credit needs of the cultivators.

5.4.1 Existing Supply of Institutional Credit in Nepal

Existing supply of institutional credit is contributed by ADB/N and commercial banks in Nepal, in order to increase agricultural growth as well as economic development as a whole.

5.4.1.1 Agricultural Development Bank and Agricultural Credit

The Agricultural Development Bank of Nepal has occupied a premier position in institutional rural credit system in Nepal. Presently, it is supplying a major share of institutional credit to the agriculture and rural sectors. It provides finance for agricultural production activities and other agro-based business, industries, individuals, co-operatives, corporate bodies and small farmers. An attempt has been made in table 5.3 to present a picture of credit supplied by the Agricultural Development Bank by purpose during the period 1988-89 to 2002-2003.

Table 5.3: Loan Disbursement by ADB/N - by Purpose
(1988/89 to 2002/03)

(In Rs. million)

Year	Crops- cereal and cash prod.	Agri tools and irrigation	Agri business	Agri ind., marketing and godowns	Horti-Culture	Tea, coffee cultivation	Housing and land Dev.	Total
1988/89	335.5	158.8	217.1	257.5	36.8	7.5	36.3	1049.5
1989/90	383.8	157.4	276.4	287.6	40.2	5.9	19.4	1170.7
1990/91	300.3	182.2	280.3	273.5	44.5	9.9	4.6	1095.3
1991/92	435.0	274.8	299.6	421.5	27.1	7.8	4.2	1470.0
1992/93	561.6	451.9	371.2	542.6	29.0	21.2	7.8	1985.3
1993/94	811.5	557	699.5	725.9	35.3	37.3	21.4	2887.9
1994/95	894.8	678.4	694.5	972.3	36.4	50.7	106.6	3433.7
1995/96	1015.6	661.5	768.5	1224.0	37.1	43.5	146.6	3896.8
1996/97	993.6	609.1	795.4	1387.8	33.5	43.7	160.3	4023.4
1997/98	1170.0	580.4	866.6	1559.1	36.0	41.8	176.2	4430.1
1998/99	1465.9	823.0	1029.3	1969.9	30.1	83.6	160.6	5562.4
1999/00	1756.3	1027.7	1221.7	2772.5	61.5	138.0	107.0	7084.7
2000/01	1913.2	1084.0	1349.8	3448.8	36.8	141.9	115.3	8089.8
2001/02	1891.9	958.7	1570.1	4150.1	38.2	97.5	182.4	8888.9
2002/03	1054.9	425.8	1117.8	3071.4	85.1	29.0	246.4	6030.4
Annual trend	110.581	54.6	91.12	266.13	1.53	7.4	15.13	546.72
Average Annual Growth (%)	11.37	11.79	14.7	21.06	13.34	25.51	45.8	15.03

Source: Economic Survey 2003, Ministry of Finance, HMG, Nepal.

Note: The trend values are calculated by using the method of least squares; Agri. = Agriculture; Dev. = Development; Prod. = Production; Ind. = Industry

The table 5.3 reveals that the amount disbursed went up from Rs. 1049.6 million rupees in 1988-89 to Rs.6030.4 million in 2002-03, representing a substantial growth of 474.5 percent. The annual growth trend was registered as Rs. 546.72 million. The growth rate on an average over the period 1988/89 to 2002/03 was 15.03 percent (Table 5.3). Portfolio wise, highest disbursement was in Agricultural industries, marketing and godowns followed by cereal and cash crops and lowest in horticulture. The disbursement of loan to crops has gone up from Rs. 335.5 million in 1988/89 to Rs.1054.9 representing a growth of 214.43 percent. The growth rate of disbursement of loan to crops on an average was 11.37 percent over the period. The total amount disbursed declined in the year 1990/91 due to the political disturbance and the general election held during the year. The highest negative growth of total disbursement was observed in the fiscal year 2002/03. The rate of decline was 32 percent (Table 5.3). The negative rate of growth in the year was due to the insecurity situation in the rural areas during the year. Therefore, the rural bank branches were closed and merged in the urban bank branches. The table 5.4 below shows the share of credit disbursement by ADB/N.

In 2002/03 the percentage share of short-term credit (Cereal and Cash Crops) disbursed by ADB/N was found to be 17.5 percent of the total, which was 32 percent in the fiscal year 1988/89 (Table 5.4). It indicates that although the disbursed amount has been increasing, the share of short-term credit needed for marginal and small farmers has been declining over the years. The share of credit flow to Agri-industries, marketing and godowns has been increasing which is clear from the table 5.4. The share of credit to this sector was 24 percent in the year 1988/89 which increased to 50.9 percent in the year 2002/03. It is clear from the table 5.4 that the share of credit is decreasing to other portfolios except agri-industries, marketing and godowns and housing and land development. The table 5.5 (in page 140) below shows the flow of credit by Agricultural Development Bank term-wise, type of borrowers and region.

Table 5.4: Pattern of Credit Disbursement by Agricultural Development Bank

(By Purpose)

(From 1988/89 to 2002/03)

(Distribution-Percent)

Year	Crops-Cereal and cash prod.	Agri Tools and irrigation	Agri business	Agri Ind. marketing and godowns	Horti-Culture	Tea, coffee cultivation	Housing and land dev.	Total
1988/89	32.0	15.1	20.7	24.5	3.5	0.7	3.5	100.0
1989/90	32.8	13.4	23.6	24.6	3.4	0.5	1.7	100.0
1990/91	27.4	16.6	25.6	25.0	4.1	0.9	0.4	100.0
1991/92	29.6	18.7	20.4	28.7	1.8	0.5	0.3	100.0
1992/93	28.3	22.8	18.7	27.3	1.5	1.1	0.4	100.0
1993/94	28.1	19.3	24.2	25.1	1.2	1.3	0.7	100.0
1994/95	26.1	19.8	20.2	28.3	1.1	1.5	3.1	100.0
1995/96	26.1	17.0	19.7	31.4	1.0	1.1	3.8	100.0
1996/97	24.7	15.1	19.8	34.5	0.8	1.1	4.0	100.0
1997/98	26.4	13.1	19.6	35.2	0.8	0.9	4.0	100.0
1998/99	26.4	14.8	18.5	35.4	0.5	1.5	2.9	100.0
1999/00	24.8	14.5	17.2	39.1	0.9	1.9	1.5	100.0
2000/01	23.6	13.4	16.7	42.6	0.5	1.8	1.4	100.0
2001/02	21.3	10.8	17.7	46.7	0.4	1.1	2.1	100.0
2002/03	17.5	7.1	18.5	50.9	1.4	0.5	4.1	100.0

Source: Economic Survey 2003, Ministry of Finance, HMG, Nepal.

Table 5.5: Loan Disbursement by Agricultural Development Bank
(By Terms, Type of Borrowers and Regions)

Particulars	1988/89		1995/96		2002/03	
	Rs.in million	Percent	Rs.in million	Percent	Rs.in million	Percent
Short	335.87	32.0	993.4	26.1	1055.3	17.5
Medium	375.75	35.8	1396.9	36.7	1543.8	25.6
Long	337.97	32.2	1416	37.2	3431.3	56.9
Total	1049.6	100.0	3806.3	100.0	6030.4	100.0
Type of Borrowers						
Individual	872.13	83.09	3300.06	86.71	5306.76	88.00
Cooperative	171.07	16.30	479.6	12.60	512.58	8.50
Others	6.39	0.61	26.64	0.70	211.06	3.50
Total	1049.59	100.00	3806.3	100.01	6030.40	100.00
Region						
Eastern	261.87	24.95	953.85	25.06	1692.13	28.06
Central	413.01	39.35	1495.67	39.29	2283.72	37.87
Western	216.32	20.61	671.65	17.65	1477.44	24.50
Mid-Western	93.42	8.90	399.66	10.50	305.74	5.07
Far-Western	64.97	6.19	285.47	7.50	271.37	4.50
Total	1049.59	100.00	3806.3	100.00	6030.40	100.00

Source: Economic Survey 2003, Ministry of Finance, HMG, Nepal.

Term-wise, the flow of short-term loan went up from Rs, 335.87 million (32 % of total) in 1988/89 to Rs.1055.32 million (17.5 % of total) in 2002/03 as shown in table 5.5. In terms of composition of total disbursement, the short-term loans decreased from 32 percent in 1988/89 to 17.5 percent in 2002/03 indicated by table 5.5. The increase in medium and long-term loans had been caused by the emphasis of the bank to lend more in irrigation, agri-industries, biogas, and cold storage. The composition of loan disbursement to various categories of borrowers, which was 83.1 percent to individuals, 16.3 percent to co-operatives and 0.6 percent to other institutions in 1988/89 changed to 86.7 percent to individuals, 12.6 percent to cooperatives and 0.7 percent to other institutions in 1995/96. The flow of loans to individuals, which was Rs. 872.13 million in 1988/89 increased to Rs. 5306 million in 2002/03 (508 % increase). However, the loan to cooperatives went up from Rs.171.07 million to

512.58 million (199 percent increase) only in a period of 15 years. The share of loan disbursement to cooperatives which stood at 70 percent of the total disbursement (NRB: 1994) in 1976/77 came down to 12.6 percent in 1995/96 and 8.5 percent in 2002/03. The decrease in the share of loans to cooperatives in total disbursement has been caused by the increase in the number of defunct cooperatives despite the policy declaration of the Government to promote and develop cooperatives as basis of socio-economic development relying on the mobilization of local resources and skills and the participation of local people (HMG: Ninth Plan).

Out of the 840 primary cooperatives, only about 100 were working at normal condition (NRB: 2002). The dominating role of cooperatives in the delivery of small production loans to farmers living far and wide in the country has been now a matter of the past history.

The structure of disbursement of loans in various development regions gives a critical picture of Mid-Western and Far-Western development regions (table 5.5). The volume of disbursement which were recorded Rs.281.87 million, Rs. 413.01 million, Rs.216.32 million, Rs.93.42 million and Rs.64.97 million in 1988/89 in Eastern, Central, Western, Mid-Western and Far Western regions respectively increased to Rs.1692.13 million, Rs.2283.72 million, Rs.1477.44 million, Rs.305.74 million and Rs. 271.37 million respectively in 2002/03. But the share of disbursement in different regions which stood 24.9 percent of the total in Eastern region, 39.3 percent in Central, 20.6 percent in Western, 8.9 percent in Mid-Western and 6.2 percent in Far-Western regions in 1988/89 was not changed much. The Mid-Western and Far-Western regions, which are relatively backward in socio-economic terms, received only 10 percent and 7.5 percent in 1995/96 and 5.07 percent and 4.5 percent respectively in 2002/03. The main factors responsible for the skewed distribution of credit in different regions are the absence of infrastructures such as roads, irrigation, school etc. and non-availability of support services in agriculture and inadequate intervention efforts by credit institutions in Mid-Western and Far-Western regions. The Mid-Western and Far-Western regions are more affected areas of insecurity, which have caused low economic activities in these areas.

5.4.1.2 Commercial Banks and Agricultural Credit

The pioneering commercial banks of Nepal i.e., Nepal Bank Ltd. (NBL) was instituted in 1937 and the second commercial bank, an entirely government owned commercial bank, namely Rastriya Banijya Bank (RBB) was established in 1966. These

commercial banks began to finance the agricultural sector after NRB gave directives to lend a certain portion of their deposits in the rural sector in 1974 (NRB: 1994).

In 1974 Nepal Rastra Bank (NRB) issued directives to the commercial banks to invest five percent of their deposits in the "small Sector" which was later in 1976 designated as the "Priority Sectors". Subsequently in 1981 the NRB initiated the Intensive Banking Program (IBP) as a strategy to boost up the Priority Sector Lending (PSL). The requirement for lending to Priority Sector was fixed at 10 percent of deposit liability of the concerned bank. In 1984, the limit of priority sector lending was changed to 8 percent for commercial bank's loan and advances, which was further raised to 12 percent in 1989 (NRB: 1994). The credit supplied by the commercial banks has been shown in the table 5.6 below:

Table 5.6: Total Credit Disbursement by Commercial Banks

(From 1988/89 to 2002/03)

(Rs. in million)

Fiscal Year	Agricultural	Industrial	Commercial	General use and social purpose	Service	Total credits
1988/89	553.2	2575.2	2512.0	2190	333.8	8164.3
1989/90	1157.8	3134.7	2829.8	2733	501.2	10357
1990/91	1531.6	3817.6	3371.7	2785	292.5	11799
1991/92	1850.3	4545.6	4150.0	3133	330.4	14009.0
1992/93	2432.1	5389.3	6801.8	3629	545.1	18798
1993/94	3144.2	6621.1	7235.2	3741	735.5	21477
1994/95	3395.6	11046.9	9508.1	4117	1271.8	29339
1995/96	4923.8	15877.6	13305.7	4786	1697.7	40590
1996/97	3972.8	24212.6	17010.3	4750	2674.4	52620
1997/98	5599.9	26393.9	20401.0	5652	2927.0	60974
1998/99	6095.9	31775.2	23963.9	5970	3439.1	71244
1999/00	7868.5	38062.1	27654.9	6256	4240.9	84083
2000/01	8863.7	44885.3	32753.3	7138	5713.6	99354
2001/02	9999.4	51008.9	36200.2	8049.0	7603.2	112861
2002/03	10156.0	53995.3	36928.6	8238	9110.3	118428
Annual Average Growth (%)	25.9	25.3	22.0	10.2	30.2	21.4

Source: Economic Survey 2003, Ministry of Finance, HMG, Nepal.

The table 5.6 indicates that the industrial sector has traditionally been the largest recipient of credit from the commercial banking system, followed by the commercial sector. On the other hand, agriculture has only represented a relatively small amount of credit from the commercial banks. The total credit disbursed by the commercial banking sector was Rs. 8164.3 million in the fiscal year 1988/89 which increased to Rs. 118428 million in 2002/03. The annual average rate of growth was found to be 21.4 percent. In fact, over the period, the service sector experienced the fastest rate of growth in credit supply growing at over 30 percent per year. Table 5.7 presents a clear picture of the distribution of credit disbursed as a percentage of the total disbursed by commercial banks to different sectors of the economy.

Table 5.7: Loan Disbursement by Commercial Banks
(From 1988/89 to 2002/03)

(Distribution-percent)

Fiscal Year	Agricultural	Industrial	Commercial	General use and social purpose	Services	Total credits
1988/89	6.8	31.5	30.8	26.8	4.1	100.0
1989/90	11.2	30.3	27.3	26.4	4.8	100.0
1990/91	13.0	32.4	28.6	23.6	2.5	100.0
1991/92	13.2	32.4	29.6	22.4	2.4	100.0
1992/93	12.9	28.7	36.2	19.3	2.9	100.0
1993/94	14.6	30.8	33.7	17.4	3.4	100.0
1994/95	11.6	37.7	32.4	14.0	4.3	100.0
1995/96	12.1	39.1	32.8	11.8	4.2	100.0
1996/97	7.6	46.0	32.3	9.0	5.1	100.0
1997/98	9.2	43.3	33.5	9.3	4.8	100.0
1998/99	8.6	44.6	33.6	8.4	4.8	100.0
1999/00	9.4	45.3	32.9	7.4	5.0	100.0
2000/01	8.9	45.2	33.0	7.2	5.8	100.0
2001/02	8.9	45.2	32.1	7.1	6.7	100.0
2002/03	8.6	45.6	31.2	7.0	7.7	100.0

Source: *Economic Survey, 2003, MOF, HMG, Nepal*

The table 5.7 shows that the share of agricultural credit disbursed by the commercial banks is less than the other sectors of the economy except service sector. The share of agricultural credit supplied by the commercial banks was 6.8 percent of the total in the year 1988/89 whereas the shares of industrial, commercial and general use and social purpose were 31.5, 30.8 and 26.8 percent respectively in the same year. The table 5.8 shows the annual growth of credit in different sectors of the economy disbursed by the commercial banks.

Table 5.8: Loan Disbursement by Commercial Banks

(1988/89 to 2002/03)

(Annual growth-percent)

Fiscal Year	Agricultural	Industrial	Commercial	General use and social purpose	Services	Total Credits
1988/89	—	—	—	—	—	—
1989/90	109.3	21.7	12.7	24.8	50.1	26.9
1990/91	32.3	21.8	19.1	1.9	-41.6	13.9
1991/92	20.8	19.1	23.1	12.5	13.0	18.7
1992/93	31.4	18.6	63.9	15.9	65.0	34.2
1993/94	29.3	22.9	6.4	3.1	34.9	14.3
1994/95	8.0	66.8	31.4	10.0	72.9	36.6
1995/96	45.0	43.7	39.9	16.2	33.5	38.3
1996/97	-19.3	52.5	27.8	-0.7	57.5	29.6
1997/98	41.0	9.0	19.9	19.0	9.4	15.9
1998/99	8.9	20.4	17.5	5.6	17.5	16.8
1999/00	29.1	19.8	15.4	4.8	23.3	18.0
2000/01	12.6	17.9	18.4	14.1	34.7	18.2
2001/02	12.8	13.6	10.5	12.8	33.1	13.6
2002/03	1.6	5.9	2.0	2.4	19.8	4.9

Source: Computed from table 5.7

The annual growth percent of agricultural credit disbursed by commercial banks was 109.3 percent in the year 1989/90 which declined to 32.3 over the preceding year. It again decreased to 20.8 percent in 1991/92 over the preceding year. The reason behind the decreasing trend of disbursement of credit to agriculture was general elections took place in Nepal in the year 1990/91. The annual growth percent of credit to agricultural sector was 1.6 percent in 2002/03 over the preceding year. The reason was that most of the bank branches were closed and merged in the urban bank branches due to insecurity situation in rural areas.

However, Nepal Bank Limited has fixed a target of 40 percent recovery for its branches for continuing lending to agricultural sector. This step has severely affected the lending operations of the bank, because most of its branches failed to achieve the target of recovery. Although Rastriya Banijya Bank did not issue such instructions to its branches but due to mounting overdues situation its branches could not achieve the target fixed for them for disbursement (NRB: 2003).

It may be said that most of the rural branches of commercial banks are not providing adequate amount of credit to farmers and other agri-business activities because they are facing many problems such as lack of trained and motivated staff, job description and orientation, lack of regular inspection and evaluation and performance based reward and incentive schemes.

5.4.2 Existing Supply of Institutional Agricultural Credit in Nepal

Table 5.9 presents the combined picture of total existing supply of institutional agricultural credit for a period of fifteen years from 1989/90 to 2002/03

Table 5.9: Existing Supply of Institutional Agricultural Credit

(Rs.in million)

Fiscal Year	Commercial Banks	Agricultural Development Bank
1988/89	553.2	1049.5
1989/90	1157.8	1170.7
1990/91	1531.6	1095.3
1991/92	1850.3	1470.0
1992/93	2432.1	1985.3
1993/94	3144.2	2887.9
1994/95	3395.6	3433.7
1995/96	4923.8	3896.8
1996/97	3972.8	4023.4
1997/98	5599.9	4430.1
1998/99	6095.9	5562.4
1999/00	7868.5	7084.7
2000/01	8863.7	8089.8
2001/02	9999.4	8888.9
2002/03	10156.0	6030.4

Source: Computed from table 5.4 and 5.5

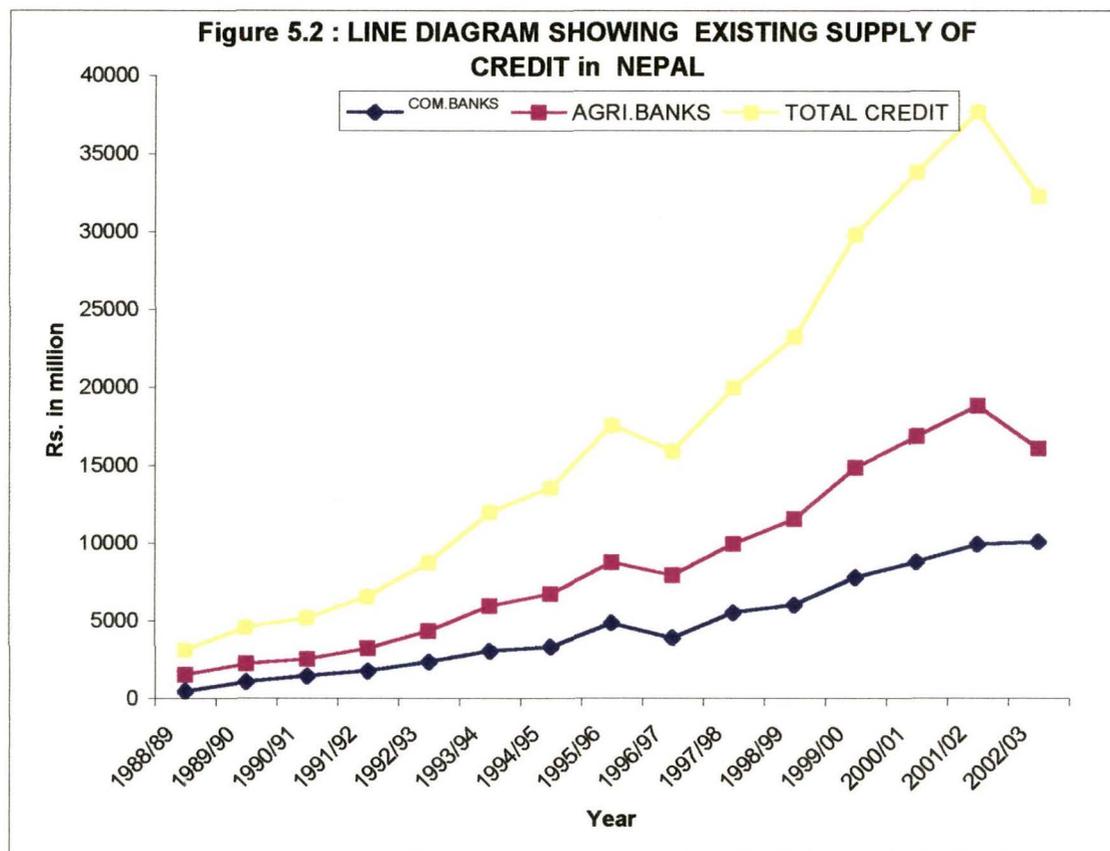


Table 5.9 and figure 5.2 reveal that the agricultural credit supplied by the major credit institutions, namely, NBL and RBB has been increasing. This implies that the total supply of agricultural credit has also been increasing. But here the question is that if this trend is followed, whether the formal credit institutions will be able to fulfil the demand for credit in the agricultural sector in coming years. To get the answer of this question, we have made an attempt in the next section to project the supply of and the demand for farm credit and the credit gap if any.

5.5 Demand for Credit – A Macro Level Study

Credit demand in agriculture has increased with the adoption of new agricultural technology. In the early stage of technological change, the new financing needs commonly represent only a small percentage of expansion in total needs. This is particularly true of short-term credit for single cropping system. These needs mount rapidly with successive technological advance (Mellor: 1969).

Therefore, the demand for new inputs such as high-yielding varieties for seeds, chemical fertilizers, insecticides and pesticides, tools and equipments and irrigation,

etc. are bound to rise at a faster rate which, in turn, leads to higher demand for credit. It is quite obvious that the farmers who might be adopting such an improved technology at later stage would be requiring the larger inputs than those who adopted it in earlier years.

An attempt is made in this section to estimate the total demand for credit in Nepal for the period 2004/05 to 2013/14. The basic data for this exercise comes from the cost of production data collected from a sample of households at the time of the rural credit survey, 1991/92 conducted by Nepal Rastra Bank.

In the case of rural credit, distinction has to be made between financial requirements on the one hand and credit demand on the other. Former is a comprehensive concept indicating what will be the credit needs if all the rural households obtained from outside sources all the credit needed for all their economic activities and other purposes. Effective credit demand, on the other hand, is what the households actually wish to borrow from the institutional and non-institutional sources taking into account what they would not borrow, considering their own resources. Credit demand used here, thus, is a much more precise concept than financial requirements.

The future demand for agricultural credit will depend on the expected course of agricultural development. This will, among other things, involve estimating the growth of agriculture in terms of different crops and regions, keeping in view, among others, the regional variations, technological development and the government strategies and programmes. Also, one has to explicitly take into account the credit requirements of different size classes of farmers. The credit absorption capacity will, in turn, depend on the development of infrastructure facilities and the extent of monetisation and commercialisation of agriculture.

It has to be kept in mind that agricultural development is a dynamic process in which technological change and shifting demand structures are key elements. While, for each of these, the past experience provides a rough base for estimating the future, it is not closely predictable. Growth in agricultural production will induce the development of agro-processing, warehousing etc. which in turn; will increase the

demand for credit. Also, agricultural prosperity will generate demand for a variety of non-agricultural goods and services, which in turn will create demand for credit for other rural-based secondary and service sector industries.

5.5.1 Household Financial Requirements for Crop Production in 1991/92

The basic relationship between value of output and cost of production varies from crop to crop: and for the same crop, it may differ under different technologies, agro-climatic conditions and among different size classes of farmers. The total value of cash and kind expenditure in the cultivation of a crop can be deemed as the short-term financial requirement for raising the particular crop. Adding the imputed value of family labour to the total cash and kind expenditure arrives at the short-term total cost of production. Using the cost of production data collected through the rural credit survey (1991/94) for 1991/92, an attempt has been made to estimate the cash and kind expenditure and the imputed value of family labour along with the value of output, crop wise and size class wise for the country as a whole.

Per hectare estimates of the value of output, cash and kind expenditure and the total cost of production for ten major crops are worked out on the basis of sample data. For each crop, these estimates are made separately for different size classes. These are presented in tables 5.10, 5.11 and 5.12 respectively. The ten crops for which detailed analysis has been made are paddy, wheat, maize, millet, barley, potato, jute, sugarcane, mustard and lentils. While the first five crops, all cereals, are grown mainly for home consumption, especially by small and marginal farmers, the latter five are principally grown as cash crops.

A comparison of per hectare value of output of various crops indicates substantial intercrop variations. The value of output of potato is as much as Rs. 29, 412 per hectare followed by that of sugarcane at Rs.25, 500. At the other extreme, the average value of output per hectare of barley is as low as Rs.3, 500 (Table 5.10).

Table 5.10: Average Value of Output per Hectare of Major Crops in Nepal, (1991/92)
(Amount in Rs. /ha)

Crop	All households	Large	Medium	Small	Marginal
Paddy	13,973	12,628	13,445	13,789	15,436
Wheat	8,624	7,789	8,492	8,867	8,685
Maize	7,359	6,227	6,627	6,829	9,399
Millet	5,582	4,882	6,032	5,121	6,355
Barley	3,501	2,654	2,788	3,432	4,674
Potato	29,412	30,249	24,140	48,484	36,118
Jute	4,737	4,986	5,277	4,281	-
Sugarcane	25,505	26,204	22,077	29,483	20,534
Mustard	6,703	11,269	6,533	5,748	5,600
Lentil	6,210	5,020	5,971	6,800	6,491

Source: *Ibid*

The variation in cash and kind expenditure per hectare for different crops is even more significant than that for value of output. While millet and barley costs are only around Rs. 1,500 per hectare, it is as high as Rs. 12,000 in the case of potato and sugarcane. Cash crops as well as paddy and wheat have higher cash and kind expenditure per hectare as compared to others. Also it may be noted that per hectare expenditure is inversely proportional to the size of the holding in the case of most of the crops (Table 5.11).

Table 5.11: Average Cost of Production per Hectare
(Excluding Imputed Value of Family Labour) in Nepal, (1991/92)
(Amount in Rs./ha)

Crop	All households	Large	Medium	Small	Marginal
Paddy	4,692	5,568	4,472	4,319	4,985
Wheat	3,663	4,300	3,919	3,523	3,460
Maize	3,209	3,406	3,358	3,052	3,376
Millet	1,666	2,466	2,207	1,435	1,564
Barley	1,542	1,108	1,014	1,796	1,592
Potato	12,796	13,453	9,220	11,986	17,600
Jute	4,284	2,270	3,618	6,128	-
Sugarcane	11,529	17,034	8,246	7,542	7,190
Mustard	2,126	2,868	2,060	1,830	2,426
Lentil	1,898	1,816	1,913	1,617	2,157

Source: *Ibid*

The table 5.12 presenting the average cost of cultivation, i.e., cash and kind expenditure plus imputed value of family labour per hectare exhibit certain important variations across crops and size classes of farmers.

While returns to cultivation as measured by the difference between value of output and cost of cultivation per hectare is positive and substantial in the case of most crops, it is found to be negative in the case of barley and jute. Also, even in the case of millets the returns are found to be negative for small and marginal farmers. These findings can be explained in terms of the use of family labour. The opportunity cost of family labour being well below the market wage rates, employment of excessive family labour and its evaluation at the market wage rate can create such apparent inconsistencies.

Table 5.12: Average Cost of Production per Hectare (Including Imputed Value of Family Labour) in Nepal
(1991/92)

(Amount in Rs./ha)

Crop	All households	Large	Medium	Small	Marginal
Paddy	9,559	9,109	8,851	9,473	10,558
Wheat	7,705	7,167	7,636	7,757	7,889
Maize	6,577	6,054	6,538	6,392	7,172
Millet	5,837	5,314	5,858	5,501	6,590
Barley	5,245	3,057	3,268	5,834	6,503
Potato	18,826	18,479	15,109	18,151	24,462
Jute	10,054	4,909	11,107	13,386	-
Sugarcane	13,244	18,256	10,052	9,308	10,819
Mustard	5,287	6,067	5,217	4,987	5,571
Lentil	4,040	3,168	4,000	4,191	4,714

Source: *Ibid*

The per hectare estimates have been multiplied by the corresponding total area at the national level to arrive at the total value of output, cash and kind expenditure and total cost of production for each of the ten crops in different classes and across the ecological regions. The estimates are presented in tables 5.13 and 5.14. A comparison of the relative significance of different crops according to the total value of output of different crops indicates that paddy has the prominent position in Nepalese economy. Wheat and maize are next to importance and have more or less same level of value of output. Among the cash crops, potato is most important in terms of value of output. These four crops together with sugarcane account for the major share of cash and kind expenditure also. For crops like millets, barley, mustard and lentils, more than half of the total cost of production is in terms of imputed value of family labour. As such, cash requirements of these crops are limited (Table 5.12).

Table 5.13: Value of Output of Major Crops Grown in Nepal, 1991/92

(Rs. in Million)

Crop	All households	Large	Medium	Small	Marginal
Paddy	18,495.7	4,346.8	4,245.5	8,065.1	1,838.3
Wheat	5,120.0	1,288.1	996.4	2,251.0	584.5
Maize	5,101.1	612.3	802.3	2,907.0	774.4
Millet	1,150.2	99.9	295.5	591.2	163.5
Barley	87.7	8.7	18.1	48.4	13.4
Potato	2,242.6	574.9	284.7	937.7	409.2
Jute	76.8	50.6	16.2	10.0	-
Sugarcane	920.2	574.9	207.5	120.3	17.5
Mustard	1,076.8	409.3	209.9	390.8	66.9
Lentil	1,529.4	573.3	349.7	556.6	85.8

Source: Ibid

The ten crops considered above, account for about for about 93 percent of the cropped area. Assuming that the crops which account for the remaining seven percent of the cropped area also have the same average per hectare value of output and cost structure, the total value of output of all crops are arrived at by aggregating across the ten crops and adjusting for the left out crops. These aggregate figures are presented in tables 5.15 and 5.16.

These summary tables reveal a number of important characteristics of Nepalese agriculture, which are important in assessing the rural credit demand and in designing appropriate credit delivery system that are noted below.

Table 5.14: Value of Output of All Crops in Nepal in 1991/92

(Rs.in million)

Regions	All households	Large	Medium	Small	Marginal
Mountains	2,450.0	214.4	407.2	1,380.0	447.4
Hills	15,471.1	1,765.4	2,678.2	8,699.9	2,327.6
Terai	20,575.1	7,163.0	4,899.4	7,033.4	1,479.2
Nepal	38,496.2	9,142.8	7,984.7	17,114.3	4,254.3

Source: Ibid

Table 5.15: Cash and Kind Expenditure for Cultivation of All Crops in Nepal

(1991/992)

(Rs.in million)

Regions	All households	Large	Medium	Small	Marginal
Mountains	898.0	102.5	130.1	525.7	139.7
Hills	5,647.4	718.4	1,021.6	3,133.1	774.3
Terai	8,688.8	3,689.0	1,870.6	2,468.4	660.6
Nepal	15,234.1	4,509.9	3,022.4	6,127.2	1,574.6

*Source: Ibid***Table 5.16: Cash and Kind Expenditure + Imputed Value of Family Labor for All Crops Cultivation in Nepal**

(1991/92)

(Rs.in million)

Regions	All households	Large	Medium	Small	Marginal
Mountains	2,084.9	191.4	310.1	1,208.5	375.0
Hills	11,853.7	1,254.1	2,053.3	6,871.5	1,674.8
Terai	15,478.7	5,722.7	3,464.0	5,108.0	1,184.2
Nepal	29,417.3	7,168.1	5,827.3	13,188.0	3,234.0

Source: Ibid

From table 5.14 it is evident that small farmers are the backbone of the Nepalese agriculture who account for about 45 percent of the value of agricultural production. The contribution to value of output by large farmers is only about 24 percent. The medium farmers account for about 21 percent share and the remaining 11 percent comes from marginal farmers. While the Terai contributes about 54 percent of the value of agricultural output in the country, the contributions of the Hills and the Mountains are 40 percent and 6 percent respectively.

Table 5.15 reveals that small farmers account for about 40 percent of the cash and kind expenditure in crop production whereas large farmers' share is as much as

30 percent. A comparison with the figures in the previous paragraph clearly indicates that the financial requirements of large farmers are disproportionately higher than their share in output whereas reverse is the case with the small farmers. Indeed, this is only a reflection of the varying levels of commercialisation between large and small framers in the country. A similar comparison across the regions indicates that the share of financial requirements of Terai is significantly higher than its contribution to output. Again, this is an indication of a higher level of commercialisation of agriculture in the Terai as compared to the other regions. These findings also imply that with increasing monetization and market orientation, the credit requirements of small farmers as well as the hills and the mountains can be expected to steadily increase.

5.5.2 Estimation of Incremental Financial Requirement for Crop Production

Incremental financial requirements for improved seeds and fertilizers have been worked out for each year for the period 2004/05 to 2013/14.

A summary picture of the estimates of incremental financial requirements for crop production for the years is presented in table 5.17. While the requirements of improved seeds increase from Rs.276 million in 2004/05 to Rs. 437 million in 2013/14, the requirements of fertilizer go up from about Rs.5, 567 million to as much as Rs. 8,437 million. The requirements of other cash and kind expenditure are projected to increase from Rs.3, 615 million in 2004/05 to Rs. 6,300 in 2013/14. The total incremental financial requirements for crop production are expected to increase from Rs.9, 454 million in 2004/05 to Rs. 15,275 million in 2013/14.

Table 5.17: Incremental Financial Requirement for Crop Production

(At 1991/92 prices)

(Rs. in million)

Year	Improved seeds	Fertilizer	Other cash and kind costs	Total
2004/05	276	5,567	3,615	9,454
2005/06	294	5,886	3,913	10,093
2006/07	312	6,205	4,212	10,732
2007/08	329	6,523	4,510	11,371
2008/09	347	6,842	4,808	12,010
2009/10	365	7,161	5,106	12,649
2010/11	383	7,480	5,404	13,287
2011/12	401	7,800	5,703	13,927
2012/13	419	8,119	6,002	14,556
2013/14	437	8,437	6,300	15,205

Source: Computed from Nepal Rural Credit Survey, NRB, 1994

The above projections are based on the following assumptions: (i) The distribution of improved seeds will increase substantially in coming years, (ii) fertilizer use will grow at a compound rate per annum and (iii) total area cropped will increase.

5.5.3 Total Incremental Financial Requirements during 2004/05 to 2013/14

The total incremental financial requirements of rural households during 2004/05 to 2013/14 are presented in table 5.18. The requirement at constant 1991/92 prices increases from Rs.19,694 million in 2004/05 to Rs.33,498 million in 2013/14.

Table 5.18: Total Incremental Financial Requirements of Rural Households for All Economic Activities

(At 1991/92 Prices)

(Rs.in million)

Year	Crop Prod.	Irrigation, land dev. and farm equip.	Agri-business	Agro and cottage industries	Marketing and cold storage	Long term credit	Total
2004/05	9,454	1,239	4,407	2,330	1031	397	19,694
2005/06	10,093	1,319	4,738	2,484	1100	428	21,074
2006/07	10,732	1,399	5,069	2,638	1168	459	22,455
2007/08	11,371	1,479	5,401	2,792	1237	489	23,835
2008/09	12,010	1,559	5,732	2,946	1305	520	25,216
2009/10	12,649	1,639	6,063	3,100	1374	550	26,596
2010/11	13,287	1,719	6,395	3,254	1442	581	27,976
2011/12	14565	1,879	7,057	3,562	1,580	642	30,737
2012/13	15,204	1,959	7,388	3,716	1,648	673	32,118
2013/14	15,843	2,039	7,720	3,871	1,717	703	33,498

Source: Based on Rural Credit Survey, 1994.

From table 5.18 it is clear that crop production will continue to be the principal economic activity in the rural areas requiring the maximum finances. As percentage of total requirements the share of crop production, however, is projected to come down from about 48 percent in 2004/05 to 47.5 percent in 2010/11 and 47.3 percent in 2013/14.

5.6 Household Borrowing during 1991/92

The rural credit Survey, 1994 revealed that only eight percent of the rural households borrowed from formal or Institutional sources during that year 1991/92. The percentage varied considerably across ecological regions and size classes as indicated in table 5.19 below.

Table 5.19: Proportion of Sample Households Reporting Borrowing from Institutional Sources during 1991/92

(In percent)

Region	All households	Large	Medium	Small	Marginal	Landless
Mountains	4	13	7	3	5	0
Hills	8	11	13	9	6	6
Terai	9	16	15	10	6	2
Nepal	8	14	14	8	6	3

Source: Rural Credit Survey, 1994, NRB

Table 5.20 below presents the average institutional borrowing per rural household during 1991/92. Using the estimated number of rural households of about 2,767,900 in the country and the overall average institutional borrowing per household of Rs.983, the total amount of institutional borrowing worked out to be Rs. 2,721.0 million in 1991/92.

Table 5.20: Average Institutional per Household Borrowing during 1991/92

(In Rs.)

Region	All households	Large	Medium	Small	Marginal	Landless
Mountains	1,083	1,635	326	1,721	360	0
Hills	1,085	4,883	2,916	1,100	395	278
Terai	819	2,657	1,780	808	373	121
Nepal	983	3,224	2,068	1,102	382	150

Source: *Ibid*

The table 5.20 shows that the average borrowing was the highest in the hills and the mountains (Rs.1, 085 and 1,083) and the lowest in the Terai (Rs.819). Within a region, the larger the size of operational landholding, the larger was the average size of borrowing, with an exception in the mountains. In the mountains, about 94 percent of the institutional loan was supplied by ADB/N.

Average borrowing per rural household including both institutional and non-institutional sources in 1991/92 is presented in table 5.21. The average for all households was Rs.3, 309. Among the regions, the lowest average was for the mountains at Rs. 2,789 and the highest was for the hills at Rs.3, 721. Across the size classes the average borrowing varied from Rs. 13,510 for large farm household to Rs.1, 015 for the landless household.

Table 5.21: Average Borrowing per Rural Household Including both Institutional and Non-Institutional Borrowing during 1991/92

(In Rs.)

Region	All households	Large	Medium	Small	Marginal	Landless
Mountains	2,789	9,026	3,041	3,328	1,689	909
Hills	3,721	19,008	5,692	3,768	2,155	2,243
Terai	2,975	11,531	5,040	2,672	1,773	809
Nepal	3,309	13,510	5,098	3,376	1,952	1,015

Source: *Ibid*

As per the rural credit survey 1994, the total borrowing of the rural households from the institutional and non-institutional sources added up to Rs. 9,158.4 million. The same survey estimated the total financial requirements for various economic activities at Rs.26, 263.6 million. These two figures imply that about 35 percent of the financial requirements for rural households were met by borrowings in 1991/92. There was significant variation in this percentage across size classes and regions. It was the highest at 51 percent in the case of marginal farmers in the hills and the lowest at nine percent in the case of landless households in the mountains. On the whole, higher percentage of the financial requirement of small and marginal farmers was met by borrowings. It may, however, be mentioned in this context that these are known to use a considerable share of informal borrowings for social and religious purposes as well as for consumption.

5.7 Forecast of Agricultural Credit to Rural Sector from Formal Institutions

The major source of institutional credit for the rural sector has been Agricultural Development Bank of Nepal. Various productive activities related to agriculture and

allied activities are being financed by ADB/N. More than 80 percent of ADB/N loans are disbursed to individuals directly. ADB/N provides short, medium and long-term credit. An attempt is made here to forecast the future credit supply by ADB/N using the time series data available since 1974/75. Semi-log time trends have been fitted for time series, using the criterion of least residuals between the fitted and the actual values; the best fit was decided for each series. Using these, the ADB/N credit supply, component-wise has been projected for the period, 2004/05 to 2013/14. The projected figures are presented in table 5.22. The implied compound rate of growth per annum varies from a low of 7.1 percent in the case of credit supply to horticulture to a high of 35.5 percent of credit supply to housing and land development.

Table 5.22: Projected Credit Supply from ADB/N - Component Wise

(At 1991/92 Prices)

(Rs.in million)

Year	Food grains and cereal crops production	Agri-tools and irrigation	Agri-business	Agri-industries, marketing and godowns	Horticulture	Tea/coffee cultivation	Housing and land development
2004/05	2396.67	4800.47	1380.55	2590.95	90.43	122.11	531.82
2005/06	2735.68	5981.39	1547.60	3015.87	96.85	147.14	720.62
2006/07	3122.65	7452.81	1734.85	3510.47	103.73	177.31	976.43
2007/08	3564.35	9286.21	1944.77	4086.19	111.09	213.66	1323.07
2008/09	4068.52	11570.61	2180.09	4756.32	118.98	257.46	1792.76
2009/10	4644.01	14416.98	2443.88	5536.36	127.42	310.23	2429.19
2010/11	5300.91	17963.56	2739.59	6444.32	136.47	373.83	3291.55
2011/12	6050.72	22382.60	3071.08	7501.19	146.16	450.47	4460.05
2012/13	6906.60	27888.71	3442.68	8731.39	156.54	542.81	6043.37
2013/14	7883.54	34749.34	3859.24	10163.34	167.65	654.09	8188.76
Implied Annual Compound rate of growth (%)	14.1	24.6	12.1	16.4	7.1	20.5	35.5

Source: Based on Nepal Rural Credit Survey, 1994, NRB

The total credit supply from ADB/N for all purposes is projected independently and the figures are given in table 5.23 along with the total of component-wise projections.

Table 5.23: Projected Total ADB/N Credit Supply

(Rs.in million)

Year	Projection of Total	Total of the Component Wise Projections
2004/05	9,970.10	11,913.00
2005/06	11,565.31	14,245.15
2006/07	13,415.76	17,078.5
2007/08	15,562.29	20,529.34
2008/09	18,052.25	24,744.74
2009/10	20,940.61	29,908.07
2010/11	24,291.11	36,250.23
2011/12	28,177.69	44,062.27
2012/13	32,686.12	53,712.10
2013/14	37,915.90	65,665.96

Source: Based on table 5.22

Besides ADB/N, the other sources of institutional credit for rural sector are commercial banks. Under priority sector lending programme the commercial banks are stipulated to lend a certain minimum percentage of loanable funds to agriculture, cottage and small industries and services. Using the methodology used for projecting the ADB/N credit supply, credit supply from commercial banks has also been projected and the figures are presented in table 5.24.

The total institutional credit supply projections, that is, the total of ADB/N and commercial banks credit supply projections are given in tables 5.23 and 4.24 respectively. Two sets of projections, namely, one based on component-wise projections and the other based on projections of the totals are presented. It is interesting to note that projection of totals give the lower figures as compared to the totals of component-wise projection for each of the ten years in the case of commercial banks and for all years in the case of ADB/N. Unless significant

Table 5.24: Projected Credit Supply by Commercial Banks

(Rs.in million)

Year	Agriculture	Cottage and small industries	Services	Total of the component wise projections	Projection of total
2004/05	8420.51	190.04	1364.45	7,577.33	3466.68
2005/06	11232.96	201.07	1715.11	9,975.00	4135.74
2006/07	14984.77	212.73	2155.89	13149.14	4933.94
2007/08	19989.69	225.06	2709.96	17353.39	5886.19
2008/09	26666.24	238.12	3406.41	22924.71	7022.23
2009/10	35572.76	251.93	4281.86	30310.77	8377.52
2010/11	47454.07	266.54	5382.30	40106.55	9994.38
2011/12	63303.73	282.00	6765.55	53102.91	11923.30
2012/13	84447.17	298.36	8504.30	70351.28	14224.49
2013/14	112652.50	315.66	10689.90	93249.83	16969.82
Implied annual compound rate of growth (%)	33.4	5.8	25.7		19.3

Source: Computed from Rural Credit Survey, 1994, HMG, Nepal

policy changes are introduced in the ADB/N and commercial banks lending in the coming years, these two sets of projections can be considered as the upper and lower bounds of institutional credit supply to the rural sector and the true figure can be expected to be between these figures for each year.

A simple average of the projections of the total and total of component wise projections for each year is taken as the preferred projections in the case of both ADB/N and CBs. These figures are given in columns 2 and 3 respectively of table 5.25. Adding the projected figures of ADB/N and CBs credit supply; we obtain the total institutional credit supply projections for the period 2004/05 to 2013/14, which are given in column 4 of table 5.25. The projections, however, are at current prices, which involve an inbuilt inflation rate of about ten percent per annum. Since the credit

demand figures for 2004/05 to 2013/14 have been worked at 1992/93 prices, we have deflated the projected institutional credit supply also to the 1992/93 price levels and presented in column 5 of table 4.25. Projected amount of institutional credit supply at 1991/92 prices increases from Rs.13, 122. 80 million in 2004/05 to Rs. 33,136.10 million in 2013/14. It may, however, be noted that these are purely based on projections based on the past trend and without any of the anticipated policy interventions.

Table 5.25: Projected Institutional Credit Supply to the Rural Sector

(2004/05 to 2013/14)

(Rs.in million)

Year	ADB	CBs	Total at current prices	Total at 1991/92 prices
2004/05	10941.55	5522.01	16463.56	13122.80
2005/06	12905.23	7055.37	19960.60	14,040.54
2006/07	13415.76	9041.54	22457.30	15,163.78
2007/08	18045.82	11619.79	29665.61	16376.88
2008/09	21398.50	14973.47	36371.97	17,693.58
2009/10	25424.34	19344.15	44768.49	19,286.00
2010/11	30270.67	25050.47	55321.14	21,600.00
2011/12	36119.98	32513.11	68633.09	24,840.00
2012/13	43199.11	42287.89	85487.00	28,814.00
2013/14	51790.93	55109.83	106900.76	33,136.10

Source: *Ibid*

Note:- CBs = Commercial banks

5.7.1 Projected Demand and Supply Gap in Rural Lending

Table 5.26 presents the projected demand and supply of credit and the credit gap in the rural sector for the period 2004/05 to 2013/14.

Table 5.26: Projected Demand and Supply of Credit and the Credit Gap

(Rs.in million)

Year	Credit demand	Credit supply	Credit gap	Credit gap as % of demand
2004/05	14,155.35	13122.80	1,032.55	7.29
2005/06	16,561.45	14,040.54	2,520.91	15.22
2006/07	19,401.15	15,163.78	4,237.37	21.84
2007/08	22,767.50	16376.88	6,390.62	28.07
2008/09	26,868.34	17,693.58	9,174.76	34.15
2009/10	31,742.25	19,286.00	12,456.25	39.24
2010/11	37,614.20	21,600.00	16,014.20	42.57
2011/12	44,611.56	24,840.00	19,771.56	44.31
2012/13	53,109.54	28,814.00	24,295.54	45.74
2013/14	63,279.65	33,136.10	30,143.55	47.63

Source: Based on table 5.25

The rural credit demand and institutional credit supply as projected in the table 5.26 show divergent trends over the relevant period. The projected figures in table 5.26 indicate that the institutional credit supply is likely to fall short of the credit demand. And, indeed, the credit gap is likely to increase overtime. As we see from the table 5.26 that the credit gap as a percentage of total demand in 2004/05 is 7.29 percent whereas it is likely to increase to 47.63 percent in 2013/14.

The main problem about rural credit in Nepal over the coming years is that of strengthening the rural credit institutions to meet the credit demand. This will require considerable effort at developing the rural financial markets. The institutional sector of rural credit market as it exists today is unsustainable and, to a large measure, inefficient and non-responsive (NRB: 2002). Because of the high cost involved in servicing small loans to households in remote areas and the high rate of repayment defaults, the formal financial institutions as they function today cannot remain viable for long. This is not a problem specific to Nepal. Experience of other developing countries in South Asia and elsewhere in the case of target-oriented rural lending by formal institutions is not different (NRB: 2002).

5.8 Demands for Credit – Micro Level Study

5.8.1 Factors Affecting Demand for Credit

Farm credit is required to supplement other sources of income and to fill the gap between the requirement and supply of purchasing power of farm families. It is demanded to buy resources for production and consumption. Thus the demand for farm credit is a derived demand. This derived demand is influenced by various exogenous and endogenous factors. Therefore, a complex interplay of economic relationships exists between the quantity demanded of farm credit on the one hand and these variables on the other.

Theoretically, the demand for farm credit like that of any other factor is dependent on its marginal value productivity and the rate of interest. This theory of demand has important simplifying assumptions, which become important in empirical derivation of demand function. These assumptions are related to the values of the variables considering being unchanging in the situation to which theory is related. These variables can broadly be grouped into (a) production function variables and (b) other variables.

Falling under the first category are (i) operational size of farm (ii) extent of irrigation (iii) cropping intensity (iv) value of purchased inputs (v) rate of interest and (vi) price of inputs and variables in the second group include (i) family consumption expenditure (ii) value of farm assets (iii) availability of institutional credit and (iv) risk aversion. These variables, which can influence the demand for farm credit, are discussed below.

5.8.1.1 Operational size of Farm

Farm size measured by land area cultivated per farm defines the basic unit of operation on which other inputs are applied. The use of other inputs like seeds fertilizer, weedicides, labour, irrigation etc., is positively correlated with the size of the farm. Therefore, the expenses as inputs and the consequent requirement of operating capital are directly linked to the farm size. Generally, there seems to be a positive relation between the size of operational area and volume of capital used. Therefore, a plausible hypothesis will be,

$$D = D(OE) \text{ and } dD/d(OE) > 0$$

That is the demand for credit (D) increases with the increase in operational expenses (OE). Indirectly, therefore the demand for credit is positively related to the size of the farm. That is

$$D = D(OE) \text{ and } OE = OE(S) \text{ with } OE' > 0 \dots\dots (1)$$

Where, S represents the size of farm. $dD/d(OE)$ represents the derivative of 'D' with respect to OE and the prime (*) indicates first derivative.

5.8.1.2 Extent of Irrigation

Availability of irrigation facilities influences the demand for farm credit in three ways: (i) Pumping and guiding water to crops adds to the cost of cultivation (ii) irrigation facilitates the intensive use of other farm inputs and (iii) it permits greater intensity of cropping and better cropping pattern. On an irrigated land multiple cropping becomes a feasible proposition. Further the cultivation of cash crops is made possible by the availability of irrigation. Therefore, variations in irrigation will vary the farm expenditures and the demand for farm credit. In other words, percentage of area irrigated (IR) may be expected to exert a positive influence on the demand for farm credit. That is,

$$D = D(IR), D' > 0 \dots\dots\dots (2)$$

5.8.1.3 Value of Purchased Inputs

New farm technology relies on the use of purchased inputs such as high yielding seeds, fertilizers and chemicals, in large quantities. These inputs though costly are more productive. Consequently, the use of purchased inputs has two effects on the demand for farm credit. First, the need for higher levels of cash expenses to buy the costlier inputs directly increases the demand for farm credit. Second, when farmers use these costlier inputs, the productivity of crops will increase and they are more induced to use additional credit to have still more output even at higher rate of interest. Therefore, it is reasonable to expect a positive relationship between the value of purchased inputs (v) and the demand for farm credit. That is,

$$D = D(v), D' > 0 \dots\dots\dots (3)$$

5.8.1.4 Cropping Intensity

Cropping intensity is another important variable that determines the demand for farm credit. By cropping intensity is meant more than one crop on the same land during the year. When farmers grow crop more than once, then it is assumed that they need

credit for each crop. Therefore, a positive relationship can be assumed between demand for farm credit and cropping intensity.

Thus,

$$D = D (CI), D' > 0 \dots\dots\dots (4)$$

Where, CI represents cropping intensity.

5.8.1.5 Farm Assets

Farm assets in the form of land, farm buildings, equipments and livestock influence the borrowing decisions of the farmers in three distinct ways: (i) It provides the necessary confidence to the farmers to borrow and repay from outside agencies, (ii) assets determine the repaying capacity and creditworthiness of the farmer and the amount of credit provided by the agencies is directly related to this repaying capacity and (iii) where the provision of credit is security linked, farm assets can be offered as good securities. These securities can act as risk absorbers because lenders' risk will decline as the estimated value of the security offered first approaches and then exceeds the value of loan. Farm assets, thus providing the security base, can reduce lenders' risk and increase their willingness to lend more. All these connections between farm assets and demand for farm credit imply a positive relationship between them. If so, the postulated relationship will be

$$D = D (A), D' > 0 \dots\dots\dots (5)$$

Where, A represents value of farm assets.

5.8.1.6 Family Consumption Expenditure

Most of the farmers need credit not only for meeting their production activities but also for consumption expenditure. The reason is that their current level of income is below the minimum necessary for the family. If consumption credit is not provided, production credit is easily diverted to meet consumption expenses, resulting in loss of potential gain in farm income. Therefore, total demand for farm credit includes consumption credit also. Thus, there emerges a direct relationship between demand for farm credit and level of consumption expenditure (F). That is,

$$D = D (F), D' > 0 \dots\dots\dots (6)$$

Where, F represents family consumption expenditure.

5.8.1.7 Availability of Institutional Credit

Since institutional credit is usually cheaper and devoid of usurious practices, it is expected that a rational farmer will borrow more from this source. Therefore, in this model a positive relationship is hypothesized between the availability of institutional credit and the demand for farm credit. Availability of farm credit is measured by its percentage share in total credit (I_c). Thus,

$$D = D(I_c), D' > 0 \dots\dots\dots(7)$$

Where, I_c represents proportion of institutional credit in total credit borrowed.

5.8.1.8 Rate of Interest

The rate of interest adds to the total cost of production by reducing the profit of the borrower farmers. Higher the rate of interest, lower will be the profit from the realized output because a substantial part of output is made for the repayment. It becomes difficult for the farmers to repay the loan if the rate of interest is high. Therefore, we can make the assumption that there is negative relationship between rate of interest and demand for farm credit. Thus,

$$D = D(r), D' < 0 \dots\dots\dots(8)$$

5.8.1.9 Farmer's Risk Aversion

Farming in general is risky business. Uncertainty in climate, rainfall and market conditions affecting prices of farm products and inputs are beyond the control of farmers. Most of them are small and marginal operators and are too poor to experiment. Therefore, they are averse to new methods of farming. Conservatism seems to be their best strategy against risk. This conservatism is reflected in their aversion to risk and consequent reluctance to avail credit for adoption of new technology. Therefore, demand for farm credit and risk aversion(R) can be expected to have a negative relationship. That is,

$$D = D(R), D' < 0 \dots\dots\dots(9)$$

Having determined the major determinants of demand for farm credit, next step is to specify the functional relationship between them. A study of scattered diagrams has strongly suggested a linear relationship between demand for credit and the explanatory variables discussed above (the diagrams are not presented here). Hence, with the classical normal linear assumptions, the following linear model is specified for the demand for farm credit,

$$D = \beta_0 + \beta_1 S + \beta_2 IR + \beta_3 V + \beta_4 CI + \beta_5 A + \beta_6 F + \beta_7 I_c - \beta_8 r - \beta_9 R + U \dots (9)$$

Where,

D = demand for farm credit in rupees, per hectare

S = operational size of farm in hectares

IR = extent of irrigation in percentage

V = value of purchased inputs rupees, per hectare

CI = cropping intensity in percentage

A = value of farm assets in Rs., per hectare

F = family consumption expenditure in rupees, per farm

I_c = share of institutional credit in total credit received in percentage

r = rate of interest in percentage

R = risk aversion

U = error term

β_0, \dots, β_9 are the regression coefficients (parameters) to be estimated

The relationship between risk aversion behaviour of farmers and demand for farm credit, rate of interest and demand for farm credit and price of inputs and demand for farm credit have been studied separately. So they are not included in the regression equations estimated below.

5.9 Regression Results – Demand for Farm Credit

The inter size group differences are significant in demand for farm credit and in various variables considered to be influencing the demand. Therefore, the three groups are studied separately. First study relates to the demand function for farm credit, which is fitted separately for each group of farmers according to the level of development. Estimated functions are presented and discussed below.

A sample of 225 farmers was selected of which 54 were marginal farmers, 126 were small farmers and 45 were medium and large farmers. Among them 18 marginal, 42 small, and 15 medium and large farmers were selected in the low developed, moderately developed and developed area respectively. The same number of farmers was selected for each group in each of the area according to the level of development.

The table 5.27 above shows that there is positive correlation between the size of operational area and the demand for farm credit. Similar is the explanation for value of farm assets, value of purchased inputs and family consumption expenditure. The regression coefficients of these variables have expected signs, and only the regression coefficients of the variables value of purchased inputs and family consumption expenditure are statistically significant.

Family consumption expenditure appears to be positively related to the amount of credit required and it is statistically significant at 1 percent level. The regression coefficient of family expenditure implies that for an increase of Rs. 100 in family expenditure the demand for credit will increase by 79.60 rupees, when other things are kept at their mean level. This means that a credit support of about 80 *paisa* is required for every additional rupee on consumption. Marginal farmers with bigger families having low returns are necessary to borrow even to maintain the subsistence living. Therefore, an increase in their family expenditure will be followed by an increase in demand for farm credit.

The availability of institutional credit has no influence on the demand for farm credit, which is indicated by the negative sign of the coefficient. This is because in the low developed area it was found that about 90 percent of the marginal farmers borrowed from the moneylenders and landowners. The share of institutional credit of the marginal farmers in the low developed area on the average was found to be 15 percent. They reported that they had to travel a long distance to reach the bank to apply for the credit. The marginal farmers were unable to borrow from the banks because the banks demanded security from them.

The coefficient of purchased input is positive and significant. It shows that one unit increase in the value of purchased inputs increases the demand for credit by 0.54 *paisa*. Thus, every additional rupee spent on purchased inputs requires a credit support of 54 *paisa*. In other words, nearly 54 percent of additional expenditure on purchased inputs by marginal farmers is met by credit. The result not only reveals the dependence of marginal farmers on production credit, but also that credit may be an important constraint in the adoption of purchased inputs like fertilizers, improved seeds and more of hired labour.

Credit Demand Function – Marginal Farmers – Moderately Developed Area

The results obtained for the marginal farmers in the moderately developed area are presented in the table 5.28 below:

Table 5.28: Estimates of value of Coefficients and Test Statistics of the Demand Function for Marginal Farmers in Moderately Developed Area

Description of variable	Regression coefficient	SD error	t value	Significance
Operational Area	4219.83	3959.25	1.065	N.S.
Value of Farm Assets	0.156	0.049	3.195	*
Value of purchased Inputs	3.435	1.256	2.734	**
Cropping Intensity	104.720	82.438	1.27	N.S.
Family Consumption Expenditure	0.692	0.250	2.768	**
% of Institutional Credit in total credit	-649.039	178.494	-3.636	*
% of Irrigated Area in Total Cropped Area	-71.329	164.83	-0.433	N.S.
$R^2 = 0.796$ $R = 0.892$ d.f. = 11 $N = 18$ N.S. = Not Significant; * = Significant at 1 % level of Significance; ** = Significant at 5 % level				

Source: *Ibid*

All explanatory variables have the a priori expected sign except the coefficient of percentage of institutional credit and percentage of irrigated area to total cropped area. The value of R^2 (0.796) is high and is significant. The coefficient of the percentage of irrigated area in total cropped area is not statistically significant.

In the moderately developed area also, the regression coefficient of operational area is positive implying that there is positive correlation between operational area and demand for farm credit. But when compared with the low developed area the per hectare demand for credit of marginal farmers is higher in moderately developed area.

The negative sign of percentage of institutional credit implies that due to the small size of land holding marginal farmers are not willing to borrow from the formal institutions. The demand for farm credit is not affected by the presence of formal credit institutions unless they are motivated towards them by attractive methods. They still depend on moneylenders and landowners for their credit requirements.

The regression coefficient of cropping intensity in the moderately developed area is found to be positive which implies that cropping intensity has positive influence on the demand for farm credit. But the coefficient is not statistically significant.. In moderately developed area the farmers practice cropping twice a year. This indicates that farmers need more credit for more crops.

In the moderately developed area, the regression coefficient of value of farm assets is found to be positive and significant at 1 percent level of significance. It implies that there is a strong relationship between the value of farm assets and the demand for farm credit. The higher the value of farm assets higher will be the demand for farm credit because marginal farmers can offer their assets as security to the formal credit supplying institutions.

Credit Demand Functions – Marginal Farmers – Developed Area

The results obtained for the marginal farmers in the developed area are presented in the table 5.29 below.

Table 5.29: Estimates of value of Coefficients and Test Statistics of the Demand Function for Marginal Farmers in Developed Area

Description of variable	Regression coefficient	SD error	t value	Significance
Operational Area	1215.56	1685.67	0.72	N.S.
Value of Farm Assets	0.0207	0.06	0.035	N.S
Value of purchased Inputs	0.288	0.128	2.25	***
Cropping Intensity	61.337	98.44	0.62	N.S
Family Consumption Expenditure	0.492	0.240	2.05	**
% Of Institutional Credit in total credit	-5.372	267.62	-0.02	N.S
$R^2 = 0.463$, $R = 0.581$, $N = 18$, $d.f = 11$ ** = Significant at 5 % level; N.S. = Not Significant; *** = Significant at 10 % level				

Source: *Ibid*

In the developed area, it is found that all the variables except the value of percentage of institutional credit have expected signs.

For the marginal farmers living in the developed area the size of operational area has positive influence on the demand for farm credit. When compared with low developed and moderately developed area, per hectare demand for credit is lower in developed area because in developed area the productivity of crops per hectare is

higher which reduces the need to borrow from outside for farm operations. Though the sign of the coefficient is positive, it is statistically not significant.

The positive and significant coefficient of value of purchased inputs implies that in developed area also the marginal farmers depend on borrowed funds to purchase farm inputs.

In the developed area, the regression coefficient of family consumption expenditure of marginal farmers is positive and significant at 5 percent level of significance. It implies that due the small size of land, the marginal farmers are not able to produce sufficient output to maintain their families even though they are hard working all the year round on their farms. It indicates that there is positive relationship between family expenditure and demand for farm credit in the developed area of Morang district.

The regression coefficient of cropping intensity is positive for the marginal farmers in the developed area but is statistically not significant.

Credit Demand Function – All Marginal Farmers

The regression results of all 54 marginal farmers is presented in the table 5.30 below

Table 5.30: Estimates of value of Coefficients and Test Statistics of the Demand Function for All Marginal Farmers in Morang District

Description of variable	Regression coefficient	SD error	Z value	Significance
Operational Area	-11046.9	19336.34	0.571	N.S.
Value of Farm Assets	0.01329	0.024	0.554	N.S.
Value of purchased inputs	0.305	0.125	2.44	***
Cropping Intensity	42.863	21.653	1.53	N.S.
Family consumption Exp.	0.219	0.110	1.990	**
% Of institutional credit	-125.46	106.26	- 1.181	N.S.
% of irrigated area	19.615	61.88	1.980	**
$R^2 = 0.467,$ $R = 0.684,$ $N = 54,$ $N.S. = \text{Not Significant}$ ** = Significant at 5 % level *** = significant at 10 % level				

Source: *Ibid*

The regression coefficient of operational area of all the marginal farmers is negative and not significant. It implies that operational area has no influence on the demand for farm credit for the marginal framers in Morang District.

The sign of regression coefficients of all the variables except operational area and percentage of institutional credit is positive implying positive relationship between the variables and demand for farm credit. The coefficient of family expenditure is significant at 5 percent level of significance. It indicates that for every additional one rupee increase in family consumption expenditure 22 *paisa* is to be supported by credit. The negative coefficient of institutional credit implies that marginal farmers resort to moneylenders and other sources for their increased demand for credit but they do not approach to formal credit institutions.

The coefficient of value of purchased inputs is positive and significant at 10 percent level. It also verifies that not only in different areas but also in the whole district the value of purchased inputs has significant influence on the demand for farm credit of marginal farmers.

The relationship between percentage of irrigated area and demand for credit is found to be positive and significant at 5 percent level. A significant and positive coefficient of percentage of irrigated area shows that increase in total area of crop would increase demand for farm credit. Increase in irrigation facilities helps higher intensity of cropping and more intensive cultivation. The coefficient of cropping intensity is also positive for all the marginal farmers implying that there is positive relationship between demand for farm credit and cropping intensity.

5.9.2 Credit Demand Function – Small Farmers

Out of 225 farmers selected, 126 farmers were small farmers. 42 small farmers were selected from each area; low developed, moderately developed and developed area respectively. The credit demand function for each group is fitted for each area. The results obtained are presented in tables below.

Credit Demand Function – Small Farmers – Low Developed Area

The estimates of value of coefficients and test statistics of the demand function for small farmers in the low developed area of Morang district are presented in the table 5.31 below:

Table 5.31: Estimates of value of Coefficients and Test Statistics of the Demand Function for Small Farmers in Low Developed Area

Description of variable	Regression coefficient	SD error	t value	Significance
Operational area	1308.321	4504.549	0.290	N.S.
Value of farm assets	-0.009	0.008	-1.178	N.S.
Value of purchased inputs	0.1620	0.374	0.433	N.S.
Family consumption expenditure	0.08901	0.045	1.978	**
% of Institutional Credit	74.544	54.736	1.374	N.S.
$R^2 = 0.442$, $R = 0.665$, $N = 42$, N.S. = Not Significant; ** = Significant at 5 % level				

Source: *Ibid*

The above table 5.31 shows that the sign of all regression coefficients is positive as expected except the sign of the coefficient of value of farm assets. The positive sign of the regression coefficients imply that there is positive relationship between the variables and demand for farm credit for the small farmers in the low developed area.

It is found that there is strong relationship between family consumption expenditure and demand for farm credit in the low developed area. It was reported by the farmers in this area that their production was not sufficient for them to maintain their lives for the whole year. For food and other purposes in addition to their farm operations they had to depend on outside finance. This is also verified by the positive regression coefficient that is significant at 5 percent level of significance.

The correlation coefficient between percentages of institutional credit in total credit received and demands for farm credit is positive which is indicated by the positive regression coefficient. It indicates that small farmers in the low developed area resort to formal credit institutions for credit. But strong conclusion cannot be made because the regression coefficient is not statistically significant.

Credit Demand Function–Small Farmers–Moderately Developed Area

The results obtained for the small farmers for the moderately developed area are presented in the table 5.32 below.

Table 5.32: Estimates of Value of Coefficients and Test Statistics of the Demand Function for Small Farmers in Moderately Developed Area

Description of variable	Regression coefficient	SD error	t value	Significance
Operational area	-765.218	4039.051	-0.189	N.S.
Value of Farm assets	0.005167	.007	0.738	N.S.
Value of purchased inputs	0.669	0.164	4.079	*
Cropping intensity	119.565	60.532	1.975	**
Family consumption expenditure	0.118	0.058	2.034	**
% of institutional credit	102.624	60.654	1.691	***
% of irrigated area	1688.645	823.729	2.050	**
$R^2 = 0.460$ * = Significant at 1 percent level, $R = 0.678$ $N = 42$ N.S. = Not Significant ** = Significant at 5 percent level; *** = Significant at 10 percent level				

Source: *Ibid*

The above table 5.32 shows that the sign of all the regression coefficients except operational area is positive as expected. The regression coefficient of value of farm assets is positive but it is statistically not significant.

The relationship between value of purchased inputs and demand for farm credit is found to be positive and significant at 1 percent level. It shows that one unit increase in the value of purchased inputs increases the demand for credit by 0.669 units. Thus every additional rupee spent on purchased inputs requires a credit support of 67 *paisa*. In other words, nearly 67 percent of additional expenditure on purchased inputs by small farmers in the moderately developed area is met by credit. This result justifies the dependence of small farmers on outside finance for agricultural operations.

A significant and positive coefficient of family consumption expenditure implies that there is direct and positive relationship between family consumption expenditure and demand for farm credit. An increase of Rs.100 in family expenditure, the demand for credit will increase by 11.80 rupees when other things are kept at the mean level. This means that a credit support about 12 *paisa* is required for every additional rupee spent on consumption. This result justifies that the small farmers also depend on outside finance for their consumption expenditure.

The significant and positive coefficients of cropping intensity and percentage of irrigated area to total cropped area also show that they influence the demand for farm credit. They are both significant at 5 percent level of significance.

The regression coefficient of percentage of institutional credit is significant only at 10 percent level of significance. But the positive sign points out the need to expand the formal credit supply in that area and motivate the small farmers towards formal institutional credit.

The availability of institutional credit exerts a significant and positive influence on the credit demand of small farmers in the moderately developed area. One percent increase in the share of institutional credit to the total credit is found to increase the demand for farm credit by Rs.102.62. This is because the institutional credit is usually cheaper than private credit and if available, farmers go in for more of this credit. 65 percent of the farmers in the moderately developed area reported that they were more willing to borrow from the formal credit institutions. At the same time untimely and inadequate supply of credit and official procedures seem to discourage the farmers from borrowing from the formal credit institutions.

Credit Demand Function – Small Farmers – Developed Area

The results obtained for the small farmers for the developed area are presented in the table 5.33 below.

Table 5.33: Estimates of value of Coefficients and Test Statistics of the Demand Function for Small Farmers in Developed Area

Description of variable	Regression coefficient	SD error	t value	Significance
Operational area	- 5765.893	4820.988	-1.196	N.S.
Value of farm assets	0.01164	0.0059	1.972	**
Value of purchased inputs	0.701	0.345	2.031	**
Cropping intensity	84.529	42.654	1.981	**
Family consumption expenditure	0.241	0.121	1.991	**
% of institutional credit	196.509	95.654	2.055	**
$R^2 = 0.417$, $R = 0.646$, $N = 42$, N.S. = Not Significant ** = Significant at 5 percent level				

Source: *Ibid*

Operational area has no significant influence on the demand for credit, probably within the group variations by size is small. The sign of the estimated regression coefficient of operational area is negative but it is not statistically significant.

The sign of all other regression coefficients except the sign of the operational area is positive as expected implying that they have positive influence on the demand for farm credit.

Credit Demand Function – All Small Farmers

The results obtained for all small farmers sampled in the Morang district are presented in the table 5.34 below.

Table 5.34: Estimates of value of Coefficients and Test Statistics of the Demand Function for All Small Farmers in Morang District

Description of variable	Regression coefficient	SD error	Z- value	Significance
Operational Area	3936.016	2310.629	1.18	N.S.
Value of Farm assets	0.000423	0.003	0.141	N.S.
Value of purchased inputs	0.618	0.115	5.355	*
Cropping Intensity	9.287	26.622	0.349	N.S.
Family consumption expenditure	0.140	0.057	2.452	**
% of Institutional Credit	14.725	34.693	0.424	N.S.
% Of irrigated area	12.679	60.845	0.208	N.S.

$R^2 = 0.489$, $R = 0.699$, N.S. = Not Significant, * = Significant at 1 percent level, ** = Significant at 5 percent level, N = 126

Source: *Ibid*

The above table 5.34 shows that the regression coefficients of all the variables are positive. Only the regression coefficients of value of purchased inputs and family consumption expenditure are significant at 1 percent and 5 percent levels respectively.

The value of purchased inputs is positive and significant. It shows that every additional rupee spent on purchased inputs by small farmers in Morang district requires a credit support of 62 *paisa*. In other words nearly 62 percent of additional expenditures on purchased inputs by small farmers is met by credit. This result not only justifies the dependence of small farmers on production credit, but also that credit may be an important constraint in the adoption of purchased inputs like fertilizers, improved seeds, chemicals and more of hired labour. It was reported by the farmers during the survey that the demand for credit was more when they had to hire labour for farm operations.

In addition to farm operations small farmers also borrow for family consumption expenditure. A positive and significant coefficient of family consumption expenditure indicates that family consumption expenditure has also great influence on the

demand for farm credit of small farmers in Morang district. It means that credit is demanded not only for farm operations but it is demanded for consumption expenditure also. Unless the farmers are provided the credit for consumption expenses, there is a chance of diverting a portion of the production credit to the purchase of consumption goods.

5.9.3 Credit Demand Function – Medium and Large Farmers

Out of 225 farmers selected, 45 farmers were medium and large farmers. 15 medium and large farmers were selected from each of the area; low developed, moderately developed and developed areas respectively. The credit demand function for each group is fitted for each area. The results obtained are presented below.

Credit Demand Function–Medium and Large Farmers–Low Developed Area

The results obtained for medium and large farmers sampled in the low developed area of Morang district are presented in the table 5.35 below.

Table 5.35: Estimates of Value of Coefficients and Test Statistics of the Demand Function for Medium and Large Farmers in Low Developed Area

Description of variable	Regression coefficient	SD error	t-value	Significance
Operational area	631.583	4156.171	0.152	N.S.
Value of farm assets	0.001938	0.009	0.224	N.S.
Value of purchased inputs	107.355	151.177	0.710	N.S.
Family consumption expenditure	0.694	0.199	3.491	*
% Of institutional credit	115.885	112.399	1.031	N.S.
R ² = 0.703, N.S. = Not Significant, R = 0.839 * = Significant at 1 percent level.				

Source :Ibid

The table 5.35 above shows that all the regression coefficients are positive indicating a positive relationship between the variables and demand for farm credit. Only the regression coefficient of family expenditure is statistically significant at 1 percent level of significance and other variables are not significant.

The regression coefficient of family consumption expenditure is positive and significant at 1 percent level. It indicates that even the medium and large farmers in the low developed area have to borrow from outside for consumption expenditure. It

is because of single cropping practice in the low developed area where the productivity per hectare is very low.

Credit Demand Function–Medium and Large Farmers Moderately Developed Area

The results obtained for the medium and large farmers in the moderately developed area are presented in the table 5.36 below:

Table 5.36: Estimates of value of Coefficients and Test Statistics of the Demand Function for Medium and Large Farmers in Moderately Developed Area

Description of variable	Regression coefficient	SD error	t value	Significance
Operational Area	- 3877.830	2687.396	-1.443	N.S.
Value of farm assets	- 0.00361	0.002	- 2.408	**
Value of purchased inputs	0.799	0.219	3.648	*
Cropping intensity	- 72.654	31.800	-2.285	***
Family consumption expenditure.	0.136	0.730	0.186	N.S.
% of institutional credit	217.802	70.395	3.094	**
% of irrigated area	-224.652	64.913	-3.461	**
$R^2 = 0.784$, $R = 0.886$, d.f. = 7 N.S. = Not Significant * = Significant at 1 percent level. N = 15; ** = Significant at 5 percent level *** = Significant at 10 percent level				

Source: *Ibid*

The above table 5.36 shows that, in case of medium and large farmers in the moderately developed area, the regression coefficient of operational area is negative and statistically insignificant. Although the sign of the regression coefficient of family consumption expenditure is positive it is not statistically significant.

The significant and negative regression coefficient of value of farm assets indicates that there is negative relationship between demand for farm credit and value of farm assets. This is due to the fact that the value of farm assets includes cash income of the medium and large farmers. The value of production of crops of medium and large farmers are more than their consumption requirements. Their cash income is more than that of marginal and small farmers

A significant and positive coefficient of value of purchased inputs indicates that medium and large farmers borrow for the purchase of inputs like improved seeds and

chemical fertilizers. It is also supported by the positive and significant regression coefficient of percentage of irrigated area. Medium and large farmers also borrow from the formal institutions because the rate of interest charged by the formal institutions is cheaper than that of moneylenders.

It is found that the relationship between the percentage of institutional credit and demand for farm credit in case of medium and large farmers in the moderately developed area is positive and significant. It was reported during the survey that medium and large farmers usually borrow from the formal credit supplying institutions at a lower rate of interest (15 percent) and lend it to the marginal and small farmers at a higher rate of interest (36 to 60 percent).

Credit Demand Function - Medium and Large Farmers – Developed Area

The results obtained for medium and large farmers in the Developed Area are presented in the table 5.37 below:

Table 5.37: Estimates of Value of Coefficients and Test Statistics of the Demand Function for Medium and Large Farmers in Developed Area

Description of variable	Regression coefficient	SD error	t value	Significance
Operational area	-4277.825	3692.75	-1.158	N.S
Value of Farm assets	-0.000867	0.004	-0.234	N. S
Value of purchased inputs	0.915	0.193	4.745	**
Cropping intensity	15.956	37.486	0.426	N. S.
Family consumption expenditure	0.312	0.249	1.254	N. S
% of institutional Credit	53.682	94.245	0.570	N.S
R ² = 0.894, R = 0.945, N.S. = Not Significant, * = Significant at 1 percent level, d.f. = 7, ** = Significant at 5 percent level, *** = Significant at 10 percent level				

The results presented in the above table 5.37 for the medium and large farmers in the developed area show that the regression coefficients of operational area and value of farm assets are negative and insignificant.

The coefficient of value of purchased inputs is significant and positive. It indicates that medium and large farmers borrow from the credit institutions to purchase the inputs required for their farms. The coefficients of other variables are

positive but not significant. Though they are not statistically significant, the positive signs indicate that there is positive relationship between demand for credit and the variables as expected.

Credit Demand Function – All Medium and Large Farmers

The results obtained for the entire medium and large farmers sampled in the Morang district are presented in the table 5.38 below:

Table 5.38: Estimates of Value of Coefficients and Test Statistics of the Demand Function for All Medium and Large Farmers in Morang District

Description of variable	Regression coefficient	SD error	Z value	Significance
Operational Area	3905.080	2469.234	1.581	N.S.
Value of Farm Assets	0.001189	0.002	0.572	N.S.
Value of purchased Inputs	0.632	0.110	5.738	*
Cropping Intensity	8.347	30.828	0.271	N.S.
Family Con. Exp.	-0.401	-0.289	-1.388	N.S.
% Of Institutional Credit.	60.451	48.956	1.235	N.S.
% Of Irrigated Area.	7.380	44.619	0.165	N.S.
$R^2 = 0.727$, $R = 0.852$, N.S. = Not Significant, * = Significant at 1 percent level				

Source: *Ibid*

The above table 5.38 shows that there is positive relationship between operational area and demand for farm credit though the regression coefficient is found to be insignificant.

The signs of all variables except family consumption expenditure are positive and only the regression coefficient of value of purchased inputs is significant. It indicates that medium and large farmers take credit mostly for purchasing the inputs required for their farm operations.

The positive sign of other variables also indicate that there is positive relationship between demand for credit and the variables under study.

The negative and insignificant regression coefficient of family consumption expenditure indicates that the family consumption expenditure of medium and large farmers has no influence on the demand for farm credit in the district under study.

5.9.4 Credit Demand Function – All Farmers

The results obtained for all 225 farmers sampled are presented in the table 4.39 below:

Table 5.39: Estimates of value of Coefficients and Test Statistics of the Demand Function for All Farmers in Morang District

Description of variable	Regression coefficient	Standard error	z-value	Significance
Operational area	1357.043	1066.34	1.273	N.S.
Value of farm assets	0.00236	0.00125	1.89	***
Value of purchased inputs	0.476	0.098	4.857	*
Cropping intensity	9.016	13.031	0.692	N.S.
Family consumption expenditure	0.195	0.046	4.205	*
% of Institutional Credit	-38.300	17.65	2.171	**
% of Irrigated Area	15.521	27.188	0.563	N.S.
R ² = 0.588, R = 0.767, N = 225, N.S. = Not Significant, * = Significant at 1 % level of Significance, ** = Significant at 5 % level, *** = Significant at 10% Level of significance				

Source: *Ibid*

The table 5.39 above shows that there is positive relationship between operational area and the demand for farm credit in the district. Although the coefficient is positive, it is not statistically significant. All other regression coefficients are positive except the regression coefficient of percentage of institutional credit. The coefficients of cropping intensity and percentage of irrigated area are not significant. The regression coefficient of value of purchased inputs is significant at 1 percent level of significance. A significant and positive coefficient of value of purchased inputs indicates that value of purchased inputs has strong influence on the demand for farm credit in Morang district. This justifies that farmers have to depend on outside finance for farm operations.

The same explanation is applicable to family consumption expenditure. The coefficient of family consumption expenditure is also positive and significant. A positive and significant coefficient of family consumption expenditure implies that family consumption expenditure has strong influence on the demand for farm credit.

It justifies that farmers have to depend on outside finance for their consumption expenditures.

5.10 Elasticity of Demand for Farm Credit

The prevailing rate of interest influences the demand for farm credit. Therefore, the demand relationships can be summarized in terms of the interest elasticity of demand, which measures the responsiveness of demand for farm credit to changes in interest rates. The concept of interest elasticity of demand has significant policy implications. In the past, several authors have attempted to examine the nature of interest elasticity of credit demand in Indian agriculture. They are discussed in detail in chapter one of this research work.

A linear regression model of two variables was fitted for all the classes of farmers in three development areas as the following.

$$D = a + bi + u$$

Where, D = Demand for credit in rupees.

i = Rate of interest in percentage.

u = Disturbance term assumed to be normally distributed.

b = Regression coefficient to be determined.

a = Constant term.

The interest elasticity of demand for farm credit is calculated using the following formula.

$$E = \hat{b} \frac{\bar{i}}{\bar{D}}$$

Where, E = Interest Elasticity of demand for farm credit

\bar{i} = Arithmetic mean of rate of interest

\hat{b} = Estimated regression Coefficient

\bar{D} = Arithmetic mean of total credit borrowed

The regression results obtained and elasticity of demand for farm credit for the marginal farmers are presented in the table 5.40 below.

Table 5.40 : The Estimated Regression Equations of Demand for Farm Credit on the Rate of Interest for the Sampled Marginal Farmers

1. Marginal farmers–Low Developed Area	$D = 12425.83 + 81i$ (2.689) (-0.727)	$R^2 = 0.032$	$F = 0.529$	$n = 18$
The values in the parentheses are t - ratios				
2. Marginal Farmers – Moderately Developed Area	$D = 5090.447 + 147.301i$ (1.299) (1.432)	$R^2 = 0.114$	$F = 2.050$	$n = 18$
The values in the parentheses are t - ratios				
3. Marginal Farmers – Developed Area	$D = 9830.486 + 77.048i$ (1.768) (0.486)	$R^2 = 0.015$	$F = 0.236$	$n = 18$
The values in the parentheses are t - ratios				
4. All Marginal Farmers	$D = 9615.872 + 29.042i$ (3.629) (0.418)	$R^2 = 0.003$	$F = 0.0418$	$n = 54$
The values in the parentheses are Z - values				

Source: *Ibid*

All the regression coefficients obtained from using the sample data for marginal farmers are positive but insignificant. The positive and insignificant regression coefficients indicate that the rate of interest has no influence on the demand for farm credit of the marginal farmers. The insignificant regression coefficients indicate that most of the marginal farmers in Morang district depend on moneylenders and landlords for credit. They have minimum access to formal institutions. The interest rate charged by the moneylenders and landlords is very high and they generally do not reduce the rate. The marginal farmers have to borrow not only for agricultural operations but also for consumption purposes. During the survey it was found that the rate of interest charged by the landlords and moneylenders was higher for consumption purposes than for agricultural operations (36 percent and 60 percent respectively). The farmers have to borrow and they have no any other alternatives. This has caused the regression coefficients to be positive contrary to the usual relationship between demand for credit and rate of interest. Since, the regression coefficients are statistically insignificant, we have not calculated the elasticity of credit for the marginal farmers.

The regression results obtained and elasticity of demand for farm credit for the small farmers are presented in the table 5.41 below.

Table 5.41: The Estimated Regression Equations of Demand for Farm Credit on the Rate of Interest for the Sampled Small Farmers

1. Small Farmers – Low Developed Area	$D = 7076.029 + 40.908i$ (4.350) (1.076)	$R^2 = 0.028$	$F = 1.158$	$n = 42$
2. Small Farmers – Moderately Developed Area	$D = 19095.382 - 104.976i$ (9.102) (-1.985)	$R^2 = 0.087$	$F = 3.829$	$n = 42$
	* = Significant at 5 percent			
	$E = 0.2457$			
	The values in the parentheses are t- values			
3. Small Farmers – Developed Area	$D = 18313.955 - 43.088i$ (11.589) (-0.988)	$R^2 = 0.024$	$F = 0.977$	$n = 42$
	The values in the parentheses are t – values			
4. All Small Farmers	$D = 15625.916 - 55.574i$ (9.144) (-1.715)	$R^2 = 0.023$	$F = 2.942$	$n = 126$
	The values in the parentheses are Z – values			

Source: *Ibid*

The regression coefficients obtained for the small farmers in all the areas including Morang district as a whole are insignificant except the regression coefficient of moderately developed area. The value of R^2 is very low in all the cases. The regression coefficient of moderately developed area is negative and significant at 5 percent level; It implies that there is negative relationship between demand for farm credit and rate of interest for the small farmers in the moderately developed area. The reason is that in the moderately developed area the number of owner cultivators sampled was greater than that of tenant farmers. These owner farmers generally borrowed credit from the formal institutions. The amount of loan taken by these farmers was found to be larger than the amount they took from the moneylenders. The rate of interest charged by the formal institutions (mainly ADB/N) was 15 percent

whereas the rate charged by the moneylenders varied from 36 percent to 80 percent per annum. At a higher rate of interest these owner cultivators took small amount of loan from the landlords and moneylenders. This behaviour of owner cultivators caused a negative relationship between demand for farm credit and rate of interest. Although there existed the negative relationship between the two variables the value of elasticity (0.2457) showed interest inelasticity of demand for farm credit.

The regression results obtained and elasticity of demand for farm credit for the medium and large farmers are presented in the table 5.42 below.

Table 5.42 The Estimated Regression Equations of Demand for Farm Credit on the Rate of Interest for the Sampled Medium and Large Farmers

1. Medium and Large – Low Developed Area $D = 22608.963 - 207.446i$ (9.144) (-1.848) $R^2 = 0.208$ $F = 3.415$ $n = 15$
2. Medium and Large Farmers – Moderately Developed Area $D = 27255.56 - 156.954i$ (9.13) (-1.012) $R^2 = 0.073$ $F = 1.025$ $n = 15$ The values in the parentheses are t – values
3. Medium and Large Farmers – Developed Area $D = 24154.33 - 102.976i$ (9.144) (0.793) $R^2 = 0.046$ $F = 0.629$ $n = 15$ The values in the parentheses are t – values
4. All Medium and Large Farmers $D = 24184.866 - 109.095i$ (5.344) (-1.715) $R^2 = 0.039$ $F = 1.746$ $n = 45$ The values in the parentheses are z – values

Source : *ibid*

All the regression coefficients are insignificant. Although the regression coefficients of all the estimated regressions are negative, they are all insignificant. Most of the medium and large farmers were owner cultivators and they usually took loan from the formal credit institutions. The rate of interest charged by the formal credit institutions was very low in comparison to the rate charged by the moneylenders. This is why the coefficients were found to be negative for all the medium and large farmers implying the inverse relationship between demand for farm credit and rate of interest.

From the study of the regression results we come to the conclusion that the rate of interest has no influence on the demand for farm credit of the marginal and small farmers but it influenced the borrowing behaviour of medium and large farmers in Morang district.

5.11 The Relationship between Price of Inputs and Demand for Farm Credit

In order to study the relationship between price of inputs and demand for farm credit we have utilized the secondary data relating to credit used in the agricultural sector of Nepal and the quantity of fertilizer used together with the price of fertilizer during the period 1992 to 2002. The relationship was determined by calculating the Karl Pearson's coefficient of correlation. The figures are presented in the table 5.43 below.

Table 5.43: Average Price of Fertilizers, Total Agricultural Credit Used and Use of Chemical Fertilizers

(1992- 2002)			
Year	Average price (Per m.t.)	Agricultural credit used Rs. in million	Use of chemical fertilizers (In m.t.)
1992	5186.7	1469	84391
1993	8866.7	1985	83331
1994	8866.7	2887.9	73812
1995	8866.7	433.7	90263
1996	10700.0	3896.8	70154
1997	10700.0	4023.4	64150
1998	11773.3	4430.1	47010
1999	11773.3	5562.4	45669
2000	14100.0	7084.7	37250
2001	15795.7	8089.8	23623
2002	15369.0	8888.9	19713

Source: Obtained from Economic Survey, MOF, 2003, HMG, Nepal

The coefficient of correlation between average price of fertilizer and total credit use is found to be (-) 0.928. It indicates a high negative correlation between the two variables. The correlation coefficient is significant at 1 % level of significance. The result indicates that when price of inputs increases, farmers are discouraged to

purchase required amounts of inputs. This will certainly affect the productivity of crops.

To examine the effect of increase in price of chemical fertilizers on the amount of credit borrowed we calculated the correlation coefficient between average price of chemical fertilizers and total credit used. The coefficient of correlation is found to be 0.928. It indicates a high positive correlation between price of inputs and the demand for farm credit. The coefficient of correlation is significant at 1 percent level of significance. This result shows that when the price of inputs increases more credit is required to purchase the earlier levels of inputs. It indicates that among the various factors determining the demand for farm credit, price of inputs is also one strong variable.

5.12 Risk Aversion Behaviour of Farmers and Demand for Farm Credit

Because the risk aversion of farmers was not fitted in the demand for credit model, we have made an attempt to analyse the risk behaviour of the farmers and its relation with the demand for farm credit.

One of the questions asked to the farmers during the survey was that why they were not using improved variety of seeds and fertilizers on their farms. The responses made by them are presented in the following tables 5.44, 5.45 and 5.46.

Table 5.44: Risk Aversion Behaviour of Farmers in Low Developed Area

Class	Did not use improved variety due to risk	Did not use improved variety due to high cost	Used improved variety	Total
Marginal	12(66.67%)	4(22.22%)	2(11.11%)	18(100%)
Small	22(52.38%)	14 (33.33%)	6 (14.29%)	42(100%)
Medium and Large	6(40%)	4(26.67%)	5(33.33%)	15(100%)

Source: Field Survey Data

In the table 5.44 in the low developed area, out of 18 marginal farmers, majority of them (66.67%) were not using modern inputs because they argued that use of these inputs required intensive care with irrigation facilities available whenever required. As there were no irrigation facilities in the low developed area, the farmers did not use modern inputs like improved seeds and fertilizers according to the recommended level. They were using local variety of seeds and manure. Similarly, 52.38 percent of

small farmers and 40 percent of the medium and large farmers were not using these modern inputs on their farms showing risk in returns by using these inputs. The figures indicated that farmers in the low developed area were risk averse. When they are risk averse, their demand for credit for production purposes will be low. This risk aversion behaviour of farmers has negative effect on the demand for farm credit.

Table 5.45: Risk Aversion Behaviour of Farmers in Moderately Developed Area

Class	Did not use improved variety due to risk	Did not use Improved variety due to high cost	Used Improved variety	Total
Marginal	9(50%)	3(16.67%)	6(33.33%)	18(100%)
Small	18(42.86%)	13(30.95%)	11(26.19%)	42(100%)
Medium and large	5(33.33%)	3(20%)	7(46.67%)	15(100%)

Source: Field Survey Data, 2001

In the table 5.45 in the moderately developed area, the proportion of farmers using modern inputs for all farmers is greater than the low developed area, yet majority of the farmers are found to be risk averse. The same conclusion can be drawn for this area also.

Table 5.46 : Risk Aversion Behaviour of Farmers in Developed Area

Class	Did not use improved variety due to risk	Did not use improved variety due to high cost	Used improved variety	Total
Marginal	8(44.44%)	3(16.67%)	7(38.89%)	18(100%)
Small	16(38.10%)	14(33.33%)	12(28.57%)	42(100%)
Medium and large	4(26.67%)	4(26.67%)	7(46.67)	15(100%)

Source: Field Survey Data, 2001

In the developed area, in the table 5.46 the proportion of medium and large farmers who were using modern inputs (46.67%) is greater than the proportion of medium and large farmers who were not using these inputs. (26.67%) because of risk factor. The figures indicated that the farmers in the developed area were less risk averse than the farmers of low developed area and moderately developed area. This indicates that the risk aversion behaviour of farmers is influenced by the level of development, which further justifies that the demand for credit is also dependent on the level of development.

The figures under the column in all the tables 'did not use due to high cost' indicated that the farmers were willing to use these modern inputs but they could not use them because these inputs were more expensive than the locally available inputs. To verify this, the researcher compared the prices of locally available inputs and modern inputs. The price of seed per Kg. of paddy of local variety was found to be Rs. 10.0 whereas the price of seed per Kg. of high yielding variety was found to be Rs. 20.0. Similarly, The price of wheat per Kg. of local variety was Rs. 20.0 whereas it was Rs. 40.0 for the HYV. Although they could get higher returns by using modern variety, the farmers could not use due to the lack of adequate finance to purchase these inputs.

Table 5.47: Risk Aversion Behaviour of Farmers
(All Farmers)

Class	Did not use improved variety due to risk	Did not use improved variety due to high cost	Used improved variety	Total
Marginal	29(53.70%)	10(18.52%)	15(27.78%)	54 (100%)
Small	56(44.44%)	41(32.54%)	29(23.02%)	126 (100%)
Medium and large	15((33.34%)	11(24.44%)	19(42.22%)	45 (100%)

Source: Field Survey Data, 2001

On the basis of the table 5.48 a chi-square test was conducted in order to test the hypothesis that there is no association between the risk aversion behaviour of farmers and the class of farmers. The table 5.48 extracted is presented as following:

Table 5.48 : Observed Frequencies

Class	Did not Use improved variety due to risk	Used Improved Variety	Total
Marginal	29	15	44
Small	56	29	85
Medium and large	15	19	34
Total	100	63	163

Source: based on the table

The table of observed and expected frequency and the calculation of Chi-Square alue is presented in the table5.49 below:

Table 5.49: Observed and Expected Frequencies and Value of Chi-Square

F_0	F_e	$F_0 - F_e$	$(F_0 - F_e)^2$	$\frac{(F_0 - F_e)^2}{F_0}$
29	27	2.0	4.0	0.15
56	52.15	3.85	14.82	0.28
15	20.86	5.86	34.34	1.65
15	17	-2.0	4.0	0.24
29	32.85	-3.85	14.82	0.45
19	13.14	5.86	34.34	2.61
			Total	5.38

Here, F_0 = Observed Frequency

F_e = Expected Frequency

$$\text{Chi - Square } (\chi^2) = \sum \frac{(F_0 - F_e)^2}{F_0}$$

The calculated value of Chi-square is 5.38

The tabulated value of chi-square at 5 percent level of significance for 1 degrees of freedom is 5.99.

Since the calculated value of Chi-square is less than the tabulated value, we accept the null hypothesis of no association between risk aversion behaviour of farmers and class of farmers. Therefore, we can conclude that all farmers are risk averse in the sampled area. This result indicates that all farmers in the sampled area are conservative and do not want to follow modern techniques of production.