INVESTMENT PATTERN AND CREDIT UTILIZATION OF LARGE FARMERS IN SOUTH-WESTERN PUNJAB

Thesis

Submitted to the Punjab Agricultural University
in partial fulfillment of the requirements
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MASTER OF SCIENCE
in
AGRICULTURAL ECONOMICS
(Minor Subject: Statistics)

By

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CERTIFICATE I

This is to certify that the thesis entitled**, "Investment pattern and credit utilization of large farmers in south-western Punjab"** submitted for the degree of M.Sc., in the subject of **Agricultural Economics** (Minor subject: **Statistics**) of the Punjab Agricultural University, Ludhiana, is a bonafide research work carried out by **Sukhdeep Singh** (Admn. No**. L-2014-BS-239-M**) under my supervision and that no part of this thesis has been submitted for any other degree.

This assistance and help received during the course of investigation have been fully acknowledged.

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CERTIFICATE II

This is to certify that the thesis / project report entitled, **"Investment pattern and credit utilization of large farmers in south-western Punjab"** submitted by **Sukhdeep Singh (L-2014-BS-239-M)** to the Punjab Agricultural University, Ludhiana, in partial fulfillment of the requirements for the degree of **Master of Science** in the subject of **Agricultural Economics** (Minor subject: **Statistics**) has been approved by the Student's Advisory Committee along with Head of the Department after an oral examination on the same.

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ABSTRACT

The present study has been devised to have an in depth knowledge about investment pattern in various farm and non-farm assets, and credit utilization of large farmers in south-western Punjab. For this study, data was collected from large farm households having operational holding more than 10 hectares (25 acres) as per the standard classification of operational holding. It was found that crop farming was the major source of income on sampled farms and about 92 per cent of the total income was generated from this source alone. Out of the total expenditure, the expenditure on food and vehicles was the major cost item heads which accounted for 20.33 and 19.53 per cent to the total expenditure respectively. The study revealed that on sampled farms the maximum investment occurred in purchase of land, tractors, trolleys and other farm machinery. In case of non-farm investment, expenditure incurred on construction of house, marriage ceremonies and general purposes was found to be high. Majority of the credit was availed from institutional sources by sampled farmers for purposes like construction of house, purchase of vehicles, tractors, trolleys and other farm machinery. Sampled farmers availed large amount of institutional credit in terms of short term credit due to their high credit limit, which was diverted for other purposes like purchase of land, tractors, construction of house and marriage ceremonies. Low rate of interest being charged by institutions ranked as the top most factor for preferring institutional credit and the fewer formalities were given the first rank by the sampled farmers for preferring non-institutional credit source. The regression coefficients for the factors like farm investment, expenditure on dwelling house and expenditure on social ceremonies were found to be having positive and significant effect on diversion of credit in south-western Punjab. So, it was suggested that, basis of credit limit formulation needs to be modified to check the diversion of short term credit as diversion of it was found to be high on the sampled farms.

Keywords: Agriculture credit, diversion, investment, large farm holding

Signature of Major Advisor **Signature of the Student**

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ਸਾਰ-ਅੰਸ਼

ਇਹ ਅਧਿਐਨ ਦੱਖਣ-ਪੱਛਮੀ ਪੰਜਾਬ ਦੇ ਵੱਡੇ ਕਿਸਾਨਾਂ ਦਾ ਵੱਖੋ-ਵੱਖਰੇ ਖੇਤੀ ਅਤੇ ਗੈਰ ਖੇਤੀ ਸਾਧਨਾਂ ਵਿੱਚ ਨਿਵੇਸ਼ ਅਤੇ ਲਏ ਗਏ ਕਰਜ਼ੇ ਦੀ ਸੁਚੱਜੀ ਵਰਤੋਂ ਸਬੰਧੀ ਡੂੰਘੀ ਘੋਖ ਕਰਨ ਦੇ ਮਕਸਦ ਨਾਲ ਕੀਤਾ ਗਿਆ। ਇਸ ਅਧਿਐਨ ਲਈ, ਉਹਨਾਂ ਕਿਸਾਨ ਪਰਿਵਾਰਾਂ ਤੋਂ ਆਂਕੜੇ ਇਕੱਠੇ ਕੀਤੇ ਗਏ ਜਿਹਨਾਂ ਦੀ ਖੇਤੀ ਮਲਕੀਅਤ 10 ਹੈਕਟੇਅਰ (25 ਏਕੜ) ਤੋਂ ਵਧੇਰੇ ਸੀ। ਆਂਕੜਿਆਂ ਤੋਂ ਪਤਾ ਚੱਲਿਆ ਕਿ ਕਿਸਾਨਾਂ ਦੀ ਆਮਦਨ ਦਾ ਮੁੱਖ ਸਰੋਤ ਖੇਤੀ ਸੀ ਅਤੇ ਉਹਨਾਂ ਦੀ ਕੁੱਲ ਆਮਦਨ ਦੀ 92 ਫੀਸਦੀ ਆਮਦਨ ਖੇਤੀ ਤੋਂ ਹੀ ਹੁੰਦੀ ਸੀ। ਕੁੱਲ ਖਰਚੇ ਦੀ ਗੱਲ ਕਰੀਏ ਤਾਂ, ਉਹਨਾਂ ਦਾ ਵਧੇਰੇ ਖਰਚਾ ਭੋਜਨ ਅਤੇ ਵਾਹਨਾਂ ਉਪਰ ਹੁੰਦਾ ਸੀ ਜੋਕਿ ਉਹਨਾਂ ਦੇ ਕੁੱਲ ਖਰਚੇ ਦਾ ਕ੍ਰਮਵਾਰ 20.33 ਅੇਤ 19.53 ਪ੍ਰਤੀਸ਼ਤ ਸੀ। ਅਧਿਐਨ ਦੇ ਨਤੀਜਿਆਂ ਤੋਂ ਪਤਾ ਚੱਲਿਆ ਕਿ ਕਿਸਾਨਾਂ ਨੇ ਸਭ ਤੋਂ ਵਧੇਰੇ ਧਨ ਜ਼ਮੀਨ, ਟਰੈਕਟਰ, ਟਰਾਲੀਆਂ ਅਤੇ ਹੋਰ ਫਾਰਮ ਮਸ਼ੀਨਰੀ ਖਰੀਦਣ ਉਪਰ ਨਿਵੇਸ਼ ਕੀਤਾ। ਗੈਰ-ਖੇਤੀ ਨਿਵੇਸ਼ ਦੀ ਗੱਲ ਕਰੀਏ ਤਾਂ ਕਿਸਾਨਾਂ ਨੇ ਘਰ ਬਨਾਉਣ, ਵਿਆਹ-ਸ਼ਾਦੀ ਅਤੇ ਹੋਰ ਕੰਮਾਂ ਉਪਰ ਵਧੇਰੇ ਖਰਚ ਕੀਤਾ। ਕਿਸਾਨਾਂ ਨੇ ਘਰ ਬਨਾਉਣ, ਗੱਡੀਆਂ, ਟਰੈਕਟਰ, ਟਰਾਲੀਆਂ ਅਤੇ ਹੋਰ ਖੇਤੀ ਮਸ਼ੀਨਰੀ ਖਰੀਦਣ ਦੇ ਮਕਸਦ ਨਾਲ ਜ਼ਿਆਦਾਤਰ ਕਰਜ਼ਾ ਸੰਸਥਾਗਤ ਸਰੋਤਾਂ ਤੋਂ ਲਿਆ। ਆਪਣੀ ਵਧੇਰੇ ਕਰਜ਼ਾ ਲੈਣ ਦੀ ਹੱਦ ਕਾਰਨ, ਕਿਸਾਨਾਂ ਦੇ ਘੱਟ ਮਿਆਦ ਦੇ ਕਰਜ਼ੇ ਦੇ ਲਿਹਾਜ਼ ਨਾਲ ਸੰਸਥਾਗਤ ਸਰੋਤਾਂ ਤੋਂ ਵਧੇਰੇ ਕਰਜ਼ਾ ਲਿਆ, ਜਿਸਦੀ ਵਰਤੋਂ ਉਹਨਾਂ ਨੇ ਜ਼ਮੀਨ, ਟਰੈਕਟਰ ਖਰੀਦਣ, ਘਰ ਬਨਾਉਣ ਅਤੇ ਵਿਆਹ-ਸ਼ਾਦੀ ਲਈ ਕੀਤੀ। ਸੰਸਥਾਗਤ ਕਰਜ਼ਿਆਂ ਨੂੰ ਤਰਜੀਹ ਦੇਣ ਦਾ ਮੁੱਖ ਕਾਰਨ ਇਹ ਸੀ ਕਿ ਇਹ ਕਰਜ਼ੇ ਘੱਟ ਵਿਆਜ ਦਰ ਤੇ ਉਪਲਬਧ ਸਨ ਅਤੇ ਕਰਜ਼ੇ ਲੈਣ ਲਈ ਘੱਟ ਔਪਚਾਰਕਿਤਾਵਾਂ ਹੋਣ ਕਾਰਨ ਕਿਸਾਨ ਗੈਰ-ਸੰਸਥਾਗਤ ਕਰਜ਼ੇ ਲੈਣ ਨੂੰ ਤਰਜੀਹ ਦਿੰਦੇ ਸਨ। ਖੇਤੀ ਨਿਵੇਸ਼, ਘਰ ਬਨਾਉਣ ਉਪਰ ਆਉਣ ਵਾਲੇ ਖਰਚੇ, ਸਮਾਜਿਕ ਰਸਮਾਂ ਉਪਰ ਹੋਣ ਵਾਲੇ ਖਰਚੇ ਲਈ ਪ੍ਰਤੀਗਮਨ ਗੁਣਾਂਕ ਦਾ ਦੱਖਣ-ਪੱਛਮੀ ਪੰਜਾਬ ਵਿੱਚ ਕਰਜ਼ੇ ਦੇ ਵਿਚਲਨ ਉਪਰ ਸਕਾਰਆਤਮਕ ਅਤੇ ਅਰਥਪੂਰਨ ਪ੍ਰਭਾਵ ਵੇਖਣ ਨੂੰ ਮਿਲਿਆ। ਇਸ ਲਈ, ਇਹ ਜ਼ਰੂਰੀ ਹੈ ਕਿ ਜਿਸ ਅਧਾਰ 'ਤੇ ਕਰਜ਼ੇ ਦੀ ਹੱਦ ਨਿਰਧਾਰਤ ਕੀਤੀ ਜਾਂਦੀ ਹੈ ਉਸਨੂੰ ਬਦਲਣ ਦੀ ਲੋੜ ਹੈ ਤਾਂ ਜੋ ਥੋੜ੍ਹੇ ਸਮੇਂ ਲਈ ਲਏ ਗਏ ਕਰਜ਼ਿਆਂ ਦੇ ਵਿਚਲਨ ਉਪਰ ਰੋਕ ਲਗਾਈ ਜਾ ਸਕੇ।

ਮੁੱਖ ਸ਼ਬਦ: ਖੇਤੀ ਕਰਜ਼ੇ, ਵਿਚਲਨ, ਨਿਵੇਸ਼, ਵੱਡੇ ਪੱਧਰ ਦੇ ਕਿਸਾਨ

ਮੁੱਖ ਸਲਾਹਕਾਰ ਦੇ ਹਸਤਾਖਰ **ਵਿੱਦਿਆਰਥੀ ਦੇ ਹਸਤਾਖਰ**

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CHAPTER – I

INTRODUCTION

Agriculture forms the core sector of the Indian economy. Agriculture and allied sectors accounted for 14.6 per cent of the Gross Domestic Product (GDP) in 2010-11 (Anonymous 2016a). The economic contribution of agriculture to India's GDP has been steadily declining with the country's broad-based economic growth. Still, agriculture is demographically the broadest economic sector and plays a significant role in the overall socio-economic fabric of India. Punjab, the "breadbasket" of India, was historically considered to be one of the most fertile areas on earth. It has a total of 50.36 lakh hectares of geographical area and 82 per cent of it was under cultivation and out of this 99.9 per cent was irrigated (Anonymous 2016b).

Punjab agriculture has witnessed transformation from traditional toward commercialization under 'Green Revolution Model' during mid 1960's. The state agriculture has become capital intensive over time with increased demand for variable as well as fixed resources. The total cropped area in the state was 79 lakh hectares in 2015-16 and the major crops grown were wheat, rice, cotton and maize. Punjab contributed 36.8 per cent of wheat and 27.3 per cent rice to the central pool during 2015-16 (Anonymous 2016b). The contribution of agriculture to the gross state domestic product (GSDP) has been 17.9 per cent at constant prices during 2015-16. The production of food grains in the state has increased from 3.39 million tons in 1965-66 to 11.92 million tons in 1980-81 and further to 28.4 million tons in 2015-16 (Anonymous 2016b). Such a glorious achievement can mainly be attributed to the evolution and wide spread adoption of the new agricultural strategy comprising high yielding varieties of seeds, chemical fertilizers, insecticides/pesticides complimented by farm mechanization with availability of assured irrigation. The cropping intensity of the state has increased from 128.6 per cent in 1965-66 to 161.8 per cent in 1980-81 and 190 per cent in 2015-16 (Anonymous 2016b). Besides this, the state has also made remarkable progress in allied sectors like dairy, poultry and fishery and as well as horticultural crops. Punjab remains a classic example of a fast developing economy with agriculture as its base. The other major technological change in Punjab agriculture was increase in mechanization accompanied by changes in factor proportions. With increased number of tractors, the average net area sown per tractor declined from 356 hectares in 1966 to only 8 hectares in 2015-16. Similarly, there was a tube well for every 83 hectares of net sown area in 1966 which has come down to 2.94 hectares in 2015-16 (Anonymous 2016b). With declining use of bullocks, threshing became almost completely mechanized in wheat crop. Harvester combines further took over the operations. As a result, the capital structure in Punjab agriculture changed significantly. The increased irrigation requirement of high yielding variety seeds gave boost to tube well

installation in the state. Mechanization drive was mainly for timeliness of farm operations as well as caused by relative scarcity of labour and higher wage rates of casual labour during peak periods. Tractor, apart for agricultural operations, became a status symbol for rural households. On the top of it, ready availability of cheap institutional credit and remittances from NRI family members encouraged this trend of heavy investments in Punjab agriculture.

The gains in productivity reflect largely on increased use of investments, purchased inputs and the new technology (Kahlon and Singh, 1984). Capital formation especially the private capital formation has taken place at a faster rate in the state. The role of borrowed funds or credit cannot be denied in the process, in wake of meager savings of the farming community and their reluctance to utilize owned funds in new agricultural technologies, it being a biological enterprise. So, risk and uncertainty has always been high here. The possibilities of farmers financing the balanced investment needed to adopt new technology from their current savings were always questionable, because of liquidity constraint (Ray 2007). Thus, adequacy of individual farmer's financial resources needed to be augmented from outside. In this light, access to financial markets was critical to most farmers.

Credit is one of the most important inputs for agricultural development and plays a pivotal role in the stage of transformation of agriculture to a commercial enterprise (Kumar *et al* 2010). An important aspect that has emerged in last three decades that the credit was not only obtained by the small and marginal farmers for survival but also by the large farmers for enhancing their income through adoption of new technologies in farming. Hence, since independence, credit has been occupying an important place in the strategy for development of agriculture. The agricultural credit system of India consists of informal and formal sources of credit supply. The informal sources include friends, relatives, commission agents, traders, private moneylenders, etc. Three major channels for disbursement of formal credit include commercial banks, cooperatives and micro-finance institutions (MFI) covering the whole length and breadth of the country. It is no exaggeration to say that diffusion of Green Revolution in ecologically favourable regions of India was greatly facilitated by a formal credit system providing a large proportion of investment and production credit to farmers under priority sector lending segment since the nationalization of major banks. Agricultural credit has played a vital role in supporting farm production. Credit makes it possible to take short cut by enabling to take advantage of new technologies to expand the farming business and to operate it on a profitable basis. The white revolution, development of horticulture, plantation, poultry, fisheries and oilseeds were similarly been facilitated by credit (Gadgil 1994). The demand for farm credit has increased manifold and it was realized that a single agency/pattern would not be sufficient to meet the expanding needs of credit in agriculture.

So, from time to time government has taken new initiatives to enhance credit

availability to the farming community like Kisan Credit Card scheme, farm credit package, interest subvention to farmers, collateral free loans and financing the joint liability groups etc. In order to ensure that all eligible farmers are provided with hassle free and timely credit for their agricultural operations, Kisan Credit Card (KCC) scheme was introduced in 1998-99. The main objectives of scheme were to meet the short term credit requirements for cultivation of crops, post-harvest expenses, consumption requirements of farmer household, working capital for maintenance of farm assets and activities allied to agriculture like dairy animals, inland fishery etc. With all these efforts, credit availability in Punjab has become Rs 92037 crore in 2015-16 (Anonymous 2017).

Utilization aspect of credit is as important or in a sense more important than availability of credit. If available credit was utilized for the productive purposes, it helped not only in increasing the returns to the farmer, but also created its repaying capacity. On the other hand, if the available funds gets diverted for unproductive purposes or misutilized for other motives, the income did not increase to the desired extent and the very purpose of credit availability was defied. But, the farmers live in social matrix, they were required to fulfill many personal and social obligations, but returns were lagged with respect to investment in agriculture along with income generation at two or three points of time in a year. So, when credit was made available to them for some specific purpose, tendency to divert the funds gets high. So, utilization aspect of agricultural credit needed to be analyzed to highlight the problem of diversion of borrowed funds. Thus, on one hand, there was an urgent need for the expansion of agricultural credit and on the other hand, there was equally urgent need to ensure improvement in equality and efficiency of lending operations (Varde 1993). The main source of credit in rural India was loans provided by institutional or non-institutional agencies. Modern agriculture being highly capital intensive and access to institutional credit at affordable rate of interest became central for adequate input use and productivity growth on all farms. The institutional sources meet only 51 per cent of the credit requirement of the farm sector (Singh *et al* 2009). Therefore, the non- institutional sources were also approached by the farmers frequently due to lack of their security assets, routine needs, inadequate supply of institutional credit, undue delay involved in formal procedure and malpractices adopted by institutional lending agencies etc.

The large farm category was found to be the highest surplus generating category in the state. Still a large proportion of these farms were indebted and availing a higher proportion of institutional loan for productive as well as non-productive purposes (Singh *et al* 2013). In India during 1960-61, there were 4.5 per cent large holdings which decreased to 0.70 per cent in 2010-11 and large farmers were operating 29 per cent of total cultivated land during 1960-61 which has also come down to 10.6 per cent in 2010-11 (Anonymous 2016a). On the other hand, in Punjab , large farmers operated 6.01 per cent of total holdings during

1990-91, which increased to 7.25 per cent in 2000-01 and marginally came down to 6.62 per cent in 2010-11 . These farmers were operating on 10.29 lakh hectares land i.e. 25.93 per cent of total cultivated area of Punjab (Anonymous 2016b).

Agro-economically, Punjab is divided into three regions, viz, sub-mountainous (region I), central plain region (region II) and south western region (region III), which occupy 9, 65 and 26 per cent of the total area of the state, respectively. The study has been designed to focus on south-western region or cotton belt of the state. As per various empirical studies undertaken in the past, this region was found to be most heavily indebted in Punjab agriculture despite the fact that average size of holding was largest here i.e. 4.05 hectares (Singh *et al,* 2008; Singh *et al,* 2014). Still, the average amount of debt per large farm household was the highest i.e. Rs 406059 in this region (Singh *et al,* 2008) whereas the per hectare amount of debt Rs 43534 in this region was still highest in case of large farm household.

Large farmers have remained leaders in adopting new technological inputs that brought revolutionary changes in the agricultural production pattern. Heavy expenditure on new technology, high yielding varieties (HYVs) and mechanization etc. made Punjab 'food bowl' of the country and the country has been able to move from 'food scarcity' to 'food security' with increased production and productivity of cereal crops. The large farmers have been the most dynamic element of the Punjab agriculture producing a large proportion of main food crops like wheat and paddy. Being resource-rich and technologically more advanced, such farmers play a key role in rural society, not only in adoption of new technologies, but also in setting up cultural and consumption standards.

As has been mentioned, the role and contribution of institutional agricultural credit towards agricultural growth cannot be negated. It has immensely helped in adoption of modern production technology and encouraging private investments on irrigation, farm machinery and land development (Sidhu *et al* 1998). The contribution of credit in agricultural growth needs to be examined and estimated. This study is, therefore, an attempt in this direction. The present study has been devised to have an in depth knowledge about investment pattern and credit utilization of large farmers in south-western Punjab. The specific objectives of the study were as follows:-

1. To study the farm and non-farm investment pattern of selected households in large farm category.
2. To find the extent of loan availed source-wise and purpose-wise by large farmers in Punjab.
3. To examine the diversion pattern of credit availed by these farmers, if any and identify the factors responsible for it.

CHAPTER - II

REVIEW OF LITERATURE

With a view to evaluate the objectives of the study, it was considered desirable to have an idea of the findings of some of the studies conducted earlier in this field to related aspects by researchers and the methodology adopted by them. This chapter has reviewed research material published in this area of study. Consistent with the objectives of the study, the review of literature has been presented under the following sub-heads:

2.1 Farm and non-farm investment pattern

2.2 Extent of loan availed source-wise and purpose-wise

2.3 Diversion pattern of credit availed

2.1 Farm and non-farm investment pattern

Kalra (1996) conducted a study in Mangat block of Ludhiana district. He found that value of all durable assets came out to be Rs. 148526 per household. On the basis of farm size category, as the farm size increased the value of assets also increased, being Rs. 79040, Rs. 125477, Rs. 241033 for small, medium and large farms respectively. It was also found that the small farmers invested more on livestock and poultry, but medium and large farmers invested more on implements and machinery. Investment on implements and machinery increased with increase in farm size. In case of irrigation infrastructure, investment decreased with increase in farm size. The investment made on farm buildings was 14.5, 11.72, and 11.82 per cent of the total investment on small, medium and large farms respectively. On per acre basis, it was revealed that the small farmers made higher investment than medium farmers and medium farmers invested more than large farmers, except in case of farm machinery where large farmers invested more on per acre basis as compared to medium and small farms. The study showed that maximum share of investment was arranged from farmer's own resources followed by institutional and non-institutional source of finance. Percent share of institutional agencies to total durable investments increased with increase in farm size. The value of correlation coefficient between farm size and total credit was 0.3134, 0.0075 and 0.441 on small, medium and large farms that was significant on small and large farms at ten percent and one percent level of significance respectively.

Investment in agriculture sector has been considered as a lever of yield improvement in the wake of no scope of growth in area under it as studied by Alagh (1997). The higher investment requirements were predicted so that agricultural intensification can proceed.

Kamarkar (1998) indicated that the real public investment in agriculture was falling due to decline in allocation to the agricultural sector in the national plans, increase in recurring expenditure and partly due to the under use of irrigation potential created mainly

through medium and major irrigation projects. The decline in public investment in eighties may have exerted an influence on private investment levels which have been stagnant in real terms. An emphasis was laid on the role of institutional credit in facilitating capital formation and in creating activity specific infrastructure for raising productivity.

Hirashima (2000) studied the issues in agricultural reforms. The study examined the emerging issues of Indian agriculture in context of global integration and has taken two important issues namely pubic investment and market developments. It was found that public investment in agriculture has been declining. This trend has now been offset by increase in private investment there by giving advantage to irrigated regions as compared to barani regions.

Roy and Pal (2002) have also considered the investment in agriculture as of prime importance in productivity growth. Due to inadequacy of capital this investment has to be a blend of public and private investment, but private investment has emerged as the principal source of growth over the years. The private investment has been grouped under five broad categories namely, land improvements, machinery and implements, irrigation structures, orchards and farm buildings. The share of land improvements and buildings has declined overtime while that of machinery and irrigation structures has increased. For growth, incentive like terms of trade must be favorable for private investment.

Pandey (2003) found that country has made significant progress in the adoption of modern methods of cultivation and creative infrastructure for effective and sustainable utilization of the national resources available at its command. It has transformed the image from that of "begging bowl to bread basket" due to the efforts of various agencies combined with scientific and engineering imports in agriculture. Farm mechanization programmes pursued in the country after attaining independence were directed towards optimal utilization of available farm power sources. Increase in cropping intensity, timeliness of operations and reduction in drudgery has shown the needed incentives for farmers and farm workers to adopt modern methods of cultivation. An increase of 15 per cent in productivity and a reduction of 20 per cent in cultivation cost were achieved by engineering interventions. Those interactions have been limited to a few field crops, farm operations and post-harvest activities. Thus, there was an urgent need to extend it to the entire gamut of agricultural .production in the country.

Kaur and Sekhon (2005) indicated that the performance of each state in terms of food grain production showed that some of the states whose income had declined, increased their production. It implied that the response to stimulate investment would be great in those states than others. In this Punjab based study of input growth and total factor productivity, the coefficient of machinery was found to be significant, indicating the scope of increasing the value productivity by increasing the use of it in state agriculture.

Suresh *et al* (2009) conducted a study in Gonda district of Uttar Pradesh to examine the investment pattern of farmers in crop-livestock production system. The study revealed that the overall total investment in crop and livestock farming together was Rs.1, 05,113 per farm of which about 74 per cent of the total investment was made in crop farming, while remaining 26 per cent in livestock farming system. The average per household investment on a mixed farm unit varied from Rs. 48994 on marginal farms to Rs. 245889 on large farms. It could be further observed that as the farm size increased the investment per household in absolute terms increased both for the crop and livestock farming enterprises. It was also observed that as the farm size increased, the proportionate investment on crop farming increased, while on the livestock enterprise a decreasing trend was observed showing that the large farmers concentrated more on the crop enterprise mainly due to higher profit and non-availability of sufficient manpower. Animals/livestock were primarily kept to produce milk for family consumption.

Kannan and Sundaram (2011) analyzed the trends in India's agricultural growth and have attributed it to higher use of modern inputs along with technological support for a few crops like rice and wheat. The crop output growth model has indicated enhanced capital formation as a major determinant of higher output in the country.

Kaur (2012) analyzed the impact of public investment in agricultural research on productivity of crops and enterprises in Punjab. Overview of growth analysis of research expenditure and productivity has shown that for all the crops except oilseed, pulses and maize, the research expenditure and productivity has shown positive relationship. This called for promotion in the investment to augment the production for realizing benefits of increased output. The impact of public sector investment on productivity of crops/enterprises was found to be positive but with lapse of time. The study pointed out the need for sustained public investment as a means to raise the productivity of crops in allied enterprises. The findings suggested that the government should increase the allocation of funds to farm sector research in order to improve research efficiency.

Khatkar *et al.* (2013) in their study on income, savings, investment and consumption pattern on farm households in Rohtak district of Haryana found that the farm investment through borrowed funds was higher on large farms (Rs. 144381) followed by medium (Rs. 50698) and small farms (Rs. 29334). The higher borrowed funds on large farms may be attributed to their better repaying capacity. On an average the borrowed funds constituted major portion of investment on crop enterprise (50.10 per cent), combine harvester/laser land leveler (17.18 per cent), livestock (14.22 per cent), tractor (10.97 per cent), underground water conveyance pipes (5.38 per cent) and tube wells (2.15 per cent). Similar trends were observed on different categories of farms. On an average, the investment on farm productive

assets i.e. on tractor, irrigation structure, combine harvester/laser land leveler and farm machinery and implements were Rs. 25125 (30.44 per cent), Rs. 16938 (20.52 per cent), Rs. 16667 (20.19 per cent), and Rs. 6867 (8.32 per cent) of the total productive investment respectively. There was a positive relationship between investment on productive farm assets and size of the operational holding.

2.2 Extent of loan availed source-wise and purpose-wise

A study undertaken by Singh (1980) found that the institutional agencies in the Hoshiarpur district of the Punjab state contributed 73.61 per cent to the total loans to the cultivators and 29.65 per cent of total loan to non-cultivators. These figures in case of non-institutional agencies worked out to be 26.39 per cent and 70.35 per cent respectively. There was relatively less dependence of large and medium farmers on the non-institutional sources of credit as compared to the small farmers in the study.

Kurulkar (1983) in his study on the problems of long term credit in an economically backward district of Aurangabad in Maharashtra found that the distribution of credit from cooperative land development banks among different farm size categories was skewed in favour of large farmers. While small farmers (5 acres) and large farmers (>25 acres) have been able to appropriate 43 per cent and 52 per cent of total loans respectively. On an average, small, medium and large farmers had received Rs. 2280, Rs. 2800 and Rs. 7695 per acre from the land development banks.

Sarwar *et al* (1985) studied that between the two sources of the credit for farmers, i.e. institutional and non-institutional, the non-institutional source was neither adequate nor reliable for the cash needs of the farmers. Other source that is institutional credit operates through its three major institutions, namely cooperatives, commercial banks and RRB's. The credit advanced through these institutions increased since 1970s and the number of beneficiaries had also been reported to be growing, but study has shown its dissatisfaction regarding the rightness of these loan operations.

Bhende (1986) analysed the aspects of rural financial markets in three villages of the three agro-climatic zones of Peninsular South India. Private moneylenders were an important source of credit in the village studied in Andhra Pradesh, whereas in the Maharashtra village, co-operative societies and land development banks played an important role. Institutional credit was found to be more concentrated in the richer households having large farm and family size, and headed by more educated older heads. On the other hand, those households who cultivated more land but were less educated, and had fewer livestock and more irrigated area relied more heavily on informal credit. Borrowers were found to be indulging in diversion of credit from the stipulated purpose to others. The largest defaulters were those households who borrowed more from institutional sources of credit.

Feder *et al* (1990) found that farmers needed funds immediately after the harvesting period for the next cropping season because of cash scarcity and non-payment of new crop. The modern agriculture is comprised of high-yielding seeds, fertilizers, and plant protection measures (PPM). Most of the modern inputs were purchased through cash or on credit, thus, more and more farm households depend upon credit markets. The efficient credit market provided an opportunity to the farmers in meeting consumption requirements and balanced input use, thus, resulting in betterment of the farmers.

A substantial gap between the demand for and supply of agricultural credit was found to be existing by Dandekar (1993) i.e. the share of non-institutional sources in the total debt in farming sector was estimated at 42.3 per cent at all India level and 52.1 per cent in Punjab state.

Kaur (2000) analysed the pattern, extent, source-wise composition, diversion of agricultural credit and the factors responsible for indebtedness of farmers in Sangrur district of Punjab state. The results revealed that more than 50 per cent of the sampled farmers borrowed from non-institutional agencies for various purposes. They mostly took the loan for non-productive purposes.

Singh *et al* (2000) conducted a study in *kandi* area of Punjab and found that out of total sample of large farmers, 85 per cent were borrowers. Out of total loan, 85.4 per cent of productive loan was obtained from commercial banks. In case of non-productive borrowing, informal sources were major loan suppliers.

Sidhu *et al* (2001) highlighted the importance of credit on all farm size categories. It was found that average productivity per hectare on credit taking farms was higher by 29 per cent in case of small farms, 47.7 per cent in semi-medium farms, 26 per cent on medium farms and 19 per cent in case of large farms due to higher use of production inputs.

Kaur *et al* (2002) carried out a study to examine the role of various sources of agricultural credit in Sangrur district of Punjab state. The study revealed that the large farmers were acquiring Rs.23,388 per hectare credit. In case of large farmers 42.06 per cent farmers acquired loan from institutional sources and 57.94 per cent farmers from non-institutional sources. The study also revealed that 19.86 per cent of institutional loans and 13.22 per cent of non-institutional loans were diverted from specific purpose to other uses.

Chand and Kumar (2004) found that in phase of declining public investments in agriculture, it was the private investment facilitated by the institutional loans, which prohibited the negative growth in agriculture sector. Thus highlighting the positive contribution of credit in output growth in the country.

Adhikari (2005) in his study on impact of farm credit on production and indebtedness

among farmers in Morang district of Nepal found that there was positive impact of credit on production of Paddy and wheat in all the sampled areas. However the actual production level of crops was lower than what it would be if recommended level of input was applied. The reason was that they did not use all the credit borrowed for production purpose and were diverting it to other unproductive motives. The marginal farmers were using only 59.65 per cent of the total credit borrowed, whereas small farmers 60.53 per cent and medium and large farmers 76.56 per cent each.

Kumari (2005) conducted a study to examine rural indebtedness in Northern Telangana Zone of Andhra Pradesh and revealed that the small farmers had least accessibility (18 per cent) to institutional credit, while the other two farm size groups, i.e., medium and large sampled farmers accounted for 29 and 55 per cent of the total credit from institutional sources. The dependence of large farmers on informal sources for credit was found to be less.

Singh (2005) analysed the pattern of credit in rural households in Bathinda district of Punjab. The study revealed that the large farmers were acquiring Rs.16,648 per acre credit. In case of large farmers 70 per cent farmers acquired loan from institutional sources and 30 per cent farmers from non-institutional sources. This study also revealed that large farmers spent about 21 percent, 15 per cent and 8 per cent on tractor, marriages and livestock enterprise.

Singh and Toor (2005) conducted a study to examine the indebtedness among Punjab farmers and found that large farmers were obtaining about 53 per cent of their credit need from institutional source and rest from the non-institutional sources. Nearly 52 per cent of loan was being utilized for productive purposes mainly for farm machinery and rest for non-farm purposes, social ceremonies being the major purpose of loan by this farm category.

Satish (2006) studied the role of institutional credit and found that it has been used as an important policy instrument for growth and development of agricultural sector. The institutional credit agencies in Punjab not only encouraged adoption of green revolution technology but also freed the farmers from moneylenders by providing credit at low rate of interest. Agriculture has become highly capital intensive with the introduction of high yielding varieties of seeds especially wheat and rice, chemical fertilizers, pesticides, mechanization and investments in irrigation i.e. on tube wells.

Sidhu and Gill (2006) conducted a study on the agricultural credit and indebtedness in India. The growth in long term advances was found to be slowing down over time. But the relationship of long term advances with private capital formation was very strong, indicating contribution of long term loans in promoting capital investment on the farms enhancing their productive capacity. They also reported that 56 per cent of large farmers acquired loans from institutional sources in Andhra Pradesh and 36 per cent in Uttar Pradesh.

Singh (2006) found that the extent of non- institutional credit has increased because the modern agriculture demands modern inputs and the cultivators who were unable to procure loans from cooperatives or banks depend on money lenders for agricultural and non-agricultural monetary requirements.

Sharma *et al* (2007) studied credit accessibility in Himachal Pradesh. The study showed that credit was very low in absolute terms which might be because the farmers had small holdings and thus borrowings for machinery etc. were avoided. Among non-institutional sources, moneylenders had no role to play. Contribution of friends/ relatives was found to be significant in the state. Among agricultural loans, crop production loan for seed, fertilizers etc. were found to be important. Among social factors, formal education was found to be important in enhancing the probability of being a borrower. Also farm size and non-farm income played a vital role in borrowing behavior.

Singh *et al* (2009) while studying indebtedness among farmers in Punjab found that large farm households in the state had Rs. 2,02,721 (65 per cent) of debt from institutional credit agencies while that from non-institutional sources was Rs. 1,07,228 (35 per cent) compared to semi-medium and medium farmers who obtained about 60 per cent of loan from non-institutional sources. Credit from institutional sources was fraught with inadequacies such as amount, easiness, timeliness and with other strings of formalities/procedures attached to it. The farmers had to make many trips to complete formalities required for obtaining institutional loans and had to spend extra money other than interest charged by these agencies, which was approximately negligible in the case of non-institutional sources.

Singh (2009) carried out a study about the amount of credit disbursed for different purposes, its utilization pattern, reasons of diversion of credit in Ghazipur district of Eastern Uttar Pradesh. The study revealed that the average amount of credit per farmer was Rs. 83188 for large farm category and large share of it was provided by commercial banks i.e. 82.82 per cent followed by PACS (15.54 per cent). This study indicated that the new agriculture technology was usually capital intensive. The demand for farm credit has increased manifold and thus multi agency approach was adopted by the government to meet the expanding needs of credit in agriculture. Credit use was to help the farming community in increasing their resource productivities through judicious use of modern farm inputs.

Gandhimathi and vanitha (2010) conducted a study in Coimbatore district of Tamilnadu to examine the distribution of institutional credit across various categories of farmers and found that the large farmers acquired about 57 per cent of institutional loan from commercial banks and rest 43 per cent from co-operative banks.

Verma *et al* (2011) conducted a study in Ludhiana district of Punjab to examine various issues related to farmer indebtedness. This study revealed that the proportion of

institutional credit decreased while that of non-institutional credit increased with an increase in farm-size. In case of large farmers, the proportion of institutional sources of credit was 56 per cent and of non-institutional sources of credit was 44 per cent. The overall amount of credit availed from both institutional and non-institutional sources was Rs. 1,84,530 per farm. While 70 per cent of such credit was repaid, almost 29 per cent remained outstanding.

Sajjad and Chauhan (2012) found that the semi-medium, medium and large farmers had taken more loans than the marginal and small farmers for the capital and current expenditure in farm business. For rest of the purposes the marginal and small farmers had taken relatively more loans than these. Amongst the productive purposes, the highest debt was incurred by the large farmers for the purchase of agricultural inputs like seed, diesel/ mobile oil, agro-chemicals tractors, harvest combines and farm machinery while the small and marginal farmers borrowed money for social and religious purposes.

Singh *et al* (2013) revealed that total investment over different components of capital assets (excluding land) by large farmers in Punjab was Rs. 822905 per farm and Rs. 96472 per hectare. Singh *et al* (2014) also conducted another study to examine the magnitude and determinants of indebtedness among farmers in Punjab. This study revealed that the net income of large farmers was Rs.1530315 per household whereas domestic consumption expenditure was Rs.177298 per household and thus debt servicing capacity was worked out to be Rs. 1353017 per household for this category. Large farmers were found to be a surplus category, but out of them 68 per cent were indebted households and amount of debt was Rs. 26668 per hectare and Rs. 397882 per household. Out of total debt, 41 per cent was being used for productive purposes such as farm machinery, agricultural land etc and 59 per cent was used for non-productive purposes such as construction of dwelling house, family consumption, health care and social ceremonies etc. Source-wise 90 per cent of loan was acquired from institutional sources and rest 10 per cent was from non-institutional sources.

Singh (2015) analysed the indebtedness among rural households in Bathinda district of Punjab. In case of large farmers 100 per cent of them had acquired loan from institutional sources. The study found that the large farmers were using 74 per cent of total credit on productive purposes and 26 per cent on non- productive purposes like house construction, social ceremonies, medical care and domestic expenditure.

2.3 Diversion pattern of credit availed

Munshi and Pandya (1985) in a study based on junagadh district found that out of the total loan availed, 63.70 per cent of cash credit and 96.25 per cent of kind credit was utilized for stipulated purposes and rest was diverted for other motives. The main reason for diversion of cash credit was that farmers were getting full amount of cash credit before season, when there was no need for money, thus leading to diversion of loan to unproductive purposes. To

check diversion of cash credit, it was suggested that credit must be given in kind, cash payments must be disbursed in two installments and credit should be advanced for the purposes of household expenditure, repaying of old debts and social obligation so that institutional agricultural credit may be entirely utilized for stipulated purposes.

Naidu and Prasad (1987) found that the proportion of cooperative credit used for production purpose and farm size were positively co-related. Co-operative loans diverted from stipulated purpose were mostly used for consumption purposes among marginal and small farmers. However, productivity of the cooperative credit was found to be poor and inversely related with the farm size.

Patel *et al* (1987) in a study conducted in Gujarat state revealed that timely repayment of loan was made by 66.22 per cent of the borrowers and the remaining 33.78 per cent borrowers were defaulters. The proportion of defaulters was noted to be the maximum (46.15 per cent) in case of large farmers and lowest (26.47 per cent) in case of small farmers. On an average, about 70 per cent of the available credit was used for productive purposes and about 30 per cent was diverted to non-productive purposes. The extent of use for un-productive purposes was maximum among large farmers.

Shaheena and Rajitha (1991) examined the utilization pattern and repayment performance of crop loan advanced by co-operatives in Kerala. The results of the study revealed that out of the total borrowers, 64.29 per cent of marginal farmers, 55.56 per cent of small farmers and 72.22 per cent of large farmers utilized the loans for the specific purpose and rest was diverted for unproductive purposes.

Makadia *et al* (1992) conducted a study on an evaluation of acquisition and utilization of cooperative credit in Junagad district. The study found that the proportion of diversion among the different categories was highest in case of small farmers (61 per cent) and lowest in large farmers (39 per cent). About two-third of the total diverted amount was used for unproductive purposes like consumption and other household needs, payment of old debts, miscellaneous expenditure etc.

Gill (1993) has highlighted the importance of credit utilization. As per the study proper usage of credit was more important than availability of credit because proper utilization increases the returns and repaying capacity of the farmers. On the other hand, diversion of the credit to the other motives defied the purpose of credit availability due to low or zero increase in income. So, increasing burden of debt over the years has caused the problem of mounting overdue results into ruining of financial health of the institutions indulged in credit. If the loan has been taken from non-institutional sources, it gives rise to many personal and social problems in the society.

Modi and Rai (1993) examined the credit utilization pattern on different categories of farms in Kurukshetra district of Haryana. Two blocks viz., Guhla and Pehowa and two villages from each block were selected at random. A sample of 150 farmers was also selected at random from the selected villages. The results of the study revealed that the total production credit received by small, medium and large farmers was Rs. 9,284.02, Rs. 25,321.59 and Rs. 39,752.00, respectively. The large farmers utilized 73 per cent, 16 per cent, 9 per cent and 2 per cent of total amount received on current farm expenditures, household expenditures, payment of old debts and fixed investment on the farm. The diversion of credit was calculated as 31.34 per cent, 29.44 per cent and 26.91 per cent by the small, medium and large farmers, respectively.

Kaur (2000) analysed the diversion pattern in a study based in Punjab state. The results revealed that the diversion was the highest in case of small farmers followed by large and medium ones. The diversion was high in case of loans taken from institutional sources and that too for the productive purposes.

Bera and Santra (2001) found that defaulting was less when loan was taken for cash crops than when it was taken for subsistence crops. It was also less in lower caste groups as compared to higher castes. The credit use efficiency of Bangladesh Rural Advancement (BRAC) programme was measured by Abdullah *et al* (2001) and found that only about 48.76 per cent of total amount of credit was properly utilized while misutilisation was mainly for repayment of debts, small business, food purchasing etc.

Sidhu *et al* (2002) conducted a study on Sri Muktsar Sahib, Bathinda, Mansa, Faridkot and Firozpur districts of Punjab and found that the fifty percent of large farmers took no loan, neither from institutional nor from non-institutional sources. About 21 percent large farmers took loan both from institutional as well as non-institutional sources. They also found that the amount of debt outstanding generally increased with increase in farm size. The debt outstanding per farm was found to be Rs. 134035 per farm and Rs. 5867 per acre in case of large farmers. The proportion of unproductive non-institutional debt was relatively higher on the medium and large farms as compared to other farm size categories. In case of large farmers, the non-productive debt accounted for 99 percent of the total non-institutional debt.

Singh and Toor (2005) conducted a study to examine the indebtedness among Punjab farmers and found that an average large farm household in the state incurred a debt of Rs 83,926 (52 per cent) for productive purposes and rest Rs 78,094 (48 per cent) was diverted for unproductive purposes mainly construction of house (6 per cent), purchasing of vehicles (14 per cent), social ceremonies (18 per cent) and family maintenance, health care and education (10 per cent).

Singh *et al* (2005) examined the credit needs, utilization pattern and factors affecting

overdues in Uttar Pradesh. The results of study revealed that the borrowed funds were properly utilized by the large farmers and its proportion decreased with the decrease in the size of farms. Thus, the misutilization of borrowed credit was not higher on large size groups. The major factors responsible for overdues of borrowed funds included borrowing of loans for emergent family needs fallowed by low profit due to higher cost of inputs and lower output prices, crop failure due to natural hazards and lack of supplementary sources of income.

Gill and Singh (2006) had found that majority of borrowing cultivators utilized the credit for productive purposes. In case of large farmers about 70 per cent of informal borrowings had also been utilized for productive purposes like repair, fuel, hiring of machinery, tube well etc. Commission agents were found to be thriving as they interlink sale of crop with credit availability.

Thorat (2006) has raised same concerns regarding rural credit in India. It was pointed that significant increase in the credit flow has achieved certain quantitative targets. But, qualitative aspects of lending like loan defaults, erosion of repayment, ethics etc. should also be addressed for the financial health of funding agencies. Another concern was raised regarding the disbursement bias of agricultural credit in favor of large farm category at the cost of small and marginal households.

Sharma *et al* (2007) in a study of Himachal Pradesh found that house construction was the major purpose of borrowing and called it productive loan as assembling, storage, grading and packing of produce was undertaken there, followed by crop production loan. Farm size, education of head of the family, non-farm income were found to be important factors affecting the borrowing behavior of the households.

Singh (2009) in an Eastern Uttar Pradesh based study and has revealed that the proper utilization of credit increased the agricultural production and consequently, the repaying capacity of the borrower farmer but on the other hand if the available credit was not utilized for the productive purposes it would not increase the rate of capital information in agricultural sector. The study of utilization of available credit was equally important as it indicated that whether the credit taken was being used properly or has been diverted. This study revealed that credit financed by PACS, UPCRDB and commercial banks were misutilized which accounted 15.73, 15.51 and 13.91 per cent respectively and the unproductive utilization on different categories of borrower farmers were accounted 14.08, 16.33, 13.48, 13.88 and 14.19 per cent on marginal, small, medium, large and overall farmers respectively.

Riaz *et al* (2012) found that the credit for agricultural purposes was also partially used for other productive as well as unproductive purposes. It was utilized for livestock and poultry production and household needs along with crop raising activities. There was a dire need to

assure that all agricultural credit be utilized for the same purpose for which it was obtained.

Sharma and Kumawat (2013) conducted a study to analyze the bank credit utilization pattern by the sampled farmer borrowers in two panchayat samitis (Govindgarh and Sambhar Lake) of Jaipur district of Rajasthan. This study concluded that the total utilization of credit was highest (93 per cent) for long-term bank credit followed by medium-term (82 per cent) and short-term bank credit (62 per cent). On the other hand, the diversion of credit was lowest (7 per cent) for long-term bank credit followed by medium-term (18 per cent) and short-term bank credit (38 per cent).

Sharma and Kumawat (2014a) conducted a study for examine the purpose-wise utilization pattern of agricultural credit in Jaipur district of Rajasthan. The study revealed that the overall borrowed amount of credit by large farm category was Rs.2,63,955. Out of which, 81 per cent (Rs. 2,12,515) was utilized for stipulated purposes and the remaining 19 per cent (Rs. 51,440) was diverted to other purposes. It was noted that the highest (96 per cent) amount of credit advanced was utilized for purchase of sprinkler system and the lowest (64 per cent) for crop production in case of large farmers. The diversion of credit was found to be the highest for crop loans (36 per cent) and the lowest (4 per cent) for purchase of sprinkler system. Out of the total diverted amount of credit, 27 per cent (Rs. 14,139) was used for other productive purposes and 73 per cent (Rs. 37,301) was used for non-productive purposes. The study also revealed that 83 per cent of the large farmer borrowers had completely utilized the credit for the stipulated purposes and 17 per cent had partially utilized the credit.

Sharma and Kumawat (2014b) conducted a study for examine the disbursement and utilization pattern of co-operative credit in Jaipur district of Rajasthan for agricultural year 2005-06. The study revealed that the overall borrowed amount of co-operative credit by large farmers was found to be Rs. 20,911 of which, 53 per cent (Rs. 10,988) was disbursed in Kharif and 47 per cent (Rs. 9,912) was disbursed in Rabi season. In both the seasons, 44 per cent of credit was advanced in cash and the remaining 56 per cent advanced in kind. Out of the total amount of borrowed credit, 66 per cent was utilized for stipulated purposes and the remaining 34 per cent was diverted to other purposes. In case of cash credit, only 24 per cent was utilized for stipulated purposes and 76 per cent was diverted to other purposes. Likewise, about 98 per cent of kind credit was utilized for stipulated purposes and about two per cent was diverted to other purposes. The per cent utilization of co-operative kind credit was observed to be very high as compared to co-operative cash credit. The per cent diversion of kind credit was found to be lowest among the large farmer than other farm categories.

Kaur (2015) studied the investment pattern and credit utilization of the farmers in border and non-border area and found that in large sampled farmers the average investment on the purchase of land was Rs. 433333.33 per farm in border areas and 1283333.33 in non-

border areas. So, the actual credit utilization on the said purpose was 66.34 per cent and 50.84 per cent in border and non-border areas respectively. In border areas, more diversion was found in credit availed for electric motors/ diesel engine, tractor and trolleys by large farmers i.e. 48.68 per cent and 47.82 per cent respectively. In non-border areas, diversion was found to be higher in investment credit availed for land development, construction of farm building and motor/diesel engine.

Chavan *et al* (2016) conducted a study in Karnatka to find the utilization pattern of crop loan by farmers in India and found that an average proportion utilized for the said purpose by large farmers was around 96.97 per cent which was found to be higher as compared to small farmers (76.78 %). Similar trend was noticed in case of cooperative banks borrowers, but the average size of amount borrowed was almost one half of the amount of commercial banks borrowers. It was also found that the amount utilized for the said purpose by large farmers was 95.51 per cent whereas for small farmers it was 85.72 per cent. It was interesting to note that across all categories the diversion of agricultural crop loan was more in case of small farmers as compared to large farmers in both commercial and co-operative banks for both the seasons.

Thus, it was found in the various studies reviewed that credit has played an important role in capital formation, leading to increased production and productivity more so in large farm categories. Though, it was found to be highest surplus generating category, but was found to be indebted. However, indebtedness of this category was more towards institutional sources of finance. It was also highlighted that majority of credit availed by large farmers was being utilized for productive purposes and the extent of diversion of borrowed amount was less here, more so in Punjab state.

CHAPTER – III

MATERIAL AND METHODS

This chapter explains the area of the study, selection of the sample, method of data collection and various analytical techniques used in this investigation. In order to accomplish the objectives of the study 'Investment pattern and credit utilization of large farmers in South-Western Punjab', methodological framework of the study has been discussed under the following sections:

3.1. Source of data and sampling design

3.2. Analytical Procedure

3.1. Source of data and sampling design

The study was based on primary data collected from large farm households having operational holding more than 10 hectares (25 acres) as per the standard classification of operational holdings. The locale of study was South-Western Punjab as the average size of operational holding in this region was found to be larger as compared to other regions.

3.1.1 Sampling design

Multi-stage sampling technique has been followed for the selection of farm households. The South-Western area of Punjab is comprised of six districts namely Bathinda, Faridkot, Ferozpur, Sri Muktsar Sahib, Mansa and Fazilka, Out of these two districts with highest proportion of large operational holdings i.e. Ferozpur (15.44 %) and Sri Muktsar Sahib (10.57 %) in the region were selected purposively at first stage. At second stage, two blocks from each selected districts namely Malout and Gidderbaha from Sri Muktsar Sahib district and Makhu and Zira from Ferozpur district were selected at random. At third stage, a cluster of villages from each sampled block were selected. At final stage, twenty large farmers from each selected cluster of villages has been selected for the present study. Thus total sample comprised of 80 large farm households. The sampling design being followed for the study has been shown in table 3.1.

Table 3.1: Sampling design

S. No.	Districts	Blocks	Villages	No. of farmers
1	Sri Muktsar Sahib	Malout	Rupana	6
			Tamkot	6
			Mehraj Wala	4
			Phulle Wala	4
		Gidderbaha	Bharu	6
			Kotbhai	6
			Mallan	5
			Gidderbaha	3
2	Ferozpur	Makhu	Hamad Wala Hithar	6
			Mallu Walie Wala	5
			Kamal Wala	5
			Lehra Bet	4
		Zira	Malsian	6
			Holan Wali	5
			Shah wala	3
			Lahuke	6

3.1.2 Collection of primary data

The required information pertaining to socio-economic parameters like age, education, size of operational holding, family structure and farm inventory, income from different sources and family consumption expenditure was collected from selected households through personal interview method. Keeping in view, the purpose of study, information on aspects like investments undertaken by the sampled households on farm and non-farm assets and activities during last five years, credit availed for these, amount outstanding and repaid, utilization of credit, diversion of loans, reasons for this diversion, extent of loans availed from different sources, reasons for the preference of credit source and the major problems faced by farmers in availing institutional agricultural credit were also recorded through a well-structured, pre-tested schedule.

3.2 The analytical framework

3.2.1 Analysis of the data

The data obtained was enumerated for analysis. Simple tabular analysis and functional analysis tools were used for the analysis of data to attain objectives of the study.

3.2.2 Statistical framework

For analysis of socio-economic parameters of the study, simple statistical tools like frequencies, percentages, averages etc. were used as well as to represent the data in the tabular form.

Ratio analysis was undertaken pertaining to investment pattern and utilization of credit as well as diversion of credit from the primary data such as:

To account for the share of credit in invested amount

$$\frac{Amount\ borrowed}{Amount\ Invested} \times 100$$

To highlight the actual utilization of borrowed funds in total investment

$$\frac{Amount\ utilized}{Amount\ invested} \times 100$$

To highlight the rate of diversion of borrowed funds

$$\frac{Amount\ diverted}{Amount\ borrowed} \times 100$$

Regression analysis: After applying different functional forms, Cobb-Douglas production function was found to be best fit to identify the factors affecting diversion of credit by the large farmers.

$$Y = A \sum_{i=1}^{n} Xi^{bi}$$

Log Y = Log A + $\sum_{i=1}^{n} b_i$log x_i + u

Log Y = Log A + b_1 log x_1 + b_2 log x_2 +…… + b_{10} log x_{10} + u

Where

Y = diversion of loan (%)

A = a constant term

x_1 = Non-farm income (Rs. Per farm)

x_2 = share of non-institutional loan in total loan availed

x_3 = Literacy level

x_4 = Household general expenditure

x_5 = Farm investment

x_6= Expenditure on dwelling house

x_7= Expenditure on social ceremonies

x_8= Major medical expenses

x_9= Expenditure on vehicles

x_{10}= Family size

Garret's Ranking Technique: Garret's Ranking Technique has been used to rank the reasons given by the sampled farmers for their preference in favour of institutional and non-institutional sources of credit. The rank assigned to factors/constraints faced by the respondents pertaining to different sources of credit was transmitted into scores using the formula given by Garrett and Woodworth (1981).

$$\text{Percentage position} = 100 \frac{(R_{ij}-0.5)}{N_j}$$

Where,

R_{ij} = Rank given for i^{th} problem by the J^{th} respondent

N_j = Number of problems ranked by the J^{th} respondent

By referring the Garrett table, the percent position estimated was converted into score. Then for each factor/constraints, the scores of various respondents were added and mean score was calculated. The factor with highest mean score was considered to be the most important factor/problem.

CHAPTER – IV

RESULT AND DISCUSSION

The present study entitled, "Investment pattern and credit utilization of large farmers in south– western Punjab" was focused on purposively selected two districts namely Ferozpur and Sri Muktsar Sahib of this agro economic zone of Punjab state. Various aspects with respect to stipulated objectives of the study like farm and non-farm investment of large farmers, purpose-wise and source-wise extent of farm loans availed by the sampled farm households, diversion pattern of credit availed by these farmers in the study area have been highlighted in this chapter. This chapter has concentrated on the discussion of the results obtained by analyzing the collected data. The results have been discussed under the following heads:

4.1 Socio-economic profile of sampled farm households

4.2. Extent of credit availed by sampled large farmers

4.3 Investment pattern and credit utilization on sampled farm households

4.4 Social and consumption purpose loans during last five years

4.5 Factors affecting diversion of credit in South-Western Punjab

4.1 Socio-economic profile of sampled farm households

Socio-economic parameters like age, family composition, education level, operational farm size, social status etc. of the sampled respondents are the most important indicators affecting the decision making in various aspects of agricultural production process. Therefore, socio-economic profile of the sampled respondents has been studied and discussed in this section under the following heads:

4.1.1 Age

Age of an individual is a significant factor in determining the attitudinal and behavioral changes towards various socio-economic aspects. As a general norm, it adds to the experience. The power to take decisions of the individual in the society is greatly influenced by the age of the individual. In Table 4.1.1, it has been observed that among the overall sampled farmers, 41.25 per cent of the respondents were below 40 years of age. About 41.25 per cent of them were found to be in the age group of 40-50 years, while the remaining about 17.5 per cent of the total farmers were relatively older *i.e.* more than 50 years of age.

Table 4.1.1: Age-wise distribution of sampled farmers in south-western Punjab 2015-16

Age (years)	Number of sampled farmers
Up to 30	5 (6.25)
30-40	28 (35.00)
40-50	33 (41.25)
Above 50	14 (17.5)
Overall	**80** **(100.0)**
Average age	**43.01**

Figures in parentheses indicate percentage to the total.

It shows majority of sampled farmers fall in the middle age category *i.e.* 41.25 per cent were found to be in age group of 41-50 years. Average age of the sampled farmers was found to be about 43 years.

4.1.2 Family size

The size of family is an important factor to determine the family labour force engaged on the farm. It also has a bearing on income and expenditure pattern of the farmers. Family size of the sampled farmers has been presented in Table 4.1.2. Among overall large farmers, about 51.25 per cent farmers had small families comprised of five or less members, whereas 12.5 per cent had large sized families of more than eight members. Average family size was found to be 6.06 in large sampled farm households.

Table 4.1.2: Distribution of sampled households according to family size in south-western Punjab 2015-16

Family Size (Number)	Number of sampled Farm Households
Up to 5 members	41 (51.25)
6-8	29 (36.25)
>8	10 (12.5)
Overall	**80** **(100.0)**
Average family size	**6.06**

Figures in parentheses indicate percentage to the total.

4.1.3 Education

Education plays an important role in determining socio-economic status and level of awareness of the respondents. In many cases it becomes a base for skill acquisition like specialized trainings or availing facilities like institutional credit etc. for an agricultural enterprise. Education generally enables the farmers to think and judge a situation rationally and gives improved impetus to adopt new farm technology. Education is of great institutional value in the process of economic growth and development. An educated and skilled worker contributes to higher economic growth. Table 4.1.3a showed that out of the total sample of 80 large farmers, majority of the famers i.e. 30 per cent were graduates. One-fourth of the total sampled farmers attained education up to matric level. The proportion of the farmers who have attained education up to primary, middle, matriculation and higher secondary level came out as 10, 6.25, 25 and 18.75 per cent, respectively. Among the sampled farmers, extremes were to a lower extent with only four per cent illiterate and six per cent post graduates.

Table 4.1.3a: Distribution of sampled farmers according to their level of education in south-western Punjab 2015-16

Education	**Number of farmers**
Illiterate	3 (3.75)
Primary	8 (10.0)
Middle	5 (6.25)
Matriculation	20 (25.0)
Senior Secondary	15 (18.75)
Graduation	24 (30.0)
Post-graduation	5 (6.25)
Overall	**80** **(100.0)**

Figures in parentheses indicate percentage to the total.

Table 4.1.3b: Distribution of highest educated family member of sampled households in south-western Punjab 2015-16

Education Qualification	Number of Farm Households
Matriculation	6 (7.50)
Sen. Sec.	19 (23.75)
Graduation	38 (47.50)
Post-graduation	17 (21.25)
Overall	**80** **(100.0)**

Figures in parentheses indicate percentage to the total.

Table 4.1.3b showed that out of the total sample of 80 large farmers, majority i.e. 47.50 per cent have graduates as the highest educated member in the family, followed by those who have attained education up to secondary (about 23.75 per cent). It was also found that 21.25 per cent of the sampled households have post graduates as the highest educated family member, whereas only 7.50 per cent household have matriculates as maximum attained education level. So, overall the sampled households were found to be having good exposure to higher education despite the fact that 45 per cent respondents were themselves educated up to matriculation.

4.1.4 Size of holding

In agricultural enterprises land holding is the basic unit for working out all input and output parameters. Farm size is considered as most important security component by all the lending institution for extending farm credit. Moreover, an adequate farm size improves the operational efficiency of the farm and hence enhances the farm productivity. As per table 4.1.4, the proportion of owned land in size of operational holding was 94.88 per cent in large sampled farms. The analysis also revealed that the leasing out operations were not prominent in the sampled category as proportion of leased in area was 6.38 per cent where as that of leased out area was only 1.25 per cent on large farms.

Table 4.1.4: Average size of operational holding of sampled farmers in south-western Punjab 2015-16

Particulars	Area in hectares
Owned land (1)	13.38 (94.88)
Leased in land (2)	0.90 (6.38)
Leased out land (3)	0.18 (1.25)
Total operational holding (1+2-3)	**14.10** **(100.00)**

Figures in parentheses indicate percentage to the total.

Average size of owned land for the sampled farmers was worked out to be 13.38 hectares. The leased in land was to the extent of only 0.90 hectare and leasing out comprised only 0.18 hectare. Thus average size of operational holding for the sampled farmers was worked out to be 14.10 hectares.

4.1.5 Member of Social organizations

Active involvement in any social organizations as a member may improve the status symbol of an individual especially in the rural society. Members of social organization have more influence in the society and therefore they can easily explore the sources of institutional loan than others. Results presented in Table 4.1.5 indicated that out of the total sample of 80 farmers, all were the members of cooperative societies, 13 (16.25%) were panchayat members, 4 (5.0%) were the member of kisan union or kisan sabha in the sampled area of south western zone of Punjab state. The results also showed that none of the sampled farmers was the member of block samiti.

Table 4.1.5: Distribution of sampled farmers according to their status as member of social organizations in south-western Punjab 2015-16

Particulars	Number of farmers
Block samiti	-
Panachayat	13 (16.25)
Cooperative Society	80 (100.0)
Kisan Union/ Kisan Sabha	4 (5.0)
Any other	-

Figures in parentheses indicate percentage to the total.

4.1.6 Cropping Pattern

Cropping pattern refers to the different crop rotations being followed by the farmers. The results with respect to cropping pattern of sampled farmers have been given in Table 4.1.6. The results showed that large farmers in the sampled districts of south-western Punjab mostly followed paddy-wheat rotation. It was evident from the table, that paddy was the major crop in the kharif season being cultivated on 10.09 hectares of land which occupied 35.98 per cent of the total cropped area due to water logging conditions in some parts of sampled area. Basmati has emerged as second most important crop in the kharif season and

Table 4.1.6: Cropping pattern of sampled farmers in south-western Punjab 2015-16

Crop	**Area under crop (Hectares)**
Kharif crops	
Paddy	10.09 (35.98)
Basmati	2.30 (8.21)
Cotton	0.73 (2.61)
Sugarcane	0.17 (0.61)
Fodder	0.67 (2.39)
Others(veg, fruits, pulses, oilseeds & maize)	0.14 (0.5)
Kharif cropped area (A)	**14.10** **(50.30)**
Rabi crops	
Wheat	13.21 (47.10)
Fodder	0.66 (2.34)
Others	0.06 (0.21)
Rabi cropped area (B)	**13.93** **(49.70)**
Total cropped area(A+B)	**28.03** **(100.0)**
Operational area	**14.10**
Cropping intensity (%)	**198.79**

Figures in parentheses indicate percentage to the total cropped area.

occupied about 8.21 per cent of the total cropped area. Cotton and Sugarcane crops were being cultivated only on 0.73 and 0.17 hectares of land which accounted for 2.61 and 0.61 per cent of the total cropped area. Fodder and other crops during the Kharif season were cultivated on 0.67 and 0.14 hectares of land which constituted only 2.39 and 0.5 per cent share in the total cropped area, respectively. In Rabi season, wheat was the major crop which covered about 47.10 per cent of the total cropped area. Fodder crops were cultivated on 2.34 per cent of the total cropped area, while the other crops in the Rabi season were cultivated only on 0.21 per cent of the total cropped area. On an overall farm situation, cropping intensity was estimated at 199 per cent for the sampled farms.

4.1.7: Source wise income pattern of sampled farmers

The results with respect to annual income of sampled farmers from different sources have been presented in Table 4.1.7. The results showed that overall in the study area, the extent of average annual gross income earned by the sampled households from all sources came out to be Rs 2157148 per household. Source-wise income generation analysis has shown that crop farming was the major source of income and about 92 per cent of the total

Table 4.1.7: Source-wise income pattern of sampled farmers in south-western Punjab 2015-16

Source of Income	**Average annual income (Rs./farm/annum)**
Farm Income (A)	
Crops	1993494 (92.41)
Dairying	56529 (2.62)
Rented land	18375 (0.85)
Hiring out machinery	21875 (1.01)
Sub total (A)	**2090273** **(96.89)**
Non-farm Income (B)	
Service	61500 (2.85)
Others (Atta chakki, shops and other bussiness)	5375 (0.26)
Sub total (B)	**66875** **(3.11)**
Total income (A+B)	**2157148** **(100.0)**

Figures in parentheses indicate percentage to the total.

income was generated from this source alone, followed by income from services and dairying enterprise at 2.85 and 2.62 per cent respectively. The extent of average annual income generated from rented out land, hiring out of machinery and other sources (Atta chakki and shops) estimated to the tune of Rs 18375, Rs 21875 and Rs 5375 per household which contributed 2.62, 2.85, 0.85, 1.01 and 0.26 per cent to the total income on total sampled farm households. Non-farm income component was constituting only 3.11 per cent to the total income of sampled farm households.

4.1.8: General household expenditure pattern of sampled farmers

The extent of family consumption expenditure of sampled farmers on various household items heads/particulars in south-western Punjab has been shown in Table 4.1.8. The results indicated that in the south-western area of Punjab state, average annual routine expenditure turned out to be Rs 721407 per household of sampled farmers. Out of the total expenditure, the expenditure on food was the major cost item head and the average amount of

Table 4.1.8: Household expenditure pattern of sampled farmers in south-western Punjab 2015-16

Consumption item	Annual expenditure(Rs/annum)
Food	147025 (20.33)
Education	126400 (17.52)
Intoxicants	25334 (3.51)
Medicines	68577 (9.5)
Electricity bill	47020 (6.52)
Vehicle repair and petrol	140887 (19.53)
Telephone/Mobile bill	23689 (3.28)
LIC Payments	4175 (0.58)
Any other	138300 (19.17)
Total	**721407** **(100.0)**

Figures in parentheses indicate percentages to the total.

expenditure incurred by the sampled households on it was estimated at Rs 147025 (20.33%) per annum, closely followed by expenditure incurred on vehicles and miscellaneous items (clothing, small social ceremonies and transportation etc.) which accounted for 19.53 and 19.17 per cent to the total expenditure. About 17.52 per cent of total expenditure *i.e.* Rs 126400 per annum has been incurred by sampled farmers on education of their children. On an overall farm household, the item wise extent of household expenditure incurred on intoxicants, medicines, electricity bills, telephone bills and LIC premium came to be Rs 25334, Rs 68577, Rs 47020, Rs 23689 and Rs 4175 per annum per household and accounted for 3.51, 9.50, 6.52, 3.28 and 0.58 per cent respectively to the total household expenditure.

4.1.9 Farm inventory

With increased number of mechanized operations and activities on the farm, the investment on farm machinery/implements also gained importance in south-western Punjab. This has also become major component of farm investment on large farm category. In this regard, the magnitude of farm inventory has been presented in Table 4.1.9a and Table 4.1.9b, respectively. The results presented in Table 4.1.9a showed that out of total sampled large farmers, all of them owned tractor for cultivation and other farm operations. The average number of tractors owned per farm unit came out as more than one i.e. 1.35 on an overall farm situation.

Table 4.1.9a: Distribution of sampled farmers according to their farm inventory in south-western Punjab 2015-16

Particulars	
Tractor	**Number of farm household**
One tractor	57 (71.25)
Two tractors	19 (23.75)
Three tractors	3 (3.75)
Four tractors	1 (1.25)
Total	**80** **(100.0)**
Particulars	
Trolley	**Number of farm household**
One trolley	61 (76.25)

Particulars	
Two trolleys	19 (23.75)
Total	**80** **(100.0)**
Irrigation structure	
Electric motor	**Number of farm households**
No electric motor	6 (7.5)
One electric motor	5 (6.25)
Two electric motors	17 (21.25)
Three electric motors	23 (28.75)
Four electric motors	19 (23.75)
Five electric motors	8 (10.0)
Six electric motors	2 (2.5)
Total	**80** **(100.0)**
Particulars	**Absolute number**
Submersible pump	26
Diesel engine	65

Figures in parentheses indicate percentages to the total.

As Punjab is highly mechanized state so far as agriculture is concerned, all sampled farmers were found to be owning one or more number of tractors. Majority of sampled farmers i.e. 71.25 per cent were owning one tractor, whereas about 23.75 per cent farmers owned two tractors per farm. Due to large operational holding, about 3.75 per cent farmers had three tractors per farm and only one farmer was owning four tractors on his farm. In case of trolleys, 76.25 per cent farmers owned one trolley, whereas about 23.75 per cent farmers owned two trolleys per farm.

As Punjab is a highly irrigated state, farmers used tubewells to withdraw groundwater for irrigation purposes. Majority of farmers were having electric motor as well as diesel

engine for operating tubewells. As, groundwater table is declining in Punjab, so farmers have been moving from centrifugal pumps to submersible pumps. About 92.5 per cent sampled farmers had installed electric motors on their farms. Majority of sampled farmers (about 28.75 per cent) were having three electric motors per farm followed by farmers with four electric motors (23.75 per cent) and 21.25 per cent of the sampled farmers were found to be having two electric motors. Two sampled farmers i.e. 2.5 per cent also owned six electric motors per farm for irrigation purposes. The magnitude of submersible pumps and diesel engines installed by the sampled farmers turned out to be 26 and 65 in absolute number as shown in table 4.1.9a.

Table 4.1.9b: Farm inventory of sampled farm households in south-western Punjab 2015-16

Particulars	**Number**
Disc harrow	82
Cultivator	81
Seed drill	82
Leveller	49
Planker	78
Generator	74
Farm sheds	
Implement shed	68
Storage shed	57
Cattle shed	80
Total	**205**
Livestock	
Buffaloes	277
Cows	132
Total	**409**

With availability of machinery for various farm activities/operations, the usage of other farm implements has increased in Punjab. Same was found to be true in case of sampled farmers. The category being large size holders, the affordability was evident from owning of these farm equipments/implements by the sampled farmers. The magnitude of other farm implements like disc harrow, cultivators, seed drills, levellers, planters, generators, farm sheds and livestock owned by the sampled farmers turned out to be 82, 81, 82, 49, 78, 74, 205

and 409 in absolute numbers as shown in table 4.1.9b.

The machinery or machine operations cost analysis takes place at a specific point in time. However, it regularly involves capital investment in agriculture. The current value of farm inventory on large farms of south-western Punjab has been shown in Table 4.1.9c. The current value of tractors on large farms was found to be Rs 422750 per farm. On the other hand, the present value of other farm equipments/implements in terms trolleys, disc harrow, cultivators, seed drills, levellers, plankers, electric motors, submersible pumps, diesel engines and generators were estimated at Rs 101075, Rs 23725, Rs 10493, Rs 22252, Rs 12693, Rs 8306, Rs 19931, Rs 4350, Rs 5943 and Rs 45887 per farm, respectively. Present value of farm sheds and livestock was estimated at Rs 104025 and Rs 234375 per farm respectively. On an average total value of farm inventory of sampled households was found to be Rs 1021792 per farm. On the other side, the present value of tractors, other implements, irrigation structures, farm sheds, livestock, small tools on large was estimated at Rs 29982, Rs 15917, Rs 2142, Rs 7378, Rs 16622 and Rs 425 per hectare respectively. The current value of farm inventory was found to be Rs 1021792 per farm and Rs 72466 per hectare basis on the sampled farms.

Table 4.1.9c: Current value of farm inventory of sampled farmers in south-western Punjab 2015-16

Inventory	**Current value (Rs/farm)**	**Current value (Rs/hectare)**
Tractor (A)	**422750 (41.37)**	**29982 (41.37)**
Equipments/Implements (B)		
Trolley	101075 (9.89)	7168 (9.89)
Disc harrow	23725 (2.32)	1683 (2.32)
Cultivator	10493 (1.02)	744 (1.02)
Seed drill	22252 (2.17)	1578 (2.17)
Leveller	12693 (1.24)	900 (1.24)
Planker	8306 (0.80)	589 (0.80)
Generator	45887 (4.50)	3255 (4.50)

Inventory	Current value (Rs/farm)	Current value (Rs/hectare)
Sub total (B)	**224431 (21.94)**	**15917 (21.94)**
Irrigation Structures (C)		
Electric motor	19931 (1.95)	1413 (1.95)
Submersible pump	4350 (0.42)	308 (0.42)
Diesel engine	5943 (0.59)	421 (0.59)
Sub total (C)	**30224 (2.96)**	**2142 (2.96)**
Farm sheds (D)	**104025 (10.18)**	**7378 (10.18)**
Livestock (E)	**234375 (22.93)**	**16622 (22.93)**
Small tools (F)	**5987 (0.60)**	**425 (0.60)**
Total (A+B+C+D+E+F)	**1021792 (100.0)**	**72466 (100.0)**

Figures in parentheses indicate percentages to the total.

4.2 Extent of credit availed by sampled farmers in south-western Punjab

No economic activity can be performed without the usage of finance, same is true for agriculture. Farmers have financial requirements for various purposes be it productive or non-productive. Though the large farm category under study was found to be surplus generating category, but still dependence on borrowed funds was found for farm as well as non-farm needs. So, in this section the extent of borrowings by sampled farmers was analyzed.

4.2.1 Purpose and source wise extent of credit availed by farmers during last 5 year

The results indicated that 38.75 per cent of farmers have availed non-institutional credit which showed that 61.25 per cent of farmers were not dependent on non-institutional credit in the sampled category. On the other side, all the farmers were found to be availing credit from institutional sources. It was also found that 100 per cent of sampled farmers have availed credit from co-operatives in both forms i.e. cash and kind. About 93.75 per cent of sampled farmers have availed credit from both i.e. co-operatives and commercial banks. The results also revealed that 38.75 per cent sampled farmers have borrowed from both sources of

credit i.e. institutional and non-institutional sources of credit.

Table 4.2.1a: Distribution of farmers according to source of credit availed (N=80)

Source of credit	Number of farmers
Institutional sources	**80 (100.00)**
Co-operatives	80 (100.00)
Commercial banks	75 (93.75)
Both (Co-operatives and commercial banks)	75 (93.75)
Non-institutional sources	**31 (38.75)**
Commission agents (Arthiya)	31 (38.75)
Both institutional and non-institutional	**31 (38.75)**

Figures in parentheses indicate percentage to the total.

As indicated in Table 4.2.1b the average amount of credit availed by the sampled farmers was worked out to be Rs 1269000 per farm in the study area. Source-wise, an amount of Rs 1185875 and Rs 83125 per farm household was borrowed from institutional and non-institutional sources which accounted for 93.45 and 6.55 per cent of the total loan availed respectively. Nearly 81.87 per cent of the total institutional credit availed by the sampled farmers was short term loan, while rest about 18.13 per cent was investment loan. Total non-institutional credit was availed from only one source i.e. commission agents by the sampled farmers. Hence, the sampled farmers have preferred institutional agencies over non-institutional sources in the study area. The reason could be traced to better access to institutional agencies and large credit limits due to large size of holdings. So, their dependence on non-institutional sources of credit was found to be less.

Table 4.2.1b: Source wise credit availed by sampled farmers (N=80)

Particulars	Credit availed (Rs per farm)
Institutional Sources	
Short term credit (A)	
Co-operatives	108375 (8.54)
Commercial banks	862500 (67.96)
Both	
Sub total (A)	**970875 (76.50)**
Investment credit (B)	
Commercial banks	215000 (16.95)
Sub total (B)	**215000 (16.95)**
Total (A+B)	**1185875 (93.45)**
Non-institutional credit	
Commission agents (Arthiya)	83125 (6.55)
Total	**1269000 (100.0)**

Figures in parentheses indicate percentage to the total.

4.2.2: Purpose and source wise credit availed in south-western Punjab during last 5 years

Farmers tap both institutional and non-institutional sources of credit for various purposes. Farm investment can be directly productive in nature like purchase or development of land, irrigation structure, purchase of heavy machinery, cattle or construction of farm buildings etc. It can also be indirect productive/Unproductive investment sometimes called as non-productive like construction of dwelling house, higher education of children, heavy expenditure on medical treatment, social/religious ceremonies etc. Though not adding to income stream directly but its importance can not be negotiated as farmer live in socio-cultural environment and has to undertake this type of expenditure willingly or unwillingly. So, the pattern of investment undertaken by the farmers during last five years has been shown in tables 4.2.2a and 4.2.2b respectively.

a) Direct productive investment

In case of direct productive investment, data furnished in table 4.2.2a revealed that sampled farmers have not availed any credit for purchase/leveling of land or water channels in the last five years. Cent per cent loan was availed from non-institutional sources i.e. Rs 13125 per farm for construction of farm building. It was also found that for purchase of tractors 79.38 per cent and 20.62 per cent of credit i.e. Rs 55550 and Rs 14425 per farm was taken

from institutional and non-institutional sources respectively. Moreover, for purchasing trolleys and other farm machinery 100 per cent was availed from institutional sources i.e. Rs 59250 per farm.

Table 4.2.2a: Direct productive investment (Rs/farm)

Purpose	Percentage of loan taken		Total
	Institutional	Non-institutional	
Purchase of land	-	-	-
Leveling of land	-	-	-
Reclamation of soil/water channel	-	-	-
Farm buildings	-	13125 (100.0)	13125 (100.0)
Electric motors/ diesel engines/ Submersible pump	-	-	-
Tractors	55550 (79.38)	14425 (20.62)	69975 (100.0)
Trolleys and other farm machinery	59250 (100.0)	-	59250 (100.0)
Cattle	-	-	-

b) Indirect productive/unproductive expenditure

As shown in table 4.2.2b regarding indirect productive/unproductive expenditure, 75.83 per cent and 24.17 per cent of loan i.e. Rs 62750 and Rs 20000 per farm household was taken for house construction from institutional and non-institutional sources respectively. For the marriage ceremonies 100 per cent of loan i.e. Rs 35575 per farm household was taken from non-institutional sources. It was also found that 100 per cent loan was taken from institutional sources for general purposes (purchase of vehicles for personal use, clothing and transportation etc.) i.e. Rs 37450 per farm household. No credit was availed by the sampled farmers for medical treatment and education of their children.

Table 4.2.2b: Indirect productive/Unproductive expenditure (Rs/farm household)

Purpose	Percentage of loan taken		Total
	Institutional	Non-institutional	
House construction	62750 (75.83)	20000 (24.17)	82750 (100.0)
Marriage ceremonies	-	35575 (100.0)	35575 (100.0)
Education of children	-	-	-
Medical treatment	-	-	-
General purpose	37450 (100.0)	-	37450 (100.0)

4.3 Investment pattern and credit utilization on sampled farms

Farm investment adds to efficiency of farming community through capital formation. It leads to creation of durable assets having long lasting impact. The farm investment pattern undertaken by sampled farmers was studied under the following purposes:-

4.3.1 Purchase of land

4.3.2 Development of land

4.3.3 Construction of farm buildings

4.3.4 Investment on irrigation structure

4.3.5 Purchase of tractor

4.3.6 Purchase of trolleys and other farm equipments

4.3.7 Purchase of cattle

4.3.1 Purchase of land

Land is the main base for agriculture production. No matter what be the kind or form, land is the standing-place, the workshop, the storehouse of labour. It is to the human being the only means by which he can obtain access to the material universe or utilize its powers. Without land man cannot exist. To whom the ownership of land is given, to him is given the virtual ownership of the men who must live upon it.

Table 4.3.1: Purchase of land by sampled farmers during last five years

Purchase of land (12.10 hectares)	**Amount(Rs/ farm)**
Amount invested	665000
Amount borrowed	-
Short term diverted	300000
Percentage of short term diverted credit in total investment	45
Average land purchased per farm	0.15 hectare

It was found that sampled farmers had purchased 12.10 hectares of land during last five years and average land purchased came to be 0.15 hectare/ farm household. The average investment on purchase of land by sampled farmers was found to be Rs 665000 per farm and there was no amount borrowed from any source directly due to higher income of large farmers, but there was large amount of crop loan diverted for this purpose by sampled farmers i.e. Rs 300000 per farm which accounted for about 45 per cent of total investment incurred on the purchase of land during last five years.

4.3.2 Development of land/Water channels

Agriculture in the state is entering the next stage of development which involves high productivity and high value products by using new techniques. This could be possible when farmers develop their land by various methods like reclamation of soils, leveling of agricultural land, constructing the water channels etc. The investment pattern for this purpose in the study area has been shown in table 4.3.2.

Table 4.3.2: Development of land/Water channels by sampled farmers in last five years

Development of land/Water channels	Amount (Rs/farm)
Amount invested	137055
Amount borrowed	-
Short term diverted	-

The analysis has shown that the average investment on development of land was Rs 137055 per farm and there was no amount borrowed for this purpose by sampled farmers due to their high income level.

4.3.3 Construction of farm building

Buildings become a long lived asset and keep on giving flow service over many years. The construction of farm buildings involves huge investment and it cannot be revoked easily. Investment on cattle shed, implement shed, construction of other farm buildings was another purpose studied under the analysis as shown in table 4.3.3.

Table 4.3.3: Construction of farm buildings by sampled farmers during last five years

Construction of farm building	Amount (Rs/farm)
Amount invested	108787
Amount borrowed	13125
Amount repaid	3525
Amount outstanding	10525
Amount diverted	-
Borrowed as %age invested	12.06
Diverted as %age borrowed	-
Utilized as %age invested	12.06

As shown in table 4.3.3, on an average Rs 108787 per farm were invested on farm buildings on sampled farm households. The borrowed amount for the same purpose was Rs

13125 per farm which accounted for 12.06 per cent of total investment on farm buildings. All borrowed amount for this investment purpose was fully utilized and no diversion of credit was found here.

4.3.4 Investment on irrigation structures

Irrigation is basic input of agriculture production. So, investment in irrigation structure is an important component of capital formation in agriculture because it helps in increasing production. Hence, it results in increasing income of the farmers. Due to more dependence on ground water resources, water table in the state was found to be declining over the years and hence expenditure on extraction of water from deeper layers of earth increased. The investment pattern for this purpose has been shown in table 4.3.4.

Table 4.3.4: Investment on irrigation structures by sampled farmers during last five years

Investment on irrigation structure	Amount (Rs/farm)
Amount invested	12725
Amount borrowed	-
Short term diverted	-

As shown in table 4.3.4, the average investment on irrigation structures during last five years was found to be Rs 12725 which was very low, because sampled farmers have been investing in improvement of irrigation structures for the last many years. Along with this, the area under the study was having good access to canal irrigation. So, the investment for this purpose was not much during last five years and there was no need for credit for this meager investment.

4.3.5 Purchase of Tractor

Tractor is the major component of machinery in Punjab agriculture as it involves lumpy investment and credit availability was on easier terms for this purpose. This has become the main device for the majority of on farm operations like ploughing, sowing as well as for off farm activities like transportation etc. As has been discussed average number of tractors owned by sampled farmers was found to be 1.35 per farm. The investment analysis for this purpose has been shown in table 4.3.5.

Table 4.3.5: Purchase of Tractor by sampled farmers during last five years

Purchase of tractors	Amount (Rs/farm)
Amount invested	355000
Amount borrowed	69975
Amount repaid	15525
Amount outstanding	67125
Amount diverted	-
Borrowed as %age invested	19.71
Diverted as %age borrowed	-
Utilized as %age invested	19.71
Short term diverted	56250
Percentage of short term diverted credit in total investment	15.84

In sampled farm households the average investment on tractor was Rs 355000 per farm and 19.71 per cent of this investment was comprised of borrowed funds which were completely utilized for the same purpose. About 15.84 per cent of total investment for purchase of tractor was diverted from crop loan i.e. Rs 56250 per farm.

4.3.6 Purchase of Trolleys and other farm equipments

Without trolley and other farm equipments, tractors are not of great importance because these farm equipments are mainly used for sowing, harvesting and transportation etc. With increased number of mechanized operations and activities on the farm, the investment on other farm machinery/implements also gained importance. The investment analysis for this component was also undertaken on sampled farms and has been shown in table 4.3.6.

Table 4.3.6: Purchase of Trolleys and other farm equipment by sampled farmers during last five years

Purchase of other farm equipment	Amount (Rs/farm)
Amount invested	201200
Amount borrowed	59250
Amount repaid	23525
Amount outstanding	44575
Amount diverted	-
Borrowed as %age invested	29.44
Diverted as %age borrowed	-
Utilized as %age invested	29.44

As shown in table 4.3.6, the average investment on trolleys and other farm equipments was found to be Rs 201200 per farm. The borrowed funds comprised 29.44 per cent of this investment and were completely utilized for the same purpose.

4.3.7 Purchase of cattle

With the emergence of dairying as a major allied enterprise in Punjab agriculture, the investment on cattle assumes importance. On the sampled farms cattle were raised as dairy animals for milk and other dairy products and as draft animals (oxen or bullocks). The investment for this purpose has been shown in table 4.3.7.

Table 4.3.7: Purchase of cattle by sampled farmers during last five years

Purchase of cattle	Amount (Rs/farm)
Amount invested	101325
Amount borrowed	-
Short term diverted	-

As shown in above table, the average investment on cattle during last five years was found to be Rs 101325 per farm household. But all this investment was with self-owned resources with no borrowed amount. So, no credit was availed for this purpose due to high income of the sampled farmers.

4.4 Social and consumption purpose loans during last five years

Consumption purpose is another head of investment which is sometime referred to as unproductive investment. But in a way it is equally important as farm investment and it adds to efficiency of farming class though in an indirect way. Farmer lives in a social matrix. He has to undertake various expenses on social/religious ceremonies along with purposes like construction of house and medical facilities which are basic items of expenditure which become unavoidable. The major expenditure incurred on these item heads has been discussed as under:-

4.4.1 Construction of house

4.4.2 Social/religious ceremonies

4.4.3 Major medical purpose expenditure other than routine expenditure

4.4.4 General purpose expenditure

4.4.1 Construction of house

Dwelling house assumes significance as it has become a status symbol in rural areas with sprawling mansions and big farm houses doting the landscape. Farmer has to comply with norms of society and more so the large farmers are trendsetters in this aspect. The average investment on dwelling house on sampled farms was calculated at Rs 345000 per farm household and Rs 82750 per farm were borrowed on an average basis from both

institutional and non-institutional sources which accounted for 23.98 per cent of total investment. There was large amount of crop loans diverted for this purpose by sampled farmers i.e. Rs 168750 per farm which accounted for about 48.91 per cent of total investment incurred on the construction of house during last five years. It was also found that only 23.75 per cent of sampled farmers have undertaken expenditure on construction of house.

Table 4.4.1: Construction of house by sampled farmers during last five years

Construction of house	Amount (Rs/farm)	Number of farmers
Expenditure incurred	345000	19
Amount borrowed	82750	
Amount repaid	42450	
Amount outstanding	50250	
Borrowed as %age invested	23.98	
Short term diverted	168750	
Percentage of short term diverted credit in total investment	48.91	

4.4.2 Marriage ceremonies

While living in the society, farmer is bound by many social, religious rituals and customs, which though totally unproductive from economic point of view but become necessary from social point of view. Marriage ceremony is one such important item head in the category of consumption expenditure as it involves huge expenditure in the 'Big-Fat Punjabi wedding concept'. The demonstration effect of this expenditure has trickled down to rural sector as well. The expenditure pattern on this item head has been shown in Table 4.4.2.

Table 4.4.2: Expenditure incurred on marriages by sampled farmers during last five years

Marriage purposes	Amount (Rs/farm)	Number of farmers
Amount invested	491250	15
Amount borrowed	35575	
Amount repaid	17125	
Amount outstanding	21725	
Borrowed as %age invested	7.24	
Short term diverted	263750	
Percentage of short term diverted credit in total investment	53.68	

The average expenditure on marriages was found to be Rs 491250 per farm in

sampled area. Only 6.25 per cent i.e. 5 farmers had taken loan for this purpose. About Rs 35575 was borrowed for this purpose from non-institutional sources and completely utilized for the same purpose. Borrowed funds accounted for 7.24 per cent of total expenditure. Only 15 farmers have undertaken expenditure for marriage ceremonies. About 53.68 per cent of total expenditure was diverted from crop loans for the same purpose i.e. Rs 263750 per farm household.

4.4.3 Medical purpose

Amount spent on medical treatment is one of the most important basic items of expenditure in a household. This can in no way be considered un-productive in wake of sickness of farmer himself or other family member. The component of expenditure was found to be less in sampled farmers as only 26 farmers have undertaken expenditure for some major medical purpose. The reason could be better access to nutritional diet and health facilities due to higher disposable income. The analysis of medical expenses in sampled area has been shown in Table 4.4.3.

Table 4.4.3: Medical purpose expenditure loan by sampled farmers during last five years

Medical purposes	Amount (Rs/farm household)	Number of farmers
Expenditure incurred	57312	26
Amount borrowed	-	-
Short term diverted	-	-

This aspect has covered major expenditure incurred on some health issues during the past five years, other than routine medical expenses. The average expenditure on medical treatment was Rs 57312 per farm household in sampled farm households.

4.4.4 General purpose

This component has all other types of consumption expenditure like performing of other social and religious ceremonies, providing gifts, purchase of vehicles for private use and other types of household gadgets were clubbed together under the general expenditure and have been shown in Table 4.4.4.

Table 4.4.4: General purpose major expenditure other than routine expenditure of sampled farmers during last five years

General purpose	Amount (Rs/farm household)	Number of farmer
Expenditure incurred	110625	20
Amount borrowed	37450	
Amount repaid	15525	
Amount outstanding	28575	
Borrowed as %age invested	33.85	

The above table showed that general expenditure undertaken was found to be Rs 110625 per farm household during last five years and only 25 per cent of the sampled farmers have undertaken expenditure for this purpose (mainly for vehicles). The borrowed amount for this purpose was at 33.85 per cent of total expenditure incurred mainly for vehicle purchase. About 11.25 per cent of total sampled farmers had availed credit for this purpose and 100 per cent of borrowed fund was utilized for the same purpose in sampled farm households.

4.4.5 Reasons for the preference for source of credit by sampled farmers

As has been mentioned, farmers were found to be tapping both institutional as well as non-institutional sources of finance to tide over their credit requirements. It was found that all the sampled farmers have availed credit from institutional sources. Whereas 31 farmers were also borrowing from non-institutional sources of credit. The reasons for preferring these sources were sought from the sampled farmers and have been discussed as under:-

4.4.5a Reasons for preferring institutional source of credit by sampled farmers in south-western Punjab

The preferences were measured on the basis of 7 preferential factors viz., access, rate of interest, timeliness, credit limit etc. by applying Garrett's Ranking technique. Low rate of interest being charged by institutions ranked as the top most factor for preferring institutional credit by sampled farms for availing institutional credit. It was followed by credit limit with institutions (52.67 mean score), old account or debt (49.47), personal relations with bank manager (46), easy access (42.97) and so on. However, formalities to get credit and time gap in sanction of loan due to lengthy procedure scored low on farmer's preferential scale. Reasons given by the sampled farmers for preferring institutional sources have been given in table 4.4.5a.

Table 4.4.5a: Reason for preferring institutional source of credit by sampled farmers in south-western Punjab

Factor	Rank							Total no of respondents	Total score	Mean score	Rank
	1	**2**	**3**	**4**	**5**	**6**	**7**				
Easy access	0	10	13	10	18	14	15	80	3438	42.97	V
Low rate of interest	79	1	0	0	0	0	0	80	6227	77.83	I
Old accounts or debts	0	21	17	13	5	20	4	80	3958	49.47	III
Credit limit	0	34	6	12	17	9	2	80	4214	52.67	II
Procedural Formalities	1	5	14	**7**	**7**	8	38	80	2915	36.43	VII
Personal relations	0	9	16	22	13	9	11	80	3680	46	IV
Timeliness	0	0	14	16	20	20	10	80	3328	41.6	VI

4.4.5b Reasons for preferring non-institutional source of credit by sampled farmers in South-Western Punjab

The preferences for non-institutional sources of credit by the sampled farmers have been given in Table 4.4.5b. Out of 80 farmers 31 farmers who availed non-institutional credit gave ranking to the 8 factors. By applying Garret's ranking technique, it was found that the fewer formalities were given the first rank by the sampled farmers in availing non-institutional credit. It was followed by easy access (62.96 mean score) and timeliness (55.74 mean score). Old accounts or debts and rate of interest got the least ranks with mean score of 40.83 and 20 respectively.

Table 4.4.5b: Reason for preferring non-institutional credit of sources by sampled farmers in south-western Punjab

Factor	Rank								Total no of respondents	Total score	Mean score	Rank
	1	2	3	4	5	6	7	8				
Easy access	4	14	6	4	2	1	0	0	31	1952	62.96	II
Low rate of interest	0	0	0	0	0	0	0	31	31	620	20	VIII
Timeliness	0	4	14	10	0	1	2	0	31	1728	55.74	III
Lesser formalities	25	3	2	1	0	0	0	0	31	2347	75.70	I
Old accounts or debts	0	4	1	3	2	2	19	0	31	1266	40.83	VII
Credit limit	2	0	4	1	14	9	1	0	31	1483	47.87	V
Secrecy	0	5	2	1	3	14	6	0	31	1396	45.03	VI
Personal relations	0	1	2	11	10	4	3	0	31	1484	47.87	IV

4.4.6 Problems faced by sampled farmers in availing the credit

Farmers faced numerous problems in availing credit especially institutional credit as enumerated in Table 4.4.6. The problems were measured on the basis of 5 preferential factors viz., procedural difficulties, high cost of borrowing etc. by applying Garrett's Ranking technique. It was found that procedural difficulty was given the first rank among all problems faced by sampled farmers in getting institutional loan. It was followed by the problems like delay in getting the loan (58.55 mean score) and high transaction cost (57.81 mean score). However, problems like repayment plan and lack of awareness about loan schemes got least rank with mean score of 43.44 and 26.75 respectively.

Table 4.4.6: Problems faced by sampled farmers in getting the loan from institutions

Factor	Rank					Total no of respondents	Total score	Mean score	Rank
	1	2	3	4	5				
Procedural difficulties	39	21	14	6	0	80	5125	64.06	I
Getting delayed	15	30	31	4	0	80	4635	57.94	II
Repayment plan	2	9	10	54	5	80	3475	43.44	IV
Lack of awareness about loan schemes	0	0	2	6	72	80	2140	26.75	V
High transaction cost	24	20	23	10	3	80	4625	57.81	III

Farmers did not face many problems to avail non-institutional credit due to lesser formalities and easy availability of credit. High interest rate on credit and binding on sale of crop through commission agents were the major problems faced by some of the farmers availing credit from this source.

4.5 Factors affecting diversion of credit in south-western Punjab

Table 4.5: Factors affecting diversion of credit in sampled area

Factors	*Coefficients*	Calculated t value
Intercept	-11.7431	-3.06
Non-farm income (x_1)	-0.0190	-0.57
Share of non-institutional credit (x_2)	-0.2809*	-2.55
Literacy level (x_3)	0.0605	0.16
Household general expenditure (x_4)	1.0562	1.51
Farm investment (x_5)	1.0053**	4.85
Expenditure on dwelling house (x_6)	0.1749**	5.89
Expenditure on social ceremonies (x_7)	0.1630**	5.79
Major medical expenditure (x_8)	0.0421	1.35
Expenditure on vehicles (x_9)	-0.0110	-0.34
Family size (x_{10})	0.7242	1.19
R square	**0.67**	
Standard error	**0.59**	

* Significant at 5% level ** Significant at 1% level

The production function analysis was applied to ascertain the factors leading to diversion of agricultural credit for purposes other than stipulated ones by the farmers in the study area. The regression analysis results of the production function fitted for the diversion of loan by the sampled farmers in the study area have been shown in table 4.5. The coefficient of determination was found to be 0.67 for the Cobb-Douglas production function, the one found to be the most suitable.

The regression coefficient pertaining to x_2 (share of non-institutional credit) was found to be significant at five per cent level of significance. It revealed that with an increase in the share of non-institutional credit, the diversion of loan will be decreased. Regression coefficient pertaining to x_1 (extent of non-farm income), x_4 (household general expenditure), literacy level (x_3) and family size (x_{10}) did not have significant role in diversion of the loan undertaken by the sampled farmers. Whereas, regression coefficient pertaining to x_5 (farm investment) came to be significantly positive with a coefficient value of 1.0053, indicating that increase in farm investment would lead towards increase in diversion of credit.

Regression coefficient pertaining to x_6 (expenditure on dwelling house) and x_7 (expenditure on social ceremonies) was found to be significantly positive with coefficient values of 0.1749 and 0.1630 respectively. This indicated that increase in expenditure on dwelling house and expenditure on social ceremonies would lead towards increase in diversion of loan by the sampled farmers. However, the regression coefficients pertaining to x_9 (expenditure on vehicles) and x_8 (major medical expenditure) came to be non-significant.

The analysis of study showed that the large farmers were availing more credit from institutional sources than non-institutional sources. Farm investment was found to be higher in purchase of land as well as for tractors. So far as unproductive expenditure concerned, construction of dwelling house and social ceremonies were found to be major purposes. The diversion of short term credit limit was found to a large extent for all these purposes.

CHAPTER – V

SUMMARY

Punjab agriculture has witnessed transformation from traditional toward commercialization under 'Green Revolution Model' during mid 1960's. The state agriculture has become capital intensive over time with increased demand for variable as well as fixed resources. Capital formation especially the private capital formation has taken place at a faster rate in the state. The role of borrowed funds or credit cannot be denied in the process, in wake of meager savings of the farming community and their reluctance to utilize owned funds in new agricultural technologies, it being a biological enterprise. Credit has been one of the most important input for agricultural development and has played a pivotal role in the stage of transformation of agriculture to a commercial enterprise. An important aspect that has emerged in last three decades was that the credit has not only been obtained by the small and marginal farmers for survival but also by the large farmers for enhancing their income through adoption of new technologies in farming. Hence, since independence, credit has been occupying an important place in the strategy for development of agriculture. The agricultural credit system of India consisted of both informal and formal sources of credit supply. The informal sources include friends, relatives, commission agents, traders, private moneylenders, etc. Three major channels for disbursement of formal credit include commercial banks, cooperatives and micro-finance institutions (MFI) covering the whole length and breadth of the country. Agricultural credit has played a vital role in supporting farm production by making it possible to take short cut by to take advantage of new technologies to expand the farming business and to operate it on a profitable basis. Utilization aspect of credit is as important or in a sense more important than availability of credit. If available credit was utilized for the productive purposes, it helped not only in increasing the returns to the farmer, but also created its repaying capacity. On the other hand, if the available funds gets diverted for unproductive purposes or misutilized for other motives, the income did not increase to the desired extent and the very purpose of credit availability was defied. The large farm category was found to be the highest surplus generating category in the state. Still a large proportion of these farms were indebted and availing a higher proportion of institutional loan for productive as well as non-productive purposes. The large farmers have been the most dynamic element of the Punjab agriculture producing a large part of main food crops like wheat and paddy. Being resource-rich and technologically more advanced, such farmers play a key role in rural society, not only in adoption of new technologies, but also in setting up cultural and consumption standards. The present study has been devised to have an in depth knowledge about investment pattern and credit utilization of large farmers in south-western Punjab with following specific objectives:-

1. To study the farm and non-farm investment pattern of selected households in large farm category.
2. To find the extent of loan availed source-wise and purpose-wise by large farmers in Punjab.
3. To examine the diversion pattern of credit availed by these farmers, if any and identify the factors responsible for it.

Methodology

The present study was conducted in 2015-16 purposively in the south western area of the Punjab state as the size of holdings in this region was found to be largest as compared to other regions. Multi-stage sampling technique has been followed for the selection of farm households. The South-Western area of Punjab is comprised of six districts namely Bathinda, Faridkot, Ferozpur, Sri Muktsar Sahib, Mansa and Fazilka, Out of these two districts with highest proportion of large operational holdings i.e. Ferozpur and Sri Muktsar Sahib in the region were selected purposively at first stage. At second stage, two blocks from each selected districts namely Malout and Gidderbaha from Sri Muktsar Sahib district and Makhu and Zira from Ferozpur district were selected at random. At third stage, a cluster of villages from each sampled block were selected. At final stage, twenty large farmers from each selected cluster of villages were selected for the present study. Thus total sample comprised of 80 large farm households. The data were collected through personal interview method.

For analysis of socio-economic parameters of the study, simple statistical tools like frequencies, percentages, averages etc. were used as well as to represent the data in the tabular form. Ratio analysis was undertaken on the primary data to show the share of borrowed funds in investment, actual utilization of these funds and diversion on various item heads of productive investment as well as some consumption purposes like family maintenance and social ceremonies etc. Cobb-Douglas production function was applied for the analysis of factors affecting diversion of credit in the study area.

Main Findings of the study

Socio-economic parameters like age, family composition, education level, operational farm size, social status etc. of the sampled respondents were the most important indicators affecting the decision making in various aspects of agricultural production process. It has been observed that among the overall sampled farmers, 41.25 per cent of the respondents were below 40 years of age. About 41.25 per cent of them were found to be in the age group of 40-50 years, while the remaining about 17.5 per cent of the total farmers were relatively older *i.e.* more than 50 years of age. Among overall large farmers, about 51.25 per cent farmers were having small families comprised of five or less members, whereas 12.5 per cent have large

sized families of more than eight members. Average family size was found to be of 6.06 members in large sampled farm households. Education is of great value in the process of economic growth and development. An educated and skilled worker contributes to higher economic growth. Out of the total sample of 80 large farmers, majority of the famers i.e. 30 per cent were graduates. One-fourth of the total sampled farmers attained education up to matric level.

Farm size is considered as most important security component by all the lending institution for extending farm credit. The proportion of owned land in size of operational holding was 94.88 per cent in large sampled farms. Average size of owned land for the sampled farmers was worked out to be 13.38 hectares. Results indicated that out of the total sample of 80 farmers, all were the members of cooperative societies, 13 (16.25%) were panchayat members, 4 (5.0%) were the member of kisan union or kisan sabha in the sampled area of south-western zone of Punjab state. Cropping pattern refers to the different crop rotations being followed by the farmers. The results showed that large farmers in the sampled districts of south-western Punjab mostly followed paddy-wheat rotation. The results with respect to annual income of sampled farmers from different sources showed that, the extent of average annual gross income earned by the sampled households from all sources came to be Rs 2157148 per household. Source-wise income generation analysis has shown that crop farming was the major source of income and about 92 per cent of the total income was generated from this source alone, followed by income from services and dairying enterprise at 2.85 and 2.62 per cent respectively. The results of family consumption expenditure of sampled farmers on various household items indicated that in the south-western area of Punjab state, average annual routine expenditure turned out to be Rs 721407 per household of sampled farmers. Out of the total expenditure, the expenditure on food was the major cost item head and the average amount of expenditure incurred by the sampled households on it was estimated at Rs 147025 (20.33%) per annum. With increased number of mechanized operations and activities on the farm, the investment on farm machinery/implements also gained importance in south-western Punjab. The results showed that out of the total 80 sampled large farmers, all 80 farmers owned tractor for cultivation and other farm operations. The average number of tractor owned per farm unit came out as more than one i.e. 1.35 on an overall farm situation.

Though the large farm category under study was found to be surplus generating category, but still dependence on borrowed funds was found for farm as well as non-farm needs. So, the extent of borrowings by sampled farmers was worked out to be Rs 1269000 per farm in the study area. Source-wise, an amount of Rs 1185875 and Rs 83125 per farm household was borrowed from institutional and non-institutional sources which accounted for

93.45 and 6.55 per cent of the total loan availed respectively. In case of direct productive investment, data revealed that sampled farmers have not availed any credit for the purpose of purchase/leveling of land or water channels in the last five years, but have diverted short term credit availed for this purpose.

Farm investment adds to efficiency of farming community through capital formation. It leads to creation of durable assets having long lasting impact. It was found that sampled farmers had purchased 12.10 hectares of land during last five years and average land purchased came to be 0.15 hectare/household. The analysis has shown that the average investment on development of land was Rs 137055 per farm and there was no amount borrowed for this purpose by sampled farmers due to their high income level. On an average, Rs 108787 per farm were invested on farm buildings on sampled farm households. The borrowed amount for the same purpose was Rs 13125 per farm which accounted for 12.06 per cent of total investment on farm buildings. The average investment on irrigation structures during last five years was found to be Rs 12725 which was very small because sampled farmers have been investing in improvement of irrigation structures for the last many years. In sampled farm households the average investment on tractor was Rs 355000 per farm and 19.71 per cent of this investment was comprised of borrowed funds. The average investment on trolleys and other farm equipment was found to be Rs 201200 per farm household.

Farmer lives in a social matrix. He has to undertake various expenses on social/religious ceremonies along with purposes like construction of house and medical facilities etc. which are basic items of expenditure and became unavoidable. The average investment on dwelling house on sampled farm was found to be Rs 345000 per farm household during the last five years and Rs 82750 per farm was borrowed on an average basis from both institutional and non-institutional sources which accounted for 23.98 per cent of total investment. About 53.68 per cent of total investment was diverted from crop loans for the marriage ceremonies purpose i.e. Rs 263750 per farm. The average expenditure on major medical treatment was Rs 57312 per farm household on sampled farm household. General expenditure other than routine family expenditure undertaken was found to be Rs 110625 per farm household during last five years. About 100 per cent of borrowed fund for it was utilized for the same purpose on sampled farm households.

Preferences by the sampled farmers approaching institutional sources for meeting their deficit requirement in the study area were measured on the basis of 7 preferential factors viz., access, rate of interest, timeliness, credit limit etc. Low rate of interest being charged by institutions ranked as the top most factor preferring institutional credit on sampled farms for availing institutional credit. It was followed by credit limit with institutions, old account or debt, personal relations with bank manager, easy access and so on. In case of preferences for

non-institutional sources of credit by the sampled farmers, it was found that the fewer formalities were given the first rank by the sampled farmers in availing non-institutional credit. It was followed by easy access and timeliness in availing credit. Old accounts or debts and rate of interest got the least ranks with mean score of 40.83 and 20 respectively.

Farmers faced numerous problems in availing institutional credit and these were measured on the basis of 5 preferential factors. It was found that procedural difficulties were given the first rank among all problems faced by sampled farmers in getting institutional loan. It was followed by the problems like delay in getting the loan and high transaction cost. However, problems like repayment plan and lack of awareness about loan schemes got least rank with mean score of 43.44 and 26.75 respectively. Farmers did not face many problems to avail the non-institutional credit due to lesser formalities and easy availability of credit. High interest rate on credit and binding on sale of crop through commission agents were the only problems reported by some of the farmers.

To determine the factors affecting diversion of credit in south western Punjab, The Cobb-Douglas production function was applied to the data. The coefficient of determination was found to be 0.67 for the sampled farmers. Share of non-institutional credit was found to be significantly negative at five per cent level of significance which revealed that increase in share of non-institutional credit decreased the diversion of credit. The regression coefficient for farm investment, expenditure on dwelling house and expenditure on social ceremonies found to be significantly positive with coefficient values of 1.005, 0.175 and 0.163 respectively, which indicated that increase in farm investment, expenditure on dwelling house and expenditure on social ceremonies would lead towards increase in diversion of credit. Whereas, regression coefficients for non-farm income, family size, household general expenditure, literacy level, expenditure on vehicles and medical expenditure were found to be non-significant.

Policy Implication of the study

- Basis of credit limit formulation needs to be modified to check the diversion of short term credit as diversion was found to a large extent here.
- Major component of diversion was found towards construction of dwelling house and social ceremonies especially marriages. There is need to create awareness about the unproductive expenditure through co-operatives or some NGOs.
- Farm investment especially on heavy machinery needs to be rationalized.
- Diversion of credit limit to purchase of land was found in this category. So, the limit on land ceiling could be revised in view of affordability of large farmers to increase their size of holding. This will be lead to better resource-use efficiency on large farms.

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