ACTA SCIENTIFIC AGRICULTURE (ISSN: 2581-365X)

Volume 3 Issue 4 April 2019

Research Article

Study on Investment Pattern in Farm Firms

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Received: February 05, 2019; **Published:** March 26, 2019

Abstract

Agricultural investment, when appropriately structured, can lead to capital deepening, technology transfer, and accelerate broader economic development of the country. It plays an equally important role in farm economy especially in the era of technological revolution. This study was conducted in Annur block of Coimbatore district, Tamil Nadu to assess the sources of farm investment and pattern of investment. It is revealed from the analysis that the borrower farms depend more on the commercial banks to meet their farm investment. The total annualized investment per hectare was higher in case of the borrower farms than that of the non-borrower farms. The institutional credit also helped on costly investments like drip irrigation, farm buildings and farm machineries in borrower farms, while the non-borrowers made lesser investments on these assets as compared to the borrowers, due to non-borrowing of credit from any source of finance and due to the usage of owned capital which was lesser. Due to the availability of the crop loan, borrowers were able to gain higher production and better profit. Investment augmenting area like drip irrigation and livestock ranks first among different types of investment.

Keywords: Investment; Agriculture; Credit; Income; Capital

Introduction

Investment in agriculture is vital for millions of the poor. It is widely accepted that agricultural investment, when appropriately structured, can lead to capital deepening, technology transfer, and accelerate broader economic development of the country. According to the Food and Agricultural Organisation report [1], Investment is the change in fixed inputs used in a production process. In the most, narrow definition, investment is the change in the physical capital stock, that is, physical inputs that have a useful life of one year or longer (land, equipment, machinery, storage facilities, livestock). The first thing that needs to be done is to invite technological investments in the farm sector both by the Government and the private sector. For increasing productivity, scientific innovations specially a well designed foolproof mechanism for implementation of genetically modified crops will have to be established in the country [2]. With the gradual opening up of the economy under the World Trade Organization regime, Indian agriculture is exposed to global markets and this will further strengthen the process of commercialization and diversification of agriculture. Besides the traditional crop production other activities like horticulture, vegetable cultivation, mushroom cultivation, floriculture and cultivation of medicinal and aromatic plants are gaining ground and agro processing is emerging as a major sub system. This calls for a considerable investment of capital in storage, godowns and processing. Thus, scope for investment in agriculture is getting enlarged with shift in focus from mere production to productivity and profitability. Investment in agriculture is made by both public as well as by private sectors. While public sector investment in agriculture is made for building necessary infrastructure, private investment in agriculture is either for augmenting productivity of natural resources or for undertaking other allied activities which supplement income sources of farmers. Higher investment in agriculture along with properly implemented land and tenancy reforms would lead to improved purchasing powers in the rural areas, particularly in the hands of the rural poor. An increase in effective demand can revive the growth of the Indian economy, which has recently faced threat from the global economic and financial meltdown. In the current situation of economic recession and inflation, agricultural growth can be achieved only by means of enhancing the investment. With this view in focus, the present study has attempted to assess the sources of farm investment and pattern of investment.

Methodology

This study was conducted in Annur block of Coimbatore district, Tamil Nadu. In the study block, Pasur, Pogalur, Kunnathur and Allapalayam were purposively selected for the study, as agriculture was the predominant sector in these villages. From each village, twenty samples were collected *i.e.,* ten borrowers and ten non-borrowers were randomly selected. Thus, the sample consists of fourty borrowers and fourty non-borrowers resulting in a total sample size of eighty. Required primary data were collected by personal interview of the selected respondents using a pre-tested questionnaire. In the present study, investment includes the investment made on fixed capital and working capital. The fixed capital investment includes, the investment made on farm buildings, machineries like tractor, power tiller and sprayer, livestock and other equipment's like bullock cart and minor tools used for farming purposes. The working capital investment includes, the investment made for purchase of seed, farm yard manure, fertilizer, plant protection chemicals and expenditure made on human labour, machine power, bullock power, irrigation charges, livestock maintenance charges and miscellaneous charges. The working capital investment is taken as such for the analysis, whereas the fixed capital investment is annualized depending upon the life period of the fixed asset and the period of investment. Both working capital investment and annualized fixed capital investment were added to arrive the total investment [3].

Results and Discussion

Educational Status of the Sample Farmers

The level of education of the rural households determined the awareness and adoption of technologies and also the extent of awareness and utilization of credit facilities in the study area. The educated farmers are expected to understand better the lending procedure followed by various lending agencies and helps in taking rational decisions on borrowing. Hence, the educational status of the sample respondents was analyzed and the results are depicted in the Table 1.

Sl. No.	Literacy level	Number of farmers (in numbers)	
		Borrowers	Non-Borrowers
1.	Illiterate	2 (5.00)	6 (15.00)
2.	Primary	17 (42.50)	9 (22.50)
3.	High school	13 (32.50)	23 (57.50)
4.	Higher Secondary	3 (7.50)	1 (2.50)
5.	Collegiate	5 (12.50)	1 (2.50)
	Total	40 (100.00)	40 (100.00)

Table 1: Educational Status of the Head of Sample Households.

(Figures in parentheses indicate percentage to the total)

The total literacy level was higher in borrower farm households (95.00 per cent) than that of the non-borrower farm households (85.00 per cent). It is to be noted that the degree holders are higher in the borrower households (12.50 percent) than the non-borrower households (2.50 percent). However it was observed that the high school education was found to be predominant in non-borrowers category (57.50 per cent), whereas it was lower in the borrower's farm households (32.50 percent). The higher literacy rate could be attributed as a reason for increased access to credit and for the adoption of new technologies.

Farming Experience of the Head of the Sample Households

It could be discerned that out of the forty farmers in the borrowers, 67.50 percent of the farmers had 20 to 40 years of farming experience, followed by 22.50 percent of the farmers who had above forty years of farming experience and 10.00 per cent of the farmers had less than 20 years of farming experience. In the non-borrowers category 60.00 percent of the farmers had above forty years of farming experience, followed by 37.50 percent of the farmers who had 20 to 40 years of farming experience and 2.50 percent of the farmers had less than 20 years of farming experience. The people of young age preferred to take new innovative practices in farming, and therefore would like invest more. Thus in the borrowers category we could find that 77.50 percent of the farmers had less than 40 years of farming experience, where as in non-borrowers category it accounted for 40.00 percent. In a similar study by Feder., *et al*. [4] on "Credit's Effect on Productivity in Chinese Agriculture in China", where they found that it was worth noting that capital, education and farm experience had significant positive effects on the output on the credit-unconstrained households but found insignificant on credit-constrained households.

Sl. No.	Family Size	Number of farmers	
		Borrowers	Non-Borrowers
1.	<20	4 (10.00)	1 (2.50)
2.	20 to 40	27 (67.50)	15 (37.50)
3.	> 40	9 (22.50)	24 (60.00)
	Total	40 (100.00)	40 (100.00)

Table 2: Farming Experience of the Sample Farmers.

(Figures in parentheses indicate percentage to the total)

Land holding pattern of the sample farms

Farm size was positively related to the cost of operation. The details on land holding pattern of sample respondents in the study area are presented in Table 3. For this study, sample respondents were post stratified into marginal, small, medium and large farms taking into consideration the size of the farm. Among the selected

respondents, there were 5 marginal farmers (less than one hectare), 35 small farmers (1 to 2 hectares), 33 medium farmers (2 to 3 hectares) and 7 large farmers (above 3 hectares). It was observed from the table that in the borrower's category, nearly 67.50 per cent of the total farmers were in the above 2 ha category whereas in the non-borrower's group it was only 32.50 per cent. The majority of the farmers in the non-borrowers category (67.50 per cent) belonged to the less than 2 ha category whereas in the borrowers it accounted for 32.50 per cent. The average farm size was higher in borrowers (2.42 ha) than that of non-borrowers (1.79 ha).

Sl. No.	Area owned (ha)	No of farmers		Total sample
		Borrowers	Non- Borrowers	
1.	<1	Nil (0)	5 (12.50)	5 (6.25)
2.	1 to 2	13 (32.50)	22 (55.00)	35 (43.75)
3.	2 to 3	22 (55.00)	11 (27.50)	33 (41.25)
4.	>3	5 (12.50)	2 (5.00)	7 (8.75)
	Total	40 (100.00)	40 (100.00)	80 (100.00)
	Average size of land holding	2.42	1.79	2.105

Table 3: Land Holding Pattern of the Sample Farms.

(Figures in parentheses indicate percentage to the total)

Asset position

The farm investment directly enhanced the value of farm assets and is also an important factor for getting various loans from the banks, *i.e.*, it acts as a security and hence, they were discussed in three sections namely land value, livestock position and other assets.

Average land value of the sample farms

It would be apt to discuss land value in terms of garden and dry land owned by the respondents, since the land value showed significant differences across types of lands. Hence, the same was discussed in the Table 4.

Sl. No.	Type of land	Borrowers (lakhs/ha)	Non-Borrowers (lakhs/ha)
1.	Garden land	12.59	12.31
2.	Dry land	12.21	11.56
3.	Average land value	12.40	11.93

Table 4: Average Land Value of the Sample Farms.

It could be observed from the table that the average value of land owned by the borrowers was Rs.12.40 lakhs/ha while it was lesser for non-borrowers at Rs 11.93 lakhs/ha.

Livestock position

Extent of livestock rearing among the sample farms would help in understanding the extent of supplementary income earned by the sample farmers. The details regarding the number of animals maintained by the sample farms are given in the Table 5.

Sl. No	Livestock	Livestock Units	Borrowers		Non borrowers	
			Present value (Rs)	Percent to total value	Present value (Rs)	Percent to total value
1.	Cow	1.6	23475.78	81.09	19062.50	84.96
2.	Calf	0.8	1024.87	3.54	874.98	3.90
3.	Buffalo	1.6	4449.35	15.37	2500.02	11.14
	Total		28950.00	100.00	22437.50	100.00

Table 5: Livestock Position of the Sample Farmers.

It could be observed from the table that the total value of livestock was more in borrowers (Rs 28,950 per farm) when compared with that of the non-borrowers (Rs 22,437.50 per farm). On the whole, the livestock wealth was higher in the borrower farms than that in non-borrower farms and this was partly because of larger size of holding and other asset position in borrower farms than that of the non-borrower farms.

Value of farm buildings, machineries and equipment's

The position of other assets such as farm house, machineries, pump shed, cattle shed, tractor and other tools of the sample households used in farming was estimated for different categories of farms and has been presented in the Table 6.

SI. No.	Type of Asset	Borrowers		Non-Borrowers	
		Present value (Rs per farm)	Per cent to Total	Present value (Rs per farm)	Per cent to Total
1.	**Farm Buildings**				
a)	Farm House	7625	4.17	3518.52	3.23
b)	Cattle shed	3525	1.93	1950	1.77
2.	**Irrigation structure**				
a)	Pump set room	7300	4.00	4625	4.23
b)	Electric motor	23350	12.80	16400	15.02
c)	Compressor	11950	6.55	8200	7.51
d)	Borewell	41250	22.60	26000	23.81
e)	Drip/sprinkler irrigation	13400	7.34	9157.50	8.37
3.	Livestock	28950	15.85	22437.50	20.55
4.	**Machinaries**				
a)	Tractor	44500	24.36	16480	15.11
b)	Other tools	712.50	0.40	426.25	0.40
	Total	182562.50	100.00	109194.80	100.00

Table 6: Value of Fixed Assets in Borrowers and Non-Borrower Farms.

It could be observed from the table that the farm building contributed for 6.10 percent of the total asset value in borrowers where as in the case of non-borrowers it accounted for 5.01 percent only. The contribution of irrigation structures was higher for non-borrowers (58.94 per cent) than that of borrowers (53.29 per cent). Similarly the contribution of livestock was higher for non-borrowers (20.55 per cent) than that of borrowers (15.85 per cent). The contribution of machineries was higher in borrowers (24.76 per cent) than that of non-borrowers (15.51 per cent). Regardless the percentage contribution it was found that value of all the assets was higher in case of the borrower farms (182562.50) than that of the non-borrowers (109194.80). The reason for this could be attributed to the credit that was availed by the borrowers from the various sources of finance for investment on fixed assets whereas non-borrowers depended on their owned capital.

Sources and pattern of investment in farm firms

Source-wise farm investment in borrowers farm firms

Farmer's sources of finance for farm investment were broadly classified into three categories, namely, i) own funds, *i.e*. past savings, ii) loans from financial institutions and iii) borrowing. The various sources of farm investment in borrower farm firms are presented in the Table 7 shows the source and purpose wise investment in borrowers.

From the table it could be observed that 55.00 per cent of the borrowers depended on commercial banks to meet their credit requirements. It was followed by regional rural banks (15.00 per cent) and co-operatives (15.00 per cent). The contribution of relatives and friends accounted for 12.50 per cent and the money lenders contributed 2.50 per cent to the borrower farmers. The non-borrowers made their investment on farms from their own

sources of finance like savings, income from crops and livestock *etc*. Income from non-farm activities such as flower shops, machineries, carpenter and off-farm income such as agricultural labourers also contributed to meet their farm credit requirements. The non-institutional sources of finance are also negligible in non-borrowers category. The non-borrowers would make use of their own funds because it avoided all the efforts to negotiate and avail credit. Thereby they could not invest more on high profitable activities which brings them better profit.

Sl. No.	Sources	Total number of farms	Per cent to Total
1.	Commercial Banks	22	55.00
2.	Cooperatives	6	15.00
3.	Regional Rural Bank's	6	15.00
4.	Relatives and friends	5	12.50
5.	Money lenders	1	2.50
	Total	40	100.00

Table 7: Source-wise Farm Investment in Borrowers Farm Firms.

Pattern of investment in borrowers farm firms

The investment pattern played a pivotal role in streamlining the productivity of crop enterprise. Farmers invested on different types of productive assets with the expectations that they would get better returns from them. Different lending agencies have differences among purposes for which the loans are been granted. Therefore, source of finance did not depend solely upon the decision of the borrowers; necessarily there was a relationship between the purpose of loans and the sources of credit. The details on the purpose wise capital investment made by the borrowers are presented in the Table 8.

Sl. No.	Asset/ Purpose of Loan	Number of Farms
1.	Crop loan + Drip irrigation loan	14
2.	Crop loan + Bore well loan	6
3.	Crop loan+ Livestock loan	11
4.	Crop loan + Tractor loan	6
5.	Farm building loan	2
6.	Compressor loan	1

Table 8: Purpose-wise Investment in Borrowers Farm Firms.

In the borrower's category higher number of farmers obtained loan for investment on crops and drip irrigation since most of the farmers used drip irrigation for their commercial crops like curry leaves, turmeric and banana which increases their profit. Similarly investment on crops and livestock was also high since livestock brings better returns from investment. Equal number of farmers also invested on bore well and tractor along with investment on crops. Considerable number of farmers also invested on farm building and compressor.

Investment on Fixed Capital

Investment on fixed capital included the investment made on the fixed assets of the farm. Usually all the fixed assets on the farm had a longer life period. So, their value cannot be taken as such for the analysis. In the present study, the value of the investment made on the fixed assets per farm was annualized based on their life period and the analyzed values are presented in the Table 9.

Sl.No.	Particulars	Amount (Rs/ha/annum)	
		Borrowers	Non-Borrower
1.	Drip irrigation	1218.18	765.26
2.	Bore well	6281.25	2465.25
3.	Livestock	2453.30	1164.28
4.	Tractor	3871.31	1756.36
5.	Farm building	5381.25	2152.48
6.	Compressor	1063.33	958.21
7.	Others	8506.26	5563.29
	Total	**28774.88**	**14825.13**

Table 9: Pattern of Fixed Capital Investment in Sample Farms.

From the table it could be inferred that fixed capital investment was higher on the borrower farms (Rs.28774.88) than that of the non-borrower farms (Rs.14825.13). Investment on circulating capital could be met out even from the owned capital, but investment on fixed assets required considerable capital which needed certain borrowing from other sources of finance. Usually it was the fixed assets that bring better results on the farm. Thus, fixed assets played a major role in improving the productivity and profitability on the farms.

Investment on circulating capital

Investment on circulating capital included investment on human labour, bullock labour, machine labour, seeds, manures and fertilizers, plant protection chemicals, animal feeds, irrigations costs, interest on working capital *etc*.

The variation in the value of inputs under each item in borrowers and non-borrower farms were analyzed and the results are discussed in the Table 10. From the table it could be inferred that the working capital investment was higher in case of the borrower farms than that of the non-borrower farms. The total investment on circulating capital worked out to be Rs.67636.47 whereas in the case of the non-borrower farms it was found to be Rs.52432.31. The reason behind low investment in non-borrower farms is due to the lack of sufficient capital. In a study by Prabha., *et al.* [5], on "Impact of Infrastructure and Technology on Agricultural Productivity in Uttar Pradesh", revealed that for one per cent change in fertilizer and high yielding varieties, the change in agricultural productivity was 0.24 q/ha and 0.91 q/ha respectively. Thus they found that both fertilizer and area under high yielding varieties had positive and significant impact on agricultural productivity at one per cent probability level. Thus investment on these aspects always brought about better results.

Sl. No.	Particulars	Amount (Rs/ha)	
		Borrowers	Non-Borrower
1.	Human Labour	15091.35	12033.58
2.	Animal Labour	3574.17	2271.56
3.	Machine Power	4359.14	2816.33
4.	Seed/Seedlings	25598.55	20367.55
5.	Manure and Fertilizers	7361.58	6195.03
6.	Plant Protections	8362.62	6384.76
7.	Miscellaneous	2146.52	1501.12
8.	Interest on Working Capital	1142.54	862.38
	Total	**67636.47**	**52432.31**

Table 10: Pattern of Circulating Capital Investment in Sample Farms.

Total capital investment

Total capital invested includes the investment made on the fixed assets including investment on land, farm building, machinery, livestock, equipment's *etc*., and the investment on working assets includes the investment made on seeds, manures and fertilizers, plant protection chemicals, human labour, animal labour *etc*. The working capital investment is taken as such for the analysis, whereas the fixed capital investment is annualized depending upon the life period of the fixed asset. Total capital invested in borrower and non-borrower farms are presented in the Table 11.

Sl. No.	Particulars	Investment on fixed assets (Rs/ha/annum)	Investment on working assets (Rs/ha/annum)	Total capital invested (Rs/ha/annum)
1.	Borrowers	28774.88	67636.49	96411.36
2.	Non-Borrowers	14825.13	52432.30	80665.25
	Average	21800.005	60034.395	88538.305

Table 11: Total capital invested in sample farms.

It was observed from the table that the investment made on the fixed assets was higher in the borrower farms (Rs.28774.88), whereas it was lower in case of the non-borrower farms (Rs.14825.13). Similarly the investment made on the working assets was also higher in borrower farms (Rs.67636.49) than that of the non- borrower farms (Rs.52432.30). Overall the investment made on the borrower farms was considerably higher (Rs.96411.36) than that of the non-borrower farms (Rs.80665.25). The reason was that the borrowers availed credit from various sources for their investment purposes. Adinew., *et al.* [6] studied significance and efficiency of agricultural credit in Karnataka's agricultural economy and found that the incremental capital output ratio had shown positive trend of efficiency of agricultural credit.

Gross income

It was the total income obtained from the sale of all main and by products from the farm enterprise taken up by the farmer in a year, without considering the total expenses involved. Income obtained from different categories were analyzed for the sample farms and are presented in the Table 12.

Sl. No.	Particulars	Crop income (Rs/ha)	Livestock Income ((Rs/ha)	Non-Farm income (Rs/ha)	Gross income (Rs/ha)
1.	Borrowers	141548.02 (45.04)	109682.09 (34.90)	63070.93 (20.06)	314301.07 (100.00)
2.	Non-Borrowers	120332.70 (57.82)	53313.22 (25.62)	34470.43 (16.56)	208116.40 (100.00)
	Average	130940.40	81497.65	48770.68	261208.70

Table 12: Gross income obtained in Sample Farms.

It was observed from the table that the major contributor of income for the borrowers was crop income (45.04 per cent), which was followed by livestock income (34.90 per cent) and then by non-farm and off farm income (20.06 per cent). In non-borrowers, it was observed that the crop income, that contributed (57.82 per cent) of the total income, followed by livestock income (25.62 per cent) and then by non-farm and off farm income (16.56 per cent). Thus, it could be inferred that borrowers had higher gross income (Rs.314301.07) than that of the non-borrowers (Rs.208116.40).

Conclusion

The value of the assets in borrower farms was higher than that of the non-borrowers. This was due to larger farm investment (in which the major share was from institutional credit) in the borrowers than that of the non-borrowers. The institutional credit also helped on costly investments like drip irrigation, farm buildings and farm machineries in borrower farms, while the non-borrowers made lesser investments on these assets as compared to the borrowers, due to non-borrowing of credit from any source of finance and due to the usage of owned capital which was lesser. Also the investment made on circulating capital varied between the borrowers and non-borrowers. This circulating capital brought greater difference on the productivity of the crops, the reason was that timely and adequate availability of inputs always brought better results on the farms. Due to the availability of the crop loan, borrowers were able to gain higher production and better profit. Investment augmenting area like drip irrigation and livestock ranks first among different types of investment. This should, therefore, find top priority in institutional credit supply. Research efforts to evolve a suitable cropping pattern for this area for the maximum utilization of the resources are necessary.

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