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Editor

S. P. GOTHOSKAR
Principal Adviser, Reserve Bank of India,
Deptt. of Statistical Analysis & Computer Services,
Garment House, P.B. No. 16604,
Worli, Bombay-400 018

Joint Editor

R. P. KATYAL
Joint Director, Central Statistical Organisation,
Sardar Patel Bhavan, Sansad Marg, New Delhi-110 001

Editorial Board

The Executive Committee of the Indian Association for Research in National Income and Wealth (IARNIW)—See back cover page.

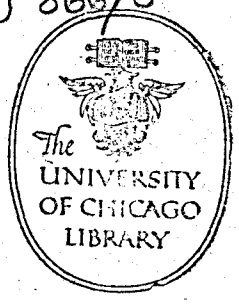
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Changes in Structure of Investment of Rural Households: 1970-71—1981-82*

PREM S. VASHISHTHA

Introduction

The objective of this paper is to examine the following issues:

- Whether changes in the structure of household investment reflect an emerging diversification of economic activity in the rural household sector?
- What factors (for example, profitability of crop production, etc.) are associated with the change in the structure of investment of rural households?

Related to these two objectives, we will examine whether the shifts in investment pattern reflect diversion of investible surplus to non-farm activity, and also the behaviour of socio-economic groups which exhibited this pattern.

These questions have important policy implications for mobilization of potential surplus from rural households, and also for the understanding of the future pattern of growth of the rural sector and the distribution of investible resources among various socio-economic groups.

We have employed NCAER's household level data of two surveys conducted in 1970–71 and 1981–82. The first one was part of a three-year survey conducted by NCAER in 1967–68, 1968–69 and 1970–71. The second one is the resurvey of 1970–71 households at the all-India level and is known as the Rural Economic and Demographic Survey. The details on the sample design of the first survey are available in NCAER (1975) and those on the second in Annexure 1.

The organisation of this paper is as follows. Section I deals with the Temporal Variation in Investment at the aggregate level. Section II discusses this problem in a more disaggregated fashion based on the analysis of the behaviour of various categories of households. The main findings are summed up in Section III.

Various concepts and definitions used in this paper, such as investment, saving, landowning category, household level consumer price index etc. are described in Annexure 2. The details on the number of sample households etc. are given in Table A.1.

I. Temporal Variation in Investment —An Aggregate Picture

(i) Gross Capital Formation

The estimated Gross Capital Formation (GCF), at 1970–71 prices, has increased from Rs. 1466 crores in 1970–71 to Rs. 1717 crores in 1981–82, i.e. it has grown at the rate of 1.45 per cent per annum (Table 1). While the increase in non-farm component has been only 10 per cent, the change in the farm componant, which constitutes the major part of rural household capital formation, has been much larger (20 per cent). The compound growth rates for the farm and non-farm components over the period of 11 years have been 1.67 per cent and 0.87 per cent, respectively. The non-farm capital formation has increased from a low base of Rs. 418 crores in 1970–71 and it accounts for about 17 per cent of increase in total GCF of the rural households.[1]

When we look at the disaggregated picture of farm and non-farm components it gives further insight into the source of change in GCF over time. Of the five subcomponents of farm capital formation only two—livestock and allied activities—show increase in real terms (132% and 706% respectively). Two other components

*The author is indebted to Mr. I. Z. Bhatty, Director General, NCAER, for encouragement and permission to use Council's data and resources in the preparation of this paper. The author is also grateful to Dr. Arun Ghosh, Prof. G. K. Chada, Professor D. P. Chaudhry, Dr. S. Bhide and Dr. S. N. Kulkarni for useful comments on an earlier draft of this paper. However, the author alone is responsible for the views expressed here. Thanks are also due to Mr. M. K. Arora for statistical assistance and to Mr. O. P. Pruthi for efficient typing of the manuscript.

[1] Since we have used the deflator for gross domestic fixed capital formation in agriculture for both farm and non-farm components, the real value of the latter is likely to be overstated to the extent the price of non-farm capital goods used in the rural household sector has risen faster than those used in the farm sector. However, in the context of the rural economy the extent of divergence of change in price of capital goods for the farm and non-farm household sector may not be large enough to make any significant difference to the results presented above.

—land and land improvement and machinery and implements—actually show decrease (−71% and −24% respectively) and the remaining, i.e. irrigation equipment, shows only little change (−1%). The capital formation in the form of livestock is thus the crucial sub-component which contributes 154 per cent of the increase in GCF in the farm sector and about 128.3 per cent of increase in the total GCF. As regards GCF in the non-farm sector there is a marginal decline in house property and a substantial increase in non-farm business assets (80.6%). The latter constitutes more than 100 per cent increase in non-farm gross capital formation (Table 1).

Rise in capital formation in livestock and allied activities is also associated with large increases in the number of households reporting investments in these assets. The percentage of households reporting investment in livestock increased from 46.5 per cent to 71.1 per cent and that in allied activities from 1.1 per cent to 9.8 per cent (Table A.2). The percentage of households investing in land and land improvement dropped sharply from 19.1 per cent to 5.4 per cent. It may be pointed out that increase in percentage of households reporting capital formation in a given asset does not necessarily imply that capital formation per household in that asset also increases. This aspect is reflected in the evidence that although the percentage of households reporting investment in machinery and implements increased from 19.2 per cent to 30.7 per cent, yet there was a decline in capital formation both in terms of aggregate and per household.[2]

It may be useful to see whether the pattern of change in gross capital formation is associated with the pattern of change in source of household increase. Income from livestock and agricultural allied activities shows a sharp increase of 110 per cent.[3] Non-farm component of household income also shows an increase of 117.7 per cent. As shown below, the contribution of farm and non-farm components to increase in estimated rural household income is 47.5 per cent and 52.5% respectively.

[2] Whether the change in the proportion of households reporting investment in a given asset and capital formation per household and/or total capital formation move in the same direction or not depends, also, on the factors such as distribution of investment among various categories of households. An increase in concentration of investment of a given asset may result in both an increase in investment per household and a decrease in the proportion of households reporting investment in that asset.

[3] Income from livestock is not presented due to non-availability of expenses on feed for milch and drought animals separately.

CHANGE IN ESTIMATED HOUSEHOLD INCOME
(Amount in Rs. crores at 1981–82 prices*)

	Farm income	*Non-Farm income*	*Total income*
(1)	(2)	(3)	(4)
1970–71	31794	9481	41275**
1981–82	41891	20649	62540
Absolute change	10097	11168	21265
% change—Row-wise	47.48	52.52	100.00
% change—col.-wise	31.76	117.72	51.52

*Household level price index is used to convert 1970–71 income to 1981–82 prices. For details see annexure 2.

**Our estimates of income as well as capital formation for the rural households for 1970–71 are different from those obtained by Rajkrishna and Raychoudhri (1982), whose estimates were based on NAS data. A comparative description of their and our methodologies would take us beyond the scope of this paper.

The above evidence suggests that changes in household income attributable to various sources are associated with the changes in capital formation. This aspect can be understood more clearly by looking at the change in the structure of GCF which brings out the following main features:[4]

- The proportion of farm component of GCF increased from 71.5 per cent to 73.2 per cent in spite of decline in the level of its sub-components, namely, land and land improvement, machinery and implements and irrigation equipment, the decline being much sharper in the first two. The increase in the farm component is attributable mainly to livestock and allied activities, particularly the former, which constitutes 128.3% of increase in total GCF. Increase in capital formation in livestock alone more than compensates the fall in capital formation in land and land improvement and machinery and implements.
- The relative significance of capital formation in non-farm business assets has increased only marginally; it increased from 4.2% of total GCF in 1970–71 to 6.5% in 1981–82. The increase in income from self-employment non-farm business is also small, i.e. 3.7%.

Although the changes in the structure of GCF have by and large reflected the changes in the structure of household income, the following question needs clarification. While the share of non-farm component in

[4] See columns 7 and 8 of Table 1 and columns 5 and 6 of Table 2.

GCF has declined only marginally (from 28.5% to 26.8%), why has there been a substantial increase in the share of non-farm income (from 23% to 33%).[5] As pointed out earlier, the increase in non-farm component of income comes mainly from salary and non-agricultural wages.[6] The increase in the real income from salary and non-agricultural wage may have been due to expansion of government activities in the form of opening more schools, post offices, block development centres, primary health centres along with construction activity on development projects. This aspect is supported by a recent study by Vaidyanathan (1986), which shows that employment opportunities in the rural non-farm sector have increased significantly. Making a careful use of NSS data, Vaidyanathan shows that the share of the non-agricultural sector in total rural employment for males increased from 22 per cent in 1972–73 to 27 per cent in 1983. However, the increase in rural non-farm employment seems to have risen in areas where sufficient investment has been made by the State in developing the infrastructure for agriculture and other activities.

(*ii*) *Financial Savings*

The major components of gross investment, namely, physical and financial, are presented in Table 3.[7] It is observed that the structure of investment has undergone a significant change in terms of the relative shares of physical and financial components. The share of physical component has declined from 84.7 per cent to 56 per cent. In terms of absolute amount gross financial investment has increased manifold (13.6 times). The composition of financial investment itself has changed in favour of non-contractual assets of which bank deposits happen to be the major part. Of the total financial investment bank deposits were 26.9 per cent and 74.8 per cent in 1970–71 and 1981–82 respectively.

If liabilities are taken out from the gross financial investment one finds that net financial saving turns out to be negative in 1970–71 while it is positive in 1981–82 (Table 4). The structure of saving has also changed drastically in favour of financial component. Physical saving which constituted about 222 per cent of total saving in 1970–71 came down to 71 per cent in 1981–82, raising the share of net financial saving in total saving to 29%.[8] Regarding the phenomenon of substantial increase in net financial savings, two points may be emphasised here: (*i*) There was a spurt in financial saving of rural households through the spread of financial intermediaries, mainly the rural banks. After the nationalisation of major banks in 1969, the number of rural bank branches increased from 1832 in 1968–69 to 20,401 in 1981–82. The proportion of rural bank branches to total bank branches in the country rose from 22% in 1968–69 to 52% in 1981–82. The rural deposits increased 16 times during the same period 1970–71 to 1981–82. Other financial institutions, such as co-operative societies, have also played an important role in inducing savings in financial form by the rural households.[9] (*ii*) A significant reduction in the rural household liability (leading to increase in net financial saving) may also have to do with the development of financial infrastructure in the rural areas.[10] It is well known that the moneylenders used to charge exorbitant rates of interest from the poor rural households which led to high indebtedness of the latter. The dependence of rural households, particularly the marginal farmers and the landless, on the non-institutional sources (local moneylenders) has decreased in a significant way.

(*iii*) *Saving and Investment Rate*

Although the overall investment rate has risen from about 9.5 per cent to 13 per cent, the rate of its major components, namely, Gross Capital Formation (physical) and Gross Financial Investment have not necessarily moved in the same direction.[11] It is observed that (*i*) the GCF rate has somewhat declined from 8 per cent to 7.3 per cent; (*ii*) this decline in reflected in both components

[5] See columns 7 and 8 of Table 2.

[6] The share of salary and non-agricultural wage component in total rural household income increased from 9.1% to 19.7%.

[7] It may be noted that unlike the information presented in earlier tables physical investment is given at current prices so that the two components can be added straightaway. Financial component of investment or saving has not been presented at constant prices.

[8] The fact that physical saving was more than 100 per cent of total saving in 1970–71 is the direct consequence of financial saving being negative.

[9] For a detailed work on the role of financial institutions to induce savings in India, see Krishnaswamy, Krishnamurthy and Sharma (1987).

[10] The evidence available from All India Rural Debt and Investment Survey (AIRDIS) 1981–82 lends support to this contention. The percentage of cash debt to total outstanding debt from institutional sources for rural households increased from 29.2 per cent in 1971 to 61.2 per cent in 1981 (NSS 1987).

[11] Saving and investment rates are likely to be overestimated in our results, as the farm component in NCAER Surveys is underestimated due to inadequate coverage of incomes from marine fisheries, plantations, logging, etc. These activities have geographical concentration for natural reasons and are not fully captured in our survey. We have not made any adjustment to farm component of rural household income in this paper. This, however, should not vitiate any of our major findings and/or inferences, except making some difference to the level of saving and investment rates.

of GCF—farm and non-farm; and (*iii*) the gross financial investment rate has increased significantly from 1.40% to 5.75%. Also the difference in the investment rate for the two survey years is not as wide as in case of the saving rate. The saving rate, which was only 3.63% in 1970-71, jumped to 10.27% in 1981–82 (Table 5). The large gap between the saving rate for the two years as compared with that for the investment rate seems to have arisen due to the behaviour of liabilities which as a proportion to income were higher in 1970–71 than in 1981–82.[12] The effect of the lower rate of liability is reflected in (*a*) a much higher net financial saving rate in 1981–82 than in 1970–71 and (*b*) increase in the capacity of rural households to finance a greater part of capital formation out of their own savings.

II. Saving and Investment—A Disaggregated View

(*i*) *Gross Capital Formation by Landowning Households*

As mentioned earlier, the structure of GCF has shown only a marginal shift in favour of farm component. The evidence presented in Table 6 shows that the pattern of contribution to increase in GCF of farm and non-farm components is different for different categories of landowners. While for the landowners 89 per cent of increase in GCF comes from farm component, for the landless the major increase (214 per cent) comes from non-farm component. In the latter case, capital formation in farm component is negative.

The increase in farm component of GCF is entirely due to marginal and small landowners. This increase is primarily due to a spurt in capital formation in livestock by these households. Of the total increase in capital formation in the form of livestock, 89.5 per cent is contributed by the marginal and small landowners. For the combined group of medium and large landowners there is decrease in capital formation resulting primarily from a decline in the farm investment. Small landowners are the only group whose GCF has increased in both the components—farm and non-farm.

The evidence presented in Table 7 suggests that (*i*) the real GCF has fallen in the group of medium and large landowners and increased for the marginal and small landowners; (*ii*) whatever little increase has taken place in the non-farm component of GCF is mainly due to investment in non-farm business assets and not in house property. The major contribution to investment in non-farm business assets comes from small, medium and the large group of landowners; and (*iii*) the diversification into non-farm activity is conspicuous among the group of small landowners and also to some extent in the case of medium and large landowners who increased their investment in non-farm business assets. On the very face of it, it appears that the landless also tend to diversify into non-farm activity as their contribution to the increase in non-farm investment is close to 36 per cent. This aspect needs a careful interpretation as the contribution of the landless to non-farm investment is mainly due to increase in investment in house property and not in non-farm business assets.[13] In contrast to this, medium and large landowners increased investment in non-farm business assets and decreased investment in house property; the decrease in house property investment was much larger than the increase in non-farm business investment. The net result is that there was an overall increase in non-farm component for this group of households.

The distribution of gains in household income due to increase in farm and non-farm components shows that the share of the landless in non-farm income has decreased from 21.5 per cent in 1970–71 to 18.5 per cent in 1981–82. This is consistent with the pattern of distribution of non-farm investment in which the landless have not been able to take advantage of the emerging diversification of capital formation by the rural households. The main advantage of diversification of income and capital formation has gone to the landowners.

(*ii*) *Financial Investment*

The gross and net financial investment increased by Rs. 3332 crores and Rs. 2665 crores respectively. The difference between gross and net financial investment arises due to increase in liabilities of the rural households over time. Table 7 shows that the medium and large landowners together contributed about 25 per cent to the increase in gross financial investment. This has happened in spite of a decline in the proportion of these households from 12.5 per cent to 11.1 per cent and also a decline in their share of rural household income from 26.7 per cent to 20.5 per cent. The largest contribution (46.5 per cent) to the increase in financial investment has come from the small landowners. The fact that small landowners make about 104 per cent contribution to the increase in the total GCF and that their contribution to net financial saving is lower than that to gross financial investment suggests that this group of households may have been incurring liabilities for raising physical investment, particularly in farm assets. In the case of medium and large landowners it is observed that their investment

[12] Liabilities as percentage to household income were 5.85 per cent and 2.77 per cent in 1970–71 and 1981–82 respectively.

[13] See cols. 3 and 8 of Table 7.

ecreased in farm assets and increased in financial assets long with the fall in their share in liabilities.

Although one finds a common pattern for all categories of households in so far as the net financial savings ere negative in 1970–71 and positive in 1981–82, the iversity in the case of allocation of their investible surus is conspicuous. The marginal and small landowners nd to allocate their savings mainly to farm assets while e medium and large ones divert their savings to financial assets (Table 8A).

ıving Rate and Distribution of Savings

Some of the salient features of variation in saving and vestment rates across various landowning groups may pointed out as below:

- The rate of physical saving has increased much faster for the marginal landowners (52.6%) than for small (5.5%) and medium and large ones (−22.1%) (Table 8B).
- While it is true that the dependence of rural households on external sources to finance their investment has declined over time, they continue to incur liabilities in a significant way in spite of positive net financial savings in 1981–82. This is in contrast with 1970–71 situation when the rural households had negative financial savings and incurred liabilities to finance their physical investment.[14] Thus in spite of having enough investible funds, all categories of landowners tend to borrow to finance their investment. This may be due to availability of institutional finance at lower interest rate than what their saving in financial assets would fetch them. Thus the tendency to commit a significant part of their savings in financial form seems to be a general phenomenon among the rural households. However, this is very conspicuous in the case of medium and large landowners as they seem to increase their financial saving rate at the cost of physical saving rate.[15]

rom the changes in the pattern of distribution of ıg and investment we observe that[16]

- The share of marginal landowners in both saving and investment has increased and that of medium and large landowners decreased significantly. The marginal landowners who had a negative share (−6.4%) in total saving in 1970–71 increased their share to 14.6% in 1981–82.[17] In contrast to this, the share of medium and large landowners in saving declined sharply from 66.3% to 30.7%.
- A somewhat similar pattern of distribution of investment in farm assets is observed across various landowning categories. Marginal landowners increased their share in farm investment from 4.7% to 16.9% and the share of medium and large landowners decreased from 57.8% to 35.2%. Small landowners also increased their share in farm investment.

It would be interesting to reflect on the implications of the above for:

(*a*) the diversion of saving from farm to financial assets by the medium and large landowners; and
(*b*) the change in distribution pattern of investible surplus in favour of the marginal landowners and the landless.

Let us examine the relevant empirical evidence which might help us explain these phenomena.

The information given in Table 9 suggests that (*a*) land productivity (real) increased fastest for the marginal group; (*b*) the profit per hectare (gross value of crop output minus the operating expenses) is inversely related to the size of land owned and (*c*) the profit per hectare is highest for marginal landowners. While this evidence may explain a fast rise of physical saving rate (especially in the form of farm assets) for the marginal category, it does not necessarily support the contention that diversion of saving from farm to financial assets by the medium and large landowners may have been induced by a fall in profitability.

The factors which may be more relevant to explain this phenomenon may have something to do with relative rates of return on physical and financial investment. Medium and large landowners have a much higher level of investment in farm assets per household as compared to their marginal and small counterparts. The former may have already acquired a good number of farm assets, such as threshers, tractors, other modern farm implements, tubewells, pumpsets, etc. After reaching this stage of accumulation of farm capital, it becomes imperative for them to allocate resources for intensive application of biological–chemical inputs. With the exhaus-

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This does not necessarily imply that liabilities are incurred for financing physical investment. They may be used for ing consumption expenditure also. One needs to have more nation on the allocation of liabilities to finance investment onsumption.

t may be noted that in spite of a decline in physical saving f medium and large landowners, the level of their physical ; rate (12.1%) is still higher than that for other categories downers.

ee Table A.3.

[17] Even the landless improved their contribution to total saving substantially—from 0 7% to 11.1%.

tion of the potential of raising farm productivity further, given the state of farm technology, medium and large farmers are not likely to go in for raising the rate of investment in farm assets. Since they may have a relatively easy access to institutional credit, it is quite rational for them to use these institutional resources and divert their own investible funds to financial assets to have a higher rate of return than what they would have obtained by investing in agriculture.

The change in distribution of investment and investible resources (savings) in favour of the marginal and small landowners has helped sustain investment in the farm sector. The fall in farm investment could have been significant in the absence of this change. The factors underlying this change may be pointed out as:

(*a*) A sharp rise in land productivity and profitability of the marginal landowners. This may have been achieved to some extent due to reduction in "technological dualism" (through a spread of agricultural technology on a wide scale).[18]

(*b*) Decline in liability for the marginal and small landowners due to improved access to institutional finance through banks, co-operative societies and other financial institutions.[19]

Summing up

Both the level and rate of rural household investment have increased significantly during 1970–71—1981–82. The structure of investment has also undergone a marked change in favour of the financial component. The structure of gross capital formation in terms of farm and non-farm components reveals certain interesting features. Capital formation in farm machinery, implements and irrigation equipment has declined but increased substantially in livestock and allied agricultural activity. On balance, there is 20% increase in real farm investment. In respect of farm investment a contrasting behaviour of the two sets of landowners is observed—the medium and large landowners' farm investment decreased while that of the marginal and small ones increased. Although, in absolute terms, decline in farm investment by the former is more than compensated by the rise for the latter, the overall rate of farm investment (as a proportion to household income) is lower in 1981–82 than in 1970–71. The rate of non-farm physical investment has also declined over time.

An important aspect of the structure of investment is that the rate of gross as well as net financial savings has increased for each category of household, including the landless. What is even more significant is that medium and large landowners have increased the net financial saving rate at the cost of physical saving rate which is not necessarily true of the other categories of landowners.

The distribution of saving has also changed. The share of marginal landowners in savings has increased while that of medium and large has decreased substantially. The main factor associated with this change is that increases in land productivity and profits of the marginal landowners have been much higher than those for the medium and larger landowners. This in turn seems to have been facilitated by the reduction in "Technological Dualism", through a spread of agricultural technology on a wide scale. A larger access to institutional credit for the marginal and small landowners may also have helped them reduce dependence on private source of credit and decrease their liabilities. The combined effect of these factors seems to have been to raise the share of marginal and small landowners in the total rural household savings. The two consequences of this change have been (*a*) that these marginal and small landowners have compensated for the diversion of investible resources from the farm sector to financial assets by the medium and large landowners; and (*b*) that they have also helped raise the rate of financial savings in the rural sector.

In order to reinforce this pattern of capital formation, it is essential that the future pattern of agricultural growth would have to be such as to raise the productivity of marginal and small landowners on a much wider scale than hitherto. This will help raise productivity of the marginal and small landowners and thereby the aggregate productivity in the agricultural sector. We would like to emphasize that this would not be possible without a substantial step up in public investment in agricultural infrastructure, especially in the regions lagging in agricultural development. It may be mentioned that such public investments could also give an impetus to private investment in the farm sector (Chakravarty, 1987).

[18] This is reflected in a sharp rise in application of chemical inputs per hectare, especially for the marginal landowner (Table A.4, col. 4).

[19] Decrease in liability could also arise due to decrease in unproductive social expenditures. This aspect needs further probing.

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ANNEXURE 1

Sample Design*

NCAER conducted a resurvey of the same households which were surveyed in 1970–71 to make a longitudinal study of rural households. The sample design of the 1970–71 survey is given in NCAER (1975). It was found that 72.5% of the households could be matched from the list of households obtained in two years, i.e. 1970–71 and 1981–82. The non-matching households in the list of 1981–82 were scrutinised to find out their parentage and to see whether they were the descendants of households appearing in the 1970–71 list. The households for whom the parentage could not be traced to the list of 1970–71 were considered new households. The latter, in fact, did not exist in 1970–71. The list of households of 1981–82 was stratified into following categories.

A. The head of the household in 1970–71 was alive and the household was intact.
B. The head of the household was alive, but all members of the household had not stayed together.
C. Households that had been set up after separating from the original household (from 'B').
D. The head of the household in 1970–71 was dead and the remaining members of the households were now separate households.
E. The head of the household in 1970–71 was dead but the rest of the household was intact.
F. New households which were not there in 1970–71.

All households were further stratified within each category into 3 income strata on the basis of data on income collected at the time of listing. The three income strata (at 1981–82 prices) are:

Low (L) : Annual income below Rs. 6,000 per household.
Middle (M) : Annual income between Rs. 6,000 and Rs. 15,000 per household.
High (H) : Annual income over Rs. 15,000 per household.

Categories A, B and E were taken to represent the *panel population*. The number of households listed in all these categories for all the 250 villages in 1981–82 are given below:

	Categories			
Income rating	*A, B and E*	*C and D*	*F*	*Total*
H	1,374	253	126	1,753
M	6,099	1,709	156	7,964
L	17,255	6,406	1,523	24,184
Total	24,728	8,368	1,805	34,901

Of the 24,728 households listed under the categories A, B and E, 3,299 households that appeared in the 1970–71 list were selected. These households were selected with probability 1.

In order to make the sample representative of the 1981–82 population, selections were made from Groups C, D and F, and also from those households of A, B and E categories which were in the list for 1970–71, but were not selected. All these households were selected independently for each group within each village and within each income category. As there are relatively fewer households in the high and middle strata, which also tend to exhibit more variation in income, savings, etc., these strata were over-sampled in order to get better estimates. The total number of households selected was 5,263. Their break-up in different categories is given below:

*The contents of this Annexure are extracted from NCAER (1987). Thanks are due to Mr I. Natarajan for helpful discussion on the material contained in this Annexure.

		Total
Panel Households	A	2,222
	B	467
	E	610
	Total	3,299

	Income Groups			
	H	*M*	*L*	*Total*
Households of A, B and E categories not selected in in 1970–71	185	282	403	870
C and D	83	235	340	658
F	71	144	221	436
Total				5,263

In any sample survey, cases of non-response are inevitable. These include total refusal, incomplete or partial responses, temporary absence of the household at the time of data collection, etc. In the present study full information was available only from 4,947 households, leaving a non-response of 316 households which is around 6.0%. The non-response in the panel households was 160 or 4.8% and information was collected from 3,139 panel households.

Estimation Procedure

In the above design, households were selected with varying probabilities. Each household is attached with a weight which is the inverse of the probability of its selection. Data on any variable observed for a particular household is multiplied by the weight attached to it. These weighted totals are aggregated over all the sample households and the resultant sum is reckoned as an estimate of the total value of the variable for the entire population. This total divided by the sum of all the weights of the sample households would give an estimate of the average value of this variable per household. The procedure outlined above would ensure that the estimates arrived at are unbiased.

Estimates for All India

The two sets of data collected for the two years 1970–71 and 1981–82 were used to estimate household income, saving, investment etc. for the entire rural household population. For the sample of households selected for the 1970–71 study, weights are already available for all the 4,363 households. These were used to estimate the all-India figures for 1970–71.

To estimate for the year 1981–82, fresh weights were calculated. These weights have two components based on

- selection probabilities of sample villages.
- selection probabilities of households within sample villages.

The total probability of selection of the household is the product of these two components.

Since the sample villages were common to both the studies, the village probabilities were taken from the 1970–71 study. The probabilities of selecting the household within a village were calculated afresh based on the number of households listed and selected in the sample. This was done for each category of households and for each income strata.

The probabilities thus arrived at are used for estimating the all-India figures for 1981–82.

ANNEXURE 2

DEFINITIONS

Investment

Investment is defined as the net addition to the stock of an asset during the reference period.* It includes net purchase (purchase − sale), additions and improvements (not repairs and maintenance) and liabilities. In the case of livestock net birth (birth minus death) and net additions to cattle sheds are included as part of investment. Livestock includes poultry. Inventory changes of food stock are excluded but those of non-farm business assets are included. Net capital transfer received (NTR) has been excluded. In the case of certain assets such as house property, land, etc., NTR are added to net purchase in 1981–82 Survey and cannot be separated out. In order to make the definition of investment comparable in the two surveys, investment in land and house property is taken inclusive of NTR in 1970-71. Expenditure on consumer durables, gold and jewellery are not treated as part of investment. Similarly, investment in human capital, usually proxied by expenditure in education and health, is also excluded. For details on components of investment see Table 1.

Saving

Saving = Investment − Liability.

Savings in financial assets inclusive of liabilities incurred by the households during the reference period are called 'Gross Financial Savings'. Gross financial savings exclusive of liabilities are defined as 'Net Financial savings'.

It may be noted that the concept of saving and investment used in this paper are in 'gross' terms, i.e. capital consumption on fixed assets has not been taken out.

*The reference period was taken to be June 1970—July 1971 for the first survey and June 1981—July 1982 for the resurvey.

Landowning Categories

Land owned (and not operational holding) is used as the classificatory variable. The various landowning catetories are defined as below:

Landowners

Marginal	$0 < LO < 1.0$
Small	$1.0 \leqslant LO < 4.0$
Medium and large	$LO \geqslant 4.0$

Landless $LO = 0$

where LO is land owned (inclusive of orchards) in hectares. We have not taken the usual five categories of landowners given in the agriculture census. We have confined ourselves to only three categories of landowners to ensure a sufficient number of observations in each category (see Table A.1).

Household Level Consumer Price Index*

"In order to compare household information expressed in money terms between any two years, it is necessary to use an appropriate price index for converting the values from nominal to real terms. For rural areas the most commonly used index is the Agricultural Labour Consumer Price Index. This index, however, relates only to the state level and is in terms of broad groups of consumer items. Such an index did not appear adequate for the kind of study we had in hand. Since price information at household level for both years was available in the survey data for a number of commodities, and for others at the village level, we decided to use these prices to build an index of our own. We also decided to use the consumer prices which were actually paid by the households, thereby reflecting rural retail prices. We then used our index to convert 1970–71 values to 1981–82 prices."

*This is taken from NCAER (1986), p. 2.

TABLE 1—ESTIMATED GROSS CAPITAL FORMATION FOR RURAL HOUSEHOLDS

S. No.	Components of GCF	Estimates Rs. crores (at 1970–71 prices)		Change			% Distribution of estimated GCF	
				Absolute Col. 3–2	Percentage			
		1970–71	1981–82*		Row-wise Col. 4/2	Col.-wise**	1970–71	1981–82
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1.	FARM	1048	1257	209	19.94	83.3	71.5	73.2
	1.1 Land & land improvement	254	73	−181	−71.26	−72.0	17.3	4.5
	1.2 Machinery & implements	233	176	−57	−24.46	−22.6	15.9	10.2
	1.3 Irrigation equipment	299	296	−3	−1.00	−1.1	20.4	17.2
	1.4 Livestock	244	566	322	131.97	128.3	16.6	33.0
	1.5 Other allied activity assets	18	145	127	705.60	50.6	1.3	8.3
2.	NON-FARM	418	460	42	10.00	16.7	28.5	26.8
	2.1 Non-farm business	62	112	50	80.60	19.9	4.2	6.5
	2.2 House property	356	348	−8	−2.25	−3.2	24.3	20.3
	Total GCF	1466	1717	251	17.1	100.0	100.0	100.0

*Deflator for private gross domestic fixed capital formation in agriculture is 2.654 for the year 1981–82 (NAS–old series with 1970–71 as base). The same deflator is used for farm as well as non-farm components.
**Percentage distribution refers to col. 4.

TABLE 2—RURAL HOUSEHOLD INCOME BY FARM AND NON-FARM COMPONENTS

Income components	Income per household Rs. (at 1981–82 prices)*		Change			% Distribution of household income	
			Absolute Col. 3–2	Percentage			
	1970–71	1981–82		Row-wise Col. 4/2	Col.-wise**	1970–71	1981–82
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. FARM	4689	4693	4	0.09	0.43	77.0	67.0
1.1 Crops	3389	3307	−82	−2.42	−8.91	55.7	47.2
1.2 Livestock & allied activities	253	531	278	109.88	30.22	4.1	7.6
1.3 Agricultural wages	1047	655	−192	−18.34	−20.87	17.2	12.2
2. NON-FARM	1397	2313	916	65.57	99.57	23.0	33.0
2.1 Self-employment	579	613	34	5.87	3.70	9.5	8.7
2.2 Salary/wage employment	550	1379	829	150.73	90.11	9.1	19.7
2.3 Others (transfer receipts + property income etc.)	268	321	52	19.78	5.76	4.4	4.6
Total Income	6086	7006	920	15.12	100.00	100.0	100.0

SOURCE: NCAER (1987).
*Household level consumer price index is used to convert 1970–71 income to 1981–82 prices.
**Percentage distribution refers to col. 4.

TABLE 3—PHYSICAL AND FINANCIAL COMPONENTS OF GROSS INVESTMENT

Components of investment	*Estimates* (*Rs. crores at current prices*)		*% Distribution*		*As % to household income at current prices*	
	1970–71	1981–82	1970–71	1981–82	1970–71	1981–82
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. *Physical*	1467	4556	84.7	55.9	8.04	7.30
2. *Financial* (gross)*	264	3596	15.2	44.1	1.44	5.74
2.1 Contractual	179	−18	10.3	−0.2		
2.2 Non-contractual**	85	3614	4.9	44.3		
Total Investment (1+2)	1731	8152	100.0	100.0	9.48	13.05

*Inclusive of liability.
**Bank deposits alone account for Rs. 71 crores and Rs. 2691 crores in 1970–71 and 1981–82 respectively.

TABLE 4—GROSS SAVINGS OF THE RURAL HOUSEHOLDS

Item	*Estimates* (*Rs. crores at current prices*)		*% Distribution*		*As % to household income at current prices*	
	1970–71	1981–82	1970–71	1981–82	1970–71	1981–82
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. Financial (gross)	264	3596			1.44	5.74
2. Liability	1069	1736			5.85	2.77
3. Financial (net) (1–2)	−805	1860	−121.6	29.0	−4.41	2.97
4. Physical	1467	4556	+221.6	71.0	8.04	7.30
Total Saving (3+4)	662	6416	100.0	100.0	3.63	10.27

TABLE 5—GROSS SAVING AND INVESTMENT RATES
(As % to income at current prices)

Item	1970–71	1981–82
(1)	(2)	(3)
1. Gross capital formation (physical)	8.04	7.30
1.1. Farm	5.74	5.34
1.2. Non-farm	2.30	1.96
2. Financial (gross)	1.40	5.75
3. Financial (net)*	−4.41	2.97
4. Investment (1+2)	9.48	13.05
5. Saving (1+3)	3.63	10.27

*Excluding liabilities from gross financial investment.

TABLE 6—PERCENTAGE CHANGE IN GROSS CAPITAL FORMATION FOR EACH LANDOWNING CATEGORY*

Landowning category	*% Row-wise***		
	Farm	*Non-farm*	*Total physical*
(1)	(2)	(3)	(4)
1. LANDOWNERS	89.3	10.7	100
1.1 Marginal	102.5	(−) 2.5	100
1.2 Small	84.2	15.8	100
1.3 Medium and large	(−) 94.2	(−) 5.8	(−) 100
2. LANDLESS	(−) 114.3	214.3	100
All households	83.3	16.7	100

*Change in GCF is computed at 1970–71 prices.
**Reveals change in the major components of GCF within each landowning category.

TABLE 7—PERCENTAGE CONTRIBUTION TO CHANGE IN INVESTMENT BY LANDOWNING CATEGORY

Landowning category	*Farm*	*Non-farm*	*Total physical (GCF)*	*Financial (gross)*	*Financial (net)*	*Physical*	
						Livestock	*Non-farm business*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. LANDOWNERS	103.8	64.3	97.2	85.5	81.3	95.7	108.0
1.1 Marginal	77.5	−9.5	63.2	14.1	14.3	45.1	−20.0
1.2 Small	104.3	97.5	103.6	46.5	38.4	44.4	76.0
1.3 Medium and large	−78.0	−23.8	−66.8	24.9	28.6	6.2	52.0
2. LANDLESS	−3.8	35.7	2.8	14.5	18.7	4.3	8.0
All households	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Absolute change (Rs. crores) at 70–71 prices	209	41	250			322	50
at current prices				3332	2665		

*Only two of the individual components of GCF (physical) are presented here. Cols. 2 and 3 give an aggregate picture of change in physical saving. While col. 8 refers to only non-farm business assets, col. 3 contains both house property and non-farm business assets.

TABLE 8A—RATE OF GROSS CAPITAL FORMATION AND INVESTMENT BY LANDOWNING CATEGORY
(As % to household income—at current prices)

Landowning category	1970–71					1981–82				
	GCF			*Financial (gross)**	*Total investment (Col. 4+5)*	*GCF*			*Financial (gross)**	*Total investment (Col. 9+10)*
	Farm	*Non-farm*	*Total*			*Farm*	*Non-farm*	*Total*		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1. LANDOWNERS										
1.1 Marginal	1.53	1.74	3.27	2.22	5.49	4.0	0.99	4.99	3.85	8.84
1.2 Small	5.70	2.68	7.78	1.21	8.99	6.31	1.90	8.21	6.73	14.94
1.3 Medium and large	12.41	3.08	15.49	1.32	16.81	9.17	2.90	12.07	6.99	19.06
2. LANDLESS	1.00	2.05	3.05	1.33	4.38	0.69	2.18	2.87	4.64	7.51
All households	5.74	2.30	8.04	1.44	9.48	5.34	1.96	7.30	5.75	13.05

*Inclusive of liabilities.

TABLE 8B—GROSS SAVING RATE BY LANDOWNING CATEGORY*

Landowning category	*Income per household (at current prices)*		*Saving rate*					
			Physical	*Financial (net)*	*Total*	*Physical*	*Financial (net)*	*Total*
	1970–71	1981–82	1970–71			1981–82		
(1)	(2)	(3)	(4)	(5)	(6)(6)	(7)	(8)	(9)
LANDOWNERS	3124	7680	9.37	−4.81	4.56	8.28	2.90	11.18
1.1 Marginal	1898	5554	3.27	−4.53	−1.26	4.99	1.66	6.65
1.2 Small	3070	7739	7.78	−3.29	4.49	8.21	3.40	11.61
1.3 Medium and large	5744	12944	15.49	−6.93	8.56	12.07	3.29	15.36
LANDLESS	1805	5046	3.05	−2.89	0.16	2.87	3.33	6.20
All households	2701	7006	8.04	−4.41	3.63	7.30	2.97	10.27

*Rate is presented as percentage to income at current prices.

TABLE 9—CHANGE IN LAND PRODUCTIVITY AND PROFIT PER HECTARE
(At 1970–71 prices)

Landowning category	*% Change in land productivity*	*Profit per hectare*		*% Change in profit per hectare*
		1970–71	1981–82	
(1)	(2)	(3)	(4)	(5)
Marginal	26.0	1406	1841	30.9
Small	2.2	1087	1114	2.5
Medium and large	8.4	634	687	8.4
All landowners	13.3	851	971	14.1

NOTE: For converting 1981–82 figures to 1970–71 prices, we have used appropriate deflators for different items. For details see Table A.4.

TABLE A.1—DISTRIBUTION OF HOUSEHOLDS AND LAND OWNED BY THE LANDOWNING CATEGORY—ALL INDIA

Landowning category	*Sample households*		*% Distribution of households*		*% Distribution of population*		*Land per household (hectare)*		*% Change in mean size of landowners*
	1970–71	1981–82	1970–71	1981–82	1970–71	1981–82	1970–71	1981–82	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1. LANDOWNERS	3453	3863	67.9	74.4	71.8	79.1	2.59	2.15	—
1.1 Marginal	829	1113	25.5	28.4	22.5	25.5	0.53	0.51	−3.8
1.2 Small	1394	1652	29.9	34.9	32.3	39.3	2.07	1.94	−6.3
1.3 Medium and large	1230	1098	12.5	11.1	17.0	14.3	8.02	7.01	−12.6
2. LANDLESS	910	1084	32.1	25.6	28.2	20.9	—	—	—
All households	4363	4947	100.0	100.0	100.0	100.0	1.76	1.60	−9.11

TABLE A.2—GROSS CAPITAL FORMATION PER RURAL HOUSEHOLD

Components of GCF	Per household Rs. (at 1970-71 prices)		Change			Percentage of households reporting capital formation	
			Absolute (Col. 3–2)	Percentage			
	1970–71	1981–82		Row-wise Col. 4/2	Col.-wise*	1970–71	1981–82
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. FARM	155	141	−14	−9.0	−58.3	57.0	72.7
1.1 Land and land improvement	37	8	−29	−78.4	−120.8	19.1	5.4
1.2 Machinery and implements	34	20	−14	−41.2	−58.3	19.2	30.7
1.3 Irrigation equipment	45	33	−12	−26.7	−50.0	4.8	5.2
1.4 Livestock	36	63	27	75.0	+112.5	46.5	71.1
1.5 Other allied activity assets	3	16	13	433.3	+54.2	1.1	9.8
2. NON-FARM	61	51	−10	−16.4	−41.7	6.0	9.4
2.1 Non-farm business	9	12	3	33.3	+12.5	4.1	1.9
2.2 House property	52	39	−13	−25.0	−54.2	7.9	16.9
All households	216	192	−24	−11.1	−100.0	67.6	85.2

*Negative sign in parentheses indicates that the overall change is negative. Distribution refers to col. 4.

TABLE A.3—PERCENTAGE DISTRIBUTION OF INVESTMENT AND ITS MAJOR COMPONENTS BY THE LANDOWNING CATEGORY—ALL INDIA

Landowning category	Physical			Financial (Gross)	Total investment	Saving
	Farm	Non-farm	All Physical			
(1)	(2)	(3)	(4)	(5)	(6)	(7)
			1970–71			
1. LANDOWNERS	96.3	80.6	91.9	80.2	90.1	99.3
1.1 Marginal	4.7	13.6	7.2	27.3	10.3	−6.4
1.2 Small	33.8	31.1	33.1	28.4	32.4	42.4
1.3 Medium and large	57.8	36.1	51.6	24.5	47.4	63.3
2. LANDLESS	3.7	19.2	8.1	19.8	9.9	0.7
All households	100.0	100.0	100.0	100.0	100.0	—
			1981–82			
1. LANDOWNERS	97.6	79.4	92.8	85.2	89.4	89.1
1.1 Marginal	16.9	11.5	15.4	15.0	15.3	14.6
1.2 Small	45.5	37.4	43.4	45.1	44.1	43.8
1.3 Medium and large	35.2	30.5	34.0	24.1	30.0	30.7
2. LANDLESS	2.4	20.6	7.2	14.8	10.6	11.1
All households	100.0	100.0	100.0	100.0	100.0	—

TABLE A.4—LAND PRODUCTIVITY AND OPERATING EXPENSES BY LANDOWNING CATEGORY

Landowning category	*Gross value of crops output per hectare (Rs.)*	*Operating expenses per hectare (including animal feed) (Rs.)*	*Fertilizer + pesticides per hectare (Rs.)*	*Agricultural wages paid out per hectare (Rs.)*	*Ratio of operating expenses to gross value of output per hectare (%) (Col. 3/2)*	*Ratio of fertilizers to operating expenses (%) (Col. 4/3)*	*Ratio of wages paid to operating expenses (%) (Col. 5/3)*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				1970–71			
1. Marginal	2032	626	49	101	30.8	7.8	16.1
2. Small	1524	437	55	97	28.7	12.6	22.2
3. Medium and large	904	270	36	84	29.9	13.3	31.1
All landowners	1206	355	43	90	29.4	12.1	25.4
				1981–82			
1. Marginal	2561	720	184	165	34.0	21.8	19.1
2. Small	1558	444	111	99	34.5	21.4	18.4
3. Medium and large	980	293	71	82	36.2	20.8	23.2
All landowners	1367	396	99	96	35.0	21.2	20.2

NOTES: (i) Amount in Rs. and the ratios are presented at 1970–71 and current prices respectively.
(ii) The following deflators are used to convert 1981–82 amount to 1970–71 prices:

Deflator	1970–71 = 1	Title	Col. No.
(*a*) Value added from agricultural and allied activities	2.322	Gross value of crop output	2
(*b*) Chemical fertilizers	2.396	Fertilizers and pesticides	4
(*c*) All input	2.812	Operating expenses	3
(*d*) CPIAL, All India	2.333	Agricultural wage paid out	5

First three deflators are taken from National Accounts Statistics.