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Vol XXVII
No. 4

CONFERENCE
NUMBER

OCTOBER-
DECEMBER
1972

ISSN 0019-5014

INDIAN JOURNAL OF AGRICULTURAL ECONOMICS

INDIAN SOCIETY OF
AGRICULTURAL ECONOMICS,
BOMBAY

CONCLUSION

From the above analysis it can be concluded that the gains due to the green revolution have been distributed among farmers of all categories irrespective of different demographic and socio-economic characteristics. Contrary to what is often believed, this new prosperity in agriculture has a salutary effect on the propensity to save and invest among the progressive farmers of the State. However, both the absolute and the relative income gains have tended to increase with the increase in the size of holding, level of mechanization, formal education of the head of the family and the number of earners in the family. This variation in socio-economic factors seemed to accentuate inter-regional and intra-regional income imbalances which might involve serious socio-political implications.

SAVINGS AND INVESTMENT PATTERNS OF FARM FAMILIES IN THE PUNJAB (INDIA)

A. S. KAHLON

Dean
College of Basic Sciences and Humanities

H. S. BAL AND GURBACHAN SINGH

Assistant Research Officers
Department of Economics and Sociology
Punjab Agricultural University, Ludhiana

INTRODUCTION

The recent technological break-through in agricultural production through seed-fertilizer revolution has accelerated the transformation of the Indian farm economy from subsistence level to a profitable farm business. With the rapid diffusion of new technology, the proportion of marketable surplus rapidly increased in those areas, where wheat revolution was established.*

Intensive research efforts are being made to explore new methods and techniques, that would further raise agricultural production, marketable surplus and farm cash incomes. As a result, farmers are motivated to save and invest in order to expand their volume of business and further raise their

* In the Punjab (India), for example, the marketable surplus in the case of wheat increased by 250 per cent by 1970-71 over 1966-67, against an increase of 100 per cent in wheat production.

incomes. The progressiveness of Indian agriculture will, however, depend upon what the farmers do with the additional incomes generated from year to year. It is recognized that the growth rate in the farm economy will largely depend on the stock of capital built in a farm organization and ploughing back of savings for further improvement of the farm organization. If increments in farm income were mostly utilized for increasing capital investment in farm organizations, the growth rate in the agricultural sector would be higher. If the increments were spent on household expenditure, without building up the necessary infra-structure, the economic development of agriculture might be hampered, at least over a longer period. On the other hand, if large increments in farm income were invested on the farm, rather than raising the household expenditure proportionately, the economic development of agriculture would follow. Thus the utilization of additional incomes earned by the farm families is a matter of concern in the context of rapid economic development of the developing countries. The present study aims at identifying the items on which the farmers were spending their incomes and particularly increments in incomes. More specifically, the objectives of the study were (1) to study the existing income levels of the farm families, (2) to examine the pattern of investment of these families, and (3) to estimate the savings of the farm families.

METHODS AND MATERIAL

The farm family gross income was obtained by adding all the incomes from farm, non-farm resources and borrowings from institutional and non-institutional resources. The production expenditure included all the expenditures on cultivation and home-produced inputs (having alternative market) used for cultivation during the year. The disposable income was compiled by deducting production expenditure from the farm family gross income. The investment included farm, non-farm and household investments. The farm family savings were derived through asset account method.

Being one of the leading districts, Ludhiana was selected purposively for the study. Eight villages were selected with probability proportional to the cultivating population. Farm holdings of these sample villages were categorized into small, medium and large holdings. These holdings were selected at random from each category within each sample village. Thus the data were collected from 72 holdings and related to the period 1966-67 through 1970-71.

RESULTS AND DISCUSSIONS

Farm Family Gross Income

Table I shows that on an average, the farm family gross income from all sources, amounted to Rs. 16,754 in 1966-67 and increased to Rs. 21,498,

TABLE I—AVERAGE FARM FAMILY GROSS INCOME, DISPOSABLE INCOME AND INVESTMENT IN DIFFERENT SIZE-GROUPS : 1966-67 THROUGH 1970-71

(Rupees)

Year	Farm size	Average gross income (1)	Production expenditure (2)	Disposable income (3=1−2)	Investment expenditure (4)
1966-67 ..	Small ..	8,701	2,561	6,140	3,145
			(29.42)	(70.57)	(51,22)
	Medium ..	13,729	4,448	9,281	1,578
			(32.40)	(55.52)	(17.00)
	Large ..	27,831	11,215	16,616	6,800
			(40.29)	(67.60)	(40.92)
	Average ..	16,754	6,070	10,684	3,841
			(36.23)	(63.77)	(35.95)
1967-68 ..	Small ..	9,539	2,889	6,650	2,091
			(30·29)	(69.71)	(31.44)
	Medium ..	16,533	5,220	11,313	3,461
			(31.38)	(68.62)	(30.59)
	Large ..	38,424	12,386	26,038	14,041
			(32.24)	(67.76)	(53.92)
	Average ..	21,498	6,832	14,668	6,532
			(31.78)	(68.22)	(44.53)
1968-69 ..	Small ..	12,136	3,593	8,543	2,166
			(29.61)	(70.39)	(25.35)
	Medium ..	19,870	5,781	14,089	3,834
			(29.19)	(70.81)	(27.21)
	Large ..	44,898	12,951	31,947	13,617
			(28.85)	(71.15)	(42.62)
	Average ..	25,614	7,442	18,172	6,540
			(29.05)	(70.95)	(35.38)
1969-70 ..	Small ..	12,275	2,720	9,555	2,278
			(30.31)	(69.69)	(23.84)
	Medium ..	21,907	6,408	15,499	6,854
			(29.25)	(70.75)	(44.22)
	Large ..	44,124	13,768	30,356	13,885
			(31.20)	(68.80)	(45.74)
	Average ..	26,104	7,966	18,138	7,672
			(30.52)	(69.48)	(42.29)
1970-71 ..	Small ..	12,734	3,950	8,784	2,395
			(31.02)	(68.98)	(27.27)
	Medium ..	20,039	7,039	13,000	6,254
			(35.33)	(64.87)	(48.11)
	Large ..	42,085	13,772	28,313	9,551
			(32.72)	(67.28)	(33.73)
	Average ..	24,952	8,267	16,685	6,067
			(33.13)	(66.87)	(36.36)

Note : Figures in parentheses denote percentages of prodution expenditure and disposable income to gross income and percentages of investment expenditure to disposable income.

Rs. 25,614, Rs. 26,104 and Rs. 24,952 in 1967-68, 1968-69, 1969-70 and 1970-71 respectively. The percentage increase in gross income over 1966-67 worked out to be 28.32, 52.88, 55.81 and 48.93 over this period. The rising trend in income from 1966-67 to 1969-70 came mostly from the adoption of high-yielding varieties and intensive use of technological inputs. The farm income accounted for a large share of the farm family gross income and its contribution varied from 83.30 to 89.01 per cent during the period under study.

Production Expenditure

A substantial proportion of increases in income was spent on purchase of such material inputs as improved seeds, chemical fertilizers and manure, irrigation charges, pesticides and hired labour. The average production expenditure amounted to Rs. 6,070, Rs. 6,832, Rs. 7,442, Rs. 7,966 and Rs. 8,267 from 1966-67 through 1970-71 respectively, indicating a rising trend over this period (Table I). The production expenditure formed 36.23, 31.78, 29.05, 30.52 and 33.13 per cent of the farm family gross income. The percentage increase in production expenditure over 1966-67 worked out at 13.92, 22.66, 31.23 and 36.19 in the subsequent years.

Disposable Income

The analysis of disposable income presented in Table I showed that the average disposable income amounted to Rs. 10,684 in 1966-67, and it increased to Rs. 14,668, Rs. 18,172, Rs. 18,138 and Rs. 16,685 in 1967-68, 1968-69, 1969-70 and 1970-71 respectively. The disposable income in 1970-71 increased by 56.17 per cent over the base year. The small farmers experienced an increase of 42.08 per cent in their disposable income, compared to 70.40 per cent of the increase in the case of large farmers.

Investment Pattern

The results of farm family investment, as a proportion of farm family disposable income, are presented in Table I and Appendix 1.* The results indicate that the average investment increased from Rs. 3,841 in 1966-67 to Rs. 7,672 in 1969-70 and Rs. 6,067 in 1970-71, the percentage increase over the base year being 99.72 in 1969-70 and 58.03 in 1970-71. These investments constituted 35.95 per cent of the disposable income in 1966-67, 42.29 per cent in 1969-70 and 36.36 per cent in 1970-71. The main reason for the decline in farm family investment in 1970-71 was that these farm families had already made heavy investment in building the infra-structure and currently they were making more investment in production expenditure to increase their income.

* Appendix 1 which gives the data relating to the items of farm family investment for the three size-groups of holdings is not reproduced.

Farm Investment

The average farm investment came to Rs. 3,093, Rs. 4,746, Rs. 5,284, Rs. 5,882 and Rs. 3,648 from 1966-67 through 1970-71 respectively. This investment showed an increase of 20.24 per cent in 1969-70 and 17.94 per cent in 1970-71 over the base year. The largest farm investment was made in the purchase and improvement of land, which accounted for 38.31, 58.62, 43.16, 33.37 and 24.31 per cent of the farm investment. Next in order was investment in farm machinery, which constituted 22.05, 13.65, 23.62 and 27.51 per cent of the farm investment from 1966-67 through 1969-70 respectively. The investment in irrigation structure occupied third position, contributing 17.01, 8.13, 9.05, 11.02 and 10.36 per cent of the farm investment.

The break-up of different farm investments was examined for different sized holdings. The average farm investment was the highest in the case of large holdings and the lowest for small holdings, except for 1966-67, when it was the lowest on the medium holdings. It was found that on the small holdings, irrigation structure formed the major investment from 1966-67 to 1969-70. This means that the small holders gave high priority to development of irrigation resources for increasing the intensity of cropping. On the medium holdings, 41.81 per cent of farm investment was made on irrigation structures during 1966-67 but it declined to 21.57, 20.99, 6.45 and 9.70 per cent in 1967-68, 1968-69, 1969-70 and 1970-71 respectively. In fact from 1967-68 onward, the emphasis shifted to the purchase and improvement of land, which formed 43.14, 24.88, 46.37 and 48.51 per cent of the farm investment from 1967-68 through 1970-71 respectively. This indicates that the medium holdings attached great importance to increasing the size of their operational holdings. On the large holdings, investment in farm machinery accounted for a large proportion of 31.32 and 54.22 per cent of farm investment during 1966-67 and 1970-71. Also, there was great stress on the purchase and improvement of land, which accounted for 9.42 to 66.55 per cent of farm investment during 1966-67 through 1970-71. This clearly indicates that the large holdings invested more and more in farm machinery for efficient and timely performance of agricultural operations. The year to year fluctuations in the relative importance of different farm investments could also be attributed to their lumpy nature.

Non-farm Investment

The average non-farm investment was estimated at Rs. 126, Rs. 1,021, Rs. 2,118, Rs. 731 and Rs. 1,100 from 1966-67 through 1970-71 respectively, which constituted 1.18, 6.26, 1.19, 4.01 and 6.6 per cent of the disposable income. Though the amount invested on this component contributed little to the farm family investment, yet it shows the business attitude of the farmers to supplement and stabilize their incomes. The medium and large holdings invested more on non-farm occupations than the small holdings.

Household Investment

On an average, 5 to 8 per cent of the disposable income was used as household investment. The average household investment came to Rs. 622 in 1966-67 and increased to Rs. 1,319 in 1970-71. The investment in construction and renovation of dwelling houses was relatively more than on consumer durable goods. The break-up of different household investments on different sized holdings showed that on the small and medium holdings, the purchase, construction and renovation of dwelling houses formed a major investment during all the years. In the case of large holdings, the construction of dwelling houses formed 77.33 per cent of the household investment in 1966-67 and 52.99 per cent in 1970-71. And these holdings invested relatively more on consumer durable goods in 1967-68, 1968-69 and 1970-71 respectively.

Marginal Propensity to Invest

The marginal propensity to invest is the marginal increase in investment, associated with a unit increase in disposable income, and may or may not be the function of income level. It was obtained by fitting the Cobb-Douglas function of the type $Y = ax^b$ to the investment income (disposable) data. The influence of farm family disposable income in determining farm family investment was studied for 1966-67 through 1970-71 and the estimated constants are shown in Table II.

TABLE II—ESTIMATES OF INCOME ELASTICITY AND MARGINAL PROPENSITY TO INVEST FROM 1966-67 TO 1970-71

Year	Constant elasticity	R^2	Marginal propensity to invest $= \frac{dy}{dx} = b \frac{\bar{y}}{\bar{x}}$
1966-67	0.7031*	0.40*	0.1611
1967-68	0.6832*	0.38*	0.2008
1968-69	1.0144*	0.58*	0.2243
1969-70	1.5016*	0.71*	0.2866
1970-71†	1.1977*	0.45*	0.1980

* Significant at 5 per cent level.
† The marginal propensity to invest was related to farm family gross income and not disposable income.

The marginal propensity to invest came out to be 16, 20, 22, 28 and 20 per cent for 1966-67, 1967-68, 1968-69, 1969-70 and 1970-71 respectively. The constant elasticity coefficients were significant at 5 per cent level. The statistical test showed that these coefficients were not significantly different from unity.

Farm Family Savings

The contents of Table III show that on an average, the farm family saved 22.34 per cent of the disposable income in 1966-67. These absolute savings as well as the saving-income ratio increased from 1966-67 through 1970-71. The average savings were estimated at Rs. 2,387.10, Rs. 4,263.30, Rs. 6,410.62, Rs. 6,310.96 and Rs. 4,882.55 from 1966-67 through 1970-71 respectively.

TABLE III—FARM FAMILY SAVINGS PER HOLDING AND SAVING-INCOME RATIO BY SIZE-GROUPS: 1966-67 THROUGH 1970-71

(*Rupees*)

Year	Small	Medium	Large	Average
1966-67	—186.63 (—3.04)	2,401.49 (25.87)	4,949.25 (29.79)	2,387.10 (22.34)
1967-68	544.24 (8.18)	3,743.56 (33.09)	8,502.10 (32.64)	4,263.30 (29.07)
1968-69	673.58 (7.88)	5,908.58 (41.93)	12,649.73 (40.60)	6,410.62 (35.28)
1969-70	2,052.26 (21.48)	5,800.00 (37.22)	11,092.56 (36.54)	6,310.96 (34.74)
1970-71	189.85 (2.15)	2,690.75 (20.70)	11,766.51 (41.56)	4,882.55 (29.26)

Note: Figures in parentheses denote percentage of saving to income.

The relative savings of the small farmers upto 1968-69 were very small (less than 8 per cent of the income) as compared to that of the medium and large farmers who saved between 13 to 42 per cent of their incomes. The saving-income ratio for the small farmers increased to 21.48 per cent in 1969-70, but came down to 2.15 per cent in 1970-71. The main reason for this decline in savings in 1970-71 was higher household expenditure and particularly higher expenditure on socio-religious ceremonies by the small and medium holdings.

Savings and Income

In view of the central importance given to current income by almost all theories of savings, the influence of this factor in the determination of savings was studied. Table IV shows the average savings at different income levels and the share in aggregate savings of each income class. The contents of this table indicate that 25.00, 20.83, 16.67, 13.89 and 23.61 per cent of the holdings having an income of Rs. 5,000 or less were dis-saving from 1966-67 to 1970-71 respectively. In other words, the net contribution to the total savings of these holdings was negative. This does not mean that every holding with an income of Rs. 5,000 or less suffered dis-savings. All it means is

TABLE IV—SAVINGS AND INCOME FROM 1966-67 TO 1970-71

(*Rupees*)

Income class intervals (Rs.)	1966-67		1967-68		1968-69		1969-70		1970-71	
	Percentage of holdings	Savings per holding	Percentage of holdings	Savings per holding	Percentage of holdings	Savings per holding	Percentage of holdings	Savings per holding	Percentage of holdings	Savings per holding
0 — 5,000 ..	25·00	—2,109·13	20·93	—1,607·93	16·67	—5,981·66	13.89	—6,120·20	23·61	—5,927·50
5,000 — 10,000 ..	27·78	947·56	29·17	1,047·83	23·61	1,071·35	19·44	2,131·19	18·06	2,365·12
10,000 — 15,000 ..	20·83	2,833·50	22·22	3,402·69	18·06	3,391·62	23·61	4,710·36	22·22	4,815·77
15,000 — 20,000 ..	12·51	3,614·28	11·11	4,072·38	15·27	4,805·63	12·51	6,089·13	12·50	5,807·39
20,000 — 25,000 ..	6·94	8,843·07	5·56	9,502·00	8·33	12,287·16	9·72	15,181·33	9·72	17,146·45
25,000 and above ..	6·94	12,995·62	11·11	15,553·78	18·06	19,702·84	20·83	22,135·50	13·89	18,792·57

that the negative savings of dis-savers more than offset the positive savings of the other savers. It may be noted that in every income class, there were savers and dis-savers. The top 75.00, 79.17, 83.33, 86.11 and 76.39 per cent of the holdings with an income of Rs. 5,000 or more were responsible for the entire savings from 1966-67 through 1970-71 respectively.

Marginal Propensity to Save

The marginal propensity to save is the average increase in savings associated with a unit increase in income. It was obtained by fitting the Cobb-Douglas function of the type $Y = aX^b$ to income-saving data. The influence of farm family income in determining farm family savings was studied from 1966-67 through 1970-71 and estimates of constants are given in Table V.

TABLE V—ESTIMATES OF CONSTANT INCOME ELASTICITY AND MARGINAL PROPENSITY TO SAVE : 1966-67 THROUGH 1970-71

Year	Constant elasticity	R^2	Marginal propensity to save $= \frac{dy}{dx} = b\,\frac{\bar{y}}{\bar{x}}$
1966-67	.6374*	.4551*	.1424
1967-68	.7518*	.3862*	.2140
1968-69	.7186*	.4127*	.2535
1969-70	.7891*	.3987*	.2746
1970-71†	1.5557*	.5937*	.2306

* Significant at 1 per cent level.
† The marginal propensity to save was related to farm family gross income and not disposable income.

The marginal propensity to save was 14.24 per cent in 1966-67 and it increased to 23.06 per cent in 1970-71. The constant elasticity coefficients were significant at one per cent level. Statistical tests showed that these coefficients were not significantly different from unity, *i.e.*, one per cent increase in income was followed by one per cent increase in the savings.

Concentration of Savings

The concentration of savings of the farm families is evident from Table VI. The percentage of the dis-savers among the farm families was 36.11 in 1966-67, but it declined to 16.67 per cent in 1969-70. The concentration of savings was more in 1966-67 as compared to other years. In this year, 70.63 per cent of the total savings were shared by 4.17 per cent of the savers, whereas in 1970-71, the upper 9.72 per cent savers held 77.06 per cent of the total savings. These results indicate that the disparity in the distribution of savings declined somewhat over this period.

TABLE VI—SAVINGS OF FARM FAMILIES BY SAVER'S CLASSES : 1966-67 THROUGH 1970-71

Savings class intervals (Rs.)	1966-67		1967-68		1968-69		1969-70		1970-71	
	Percentage of holdings	Percentage share of each saving class	Percentage of holdings	Percentage share of each saving class	Percentage of holdings	Percentage share of each saving class	Percentage of holdings	Percentage share of each saving class	Percentage of holdings	Percentage share of each saving class
Below (—8,000)	4·17	—34·52	—	—	1·39	—2·05	—	—	4·17	—12·14
(—8,000) — (—4,000) ..	4·17	—17·41	6·94	—10·67	1·39	—1·52	1·39	—1·07	6·95	—7·77
(—4,000)—0·00	27·77	—30·67	19·45	—7·78	20·84	—6·00	15·28	—5·17	30·56	—15·42
0.00 — 4,000	44.44	51.19	36.11	17.87	34.72	9.54	30.55	9.13	19.44	9.13
4,000 — 8,000	12.50	43.66	20.84	32.92	5.56	5.35	19.44	18.61	20.83	31.07
8,000 — 12,000	2.78	17.12	6.94	17.41	19.44	31.90	12.50	19.29	8.33	18.07
12,000 and above ..	4.17	70.63	9.72	50.25	16.66	62.78	28.84	59.21	9.72	77.06

CONCLUSIONS

The study showed that owing to the adopting of modern technology, farmers' gross incomes in Ludhiana district increased by 48.93 per cent in 1970-71 over 1966-67. The production expenditure also increased by 36.20 per cent over this period and constituted 26.80 per cent of the additional gross income. Thus a substantial proportion of increased gross income was spent on the purchase of such modern inputs as new seeds and chemical fertilizers, etc., which augmented farm production and incomes.

The study showed that the farm family investments increased by 99.72 per cent in 1969-70 and 69.77 per cent in 1970-71 over the base year (1966-67), which constituted 56.17 per cent and 27.19 per cent of the increased disposable income. Similarly, on an average, the farm family savings increased by 52.64 per cent in 1969-70 and 41.58 per cent in 1970-71 over 1966-67. These savings constituted 69.77 and 56.17 per cent of the increased disposable income in 1969-70 and 1970-71 respectively. The study further indicated that the disparity in the distribution of savings declined during the period under study.

The main reason for the decline in farm family investment and savings in 1970-71 was that these farm families made heavy investment in building the infra-structure upto 1969-70 and thereafter spent more on household expenditure and particularly on socio-religious ceremonies, which is an unhealthy trend in the development of the agricultural economy. For rapid economic growth in agriculture, the increments in farm income should be utilized continuously for increasing capital investment in the farm organization.

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