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shows that the rate increases with increase in farm output. Further, these equations, when fitted with the respective values of explanatory variables, show that investment in human capital explained by family size as a percentage of that explained by farm output declines as one moves from small (72.7 per cent) to medium (57.3 per cent) to big (42.1 per cent) and to large households (8.4 per cent). This agrees with our conclusion that the role of family size in determining investment in human capital is taken over around big households by farm output.

SAVING ELASTICITIES AND STRATEGIES FOR CAPITAL FORMATION—A MICRO ANALYSIS

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Capital in the developing economies is the crucial factor which sets the pace and pattern of economic growth. The touch of capital on all other factors is too obvious and it becomes the basic theme of the parables of growth economists. Implicit in the modern concept of capital is that its embodiment in land productivity, in differential labour efficiency and varied managerial efficiency. Technology determines such embodiment and therefore, capital and technology are so interlinked that tardiness in any one would affect the other. Capital provides for activities of identifying and augmenting technology which in turn and in conjunction with capital resources, generates capital formation through output expansion and increase in savings and new investment.

In development economies agriculture is said to be the least efficient sector characterised by low resource productivity and subsistence level of income. Capital investment is necessary for land resource development through reclamation for provision of irrigation inputs, for increasing soil fertility and for improving labour efficiency and managerial skills by formal, vocational and extension education. The demand for capital for developing agriculture is motivated by the aspiration for higher income levels conditioned by cultural and other extra economic factors.

CAPITAL STRUCTURE

It would appear that a formal definition of capital structure and capital formation would be useful for understanding the discussions on savings and investments that follow.

Capital formation *per se* is the flow of capital services per unit of time. Implied in this definition is that the rate of capital formation is determined not only by saving but also by initial capital stocks. For a typical developing agriculture the capital structure necessary for dynamic output expansion and growth, can be summarised as in Figure 1. There are two ways by which capital, both physical

N.B.: Figures in bracket denote to the literature cited under 'References' at the end of the paper.

CAPITAL STRUCTURE IN AGRICULTURE

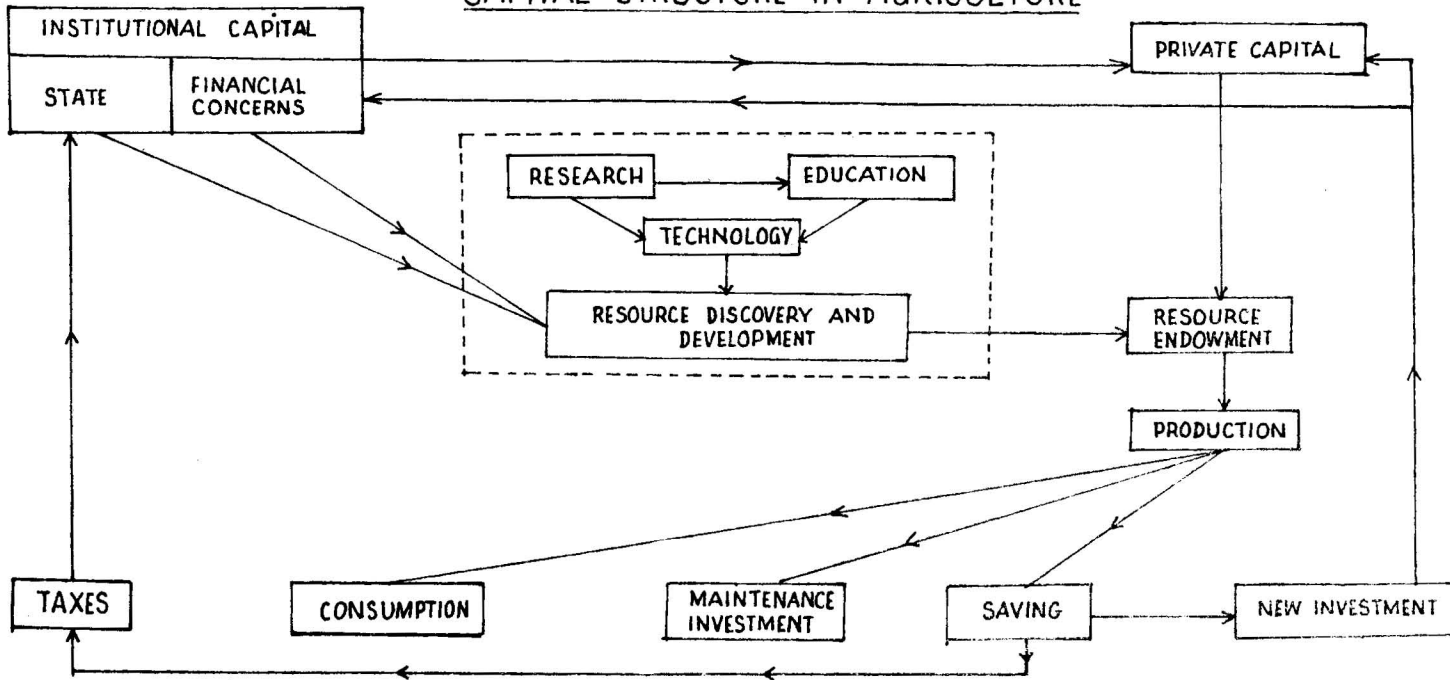


Figure 1

and technical, is developed in most of the developing countries. Private capital is built through saving and reinvestment and as such limited by individual propensities and responsive to market stimuli. Public capital is defined to include not only public investment on agricultural infra-structure but also capital investment by financial institutions. Public capital is created by fiscal and monetary policies and through direct and indirect income transfers (7). Apart from investment in direct production public capital provides for necessary social overhead for increasing agricultural efficiency. Institutional capital comprises of capital stocks created by investment by the State and financial institutions such as commercial banks and development banks of private and quasi-public control. The four blocks is the dotted rectangle, *viz.*, research, education, technology and resource discovery and development form the agricultural infra-structure created mostly by State capital and to a less extent by financial institutions. Resource discovery and development is the end product of the other three activities and it includes development and management of soil and water, evolution of improved seeds of high-yielding varieties, new levels of fertilizers and pesticide use, new techniques of processing, storage, transport and marketing. The development of agricultural infra-structure is crucial not only for breaking the initial stagnation but also for sustaining growth in agriculture and therefore it becomes the primary adjunct of the green revolution.

Private capital is defined, in a limited way, to include capital stocks of multitudinous producers plus capital of unorganized markets. For developing agricultural sector employing new strategies, private capital is necessary to exploit the potential created by the agricultural infra-structure. Under the impact of agricultural infra-structure productivity of the resource endowment undergoes significant changes resulting in higher income and higher saving potential

Produced income is disposed of through taxes which flow into States' capital, consumption expenses which include components of standard of living and out-of-pocket factor costs involved in production, investment on maintaining capital stocks and dues of prior investment, and saving which represent investible funds.

DYNAMIZING AGRICULTURE

I. *Conceptual Framework*

In traditional agriculture with static resource efficiency, private capital is also static at the subsistence level. To dynamize the static resource endowment and efficiency, introduction of technology is necessary. At the initial point of growth path, private capital is assumed to be static and inadequate and a big 'push' in investment for resource development by institutional capital is a pre-condition for dynamic movement. The major source of public capital are taxes and savings. Taxes increase with production and with additional capacity to bear the increased tax burden it is possible to increase tax revenue which swell investible funds of the State. The relationship between saving and taxes on the one hand, and saving and consumption on the other becomes crucial for development financing. Increased saving when converted into capital serves the purpose of dynamizing production. The relationship between saving and taxes tends to be inverse. The

leakage in saving till investment and cost of tax administration and of their impact as disincentive should be examined. When institutional factors and individual propensity to save are less favourable taxes serve the purpose. What is crucial for the required rate of capital formation consistent with the overall objectives of agricultural development and growth turns out to be optimum combination of disincentive of taxes and incentive for saving.

The rate of capital formation in Indian agriculture is determined by saving (supply of capital) and investment opportunities. More specifically, the policies for financing agricultural development require measures for increasing the savings and saving potential. The green revolution has already increased the momentum of rate of investment opportunities and the level of investment potential. ' Regarding saving potential what are its determinants?

An attempt was made to study the saving behaviour of select farms in Coimbatore district. A sub-sample of 30 farms were drawn from farms selected for studying the problems of the introduction of hybrid corn and as such the samples who planted the corn should have high degree of awareness and adoption of improved technology. The saving model was formulated and income and saving were specified on the basis of two criteria, *viz.*, on per capita and on per acre basis. Income is defined as gross income of the farm whereas saving is defined as gross income *minus* household consumption *minus* operating expenses of the farm *minus* maintenance expenses on capital stocks. An additional explanatory variable to represent the investment opportunities was considered. In the absence of relevant information on investment opportunities, the input-output ratio was assumed to serve as a proxy variable for investment opportunities. The sample farms were classified as small (below 5 acres), medium (between 5 and 10 crores) and large (above 10 acres) and the saving characteristics were analysed.

TABLE I—SAVING-INCOME RATIO

(in Rs.)

Size	Per capita savings*	Per capita income*	Saving-income ratio
Small	139 (80)	1358 (923)	0.1009
Medium	182 (111)	1569 (1032)	0.1027
Large	478 (190)	2520 (1048)	0.1781

*Figures in parentheses indicate per acre basis.

From Table I it may be seen that the rate of saving increases with size of farms. On further examination of data of individual farms it was observed that saving-income ratio was higher in those farms where cotton and sugarcane were major crops. The estimated equations are presented below.

(i) *On per capita basis*

$$Y = -253.7^{**} + 0.28628 x_1^{**} \quad \dots (1)$$

(23.26) (0.0089)

$$R^2 = 0.787^{**}$$

$$Y = -373.01^{**} + 0.28245 x_1^{**} + 326.18837 x_2 \quad \dots (2)$$

(88.076) (0.02746) (203.3117) ..

$$R^2 = 0.806^{**}$$

(ii) *On per acre basis*

$$Y = -31.78\ddagger + 0.14994 x_1^{**} \quad \dots (1')$$

(16.824) (0.0416)

$$R^2 = 0.317^{**}$$

$$Y = -177.136^* + 0.18192 x_1^{**} + 294.49263 x_2^* \quad \dots (2')$$

(71.95) (0.0409) (124.76)

$$R^2 = 0.434^{**}$$

where,

- Y = saving per capita/per acre,
 x_1 = income per capita/per acre,
 x_2 = input-output ratio,
 * = Significant at 5 per cent level,
 ** = Significant at 1 per cent level,
 † = Significant at 10 per cent level.

All regressions were found to be highly significant and similarly all the regression coefficients except that of investment variable in equation (2) were significantly different from zero. Even the coefficient of investment in equation (2) was found to have border-line significance around 10 per cent level of significance. A noteworthy result is that the intercept was significant implying, therefore, non-proportionality of saving to income and also the absence of non-stationary economy (3). The results are not surprising since the sample farms were virtually the pace-setters for adoption of improved technology. It can also be inferred that saving is 'proportionately more important' for the sample farms (3). As regards the choice of the use of different basis for identifying the variable, the relatively small R^2 in (1') and (2) could be adduced to aggregation bias in farm area. A proper indexing and standardizing of different types of lands in the farm could probably have resulted in greater coefficient of multiple determination.

The saving elasticities computed at centroid are given in Table II. Saving elasticities are more in the first model than in the second model. The estimates of elasticities computed from the latter seem to be in line with the opinion expressed by the respondents of the study.

TABLE II—SAVING ELASTICITIES

						Income	Investment opportunities
Per capita	(1)	..	..	..	..	1.9092	—
	(2)	..	..	..	..	1.8836	0.4385
Per acre	(1')	..	..	..	..	1.2413	—
	(2')	..	..	..	..	1.5060	0.8390

The significance of the level of coefficients with negative signs should be borne in mind when policy issues are considered. The level of coefficient imposes a limit above which positive savings would be forthcoming and below this limit negative savings or consumption of capital would occur.

II. Policy Issues

It is agreed that capital formation is essential for growth and development of Indian agriculture. There exist differences in the *modus operandi* for securing savings to ensure for the required rate of growth of capital formation and the differences seem to arise out of various assumptions involved in policy formulations. Capital formation, as seen earlier, flows from two origins and converges on a point creating additional potential for output expansion. The two origins are public and private savings and, to be sure, both are complementary to each other, the former creating the infra-structure and the latter exploiting its potential.

Public savings are augmented through direct, indirect and compulsory transfer of private savings with the object of evolving a structure for long-term investment and development. Taxes, institutionalized savings and monetary and fiscal measures form the three types of the savings transfer mechanism (6). Consideration of their accomplishment in turn would lead for meaningful future policy formulations. First, the tax structure of Indian agriculture has two major elements: land revenue and agricultural income-tax. There is a point of view that land tax is regressive and needs rationalization. For example, the percentage of land revenue to national income from agriculture declined progressively from 1.42 per cent in 1956-57 to 1.24 per cent in 1967-68 (2,5,8). Paradoxically, some States were considering for sometime the elimination of land revenue and some have implemented it partially. In addition to land tax, there are other collections such as levies and cess. There are two alternatives: either to rationalize the structure of land revenue on a progressive slabs or to abolish it altogether and modify the income-tax structure. A decision on this issue depends on the relative costs of collection and tax administration. Similarly, agricultural income-tax, as a measure of transferring private savings to public capital flow needs examination. It was estimated that, under the current Central income-tax provisions, agricultural income-tax would yield about Rs. 75 crores per annum (3). To render this tax measure more effective, the integration of Central income-tax and agricultural income-tax needs a comprehensive study.

As regards the indirect transfers it is necessary to formulate bold and imaginative policies for financial institutions both public and private such as insurance organizations inclusive of life, crop and livestock insurance business, small savings units, unit trust, decentralized units of commercial banks and others. During the Fourth Plan, it has been decided to mobilize 'small savings' to the tune of Rs. 526 crores (8) and approximately a half of it should be drawn from the agricultural sector. Consequent on the nationalization of the major banks and the follow-up strategies for credit expansion the other side of the coin, *viz.*, creation of deposits is likely to receive better attention. Prompt debt clearance and development of banking habits by rural population will lead in the long-run to increased saving deposits which influences the rate of capital formation.

For the capital formation in agriculture the co-operatives contributed Rs. 400 crores in 1967-68 which will be increased to Rs. 700 crores in 1973-74 and the commercial banks will provide Rs. 800-900 crores by then. For capital development in the Fourth Plan which requires medium and long-term financing the following is the break-up: co-operatives Rs. 150 crores, land development banks

Rs. 700 crores, Agricultural Refinance Corporation Rs. 160 crores and commercial banks Rs. 415 crores (1). The capital outlay for financing agriculture which is in the midst of the green revolution has built-in multipliers which would accelerate the growth in capital formation since the outlay is hopefully linked with 5 per cent compound rate of growth per annum in agricultural production. Monetary and fiscal measures through currency expansion, public debt management and taxation have relevance only through propensities of consumption, savings, opportunity and pattern of private investment, and the role of financial intermediaries.

CONCLUSIONS

Private savings are determined by the level of income, consumption and investment opportunities. It is hazardous to venture for an estimate of private savings in the agricultural households. From the limited results reported earlier, it may be concluded that as income increases the savings tend to increase. What is not clear is the pattern of disposal of savings. Reinvestment in farm business to improve income opportunities happens to be the major element of decisions on disposal. If it were true the old controversy rears its head. If savings at farms find their way to reinvestment and not to an unnecessary increase in consumption what effect would direct taxes cause? This has serious implications in terms of capital rationing to the sample farms which belong to a highly developed region of the country. The marginal propensity to save is likely to vary among regions. Under such conditions policy makers need dependable information on propensities in consumption and saving and their secular shifts.

REFERENCES

1. Agricultural Refinance Corporation, *Financing Agriculture*, Vol. I, Nos. 1 & 2, April-July, 1969.
2. *Commerce*, Annual Number, Vol. 115, No. 2956, 1967.
3. Ved P. Gandhi, "Taxation of Agricultural Income under Central Income-tax," *Indian Journal of Agricultural Economics*, Vol. XXIV, No. 1, January-March, 1969, pp. 29-39.
4. H. S. Houthakker, "On Some Determinants of Saving in Developed and Underdeveloped Countries," *Problems in Economic Development*, Macmillan & Co. Ltd., New York, 1965.
5. V. G. Kulkarni : *Statistical Outline of Indian Economy*, Vora & Co., Bombay, 1968.
6. C. T. Kurien : *Indian Economic Crisis*, Asia Publishing House, Bombay, 1969.
7. Ragnar Nurkse : *Problems of Capital Formation in Underdeveloped Countries*, Basil Blackwell, Oxford, 1957.
8. Fourth Five-Year Plan 1969-74—Draft, Planning Commission, Government of India, 1969.