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A CRITIQUE OF RESEARCH ON RURAL
SAVINGS IN INDIA

by

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Introduction

The paper reviews analytical basis of rural savings research^{1/} on India. It also reviews estimates of rural household savings published by the Reserve Bank of India (RBI) since they form a data base for the macro time-series studies under review.^{2/} This review is based on close to 100 studies. Even after allowing for some studies that were not accessible it would not be incorrect to guess that the studies on rural savings are fewer than those on rural credit.^{3/}

The principle theme emerging from this review is that the existing literature has neglected "incentives to save" (ITS) hypothesis^{4/} of savings behavior.^{5/} Neither the analytical basis of this literature nor the RBI estimates are adequate to support the pessimistic assumption about the saving capacity of rural households.^{6/} The literature has also, therefore, not clarified the issue of rationality of rural households' decision

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to consume now or later. Neglect of these issues is ironical because there exists for quite some time now an empirically supported view that these households do respond to incentives and are rational in their current production decisions.^{7/}

This neglect appears to have also resulted in an over-emphasis on the improvement of "ability to save" (ATS) as a remedy for increasing rural saving rates. To quote from the report of the All-India Rural Credit Survey (AIRCS) Committee which had set the tone of the policies for rural financial market (RFM) and agricultural development in general,

"In view of the many suggestions for mobilization of rural savings - e.g. through commercial banks - that appear from time to time, it is in our view important to recognize (1) that the need to make rural savings possible (e.g. by economic development and credit extension of the types we have mentioned) is much more important than to render rural savings available (by "mobilization" of different kinds)." (RBI, 1954, Vol. II, p. 487)^{8/}

The committee goes on to further observe that

"(2) that, to the extent they exist, rural savings are most likely to be rendered available where most seem to be used for rural needs, and (3) that rural savings fall so short of rural needs that they must be supplemented from, not diverted to, urban areas." (Ibid, p. 487)

While the underlying rationale for the last observation would be justifiable for a technologically stagnant agriculture, the same, however, cannot be said for the first two observations

which tacitly assume that there does not exist a need for technological change nor for improved financial "intermediation" to better the rate of return on saving and investment of the rural households. Similarly, the consequent policy-imbalance in the role assigned to the RFM for extending credit and for mobilizing savings is inoptimal and undesirable.

The preceding theme is developed by first formulating an analytical framework that facilitates a critical but constructive examination of various issues considered in the studies under review, and then by evaluating the RBI estimates of rural household savings. We finally identify certain basic assumptions on which the existing literature and the RFM policies rest. Before concluding the paper we offer a few suggestions about the approach to future research to test these assumptions.

Determinants of Rural Savings

For decision-makers like rural households who combine consumption, production and investment activities, both "ability to save" (ATS) and "incentives to save" (ITS) determine their savings. While the former is primarily perceived by some concept of income-current or permanent, the latter is determined by the rate of return these households expect from foregoing present consumption. For rural households this latter variable represents a price for every act of current consumption. This is because their return on savings implies an opportunity cost of current consumption. Such cost would vary with the type of

investment or saving opportunities available to these households. The importance of "incentives" as a determinant of saving was emphasized by Schultz, who stated that "although there has been a long standing concern about the effects of the level of per family income upon percentage of income that is saved, there has been no comparable concern about the effect of difference in relative prices of new income streams upon savings and investment" (Schultz, 1964, p. 74).

Most studies under review consider the "ATS" hypothesis alone. Moreover, all these studies are Keynesian and aggregative in the sense that they consider only current income as a measure of "ATS." Very few studies consider neo-Keynesian versions characterized in permanent income variable.^{9/} The underlying Keynesian framework is inappropriate for it assumes that the decisions to consume and save-invest are independent. That this is not so for the rural households is increasingly appreciated.^{10/} Further, the intent of the Keynesian framework was to provide a rationale to forecast and control business cycles that originated from urban-industrial complex of the economic systems. It also assumes that the production and consumption surfaces change gradually.

The preceding limitations are applicable even to those studies that separately examine savings behavior of different income groups or farm sizes or technological categories.^{11/} This is because these studies relate savings to current income alone, and more importantly the differences in the average

and marginal propensity to save (APS and MPS) of different groups cannot be unequivocally attributed to "ITS." These differences could be due to differences in the dependency ratio, or in the permanent and transitory components of income or in the accessibility of the households to financial institutions or in their expected rates of return on savings and investment. Alternatively, they could be due to differences in all these factors taken together.

Consideration of the "ITS" hypothesis would entail conceptual, methodological and data requirements that are difficult to meet. In the context of the existing literature^{12/} two basic issues on this aspect deserve to be reviewed. These are:

1. Direction of influence of the expected rate of return on savings, and
2. Measurement of the expected rate of return.

On the first issue there are two schools of thought:

- a) that the influence of interest rate^{13/} on savings is zero, and
- b) that this influence is uncertain and cannot be predicted a priori.

The former school rests on an implicit assumption of "income" effect of interest rate being both negative and of the same magnitude as the positive "substitution" effect. This is a much more restrictive assumption than the one implied by the second school of thought. The argument of the uncertain (total) effect as advanced by this school rests on the ground that

the size of the negative "income" effect could be same, smaller or larger than that of the positive "substitution" effect. Even this assumption is restrictive, because "income" effect need not be negative alone.

Following Hicks (1946) it can be shown that this effect can be positive or zero or negative. This nature of the "income" effect depends upon whether a household is better-off or worse-off after a rise in the interest rate. This in turn is dependent upon whether a household has a surplus in the early period or in the later period. If it has a surplus in the early period, the household is better-off (i.e. the present value of its income rises) when the interest rate goes up. Such a household would consequently increase its current consumption and that would make the "income" effect of the interest rate on savings negative. If, on the other hand, a household has a surplus in the later period, it is worse-off when the interest rate rises. For such a household the "income" effect of a rise in interest rate on saving would be positive. In reality, both these types of households exist. Depending upon the weight of these two types of households the "aggregate income" effect could be positive or negative or even zero. When it is positive the positive "substitution" effect of the interest rate is obviously reinforced. In this case then, saving increases with the increase in interest rate. The same result would hold if the "income" effect is zero, though the magnitude of the positive saving response would now be smaller. If, however, the "aggregate

income" effect is negative, the total effect could be negative or positive or zero, depending on the size of the two effects, as is recognized by the second school.

It may not be unreasonable to assume that the "aggregate income" effect could be zero, considering that other factors are the same for the two groups of households. Under this assumption we can argue for the third school of thought, that is, that the "total" effect of interest rate on savings would be positive. An additional reason for this proposition stems from the decline in the future demand for non-financial assets as a result of the rise in interest rate. This decline would lower the prices of these assets which in turn would imply that the total value of wealth held by the savers would also be lower than before. The savers would now strive to restore the previous value of their wealth by reducing the level of consumption. Such flexible behavior would very likely come forth from the self-employed entrepreneurs like the rural households. This is because their demand for credit is interest-inelastic though their savings are interest-elastic.^{14/}

As regards the second issue of the measurement of expected rate of return or "ITS" is concerned only two studies on India are relevant.^{15/} One of these uses the real interest rate on postal savings of the previous year as an indicator of saving incentives. This study shows a positive response of rural savings to this interest rate, besides revealing a decline in the MPS out of income when the model is reestimated after

omitting the real interest rate variable.^{16/} The second study uses the index of investment opportunities as measured in terms of weighted district average of the adopters of new technology in the preceding year. According to this study, saving of the subsistence households increases with the increase in the investment opportunity index, whereas that of the non-subsistence households declines with the increase in this index.^{17/} But, the measurement of this index rests on an unsatisfactory assumption of all households within a district have an equal access to extension, credit, etc. District is too large a unit to accept realism of this assumption. Alternative proxy that could have been used in this cross-sectional study by Bhalla is the ratio of gross income to total assets or the ratio of net income to net-worth or that of net income to operating costs of the preceding year or two.^{18/}

Incentives to save variables used in both the studies are rather proxies. This is because rural households hold savings in the form of farm assets, buildings, off-farm physical assets, gold and jewelry, bank deposits, cash and so on. Weighted average of expected real yields from all these savings constitute the true measure of incentives to save for these households. However, use of real interest rate can still be justified because data required to measure this variable are not available particularly for a macro-oriented study. Alternatively it can be justified on the ground that such a rate may very well represent the true prospective weighted average yield from savings.

Undoubtedly, in either case there is a need to recognize that the estimated response coefficient will be distorted. This could very well be the reason for relatively small and statistically insignificant response coefficient for the incentive variable obtained in Gupta's study. Yet another reason for such result could be that the real interest rate used in this study is unlikely to be free of market distortions. Therefore, smaller and insignificant response coefficient should not be interpreted as showing inferior savings behavior of rural households. This would hold even when such coefficients are compared for rural versus urban or small versus large farm households, because financial market distortions are generally larger for rural households and more so for the poor.^{19/}

To conclude, rural savings response estimates based on the 'ATS' hypothesis alone suffer from specification errors. Though the incorporation of the 'ITS' hypothesis involves methodology and data related difficulties, these errors are too serious to ignore. The efforts initiated by the two exceptional studies should therefore be welcomed and strengthened. As will be soon shown, the use of macro time-series data published by the RBI should however recognize their limitations.

Rural Household Saving Estimates of the RBI

The RBI estimates are deficient because of their reporting, measurement and analytical weaknesses. As a result, rural savings are considerably underestimated. The extent of underestimation

would also vary significantly from one income or asset or farm size group to the other. In general, it may be high for lower income groups. Before we elucidate these conclusions a brief description of how the estimates of rural savings are derived is presented.

These estimates are derived by using rural savings to agricultural income ratio as found out by the All Indian Rural Credit Survey (AIRCS) and its follow-up. These ratios are 3.3 percent each for 1951-52 and 1961-62, and 3.7 percent for 1956-57. An average of these three ratios is uniformly applied to the agricultural income of each of the years from 1950-51 to 1962-63 to obtain absolute amount of rural savings for these years. The amount so derived is then deducted from the estimate of savings of all households^{20/} to separate urban from rural savings.

Savings estimate in the AIRCS and its follow-up are developed by utilizing Asset Account method of measurement of savings. According to this method, savings of an economic unit is defined as the difference in an accounting period between changes in assets and in liabilities adjusted for capital transfers and capital gains and losses. Assuming that no adjustment is required for capital gains and losses,

$$S = [(\Delta PA + \Delta FA + \Delta LA) - \Delta L - NC] - D$$

where S = saving (net)

ΔPA = purchase of physical assets including non-monetized investments, consumer durables, and buildings minus sale of such assets.

ΔFA = acquisition of financial assets like shares, securities, insurance policies, etc. minus liquidation of these assets.

ΔLA = acquisition of liquid assets like currency, crop inventories, bank deposits, informal loans, amounts receivables, etc. minus liquidation of these assets including recovery of informal loans.

ΔL = change in liabilities, i.e. borrowings including accounts payables minus repayment of past debts and accounts payables.

NC = inflow of capital transfers minus outflow of such transfers.

D = depreciation.

As can be seen from the above, the data required to estimate savings are enormous and are sensitive to high margin of errors. Moreover, exclusion and inappropriate treatment of one or the other item, as will be shown below, would also distort the savings estimate.

The RBI estimates consist of non-random errors, since many of the items like depreciation, changes in inventories etc. are derived by making arbitrary and at times subjective adjustments. Econometric models used by most macro time-series studies under review do not allow for non-random errors and variations in the data (Rudra, 1973).

Second, when these models regress rural savings on agricultural income the good fit obtained by them is artificial, besides showing circularity on which the estimates of both savings and income are based (Rudra, 1973).

Third, the sample chosen for the AIRCS and its follow-up was not selected in a way to make it representative for the entire country (Sen, 1958).

Fourth, the RBI series exclude rural savings in the form of non-monetized investments. Such investments take the form of bunding and other land improvements, digging of wells and water channels, reclamation of lands, laying of new orchards and plantations, construction and repair of farm buildings and cattle sheds, etc. These investments have genuine cost even if they are undertaken with the family labor. This is because the direct cost of such labor would be its consumption without which it cannot contribute to the production process. Moreover, the indirect cost of non-monetized investments also arise from the increased productivity which would be foregone if such investments were not undertaken. These investments are very significant for smaller farmers. Even in 1970-71, according to the large-scale sample survey of National Council of Applied Economic Research (NCAER), non-monetized investments for farmers owning less than five acres constituted three percent of their income, and 37 percent of their savings. For the entire sample the corresponding figures were two and 11 percents (Bhalla, 1976).

Fifth, the RBI series also exclude savings in the form of gold and jewellery on the ground that it is a consumer durable. Such form of savings is often undertaken to hedge against emergencies. It is also held when the access to the formal RFM is non-existent and/or imperfect. In this latter circumstances rural households borrow from informal credit agencies by providing such asset as a collateral. And these borrowings often facilitate non-monetized investments through family labor. Providing loans against such collateral is also popular among some formal financial agencies. Rural saving-income ratio would therefore be sensitive to the exclusion of gold and jewellery. This ratio increases by about 30 to 35 percent for the three years, namely, 1951-52, 1956-57 and 1961-62, for which the relevant data were available to reestimate savings (Ishikawa, 1967).

Six, the RBI series overemphasize the concept of net saving even though the estimates of depreciation are considered imprecise. These estimates are derived by making liberal allowances for replacement, repairs, and maintenance of various farm assets. For rural housing and farm assets it is extremely difficult to distinguish expenditure on repairs from maintenance, and replacements from new investments. For this reason, estimates of gross instead of net savings are preferred to judge the savings capacity of rural households whose farm technology is not highly capital-intensive. (Raj, 1962).

Seven, as mentioned earlier, the RBI series is based on the rural savings data obtained for the AIRCS and its follow-up. In deriving this estimate through the Asset Account method net borrowings of the rural households are deducted without allowing a credit for net lendings (i.e., informal loans including accounts receivables minus their recoveries) of these households (Panikar, 1970). Non-availability of data on lendings and recoveries (RBI, 1960, p. 317) may have caused the exclusion of this item from the savings estimate. Another reason for this treatment could be that the net borrowings of the rural sector might have been considered an inter-sectoral transfer. However, such treatment cannot be justified on either of these grounds. This is because an overwhelming proportion of rural borrowings was intra-sectoral; it being 93 percent in 1951-52, and 81 percent in 1961-62, assuming all non-formal credit was provided from within the sector.^{21/}

Considering these proportions, rural savings can be reestimated for 1951-52 and 1958-59 for which the required detailed data are available from Panikar. The saving to agricultural income ratio for 1951-52 now works out to 5.8 percent instead of 3.4 percent implied by the RBI treatment. For 1958-59, the corresponding ratios are 8.6 and 3.8 percent. The extent of underestimation of saving to income ratio is 71 percent for 1951-52 and 126 percent for 1958-59. These figures would decline by merely one percentage point if rural saving to rural income instead of agricultural income were considered.^{22/}

Interestingly, the extent of underestimation of the rural saving-income ratio between 1951-52 and 1958-59 has increased. This suggests that agricultural as well as rural incomes have grown less rapidly than the rural savings during this period. This reinforces our contention that the rural household savings behavior should also be explained by factors other than just the current income.

Finally, an exclusion of certain items and the inappropriate treatment of net lendings in deriving savings would also underestimate the share of rural savings in total household savings. While alternative estimates to account for all the preceding limitations cannot be computed, an estimate that accounts for the appropriate treatment of net lendings can be used to highlight sensitivity of this share; it goes up from 61.2 to 72.8 percent for 1951-52 and from 27.9 to 46.5 percent for 1958-59. Such sensitivity would obviously also affect the average (i.e., 25 percent) of this share over years which is used in a recent study by Raj Krishna and Raychoudhury.

To conclude, all the macro time-series studies under review have utilized RBI estimates of rural household savings either directly or indirectly. These studies, therefore, also share reporting, measurement and analytical deficiencies of the RBI estimates.

Assumptions and Approach to Future Research

From the preceding discussion several assumptions of the existing literature and the RFM policies may be identified.

Some of the more critical assumptions are:

1. Rural households capacity to save is low and/or stagnant.

The assumption of stagnant capacity is implied by the constant ratio of savings to income used in the RBI estimates of rural savings.

2. Rural households are homogeneous in their cash-flow profile. This homogeneity assumption needs to be tested not only for different types of households but also for a given household's profile of cash-flow during the year and over the years.

Rural households receive their incomes only once or twice a year, whereas their expenditure is more or less continuous. Such cash-flow profile results in periods of both deficits and surpluses. RFM policy emphasis on extending credit is derived from, among other factors, the deficit period alone. Yet another implication is that the estimate of interest-elasticity of savings for an aggregate period of one year may not be sufficient to determine households' response to saving incentives.

3. Rural households tend to save only when their incomes increase.

4. These households do not respond to saving incentives like better rates of return on their non-financial and financial savings including bank-deposits. For this assumption to hold

either the negative 'aggregate income' effect would have to fully offset the positive 'substitution' effect of a rise in saving incentives, or both these effects would have to be close to zero or too small to be significant.

5. Related to the preceding two assumptions is yet another assumption that the rationality of rural households' decisions to consume now or later is unimportant to study.
6. Finally, the demand for credit by the rural households is interest-elastic, whereas their savings are interest-inelastic.

Test of the above assumptions would require incorporating both the 'ATS' and 'ITS' hypotheses. This would be possible for both the macro and micro data on savings, as is amply shown by the two studies reviewed earlier. Besides using this conventional approach to savings research, future researches can also be conducted by carefully selecting samples in the areas witnessing technological change or special savings mobilization programs of the financial agencies. Undertaking such studies would imply test of the two hypotheses under the continuing environment of interest rate and other policies. Studies can also be organized to evaluate the impact of upward revision in the interest rate and such other policies that would have a more direct bearing on saving incentives. Such pilot savings mobilization programs and studies based on them may be given a priority over other types

of savings and credit studies, for they would facilitate introduction of more generalized policy-revisions for the RFM.

Conclusions

Most rural savings studies on India as also on the other low income countries are Keynesian and aggregative in the sense that they have considered income as the sole determinant of rural household savings.^{23/} Very few attempts have been made to incorporate the neo-Keynesian versions as characterized in permanent income. The emphasis on the "ability to save" thesis has been derived at the neglect of the "incentives to save" hypothesis. As a result, the literature has not squarely faced the issue of rationality of rural households' decisions to consume now or later. And the skepticism about the potential capacity of these households to save has persisted. Even the recent attempts to distinguish savings behavior of the small farm households from that of the large ones, or a technologically superior farm from an inferior one, etc. are no exception to these limitations. This is because the differences in the MPS and APS of different groups cannot be unequivocally attributed to the 'ITS' hypothesis.

Neglect of this hypothesis seems to have been justified on the ground that the positive "substitution" effect of interest rate on savings would be fully offset by the negative "income" effect. Alternatively it may have been rationalized by the

argument that the total effect of interest rate on savings is uncertain and cannot be predicted a priori. Both these rest on a restrictive assumption of "income" effect being always negative. This, however, need not be true. Whether or not the "income" effect is positive or negative depends upon whether the decision-maker is better-off or worse-off after the rise in interest rate. If he has a surplus in the early period, he would be better-off and hence he would raise his current consumption or reduce his savings. If, on the other hand, he has a surplus in the later period, he would be worse-off and would therefore reduce his current consumption. In reality both these types of households exist. It may not be unreasonable to assume that the "aggregate" of "income" effects of these two types of households could be zero, assuming that all other factors are same for them. In this case then savings would positively respond to a rise in interest rate. Such savings response may result when the demand for credit by the rural households are interest-inelastic, and their supply of savings is interest-elastic.

Yet another issue relevant for the 'ITS' hypothesis is the measurement of this variable. Only two studies on India address this issue. One of these uses real interest rate on postal savings of the previous year. It shows that this rate has a positive influence on savings, besides showing a decline in the

MPS out of income when this variable is omitted from the model. The other study uses an index of investment opportunities as measured by the weighted district average of adopters in the previous year. This incentive variable has a positive influence on the savings of the subsistence farmers, whereas it has a negative influence on the behavior of non-subsistence farmers. But measurement of this index is unsatisfactory for it is based on an assumption of all households within a district have an equal access to credit, extension, new technology etc. Future researches would require better specification of the incentives variable, since rural households hold their savings in the form of farm-assets, non-farm assets, gold and jewellery, bank-deposits, cash and so on.

Similarly these researches would need to recognize weaknesses of the RBI savings estimate. These weaknesses have resulted from the exclusion of savings in the form of non-cash investments, gold and jewellery, and lendings. Finally, the future research should test certain critical assumptions on which the existing RFM policies rest. Some of these assumptions are (1) low and stagnant rural saving-income ratio, (2) cash-flow profile of rural households is homogenous, (3) rural savings are responsive to income alone, (4) rural savings are inelastic to saving incentives, (5) rationality of rural households to consume now or later is unimportant to study, and (6) the demand for credit by

these households is interest-elastic, though their savings are not elastic to interest rate. Test of these assumptions may be more usefully carried out by promoting savings mobilization programs that offer such incentives as higher interest rates that have a direct bearing on the rate of return on savings. This test would also help validate the new thinking that such policy has a potential to benefit the poor directly, besides promoting better agricultural growth.

NOTES

1. Research on rural savings in India has covered four distinct aspects. These are: determinants of savings, composition of savings, saving measurement methods, and requirements and availability of data. This paper mainly reviews the first aspect of determinants of savings.
2. The literature under review can be classified into three broad types, namely, micro cross-section, macro time-series, and the studies that are both micro and macro. Some of the studies in this third category are not empirical in nature. These studies mainly deal with the entire economy rather than rural sector. Most of these studies do not explicitly discuss the 'incentives to save' hypothesis. Those that do consider this hypothesis contend that saving composition rather than saving rate is sensitive to the interest rate. Some even contend that the influence of interest rate on savings is uncertain and vague. The micro cross-sectional studies can further be divided into small and large-sample studies. Most of them use only one year data, though some of them have examined two to five years data. They measure saving as a residual after deducting consumption from income, though some of them use both this and the Asset Account method. They also use the concept of gross savings. Against this, the macro time-series studies consider the concept of net savings, besides the Asset Account method. All of them use Reserve

Bank of India's estimates of rural savings either directly or indirectly. With the singular exception of a study carried out by Raj Krishna and Raychoudhury all of them use data for 13 years. This exceptional study uses data for 24 years, and is based on the savings estimates published by the Central Statistical Organization (CSO). Since these data are for all households, the study uses the share of rural households savings as estimated by the RBI to derive the absolute amount of rural savings in the CSO's savings estimates of all households.

3. This is true not only for the literature on India but that on most Low Income Countries (LICs). This may partly be due to the difficulties in obtaining reliable data on this subject. However, such difficulties are universal for a study on savings, and moreover studying rural credit also involves similar difficulties.
4. For the importance of this variable in the context of stagnant agriculture, see Schultz, 1964; Mellor, 1966; and that in the context of the rural financial market, see Gurley and Shaw, 1956 and 1960; Patrick, 1966; Wai, 1972; Shaw, 1973; McKinnon, 1973; Adams, 1973 and 1978.
5. Notable exceptions to these are studies by Bhalla, 1978; and Gupta, 1970.
6. Notable exceptions to this are studies by Paniker, 1970; Raj, 1972 and 1970; Sahni, 1967; and Desai, et al., 1971.

7. Selected literature on this evidence for India includes Sen, 1962; Raj Krishna, 1963; Hopper, 1965; Saini, 1969; Srinivasan, 1971; Desai, 1973; Bardhan, 1973; Cummings, 1975; and Ketker, 1975.
8. For the perpetuation of this view see, for example, Singh and Gugnani, 1975.
9. This includes studies carried out by Raj Krishna et al., 1980; Bhalla, 1978; Chauhan et al., 1972; Gupta, 1970; and Datta Roy Choudhury, 1968.
10. For examples, see Day, 1963; Nakajima, 1969; Lau et al., 1972; Adams et al., 1972; Mizoguchi, 1973; Singh et al., 1973; Desai, 1975; Pichit, 1979.
11. This includes the studies carried out by Radha Krishna et al., 1980; Bhalla, 1978; Singh et al., 1978; Kalla, 1977; Singh and Gugnani, 1975; Kahlon et al., 1972; Desai et al., 1971; Gupta, 1970; Joshi, 1970; Rajgopalan et al., 1969; Shah et al., 1969, Datta Roy Choudhury, 1968; NCAER, 1965 and 1972.
12. This includes studies by Vardachary, 1980; Coats et al., 1979; GOI, 1977; Raj Krishna et al., 1980; Khatkhate, 1972; Kahlon et al., 1972; Chakravarty, 1972; NCAER, 1972, Desai et al., 1971; Bhatt, 1971; Paniker, 1970; Rajgopalan et al., 1969; Shah et al., 1969; Sahni, 1967; and NCAER, 1965.

13. This influence is relevant to understand the influence of rate of return on savings because interest rate reflects the marginal rate of return on current sacrifice or the marginal rate of return to saving or investment. For the detailed discussion on the functions of interest rate see Hirshleifer , 1970.
14. For the proponents of this view see, for example, Gurley and Shaw, 1956 and 1960; Patrick, 1966; Wai, 1972; Shaw, 1973; McKinnon, 1973; Adams, 1973 and 1978; and Lee et al., 1980.
15. This includes the Bhalla, 1978 and Gupta, 1970 studies.
16. One exception to this is a study done by Gupta, 1970. Gupta reports a marginal propensity to save of the order of 3.05 percent, as against Joshi's estimates of 1.20 percent, Datta Roy Choudhury's estimate of 0.96 percent, and Raj Krishna et al.'s estimate of 1.33 percent for the period 1950-51 to 1962-63.
17. Such a result for non-subsistence farmers can be attributed more convincingly to increase in their borrowings instead of reduction in consumption to finance investment. The explanation provided in this study seems to rest on an unsatisfactory assumption that the capital market is perfect for credit alone rather than both credit and savings. Another interesting finding of this cross-sectional study is that the model estimation is not much sensitive to alternative measures of permanent income. Two measures used in the study are: (a) weighted average of income of past three years and (b) earnings function approach.

18. For the use of such measures see Hyun et al., 1979. This study also considers 'ability to save' and 'incentives to save' hypotheses in an interactive manner. To validate such a model empirically, the study uses cross-sectional data of only two years.
19. For the discussion on how these distortions affect efficiency and equity objectives adversely see, for examples, Adams, 1971; Gonzalez-Vega, 1976, and Desai, 1980.
20. RBI data on savings of all households are developed by estimating financial and physical savings separately. In the estimates of the latter for the rural households the results of the AIRCS and its follow-up are extensively used.
21. These data are taken from RBI, 1954 and 1969.
22. Data on rural incomes are taken from Raj Krishna et al., 1980.
23. For a review of literature on this subject on LICs see Mikesell et al., 1973 and Snyder, 1974. Even these reviews are incomplete in showing the critical importance of the 'ITS' hypothesis.
24. NCAER studies and the Bhalla study which utilizes NCAER data also exclude gold and jewellery, and currency. See Bhalla, 1978.

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