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RESEARCH ON RURAL SAVINGS IN INDIA

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Recent research on rural savings in India is reviewed and evaluated. Most savings studies emphasize the ability to save and little is said about incentives to save. Many of these studies use data or research methods that have major weaknesses. Suggestions are given on ways to improve future research on rural savings in India.

Compared to many other low income countries there has been a good deal of research done on rural savings in India. This research has covered four topics: the volume of savings, the composition of savings, the methods of measuring savings, and data requirements and availability. This paper concentrates on reviewing research on savings volume. Estimates of rural household savings published by the Reserve Bank of India (RBI) are also critiqued since they form a data base for the savings macro studies.

About 100 studies of rural savings in India are available. These studies are macro time-series, micro cross-sectional, and both macro and micro. Some of the studies in the third category are not empirical. The micro cross-sectional studies are based on samples of rural households. Most of them present data for only one year although several of them examine data for two to five years. They measure savings as a residual after deducting consumption from income, although some studies

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used both this and the asset account method. The concept of gross savings was also used. Against this, the macro time-series studies consider the concept of net savings, besides the Asset Account method.

A principal conclusion that emerges from this review is that the existing literature focuses mainly on the "ability to save" and that little attention has been given to the "incentives to save"^{1/}. In part, the lack of analysis on incentives results from widely held and long cherished assumptions that rural people do not save, especially in financial form. These assumptions have resulted in an over-emphasis on the improvement of "ability to save" as a remedy for increasing rural savings rates. They have also lead to an imbalance in the role assigned to rural financial markets in favor of loans and against mobilizing savings.^{2/} Such emphasis originates from the Investment-First approach to conceptualization of research on RFMs. According to this, unlike the Flow-of-Funds approach, technological slack exists in the rural sector but avenues of investments are not fully utilized due to lack of finance. It also assumes that there is no scope

^{1/} For further discussion of the importance of incentive in agricultural development, see Schultz; Mellor; and in the context of rural financial markets (RFMs), see Gurley and Shaw, 1956 and 1960; Patrick; Wai; Shaw; McKinnon; Adams and Singh; Adams 1973 and 1978.

^{2/} Illustrations of such views can be found in the report of the All-India Rural Credit Survey (AIRCS) Committee and in a study by Harpal Singh and O.P. Gugnani.

for "improved" financial intermediation by promoting transfer of funds from surplus units to deficit ones by financial intermediaries. These assumptions have been questioned by recent research which suggests that technological slack does not exist, bio-chemical technologies can be adopted by the farmers without much loan, and that financial reforms can facilitate growth of income and capital.

In the following discussion the preceding theme is developed by formulating an analytical framework that facilitates a critical examination of various issues considered in different studies. This is followed by a review of RBI estimates of rural household savings. Some of the basic assumptions on which the existing RFM literature and the policies rest are also highlighted. Before concluding the paper a few suggestions are offered about future research on RFMs.

Determinants of Rural Savings

Rural households' decision to consume now or in the future is influenced by both "ability to save" (ATS) and "incentives to save" (ITS). While the former is primarily related to income, current or permanent, the latter is determined by the rate of return these households expect from foregoing present consumption. For rural households the returns to savings represent a price for current consumption. Such cost would vary with the type of saving opportunities available to these households. The importance of "incentives" as a determinant of savings 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 reviewed 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 used a permanent income variable. Keynesian framework has several weaknesses when applied to rural savings behavior. It assumes that the decisions to consume and save-invest are independent, a very weak assumption when applied to rural households. Further, the original purpose of the Keynesian framework was to provide a rationale to forecast and control business cycles that originated in urban-industrial economies. Keynesian analysis also assumes that production and consumption possibilities change gradually.

These limitations are also applicable to those studies that examine disaggregated savings behavior of households belonging to different income groups or farm sizes or technological categories. 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". 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.

Testing of "ITS" hypothesis involves conceptual, methodological and data problems that are difficult to resolve. In the literature two of these problems stand out:

- (a) the direction of influence of the expected rate of return on savings, and
- (b) the measurement of the expected rate of return.

On the first problem there are two schools of thought: that the influence of interest rate on savings ^{1/} is zero, or that this influence is uncertain and cannot be predicted a priori.

The zero value response school rests on an implicit assumption about the "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 grounds that the size of the negative "income effect" could be the same, smaller, or larger than that of the positive "substitution effect." Even this assumption is restrictive, because "income effect" need not be negative alone.

1/ Since all the econometric studies reviewed use only single equation saving models, they may also imply the famous identification error of showing demand instead of supply schedule. Consequently, when estimation of such a model gives a negative relation between savings and interest rate it may actually reflect this relation between investment and interest rate. For the purpose of this review it is assumed that saving schedule estimated by these models approximate that schedule which is derived from the inter-section of investment and saving as depicted by the time-series data under the assumption of unstable investment and stable saving schedules. (Friend).

Following HICKES (1946) it can be shown that this effect may be positive, zero, or negative. The 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 initially or in the later period. If it has a surplus initially 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 rates on savings 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, negative or even zero. When it is positive the positive substitution effect of the interest rate is obviously reinforced. In this case savings increase 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, positive, or zero, depending on the size of the two effects, as is recognized by the second school.^{1/}

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 a third school of thought, that is, that the "total" effect of interest rates on savings would be positive. An additional reason for this proposition stems from the

^{1/} Any of the three outcomes is, however, possible under a flow-of-funds approach, which also recognizes that such ambiguity in determining the influence of interest rate on composition of savings ("financial" and "physical" savings) does not hold.

decline in the future demand for non-financial assets as a result of the rise in interest rates. 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 come from the self-employed entrepreneurs like the rural households, assuming that their demand for credit is interest-inelastic though their savings are interest-elastic.^{1/}

Only two studies attempt to measure expected rate of return or "ITS". One used the real interest rate on postal savings of the previous year as an indicator of incentive (Gupta, 1970). This study showed a positive response of rural savings to this interest rate, besides revealing a decline in the MPS out of income when the model was re-estimated after omitting the real interest rate variable. The second study used the index of investment opportunities as measured in terms of weighted district average of the adopters of new technology in the preceding year (Bhalla, 1973). According to this study, savings of the subsistence households increased with the increases in the investment opportunity index, whereas that of the non-subsistence households declined with the increase in this index.^{2/}

1/ The approach of the third school may be termed as prior savings approach.

2/ Such a result of non-subsistence farmers can be attributed to increases 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 very sensitive to alternative measures of permanent income. The two measures used in the study are: (a) weighted average of income for the past three years, and (b) earnings function approach.

But, the measurement of this index rests on an unsatisfactory assumption of all households within a district having equal access to extension, credit, etc. The district is too large a unit for this assumption to be plausible. An alternative proxy that could have been used in this cross-sectional study 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.^{1/}

Measures of incentives to save used in both studies are rather proxies. This is because rural households hold both "physical" savings, such as farm assets, building, off-farm assets, gold and jewelry, etc. and "financial" savings, such as bank deposits, cash, etc. Weighted average of expected 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 time-series study. Alternatively, it can be justified on the grounds 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

^{2/} 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 for only two years.

obtained in one of the studies. Yet another reason for such a 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.

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 soon be shown, the users of macro time-series data published by the RBI should, however, recognize their limitations.

Rural Household Savings 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.

The RBI estimates are derived by using a rural savings to agricultural income ratio as reported in the All India 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 the absolute amount of rural savings for these years. The amount so derived is then deducted from the independent estimate of savings of all households to separate urban from rural savings.

Savings estimated in the AIRCS and its follow-up are developed by utilizing an 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 = savings (net)

ΔPA = purchase of physical assets including non-monetized investments, consumer durables, and buildings minus the 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 subject to wide margins 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).

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).

Third, the RBI series exclude rural savings in the form of non-monetized investments. Such investments take the form of 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 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 eleven percents (Bhalla, 1976).

Fourth, the RBI series also excludes savings in the form of gold and jewelry on the grounds that it is a consumer durable. Such a 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. Under these circumstances, rural households borrow from informal credit agencies by providing such an asset as collateral. 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 affected by the exclusion of gold and jewelry. 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.^{1/}

Fifth, the RBI series overemphasize the concept of net savings 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

^{1/} Data for this are taken from Ishikawa.

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).

Sixth, 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 (Paniker). 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.^{1/}

Considering these proportions, rural savings can be reestimated for 1951-52 and 1958-59 for which the required detailed data are available.^{2/} The savings 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 underestima-

^{1/} These data are taken from RBI, 1954 and 1969.

^{2/} Data for this are taken from Paniker.

tion of savings 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 savings to rural income instead of agricultural income were considered.

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 savings of the rural households in those of all households. While alternative estimates to account for all the operating 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 72.6 percent for 1951-52 and from 27.9 percent to 46.3 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 one of the recent studies reviewed here (Krishna Raj, et al.).

Assumptions and Approach to Future Research

From the preceding discussion, several assumptions in the existing literature on RFM 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.^{1/}

- (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 a large part of their incomes only once or twice a year, whereas their expenditure is more or less continuous. Such cash-flow profile results in periods of 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 higher rates of return on their savings. 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.

^{1/} Since 1966 the RBI has discontinued estimating these savings.

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 research might also be conducted by carefully selecting samples in the areas witnessing technological change or special "financial" savings mobilization programs. Undertaking such studies would test the two hypotheses under conditions where returns to savings are changing. 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 or rejection of policy revisions for the RFM in general.

Conclusions

The "ability to save" thesis has been extensively studied in India as well as in other low income countries (LICs).^{1/} These studies have been useful, but their neglect of the "incentives to save" hypothesis implies an assumption that the incentives and opportunities to save have not much role to play in increasing savings rates. Testing this hypothesis and the assumptions underlying them should be given a high priority in future research on rural savings. This research needs to carefully specify the incentives variable, since rural households hold their savings in the

^{1/} For a review of literature on this subject on LICs see Mikesell et al., and Snyder. Even these reviews are incomplete in showing the critical importance of the 'ITS' hypothesis.

form of "physical" as well as "financial" savings. It also needs to properly determine the direction of influence of the rates of return on both the volume and the composition of savings. Besides using the conventional approach to savings research, future research might be conducted by carefully selecting samples in the areas witnessing technological change or special "financial" savings mobilization programs. The new literature may also be developed by promoting and researching programs with better rates of return on financial savings.

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