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Case of India**

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Liberalisation and Savings in Developing Countries: The Case of India

I Introduction

The impact of economic liberalisation on savings and investment is a matter of considerable debate. Mackinnon (1973) and Shaw (1973) set the ball rolling with the thesis that financial repression with ceilings on interest rates, high reserve requirements for banks, and directed credit to specific sectors of economic activity distorts resource mobilisation and resource allocation. Removal of these distortions would stimulate savings and investment and hence growth. These propositions have been challenged on the grounds that asymmetric information and moral hazard result in market failure which can only be rectified with government intervention in financial markets (Stiglitz and Weiss 1992). Also, removal of constraints on borrowing by households may stimulate consumption rather than savings; interest rate liberalisation may change the composition of savings leaving the total volume of savings unchanged; and the causation may run from growth to savings rather than the other way round.

India's economic reforms initiated in 1991 including measures designed to liberalise the financial sector provide an opportunity to test the Mackinnon-Shaw type of propositions concerning savings. This paper which tests these propositions is organised as follows. Section II briefly reviews the literature on the relationship between financial reforms and savings. Section III provides an overview of the volume, pattern and growth of savings in India and the main features of financial reforms in India. Section IV reports the results of statistical tests designed to

investigate the determinants of savings in India. Section V summarises the conclusions of the paper.

II. Financial Reforms and Savings.

One element of the Mackinnon-Shaw thesis is that abolition of ceilings on interest rates stimulates savings. Increased interest rates, however, may reduce rather than increase the volume of savings for a number of reasons. First, the negative income effect of increased interest rates might offset the positive substitution effect between consumption and savings. Second, an increase in the real interest rate may merely reallocate the existing volume of savings in favour of financial savings as opposed to other forms of savings and leave the total volume of savings unchanged (Gupta 1984, Rangarajan 1997). Such a reallocation may also occur if reforms provide a new range of financial instruments such as shares, mutual funds, postal savings and pension funds. Third, at very low levels of income interest rates are unlikely to stimulate savings since the totality of incomes would be devoted to consumption. Statistical evidence on the issue suggests that a one percent increase in the real interest rate raises the saving rate by only about one-tenth of one percentage point in the relatively poor countries, where as this coefficient is about two-thirds of one percentage point in the relatively rich countries (Ogaki *et al* 1996). Fourth, even at relatively high levels of income, financial reforms which ease borrowing constraints, may stimulate consumption rather than savings (Hall 1978, Jappelli and Pagano, 1989, 1994). Finally, increased interest rates may restrict the ability of the corporate sector to restructure production methods and hence its productivity and growth. And if the savings propensity of the household sector is lower than that of the corporate sector total savings may decline (Singh, 1993).

In general empirical studies on the elasticity of savings with respect to real interest rates have produced a mixed bag of results. Fry (1980) finds a positive relationship between savings and the rate of interest for fourteen developing countries. So too do Yusuf & Peters (1984) for South Korea, Leite & Makonnen (1986) for six African countries, and Ostry & Reinhart (1992) for 13 developing countries. Mixed results were obtained by Gupta (1987), Lahiri (1989) and Villagomez (1994). Studies that have found a negative or insignificant relationship include Giovannini (1983, 1985), Mwege *et al* (1990) and Oshikoya (1992) and Reichel (1991). The weight of evidence supports a weak and relatively low positive elasticity of savings with respect to the rate of interest.

Financial reforms, however, may stimulate financial savings in other ways than through an increase in interest rates. A reduction in controls on the financial system along with increased competition and improved customer service may result in increased savings. Access to savings instruments may not only enhance the willingness to save but also result in the substitution of financial savings for investments in assets such as gold and jewellery. One other aspect of financial reforms, which may influence household savings is taxation. Reforms which reduce high marginal income tax rates and increase disposable incomes may not only serve to eliminate tax evasion but also stimulate savings. Tax reforms designed to reduce tariffs on trade and excise duties, however, may encourage consumption and reduce savings.

Yet another issue which has aroused considerable discussion relates to the impact of reforms on public savings defined to include current surpluses of public administration and publicly owned enterprises. The seemingly obvious proposition here is that reforms which tend to reduce the profligacy of the public sector would increase public savings and hence total savings. The much discussed Ricardian equivalence theorem, however, argues that an increase in public savings may be offset by an equivalent reduction in private savings leaving the total volume of savings unchanged. The Ricardian equivalence theorem rests on a number of assumptions such as well-functioning capital markets, perfect information, an independent banking sector free of government imposed restrictions, none of which may hold in developing countries. In any case, empirical evidence in support of the theorem is weak. Most studies detect a very weak negative relationship between public and private savings (Edwards 1995, Corbo and Schmidt-Hebbel 1991). Indeed, increased public savings may promote total volume of savings. The experience of the East Asian countries suggests as much.

None of the existing econometric studies on savings discuss the impact of differing types of foreign trade regimes on the savings rate. Most studies on economic liberalisation analyse the impact of exports and foreign direct investment on growth, but not on savings (Greenaway *et al* 1997). It is likely that relatively liberal foreign trade regimes promote savings. Typically, the savings rate tends to be high in relatively open economies such as the East Asian economies. Liberal foreign trade regimes may promote savings for a number of reasons. Import competition may serve to reduce the prices of consumer durables, so too would increased flows of foreign investment in these industries. The resulting increase in real incomes may promote

savings, provided both the income and substitution effects of a growth in income work in favour of savings as opposed to consumption. Liberalisation of the foreign trade regime may promote competition and efficiency with a benign impact on growth and hence savings. Also, increased exports may result in increased savings if the propensity to save from export incomes is relatively high. Equally remittances from expatriates abroad may increase with economic reforms, as has happened in India, and promote savings.

In sum, there are no settled conclusions on the impact of financial liberalisation on the savings rate. The one proposition which seems to be robust is that liberalisation is likely to promote savings because of its impact on growth and not the other way round. India's experience provides an opportunity to test this and other propositions.

Unfortunately, not all of the propositions in the literature on economic liberalisation and savings can be econometrically tested. Some of the variables cannot be quantified, and for some others data in the required form are not available. This study utilises available data for India to test the following propositions:

- #. The causation runs from growth to savings rather than from savings to growth.
- #. The real rate of interest has a weak impact on savings.
- #. Ricardian equivalence does not hold in developing countries such as India.
- #. Increased dependence of the economy on indirect as opposed to direct taxes promote savings.
- #. Removal of constraints on borrowing depresses savings.
- #. Liberalisation of the foreign trade regime promotes savings.

III. Savings in India

The main features of savings behaviour in India can be briefly summarised. First, savings in India exhibit an upward trend over the years 1960-1996 although there are fluctuations around the trend. Second, financial savings as opposed to physical savings show an upward trend (table 1), with financial instruments such as bank deposits and insurance policies accounting for the bulk of financial savings. Third, India is the world's largest gold consumer. If such investments in gold are reckoned as savings the savings rate would be much higher than what the official statistics suggest. But gold purchases are regarded as consumer expenditures in official estimates, erroneously so in our view. Fourth, remittances from expatriates abroad have contributed to the growth in savings in recent years. The substantial growth in inward remittances by Indian expatriates, which has steadily increased from \$ 2 billions in 1990/91 to \$ 12.4 billions in 1996/97, explains in part the growth of financial savings in recent years. Foreign remittances serve as an additional income stream to households in India and may promote savings.

While corporate savings has shown an increasing trend since reforms, public savings continue to be dismally low. Public sector savings consist of savings by government administration, government departments and public enterprises. None of these components appear to have made a significant contribution to the overall savings rate. For the most part, publicly owned enterprises have failed to make any profits. In the early years of planning, investments in the public sector were to be funded by surpluses these enterprises would generate. In the event, these enterprises had to be sustained with savings generated elsewhere in the economy.

(Insert Table 1 here)

These features of India's savings behaviour merit econometric investigation. The reform process which began in the early nineties is likely to have influenced household savings behaviour in India. Financial liberalisation in India forms a part of the wider stabilisation and adjustment programme initiated in 1991. These reforms include increased market orientation of the financial system, promotion of competition in the commercial banking sector through the entry of private banks, interest rate deregulation, a reduction in commercial banks' reserve requirements, and measures to strengthen supervision of banks as well as capital adequacy norms. In addition, controls over the pricing of new issues have been abolished and the regulatory mechanism of the capital market has been tightened.

The upward trend in savings over the years itself warrants explanation in view of the debate on the direction of causation between growth and savings. There are a number of studies on India's savings behaviour (Raj 1962, Rao 1980, Mujumdar, *et al* 1980, Krishnawamy *et al* 1987, and Lahiri 1989). Yet another study is warranted on several counts. First, most of the existing studies, with one exception, are dated and do not address the issue of the impact of the 1991 economic reforms on savings. Second, most of the studies are based on the ordinary least squares technique (OLS) and the well-know deficiencies of the technique may have yielded spurious results. The assumption of stationarity of variables is not tested in most of the existing studies. Third, existing studies do not model the impact of taxation, remittances from abroad, nature of the trade regime, and changes in public savings on private savings. Also, the interdependence of growth and savings has been neglected in most of the studies, ignoring the issue of causality between savings and growth.

IV. The Model

The long run vector autoregressive (VAR) model employed here is estimated utilising techniques of cointegration and the error correction mechanism with time series data for the years 1960/61 to 1996/97. Here we utilise the Johansen maximum likelihood (ML) procedure of cointegration to estimate the model for the following reasons:

#. The most commonly used Engle-Granger cointegration methodology relies on the assumption of a single cointegrating vector and can lead to contradictory results when there are more than two $I(1)$ variables in the model. A more satisfactory approach is to employ a vector autoregressive (VAR) error correction model.

#. VAR is specified to take into account the endogeneity of variables, most likely to be the case with savings and income. The VAR specification, as stated earlier, incorporates two long- run equations with financial saving as the dependent variable in one of the equation and with per capita real income as the dependent variable in the other. The estimated coefficients of the variables in two equations help to determine the direction of causality between savings and income.

VAR is specified as a bivariate system with an appropriate lag structure, which incorporates endogeneity of savings and income since both the variables are allowed to influence each other. The two equations incorporated in the VAR treat financial saving as the dependent variable in one equation and per capita real income as the dependent variable in the other. The dependent variable is confined to financial savings since the data on physical savings is known to be suspect.¹

¹ India's reported aggregate savings consist of public, corporate and household savings. Physical saving component of household savings is a residual after public and private corporate investments are

$$\mathbf{FS = f(Y, FL, PUBSAV, TRAS, IT, XM)} \quad \mathbf{(1)}$$

Where,

FS	= Log of financial savings/GDP at current prices
Y	= Log of real per capita disposable income (1980-81 prices)
FL	= Log of financial liabilities/GDP (current prices)
PUBSAV	= Log of public savings/GDP (current prices)
TRAS	= Log of inward remittances/GDP (current prices)
IT	= Log of indirect tax revenue/ total tax revenue
XM	= Log of (exports + imports)/ GDP

Recently some studies have attempted to develop an aggregate index of financial reforms (Bandiera *et al* 1999). Financial liberalisation, however, is a complex process and no single measure can capture it in its entirety. The variable FL included in equation 1 is designed to capture one significant element of liberalisation in India, namely the easing of constraints on the ability of households to borrow. PUBSAV is included to test for the presence the Ricardian equivalence discussed earlier. IT is designed to assess the impact of a reduction in taxes on consumer goods on savings. TRAS takes into account the influence of the growing flow of inward remittances since the early nineties on saving and XM is a measure of the openness of the economy, which is expected to influence savings positively.

deducted from aggregate investment and thus equals household investment. Financial savings are obtained from data on total assets and liabilities of the financial sector, adjusted from outstanding

V. Results

Following the ADF tests to determine the stationarity of variables, the order of lags and the number of cointegrating vectors² the estimated long run saving function is as follows.

$$FS = 1.6 Y - 0.82 FL - 0.28 PUBSV + 10.27 IT + 0.07 TRAS + 0.22 XM - 0.12 t$$

LL subject to exactly identifying restrictions= 136.00

37 observations from 1960 to 1996. Order of VAR = 2, chosen r = 1.

The signs of all the estimated coefficients in the long run relationship confirm a priori expectations. Financial savings exhibit a long run positive association with the level of GDP per capita, the ratio of indirect taxes to total taxes, and with the ratio of inward remittances to GDP. Savings appear to decline with growth in public savings and financial liabilities. However, an increase in public savings by one unit reduces household financial savings by 0.28. This result suggests that growth in aggregate domestic savings due to enhanced public savings is likely to be substantial, around 0.72. Increased access to the credit market on the part of households as denoted by the ratio of financial liabilities of households to personal disposable income, reduces financial savings in the long run. Similarly, a reduction in indirect taxes after reforms is likely to promote consumer spending. A relatively open foreign trade regime seems, for reasons stated earlier, to promote financial savings. In short, the level of real income per capita, indirect taxes, public savings and the type of foreign trade regime appear to be the most important determinants of domestic savings in the long run.

Apart from the variables included in the long run, two more variables are added to the short-run model: real deposit interest rate (R)³, and a dummy variable (D) with a value

positions with the public and private sectors. See EPW research foundation (1996) for details.

of 1 from 1992/93 and 96/97 and zero for the other years. In the short run equation the coefficient of the error correction term ($ecm(-1)$), which shows the speed of short run adjustment towards the long run equilibrium (table 2) has the correct sign and is statistically significant at 1 per cent level of significance. Other results in the short run equation suggests that the short-run elasticity of financial savings with respect to income is negative. It is likely that in the short run households maintain consumption standards they are accustomed to irrespective of income levels.

(Insert table 2 here)

Ricardian equivalence does not appear to hold true, the coefficient of public savings being considerably less than one. The proxy for the borrowing constraint namely, the ratio of financial liabilities of households to GDP, is not significant in the short-run. The coefficient of the interest rate variable is significant and positive, but very small in magnitude. These two results taken together suggest that in the short run households do not borrow in order to increase consumer expenditures. They may though do so by drawing down their savings in the face of declining incomes.

Finally the model was tested for the direction of causation between growth and savings. The ECM term in the equation with income per capita as the dependent variable is not statistically significant. This suggests that income per capita is weakly exogenous with financial savings and other explanatory variables. Further, the Granger causality test suggests that causality runs from growth to savings.

² See Appendix 1 for the results of ADF tests and number of cointegrating vectors.

In sum, over the short run savings do not seem to respond positively to changes in most of the variables included in the model. This is not surprising. Households attempt to maintain consumption standards in the face of a short-run disequilibrium situation. Several theories on consumer behaviour including Dusenbery's relative income hypothesis and Friedman's permanent income hypothesis suggest that consumers attempt to maintain their consumption standards in the face of short run changes by drawing down their savings and regard short run changes as transitory. Over the long run, however, when all the adjustments have taken place they revert to normal behaviour. Results of the exercise suggest as much.

VI. Conclusions

This paper has attempted to test several of the propositions in the literature on economic liberalisation and savings in the context of India. Results of the statistical tests confirm many of the propositions outlined earlier. In the long run the level of income promotes savings rather than the other way round. Ricardian equivalence does not hold true in the Indian case. In the short run economic liberalisation appears to depress savings, but in the long run it promotes savings through its impact on growth.

³ Real interest rate is a stationary variable and was not included in the long-run equation.

Table 1: Gross Domestic Savings (per cent of gross domestic product)

Year	GDS	Household	FS	PS	Corporate	Public
1960/61-69/70	13.48	9.22	2.87	6.34	1.53	2.74
1970/71-79/80	18.91	13.57	4.82	8.75	1.61	3.73
1980/81-89/90	20.03	15.17	7.17	7.99	1.83	3.02
1990/91-96/97	24.12	19.10	9.75	8.78	3.44	1.57
Post-Reform Period						
1991/92	22.90	17.73	10.06	7.64	3.24	1.93
1992/93	21.99	17.68	8.80	8.00	2.78	1.52
1993/94	22.50	18.40	10.99	7.40	3.50	0.60
1994/95	25.00	19.80	12.00	7.80	3.50	1.71
1995/96	25.50	18.50	8.90	9.60	5.00	2.00
1996/97	23.30	17.10	10.40	6.70	4.5	1.70

Notes: GDS = gross domestic savings/gross domestic product = (household + corporate + public)/GDP, Household savings = financial (FS) + physical savings (PS). Source: Central Statistical Organisation.

Table 2: ECM estimated by OLS based on cointegrating VAR(2)

Dependent variable is δFS with 35 observations used for estimation from 1962 to 1996

Regressor	Coefficient
Intercept	13.91*
δFS	-0.32
δY	-1.96*
δFL	0.03
$\delta PUBSAV$	-0.23*
δIT	-3.88*
$\delta TRAS$	0.06***
δXM	-0.45**
Ecm1(-1)	-0.24*
R	0.01*
D	-0.14*

R bar² = 0.57, LM version of serial correlation = 0.063(0.80)

Normality: 2.390 (0.30), *, **, *** significant at 1, 5 and 10 per cent respectively. All independent variables are lagged by one period.

Appendix

Since there was no suggestion of a structural break in data using the CUSUM and CUSUMQ tests we performed ADF tests to test for stationarity. The results suggest that we cannot reject the null hypothesis that FS, Y, FL, PUBSAV, TRAS, XM and IT are integrated of order 1 i.e.; I(1) (table 1). In contrast R is I(0). All variables except R are thus stationary in first differences.

The Akaike information criterion (AIC) suggests the VAR of order 2. The presence of trend in the cointegrating relationship was determined using LR test of the deletion of exogenous variables in VAR. Following these results a VAR with two I(1) endogenous variables (FS and Y), four I(1) exogenous variables, namely FL, PUBSAV, TRAS, XM and IT, one I(0) variable; real deposit interest rate, a dummy variable, D and trend with lags set to 2 is formulated.

Table A.1: Augmented Dicky-Fuller statistics for the variables

Variable	ADF	Variable	ADF
FS	-1.00	δ FS	-5.66*
DY	1.47	δ DY	-3.41*
PUBSAV	-2.18	δ PUBSAV	-7.14*
IT	-1.76	δ IT	-3.55*
TRAS	-0.92	δ TRAS	-6.02*
FL	-1.95	δ FL	-5.33*
XM	-0.31	δ XM	-3.41
R	-3.99		

Note: All variables except R are in natural logarithms, δ : difference operator, *: significant at 5 per cent level, the critical value of the ADF at the 5 per cent is -2.94

Table A.2: Cointegration LR test based on Maximal Eigenvalue of the Stochastic Matrix

Number of Cointegrating vectors		Statistics	95% critical value
Null	Alternative		
R = 0	R = 1	41.24	33.26
R \leq 1	R = 2	16.43	25.70

The maximum eigenvalue (as well as trace eigenvalue) statistics strongly reject the null hypothesis that there is no-cointegration ($r = 0$) between I(1) variables, but do not reject the hypothesis that there is one co-integration relation ($r = 1$) between these variables (table 2). There exists therefore one long-run relationship among variables under consideration. The estimates of cointegrating coefficients were obtained by normalising the coefficient of FS.

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