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AND SAVINGS MOBILISATION: AN
ASSESSMENT**

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1. Introduction

The main theoretical works in support of financial liberalisation as a policy goal is the fundamental theorem of welfare economics, and the efficient market hypothesis. The fundamental theorem states that competitive markets yield *Pareto* optimal equilibria, whilst the efficient markets hypothesis states that financial markets use information efficiently. A combination of the two ensure, by definition, efficiency of the real economy and ensure that the financial markets reflect the fundamentals of the real economy. Market liberalisation removes any market distortions that impede these free market conditions (Eatwell, 1996).

The lack of financial intermediation in developing countries is widely evidenced by the mismatch between institutional savings and investment. The need for investment is indisputable, and in the past has been addressed through structural adjustment programs, such as the introduction of development finance institutions and other such vehicles, which provide credit at below market rates for the purchase of capital. Many policies introduced into developing countries by donors, such as concessionary discount facilities in Central Banks (vehicles for handling donor funds), high reserve requirements and extensive use of targeted credit programs have discouraged deposit mobilisation: the numerous small savers that exist, even in the poorest sectors of the least developed economies, have been overlooked as a source of internal funds. The difficulty is that it is far easier for governments to accept donor funds than to mobilise the savings of its population, even though the latter method may, in total, provide more credit for fixed capital formation than the former method.

What such countries often lack is an appropriate financial sector, which provides incentives for individuals to save, and acts as an efficient intermediary to convert these savings into credit for borrowers. However, there is a caveat here - the over rapid liberalisation of financially repressed economies, especially when combined with a lack of planning and preparation, has resulted in turbulent interest rate and exchange rate movements. In pursuit of a new financial system, many developing countries have implemented far-reaching financial reforms, including lifting restrictions on bank lending, and the provision of market-based systems of credit allocation, lowering of reserve requirements, and the easing of entry restrictions to the banking sector and privatisation of state owned banks. Whilst this may be the ultimate aim of liberalisation, the process must be correctly managed.

Along the above lines, the present paper will try to critically assess the literature associated with the relationship between financial sector development and savings mobilisation by looking mainly at aspects of the literature which have not been properly discussed before. Furthermore, the paper discusses a new booming literature on savings mobilisation, namely social security reforms and the way they affect savings. Finally, we discuss the plethora of formal as well as informal institutions through which savings mobilisation is influenced in developing countries. The rest of the paper is organised as follows: section two will look at the nexus between financial sector development and savings mobilisation; the importance of savings mobilisation is discussed, with reference to the appropriate literature, as well as the importance of financial sector development in the process of financial liberalisation. Section three will look at other determinants of saving, including the causality between savings and growth, and the role of social security reform. Section four will discuss the formal and informal institutions that have been developed for development finance, and their effectiveness in acting as financial intermediaries. Finally, section five concludes the paper.

2. Financial Sector Development and Savings Mobilisation: The Nexus

Financial sector development is one of the key elements of, and a necessary condition for, financial liberalisation, and often the terms are used synonymously in the literature. Thus it is important to consider the process of financial sector liberalisation in order to see the full picture of financial sector development, and its effect on saving.

2.1 Financial Repression

Developing economies have historically been characterised by financial repression. This has tended to involve intervention by governments in allocating and pricing credit, controlling what banks and other intermediaries were able to do, using intermediaries as tax collection devices, and limiting competition, particularly from foreign institutions. Financial repression tends to be the unintended outcome of policies of financial restriction, in which ceilings are placed on interest rates by the Government to provide firms with cheap capital, to facilitate expansion. In addition, the associated low deposit rates prevent funds from being attracted away from productive investment in physical assets. Such policies tend to reduce individuals incentives to save in the form of monetary assets; the wide spreads offered, typically combined with high rates of inflation meant that rates of return on deposits are frequently negative, so saving takes a non-monetary form. Such economies are described as having a low degree of financial depth, a typical measure of which is the ratio of money to GDP.

A financially repressed country has, at the best of times, a poorly developed financial sector. However, matters are worsened during periods of high inflation, when real rates of interest are frequently negative, inducing disintermediation, in the form of further withdrawals of funds from the banking sector. This results in reduced productive investment, as households decrease investment, preferring instead to consume, and at the same time the funds that are available for productive investment are allocated inefficiently, because the market price rationing system is not at work (McKinnon (1973), Shaw (1973)).

The cost of financial repression

Fry (1980) attempts to calculate the cost of financial repression, using data from 10 Asian LDCs. The study assumes that a decline in the real deposit rate of interest reduces real money demand (broadly defined so to include savings and time deposits) and real credit supply since domestic credit is the primary asset backing the monetary liabilities of the banking system (p.318). This, in turn, lowers both the rate of new fixed investment and investment in working capital. As a result, the rate of capacity utilisation of the entire capital stock falls and, hence, the growth rate declines. Therefore, Fry (p.323) includes the real deposit rate in the growth function in an attempt to capture this credit squeeze effect on the rate of capacity utilisation and also on the average efficiency of new investment. The author concludes that the cost of financial repression lies in the range of 0.48-0.66 points in economic growth forgone for every percentage point by which the real deposit rate of interest is set below its market equilibrium level.¹

¹ Using a different theoretical and methodological framework, Easterly (1993) concludes that countries with financial repression lost about 1.5 % points in growth due to financial repression. In his study, Easterly modifies Summers and Heston's (1988) data for 57 countries and 151 commodities, with Gelb's (1989) data set of real interest rates of developing and developed countries. The results are weakened when the Barro "correlates" (indicators of education and social unrest) are added.

A study by Gupta (1984) deals with the same issue. The author uses historic data series of seven endogenous variables that represent financial deepening, private savings and disposable income. These are compared to simulations of the data series using assumptions of the behaviour of the real rate of interest. The difference is supposed to be the cost of financial repression. However, the author concludes subsequently that no clear results were obtained.

2.2 The importance of Financial Sector Development

While the problems of financial repression originate from government control of interest rates, they are perpetuated by a lack of financial intermediation, which itself perpetuates and is perpetuated by a low level of monetisation. A vicious circle seems to operate. Clearly, therefore financial sector development, and in particular the development of financial intermediation has a key role to play in the process of financial liberalisation: the two processes are inextricably linked.

A widely documented problem in developing countries with poorly developed financial sectors is the mismatch between institutional savings and investment, resulting in a lack of investment in productive capital.² It is a commonly held fallacy that individuals in developing countries do not save; in fact it has been found that even in the poorest rural areas saving is rife, albeit frequently this does not occur in a monetised fashion in the mainstream financial system. This will be discussed further in section 3.

2.3 Early Financial Sector Reforms

Structural adjustment: the introduction of Development Finance Institutions

Based on the belief that the potential for saving in developing countries is negligible, a traditional first step in development policy has tended to be the introduction of Development Finance Institutions (DFIs), institutions that provide credit for working capital at non-market rates, but offer no deposit facilities for individuals, and as such do not perform an intermediation role. They operate independently of the commercial banks, which act as deposit takers, and provide short term loans and overdrafts. The development of a more sophisticated financial sector which provides a safe and attractive place for investors to place deposits would enable countries to move away from subsidised, state provided credit, and move toward a market based system that acts as an intermediary, channelling funds from savers to investors. In this way, the development of the financial system mobilises domestic savings, rather than being reliant on external assistance.

Kenrick Hunte (1997) provides a useful analysis of the role of savings mobilisation in helping DFIs become independent of donor funds. He observed that traditional development finance institutions were dependent on donor funds; they purely supplied loans at subsidised rates. Some financial intermingling occurred (defined as the use by households of financial services from formal and informal institutions simultaneously), with individuals depositing at commercial banks.

Development of the financial sector and the resulting mobilisation of savings would provide a number of benefits to DFIs. They would be able to provide a basic set of financial services at a single institution, which he saw as having three main effects:

² See, for example, the works of Deaton (1989) and Gersovitz (1988).

- it would minimise the saver-borrower transaction costs
- it would improve creditworthiness decision making
- it would reduce the risk and cost of lending and improve recovery rates.

Traditionally, it is in developing countries, where financial sector intervention has been prevalent, that financial sector reform is likely to have the largest impact. Whilst regulation of interest rates and credit expansion is common in most repressed economies, in some developing countries banks were required to hold in excess of half of their liabilities in the form of reserve or liquid assets (often deposits at the central bank) and another large part of the portfolio was dominated by directed credit (Bandiera *et al.*, 1998). In practice, little power or responsibility was left to the banks. Thus, the banks invested little in credit assessment or monitoring.

2.4 Analytical Framework for Modelling the Link Between Saving and Financial Sector Development

The life-cycle model of saving

Traditionally, the models that look at the interface between saving and development are based around the life-cycle or permanent income theory of consumption, and it will be useful to briefly review these hypotheses, and then discuss the relevance of financial sector development to these models.³ The model described below draws on Gersovitz (1988), but is typical of the style used by most authors.

Consider an individual who lives for T periods, receives income payments of y_i and consumes c_i . He neither receives nor leaves bequests. The only constraint on the individual's consumption is that the present value of lifetime consumption (C) cannot exceed the present value of lifetime income (Y):

$$C \equiv \sum_{i=0}^{T-1} \left[\frac{c_i}{(1+r)^i} \right] \leq \sum_{i=0}^{T-1} \left[\frac{y_i}{(1+r)^i} \right] \equiv Y \quad (1)$$

However, he is able to borrow or lend at interest rate r in period i if his objective, namely maximising his discounted lifetime utility, V , does not require that $y_i = c_i$. V is defined as follows:

$$V \equiv \sum_{i=0}^{T-1} \delta^i U[c_i] \quad (2)$$

The decision maker's problem is solved for the two period model by the first order condition:

$$U'[c_0] = (1+r)\delta U'[c_1] \quad (3)$$

³ Apart from models of saving behaviour rooted in the popular life-cycle hypothesis, there exists a quite interesting strand of theoretical literature which focuses on the role of savings in the context of models of endogenous growth and financial sector development - see Mavrotas and Santillana (1999) for a discussion.

which, along with condition (1) holding as an equality, yields optimal values of consumption, c_0^* and c_1^* . Current savings are then treated as a residual, which is why most models examining saving are formulated in terms of consumption rather than saving.

There are a number of key messages relating to the effects of interest rates, demography, and other matters of interest that the standard life-cycle model has been used to analyse. These will be considered in detail later in the paper. The permanent income hypothesis, proposed by Friedman (1957) is similar to the life-cycle hypothesis, in that future, as well as current resources affect saving. One of the main differences between the two hypotheses is that Friedman assumes consumers are infinitely lived.

The life-cycle model assumes that saving varies over the course of an individual's life. Bayoumi (1993), using an overlapping-generations model describes the effects of financial deregulation on household saving in the life-cycle model. It is assumed that consumers live for a fixed number of periods and wish to smooth their consumption path. It is also assumed that the endowments available to individuals when they are young are small, so they would like to borrow when young in order to smooth consumption over their life-cycle. Prior to financial liberalisation, consumers have limited access to financial intermediation; they are unable to finance their desired level of consumption when young, as they have no financial assets and are unable to go into debt, so they are in a corner solution.

After the initial period, consumers are able to use capital markets to smooth consumption over middle to old age. Because consumption was lower than desired when young, consumption is higher in middle and old age than it would have been, had they been able to follow the optimal consumption path over their entire lifetime.

Financial liberalisation increases competition between providers of financial intermediation, thereby eliminating the constraint on going into debt. This means the young can now borrow in order to attain their optimal lifetime consumption path. This gives rise to two effects.

There is an initial temporary effect. In the short term, there will be an increase in aggregate consumption, which will wane over time. The immediate increase reflects that the consumption of the young increases as soon as financial deregulation occurs. There is no immediate effect on the borrowing of older consumers, as they are still affected by their inability to borrow while young. The effect dwindles as previously credit constrained consumers drop out of the economy and overall consumption tends back to its original level.

There is also a permanent effect. As young consumers are no longer credit constrained, they smooth their consumption. As a result, young consumers' saving becomes sensitive to wealth, real income, demographics and interest rates. This means that aggregate saving in the economy becomes more sensitive to these factors.

Thus, during youth and old age an individual will dissave, and saving will occur while an individual is productive. Clearly, such a model relies on a number of assumptions. There must be a system of financial intermediation that permits saving and dissaving to a degree – it is hard to envisage the saving taking place in a non-monetary form. Therefore a major element of the process of financial liberalisation is the reform of the financial sector, in order to generate institutions that provide more efficient financial intermediation. The intertemporal elasticity of substitution in consumption determines the extent to which individuals are

prepared to defer consumption into the future, and therefore their propensity to save. This in turn will depend on the real rate of interest, which will both determine the preparedness of individuals to save in the financial sector, and influence their consumption decision depending on whether it is above or below the individuals subjective discount rate.

The importance of all these factors will be considered in what follows, as will the importance of financial sector development.

2.5 Savings Rates and the Economic Cycle

According to the life-cycle theory, one would expect savings rates to be pro-cyclical, with individuals saving more when incomes are higher, in order to smooth consumption in bad times. However, if there are not appropriate institutions and measures in place to ensure the protection of private property rights, individuals will be discouraged from saving in a boom (at least in a formal fashion). Lane and Tornell (1998) undertake a study of Latin America, and find that, while savings rates are procyclical in the OECD, this is not the case in Latin America.

Using a non-representative agent intertemporal macroeconomic model they provide an explanation for this lack of procyclicality. Several powerful groups replace the representative agent, a structure that may be correct for several developing economies. Each group has common access to total national income, as it is able to appropriate resources from other groups. A decision must be made by each group, between maximising appropriations from the other groups and providing sufficient incentives for investment so that future output does not collapse. In response to a shock to output, Lane and Tornell show that the balance between the two factors shifts in favour of increasing current appropriation and consumption. Thus, the savings rate declines. By contrast, in the case of a representative agent or social planning solution, savings respond procyclically.

The extension of this theory to the financial sector is straightforward. A strong financial sector is key in the protection of private property rights. The less state-controlled, and more internationally developed, the more power the banking sector has to act independently of the government. If individuals believe their savings will be safeguarded by the financial sector, they will save in this form. However, if there is a risk of appropriation, they will save in a non-monetary form.

2.6 The Role of the Rate of Interest

The McKinnon-Shaw hypothesis

It has been hypothesised in the relevant literature that domestic financial liberalisation, through reduction in intermediation spreads, financial deepening and enhanced access to credit has a positive effect on private savings. On the policy front, it has been argued that an improvement in the provision of financial services, including increased confidence in financial institutions, is crucial for mobilising savings, and particularly household savings. In the early works of McKinnon (1973) and Shaw (1973), it was argued that the liberalisation of interest rates, would end financial repression and cause financial deepening, due to the resulting increased efficiency of the intermediation process, and the effects of higher interest

rates on savings. The difference between the hypotheses of the two authors was in the transmission mechanisms through which they believed this would occur.⁴

The neo-structuralist critique

The neo-structuralist critique provides a different view of the effect of liberalisation to that proposed by McKinnon and Shaw. This critique, which includes authors such as Van Wijnbergen, Taylor, and Liang among its proponents, considers the effect of incorporating informal loan markets into the original McKinnon-Shaw models, and finds that the freeing of interest rates, far from resulting in output growth, may have the opposite effect.

Shahin (1996) performs a useful review of the neo-structuralist views of the implications of financial sector liberalisation on saving. They do not contend that an increased deposit rate motivates unorganised market funds into the banking system. However, since all assets held in informal loan markets are loaned out, whereas, due to reserve requirements, only a portion of those in the banking system are, increasing deposit rates may convey contractionary moves to economic activity. The decrease in informal market funds increases the informal loan rate, or the cost of financing working capital, causing inflation. The combination of inflation and contraction could cause stagflation.

The interest elasticity of saving

The relationship between financial liberalisation and savings, and in particular whether the increase in interest rates causes stagflation, as hypothesised by the neo-structuralists, or is successful in promoting investment and growth, as proposed by McKinnon and Shaw, will depend on the interest elasticity of saving in the countries under consideration. This is a controversial question, which has attracted a large empirical literature.

One of the pioneer works was that of Fry (1978), who tried to test the validity of the McKinnon-Shaw hypothesis by using annual observations from seven Asian LDCs. On the basis of the estimated saving functions, Fry concludes that the real rate of interest exerts a positive influence on the ratio of domestic savings to the gross national product (GNP). He calculates that a 10% increase in the real rate of interest exerts, *ceteris paribus*, a positive influence on the ratio of savings to GNP by approximately 1.4-2.1%. Therefore, there is -at least for the sample countries - support for the McKinnon-Shaw hypothesis.⁵

The same study also tried to establish which transmission mechanism is pertinent. To do so, Fry estimated demand for money functions. In the Shaw-demand-for-money-function, all of the independent variables are exogenous, while in the McKinnon one, and according to the complementary hypothesis, the savings ratio is determined jointly with the demand for real money balances. The results of the regressions show evidence in favour of the Shaw debt-intermediation and against that of McKinnon's. The explanation for this was that the Asian sample countries had reached the state beyond that of self-financing.

Giovannini's work (1983,1985) casts doubts about the significantly positive interest rate elasticity of the saving function, and consequently on Fry's research results. He states that two

⁴ For a detailed discussion see Gibson and Tsakalotos (1994).

⁵ A similar conclusion was derived in a study by Yusuf and Peters (1984) of the Korean economy, for the period 1965-1982: a 10% increase of the real interest rate on time deposits would raise the gross national savings (GNS) by 11.57% and the gross domestic savings by 5.03% (GDS). They define the GDS as the gross domestic income minus consumption, while the GNS as the GDS plus net transfer and net factor income.

main features have supported Fry's result: first, the presence in the sample of observations that have disproportionately large influence on the estimate parameters (the observations after the financial reform in Korea). If these are taken away and the equations re-estimated the results will not be robust. If a larger sample is also taken into account, the results will be insignificant. Second, the use of a Keynesian type savings function is questionable because of the assumptions concerning the functional form and the exogeneity of the instruments used in the estimation. Giovannini specifies an equation for the responsiveness of the aggregate consumption-savings decision to the expected real rate of interest and estimates it for 18 LDC's. For Giovannini, the results show that the model does not fit the data for many countries due to the different methods of representing the national accounts. Although he tries to improve the data set, his results reject the hypothesis of high intertemporal substitutability.

Gupta (1984) tests the McKinnon-Shaw hypothesis by following the general lines of research by Fry, using data of 12 Asian countries for the period 1960-1977, and reporting results on a country-by-country basis.⁶ The results do not back the McKinnon-Shaw hypothesis since in some countries it is rejected or there is little statistical support. Gupta noted that the results could be flawed because his estimations are based on aggregate savings. He states that the real interest rate could affect the real savings and the financial savings in a way that the effects could neutralise each other, thus explaining the lack of response of the aggregate savings to changes in the interest rate. Using the same model structure but taking separately real and financial savings, he concludes that financial liberalisation processes can contribute to the acceleration of economic growth by increasing financial savings rather than aggregate savings. To capture the effects of financial liberalisation on financial deepening, saving structure, and capital formation, he builds a simultaneous equation model of finance and growth. On the basis of the results obtained, the role that financial liberalisation can play in encouraging financial deepening in the short run appears to be rather limited.⁷

However, more recent research by McKinnon (1991) acknowledged that aggregate savings, as measured in the GNP accounts, does not respond strongly to higher real interest rates (p22). Overall then, it appears that a change in real interest rates has an ambiguous effect on saving, largely because of the competing income and substitution effects that changes in interest rates give rise to. However, even if higher real rates are unlikely to raise private saving and thus total private wealth, they can alter the portfolio composition of private wealth. Negative real interest rates on deposits cause a substitution of saving from monetary to real assets, such as the purchase of durables, and into foreign currency assets via capital flight. Both of these effects will result in reduced private saving as measured by official national accounts.

⁶ It is important to mention, however, some theoretical and methodological differences with Fry's work:

- (1) Gupta's model is based on the permanent income hypothesis which differs from that of Fry which is based on the life-cycle hypothesis.
- (2) Gupta prefers to discriminate between the effects of nominal interest rates and the expected rate of inflation, since there is no a priori reason that they are equivalent.
- (3) the inclusion of variables like unanticipated inflation and uncertainty with respect of inflation are intended to capture the problems caused by high and variable inflation.
- (4) the unobservable variables are generated by the adaptive expectations hypothesis.

⁷ Ocampo *et al.* (1985) undertake a similar study for Colombia for the period 1950-80, finding no support for the McKinnon-Shaw hypothesis since the influence of the interest rate is of low statistical significance.

2.7 The Intertemporal Elasticity of Substitution in Consumption

Clearly, one of the influences on the elasticity of the interest rate will be the willingness of the household to substitute consumption over time. Household decisions of how much to consume and how much to save tend to be captured by models focusing on intertemporal optimisation. In the absence of borrowing constraints, the first order conditions of such models are well known: the ratio between marginal utilities in any two periods has to be equal to the expected discount rate. Individuals borrow and save as outlined above in order to smooth consumption over time. Any change in the discount rate will change the opportunity cost of consumption today, and thus in the absence of market imperfections would change the level of consumption (and therefore saving) today and in the future.

However, the market is rarely free from imperfections, especially in developing economies, and as a result the elasticity of substitution is unlikely to be unity. It would seem likely that poorer households, being nearer the poverty line, would have less flexibility to substitute consumption between periods, thus their savings rate is likely to be inelastic relative to that of richer households. This intertemporal elasticity of substitution in consumption will vary across countries, and degree of development will be a major determinant. Results cited in the IMF's World Economic Outlook⁸ suggest that the interest elasticity of saving varies considerably with the level of wealth: in low income countries the interest elasticity is close to zero, but it rises markedly in low middle-income countries, and increases further in upper middle and high income countries. Thus, the household saving rate in upper middle income developing countries is likely to increase significantly as interest rates move up. This result is similar to that expected in industrial countries. So, while financial liberalisation, and the resulting increases in interest rates, may have a number of positive effects, including increasing the efficiency of investment and strengthening economic growth, the direct impact of such policies on household saving behaviour is likely to be relatively small in low-income countries. This would suggest that the effects of financial deregulation outlined in the overlapping-generations model of Bayoumi above, would be weaker, in lower income countries, on account of their lower intertemporal elasticity of consumption.

Clearly the rate of interest, and its effect on saving is inextricably linked to the intertemporal rate of substitution of consumption. The indirect policy tool of using interest rates to manage current and future consumption is clearly less than effective. This has led to some countries to use tax reforms aimed at discouraging consumption directly - the rationale being that the opportunity cost of consuming today is higher in the face of a consumption tax. Thus direct action is taken to affect the intertemporal rate of substitution of consumption, rather than indirect, via the interest rate. Such reforms were used by Chile in the mid-1980s. However, the effectiveness of such policies relies on the assumption that there is a high intertemporal substitution in consumption, as discussed previously, so poorer countries are less able to use such taxation tools.

2.8 Data Issues and Ricardian Equivalence

The majority of studies looking at saving behaviour have relied on the use of aggregate, national saving data, rather than data at a disaggregated level. Aggregate data has the advantage of being, in general, more reliable and more years of data are available for more

⁸ IMF, *Saving in a Growing World Economy*, World Economic Outlook, May 1995.

countries. A number of studies have tried to verify the McKinnon-Shaw hypothesis empirically for various developing countries. Typically, such studies use time series data on national savings rates (Fry (1978,80), Giovannini (1983), Gupta(1987)).

The use of private or household data can be limiting, due to the lack of comparability across countries, and many authors justify using national saving as a reasonable proxy for private saving because private saving constitutes a large part of total saving. However, assuming that one measure proxies for the other relies on the assumption that Ricardian equivalence holds. In essence, Ricardian equivalence states that public debt issues are macroeconomically indistinguishable from tax increases, and thus a change in public saving should be offset by an equal and opposite change in private saving.

A number of studies have tested the validity of the Ricardian equivalence hypothesis. Corbo and Schmidt-Hebbel (1991) use a 13-country data set to analyse the consequences of higher public saving. They found that, although government savings crowd out private savings, the magnitude of this effect is far below the one-to-one relationship suggested by the simple Ricardian equivalence doctrine. These results were echoed in the results of Edwards (1996), using a Latin American data set. More recently, Cardenas and Escobar (1998), by using Colombian data, found that increases in taxation over the permanent level of government expenditures reduced savings more than proportionally, thereby contradicting the hypothesis. This implies that higher levels of taxation during the 1990s had an adverse effect on private saving.

The general rejection of the Ricardian equivalence hypothesis implies that private and public saving are not perfect substitutes. Thus empirical rejection of Ricardian Equivalence is seen by Schmidt-Hebbel, Webb and Corsetti (1992) as a powerful argument in favour of using household saving data instead of aggregate data.

2.9 The Role of Liquidity Constraints

The household's intertemporal optimisation decision outlined above is likely to be complicated by liquidity constraints in developing countries, in the form of borrowing constraints. Such constraints tend to ease with development of the financial sector, as intermediation develops and facilitates more efficient saving and borrowing.

When a borrowing constraint is binding in the household's intertemporal consumption decision, the marginal utility of present consumption will exceed the expected utility of future consumption.

Therefore, if liberalisation reduces these borrowing constraints, saving ratios would be reduced, because a binding borrowing constraint induces an individual to consume less than they wish to, effectively forcing saving, or at least discouraging dissaving. In such a situation the consumption Euler equation no longer holds, as agents cannot borrow against future income. Studies, such as that by Jappelli and Pagano (1994), using the loan-to-value ratio and consumption credit as proxies of borrowing constraints, have shown that liquidity constraints on households raise savings, strengthen the effect of growth on saving and finally, increase the growth rate, if productivity growth is endogenous. Their sample, however, focuses on industrial countries, thus shedding little light on the relationship between financial sector development and savings as far as developing countries are concerned.

Bandiera *et al.* (1998) use Euler equations to detect the extent of credit rationing, and in so doing, assess the impact of financial reform on the extent of liquidity constraints by estimating an augmented Euler equation for consumption, in which they assume that the fraction of the consumers that are liquidity constrained varies with the degree of financial liberalisation.

There is a large literature that has attempted to determine the importance of borrowing constraints by inferring that any dependence of the change in consumption on income might reflect the inability of households to smooth the intertemporal pattern of their consumption through borrowing. Corbo and Schmidt-Hebbel (1991) confirm the importance of this dependence, and have found some evidence that it has been higher for developing countries, for reasons outlined above. The inability to smooth is taken by them as evidence of the inapplicability of life-cycle theories of borrowing for developing countries.

In the case of Colombia, Cardenas and Escobar (1998) use a framework proposed by Caprio and Schiantarelli (1996) to test the validity of the hypothesis that private savings rates have fallen as a result of the relaxation of liquidity constraints as a result of the structural reform package implemented in the early 1990s. They find that liquidity constraints are indeed a significant factor in recent declines in private saving. However, this is seen as a temporary effect.

The ratio of money/GDP is traditionally taken as a proxy for financial deepening, but it could also be used as a measure of the extent to which countries face a borrowing constraint. If the former is the case, its coefficient should be positive when included as an explanatory variable in a private savings regression; if the latter holds, it should be negative. Edwards (1996) finds that the coefficient is always significantly positive. Using alternative definitions of the index tested the robustness of this result, but the coefficient estimates were unchanged. Overall, the results did not provide support for the view that borrowing constraints have resulted in lower savings.⁹

2.10 The Role of the Financial Sector in Reducing Risk and Uncertainty

One of the key roles of saving is its precautionary motive to help mitigate future uncertainty. There are two factors that are important here: the liquidity of savings, and the availability of insurance.

The liquidity of savings

Savings are an important precautionary device, to protect against uncertainty. However, in order to encourage individuals to save, it is vital that the savings can be liquidated when needed to cope with an income shock. This requires well developed financial markets. In order to mobilise individual savings, institutions must offer a positive rate of return to attract funds. By their size, stock markets, mutual funds and other financial institutions are able to diversify their portfolios to offer risky investments as elements of financial instruments which are of a size and risk profile that is suitable to the smaller investor (Gersovitz, 1988). The presence of stock markets means that such instruments are tradable, and so can be liquidated

⁹ It is notable that the results of Edwards (1996) differ from those of Jappelli and Pagano (1994) and Schmidt-Hebbel *et al.* (1992); there are a number of possible reasons why, such as the share of private credit is a poor proxy for borrowing constraints.

as and when necessary. If such returns and liquidity are not offered, then savings rates will be lower, as in such circumstances savings will not offer their precautionary role.

The availability of insurance

The availability of insurance is an important factor in the question of savings mobilisation if the financial sector is sufficiently advanced to provide adequate insurance to individuals against future uncertainties, savings will be lower. For example, if a rural farmer in a developing country can insure against the loss of income resulting from a bad crop, he will not need to make precautionary savings to allow for this. Effectively, if the premium charged is actuarially correct, this will perform the consumption smoothing for the individual savings will not be required for this purpose. However, if the premium is too high, insurance will not be taken, and if it is too low, insurance is not sustainable in the long term and there is a risk of default by the insurance company. Social security is another type of insurance that will be dealt with in section three.

Information asymmetries

Key to having an effective insurance system is the presence of information. Moral hazard and adverse selection mean that determining actuarially correct premia is difficult (Stiglitz and Weiss, 1981). However, financial sector development reduces information asymmetries, through the development of relationships between institutions and individuals. In particular, the deposit behaviour of individuals provides signals to lenders that help reduce informational opacity.

3. Other Determinants of Savings

Whilst the subject of interest for this paper is essentially the relationship between savings and financial sector development, it is important to consider other determinants of saving, many of which impact indirectly onto the financial sector. A number of comprehensive general surveys of determinants of saving in developing countries have been undertaken, particularly notable examples being those of Deaton (1989), Gersovitz (1988) and Schmidt-Hebbel, Webb and Corsetti (1992). This section will pick up on some of the key issues.

3.1 Causality between Savings and Growth

Traditionally, it has always been held that higher saving raises GDP growth by increasing capital accumulation (see for example the classic empirical study by Mankiw, Romer and Weil (1992)). However, recently the above view, particularly in connection with the investment growth link, has been challenged by a number of studies which have argued that the co-movement of investment ratios and growth rates may be mainly the result of a third crucial factor, namely technological innovation, which drives both output expansion and capital accumulation. More precisely, recent empirical studies cast serious doubts on the hypothesised positive impact of investment on growth by providing robust empirical evidence according to which, although a causal link seems to be apparent, the direction of causation runs from growth to investment and not vice versa (see for example, King and Levine (1994), Benhabib and Jovanovic (1991) and more recently Blomstrom, Lipsey and Zejan (1996)). However, the intrinsic endogeneity of the two makes assessment of the direction of causation extremely difficult.

Some authors have attempted to deal with the endogeneity problem of savings and growth using mechanisms such as the use of instrumental variables techniques and causality tests. Carroll and Weil (1993) used detailed household level data to deal with this issue and have concluded that there is evidence suggesting that growth indeed affects private savings positively. Cardenas and Escobar (1998) examine the question of causation for Colombia. They use a first order vector autoregression of the growth rate and the saving rate for the 1925-1994 period. They find that changes in national savings and changes in investment are perfectly correlated and that savings Granger-cause growth. Indeed, Edwards' model (1996) found that the coefficient on the rate of growth per capita GDP is significantly positive in a private savings regression, and seems to provide some support to the hypothesis that there is a virtuous circle in operation.

However, the vast empirical literature suffers from a number of shortcomings including preoccupation with the use of cross-section studies and inappropriate econometric techniques. A detailed discussion of the above issue is provided in Carroll and Weil (1994) and more recently, in Attanasio, Picci and Scorcu (1998).¹⁰

3.2 Income and Wealth Effects

It is commonly held that poor individuals save a smaller fraction of their income than the wealthy because they are closer to the line of subsistence; they have less flexibility in their consumption decisions, as discussed in section 2.7. However, according to the permanent income or life-cycle theories, saving should be used to simply smooth consumption over time. As a result it is the time pattern of income that is important here; those with more volatile incomes should have higher savings rates according to these theories.

At the same time households, particularly those in developing countries, tend to be credit constrained, and as a result are less able to smooth consumption, so it is likely that consumption (and therefore saving) would respond substantially to changes in income. Gupta (1987) finds that saving responds significantly and positively to temporary income shocks in developing countries. There is also likely to be a strong element of myopia present, as households are less than perfectly able to distinguish between temporary and permanent income shocks, meaning that they will consume more out of current shocks than predicted by consumption smoothing models (Campbell and Deaton (1989)).

Income growth is also important. If the young anticipate that their income will grow steadily, and are able to borrow against the increase, their dissaving in the early years of the life-cycle may result in a negative relation between saving and growth (Deaton 1989).

Intertemporal optimisation models see wealth as a key determinant of consumption or saving; in effect wealth provides a substitute for savings, hence greater wealth is predicted to reduce saving out of current income. Schmidt-Hebbel *et al.* (1992, p.532) cite evidence from a study by Schmidt-Hebbel (1987), which uses five alternative measures of total wealth in an empirical intertemporal consumption model for Chile, and a study by Behrman and

¹⁰ In analysing the relationship between savings and growth, Attanasio *et al.* (1998) consider in detail how the empirical results change when different econometric techniques are used, when the frequency of the data is changed and when different groups of countries are included in the sample.

Sussangkarn (1989) using household level data on wealth and saving in Thailand. Both studies find that wealth has a strong negative effect on saving.

3.3 Demography

Standard life-cycle models state that individuals will have negative savings when they are young and have low income, positive savings during their productive years, and negative savings during their retired years. The aggregate amount of saving will depend on the relative number of active and retired people in the economy, which will in turn depend on the population growth rate. According to the standard model, individuals consume all the resources available to them over their life-cycle, i.e. do not leave bequests. According to this view, aggregate private savings will be affected by the age distribution of the population.

The effects of demography on saving can be analysed by extending the two-period life-cycle model discussed in section 2 to a multiperiod model, however, Gersovitz (1988) introduces a caveat here. Effectively, the increase in horizon corresponds to an increase in the life expectancy of adults, since the model is of a decision-maker in full control of his initial consumption decisions (c_0). This should be borne in mind, especially in view of the fact that much of the increase in life expectancy in LDCs has been through decreases in infant mortality rates raising the expectation of life at birth.

The importance of demography for saving was touched on in section two, in the discussion about the interface between financial deregulation and household saving. Webb and Zia (1989) use a model based on life-cycle saving to examine the importance of demography, and to see how much aggregate life-cycle saving will change during the demographic transition. Their model necessarily differs from the usual assumptions of steady state populations, and examines the effects of deviations from the steady state occurring during demographic transitions. They assume, for a given interest rate and growth rate of labour productivity, each household saves (and dissaves) in order to smooth per capita consumption as much as possible. Households start with zero net wealth, and plan to have zero net wealth when the parents die, and that households cannot be net debtors in any period. The use of such a strict liquidity constraint may be unrealistic, but for modelling purposes it is superior to the alternative simplifying assumption, that there is no liquidity constraint, and that households can borrow as much as they want to smooth their per capita consumption.

Their results show that the demographic transition toward stable populations is likely to cause increases of aggregate saving rates that would be important on a macroeconomic level. They believe that the demographically induced changes of savings rates would be comparable in size to the changes governments could hope to induce by policy changes.

Demographic factors are supposed to be important elements of the entire saving process. Doshi (1994), Edwards (1995) as well as Faruqee and Husain (1995) report strong empirical evidence concerning the significance of demographic factors by estimating reduced-form savings equations in the context of a cross-section approach for a number of developing countries.¹¹

¹¹ Modigliani (1970) used cross country data (mostly on advanced countries) to test this hypothesis. He found that differences in demographics play a key role in explaining differences in savings.

Strong demographic effects have also been found in Horioka's study on Japanese savings (Horioka (1991)) as well as in Kang (1994) concerning Taiwan, Korea and Japan. Demographic changes in East Asia were also found responsible for the high savings rates in the region, according to Higgins and Williamson (1996). Cultural effects are also present in some cases (Carrol, Rhee and Rhee (1994)). Jappelli and Pagano (1994) found a significant negative relationship between dependency ratios and savings. Finally, Edwards (1996) finds that the coefficient on the age dependency ratio is significantly negative, indicating that demographics play an important role in explaining differences in private savings across time and countries.

3.4 Macroeconomic Instability and the Terms of Trade

According to the Darberger-Laursen-Metzler effect¹², a temporary improvement in the terms of trade is considered to increase the saving rate because it suggests a transitory boost in national income, which will increase national savings. An IMF study (1995) found that changes in the terms of trade have a strong positive effect on saving. However, other studies, for example that undertaken by Lopez-Murphy and Navajas (1998) on Argentina, found no correlation between private savings and terms of trade for the period 1970-1995.

3.5 Political Instability

Government savings are a fundamental component of national savings. There has been an extensive literature detailing the behaviour of governments. Edwards (1996) provides a useful summary of this literature. The incentive of the authorities to increase government savings will depend on two factors. First, the probability that the party in power will still be in power in the subsequent period; if this is low, then an incumbent party has little incentive to save, as the other party will gain the credit from the subsequent increased production of public goods. Thus the higher the degree of political instability, the lower government savings. A second determinant of governmental incentives to save is the degree of political polarisation - in other words the degree of difference in the parties preferences. A greater degree of polarisation will, in theory, result in lower government savings. In Edwards (1995), separate equations for government savings were estimated for 36 countries over the period 1983-92. The results obtained clearly confirm a priori expectations concerning the role of political instability and uncertainty on public savings.¹³

3.6 Foreign Capital and Savings

One of the most controversial parts of the savings literature is the relationship between foreign capital (in particular foreign aid) and domestic savings, in the recipient countries. The debate has a history of more than three decades and is still the subject of a continuous disagreement on the aid-effectiveness front. The effect of foreign aid on domestic savings in developing countries has been mainly analysed in terms of the Harrod-Domar growth model and its two-gap versions associated with Hollis Chenery and his associates in the '60s. More recent contributions in the area include Boone (1994) and Obstfeld (1995). Although vast, the empirical literature on the topic, has failed to offer clear answers so far, due to inappropriate

¹² See Ostry and Reinhart (1992).

¹³ Concerning the nexus between political instability and government savings see also Cukierman, Edwards and Tabellini (1992).

econometric methodologies employed in most of the cases, simplistic modelling frameworks and lack of an aid-disaggregation approach. Cassen (1994) and White (1992) assess the relevant literature and Mavrotas (1998) focuses on the aid-disaggregation issue.

More recently, Reinhart and Talvi (1998) challenge the popular view, based on the experience of the 1990s, that domestic and foreign saving are positively related in East Asia and negatively related in Latin America. The authors conclude that the literature offers little empirical basis for the popular view of the 1990s. The estimates of the intertemporal elasticity of substitution (IES) are similar in magnitude in the two regions. Furthermore, the studies that have tested for cultural factors have found little evidence that they are significant. The liquidity constraints, that at first sight will appear to have a greater effect in Latin America, are present in both regions. Finally, the estimates of the degree of substitutability between domestic and foreign saving, obtained through reduced form models, suggest that domestic saving should respond similarly to a surge in capital flows in both Asia and Latin America.

3.7 Social Security Reforms and Savings Mobilisation

Reforming social security systems is an important route for mobilising savings in developing countries. Private savings are affected by the extent and coverage of government-run social security systems, in the sense that, if individuals perceive that when they retire they are going to receive high benefits from the government, they will tend to reduce the amount saved during their active days. Along the above lines, the development of new institutions in the social security sector (see the example of the Chilean pension system below) could force savings in low income countries with depressed levels of saving.

In most countries, pension systems are state run and are unfunded, defined benefit systems, that operate on a pay-as-you-go basis. There are a number of problems with such systems, such as the lack of a direct relationship between benefits and contributions, which can strain government budgets, and wage taxes that may distort labour markets and encourage tax evasion. It has been suggested by a number of authors, such as Edwards (1996) and Feldstein (1980)¹⁴, that a switch to either fully funded, or at least partially funded schemes would have a beneficial effect on the level of national savings in an economy, as part of a package of financial sector reform. However, there has been an increasing empirical literature that has been less conclusive about the above hypothesised effect¹⁵. Public pension systems are intended to fulfill two primary objectives: to provide a compulsory saving mechanism and to alleviate poverty among the old. The compulsory saving mechanism forces the individuals who might be myopic with regard of their future needs or who might expect to rely on charity in their old age to save for themselves. In most countries a public pension system is the institution that delivers this service.

Unfortunately there is a contradiction in the objectives of these institutions. A good saving mechanism will have a tight link between the contribution and the benefits received, but the

¹⁴ The model of Edwards(1996) found a significant negative coefficient on social security, consistent with the findings of Feldstein (1980), supporting the notion that the replacement of government run, partially funded social security systems with privately-run funded systems will tend to result in higher savings rates. However, the transition will reduce government savings in the short run, as the government will continue to have obligations to older retirees, but will receive no contributions from active workers.

¹⁵ See Arrau and Schmidt-Hebbel (1994), Diamond (1994), Schmidt-Hebbel (1994), Ribe (1994), Bailliu and Reisen (1997) and more recently Samwick (1998).

aim of poverty alleviation will divert contributions to benefit the poor. Most pension schemes around the world try to reach both objectives through a single system but they end up doing neither well.

As a result of these difficulties, most pension reforms have attempted to use a hybrid of these mechanisms. Pension reform programmes have occurred in a number of countries in recent years. Typically such reforms comprise two elements: on the one side, a pillar of fully funded savings based on individual pension accounts, with investments made in a number of public and private long term instruments, and a complementary state-run distributive pillar, to support the elderly poor. Such measures are seen by Arrau and Schmidt-Hebbel (1994) as a radical departure from the conventional pension paradigm in three ways. First, the substitution of a pay-as-you-go scheme by a fully funded arrangement for old age saving. Second, more explicit separation of the distributive from the non-distributive aspects. Finally, the private management of the collection of contributions, investment of pension fund savings and payment of pension benefits. Such a system is described by Schwarz (1995) his multipillar system has one pillar devoted to providing a saving mechanism and the other to alleviating poverty.

Samwick (1998) models a voluntary scheme to privatise some or all of the current social security programmes. The scheme is structured to allow workers to buy themselves out of the current program by saving in a dedicated retirement account. The concept underlying the proposed scheme is similar to the feature of the social security system in the United Kingdom, in which employees may use occupational or personal pensions to contract out of earnings-related portion of the state benefits. The proposed model uses the flexibility of standard life-cycle model under uncertainty. The value of the household's rate of time preference summarises the way wealth is accumulated over the life cycle. Therefore, the model is solved to estimate the distribution of household rates of time preference, and then using these estimates to simulate the savings response to a buy out. Subsequently the information is applied to the data on wealth holding in the Survey of Consumer Finances USA (1992).

The model tries at least to maintain the current savings rate because any reform that promises to make households better off may lead them to consume immediately. Relating directly the households' benefits to the amount they save in a dedicated retirement account, does this. The limitations of the model are its simplifying assumptions, its partial equilibrium approach and the fact that it ignores the redistributive purpose of the social security.

Samwick also set some recommendations to countries that want to follow a defined-contribution pension system. First of all there must be macroeconomic stability. The government must have credibility and must make an explicit recognition of the debt that was formerly implicit in the existing unfunded system (recognition bonds that are given to individuals that opt-out and are taken as the first deposit on the private scheme). Furthermore, taxation on retirement accounts must be low. Finally, the managers of the dedicated retirement account should be allowed to have access to the international capital markets and not forced to hold excessive amounts of government debt. The problem in the developing countries is that not many non-government securities are present in the market. That is why it is important that the new security system develops along side other financial market liberalisation. Administrative expenses will tend to be higher in the developing countries with less experience in managing retirement accounts.

The Chilean reform

Chile is a good example of a success story among the number of developing countries have moved toward fully funded schemes. By the late 1970s, Chile was facing serious problems with its pay-as-you-go system. Pension reform began in 1981, when the fiscal surplus was sufficiently large to finance the transition to a fully funded system, and after the retirement age was increased to 65. Under the new, privatized savings plan, workers were required to deposit 10% of their earnings in any one of a number of highly regulated intermediaries; at retirement they could choose between a series of phased withdrawals or an annuity. There was subsequently a surge in private saving and an associated strengthening of potential and actual growth; this was largely attributed to the increase in the retirement age and the fiscal consolidation that accompanied the reforms. The steady flow of contributions into investment funds created a market for indexed annuities, and improved the functioning of the capital markets. This contributed to the deepening of the Chilean capital markets.

The reforms insulated the pension system against the possible budgetary risks of a state-run defined benefit system. The downside is the increased administrative cost, which is roughly 30% of mandatory saving. This is in part due to the economic loss arising through the costs of competitive attempts to attract customers. Also, uncertainties regarding the length of working life, the duration of retirement and the return on invested contributions make pension benefits somewhat unpredictable. However, Diamond and Valdez-Prieto (1994) have argued that Chile's privatised social security system has resulted in excessive competition, where a very high percentage of contributions are spent on advertising.

Other examples

Samwick (1996) discusses reforms in a number of other countries. In Colombia, the 1993 pension reform overcame flaws of the previous system by reducing net benefits paid to future pensioners and by gradually phasing in a dual pay-as-you-go, fully funded system. The Colombian situation was assisted by labour reform which introduced a new type of labour contract that included all fringe benefits as salary. This may have increased consumption in credit-constrained households. Also, funds for severance payments are now held in the workers' own accounts at private institutions, representing a shift of saving from firms to households (Cardenas and Escobar, 1998).

In Brazil, one proposal based on the Chilean experience would raise the retirement age to 65 and substitute a fully funded system based on individual accounts for the current pay-as-you-go system; another proposal would combine defined benefit and defined contribution schemes in order to protect retirees and reduce the fiscal cost by preserving a partial pay-as-you-go system.

In Argentina, the minimum retirement age was raised to 65, phased in over a number of years, and a privately capitalized system was introduced in July 1994. The privately administered pension funds, which presently cover some 6.3 million enrollees, co-exist with the pay-as-you-go system, predominantly for older contributors who preferred to remain in the existing system.

Provident fund systems have been introduced into some Asian countries, in part as a tool of development policy. Two particularly good examples are those of Singapore and Malaysia. These countries have used provident-fund, fully funded, defined contribution schemes, where compulsory contributions are maintained in a central fund with separate accounts for

individual contributors. On retirement, benefits consist of accumulated contributions plus interest and take the form of a lump sum payment. Compulsory coverage is generally limited to wage earners in the formal sector, and those with low wages or with short employment records receive limited coverage.

Provident fund systems may generate higher savings. While it is possible that voluntary private savings may be reduced as compulsory saving increases, the experience of Malaysia and Singapore, where national saving rates typically exceed 30%, suggests that provident funds may have contributed to high overall national savings rates.

According to Samwick (1996), a combination of mandatory fully funded schemes with supplementary defined benefit arrangements relieves pressures on budgets while providing protection for retirees. The mandatory, fully funded pillar may lead to higher saving by making people aware of the need to save for the future, and through forced saving. It is also likely to deepen capital markets through private sector participation in the investment of pension funds. To the extent that the reforms lead to higher saving, they are likely to have a positive effect on growth. The increased capital market deepening that results from the reforms is also likely to contribute to higher output growth, which in turn would generate higher savings.

4. Institutional Mechanisms to Mobilise Savings

Appropriately designed institutions are key to improving the mobilisation of savings in developing countries. The poor tend to have limited access to formal financial services, and the lack of competition means that a high price is paid. This commonly takes the form of high interest payments on loans, but in fact the poor frequently pay for the chance to save: the nominal rates received on deposits are frequently low or even zero, meaning that the real interest rates are negative. In the absence of formal financial services, the poor rely on family and friends to provide loans on a reciprocal basis. A high value is placed on financial intermediation, as is evidenced by the informal financial institutions that have grown in developing countries. There exist a group of formal and informal financial institutions around the world that have developed to attend the needs of the smaller saver and investor. Formal, state introduced mechanisms traditionally worked on the assumption that the poor did not have the capacity to save, and needed direct credit to enable them to escape the poverty trap. As such, the institutions aimed to help the poor directly, through subsidy, rather than address their financial services needs. Empirical studies that will be reviewed in this section have shown that this is not the case; given the appropriate incentives, even the poorest individuals have savings that could be mobilised.

There are two basic types of self-help groups that provide financial mutual aid; they have saving and lending as their primary functions. There are those with rotating funds known as Rotating Savings and Credit Associations (ROSCA), and those with non-rotating funds that Bouman (1995) calls Accumulating Savings and Credit Associations (ASCRA). These groups have grown up in response to specific needs - there is no uniform type across countries, as will be seen below.

Both types of institution are voluntary and autonomous, and have their own objectives, rules and organisation patterns. As financial institutions they are self-sufficient, self-regulating, and have their own control mechanisms. They are thus independent of the legal, fiscal and

financial authorities of their countries. Their great advantage is their flexibility, and this is where their comparative advantage over formal financial institutions lies.

ROSCA

In a ROSCA, a group of individuals pool savings and these are returned to the members in rotation. The order of rotation varies between ROSCA. The ROSCA is governed by the principle of balanced reciprocity; this means that each member contributes the same amount, drawing from the fund as much as he puts into it. The ROSCA intermediates between savers and borrowers, allowing some to get funds before they could in the absence of the association, and allowing others to save more than they otherwise would. Once the rotation has finished, the association officially comes to an end, although in practice individuals tend to be perpetually involved in at least one ROSCA at any one time¹⁶.

The lifetime of the ROSCA depends on the number of participants, and the periodicity of the payments. Due to the regularity of the payments, they must have a steady source of income, and so membership tends to stem from homogenous groups (same occupation, residential area, social clubs). There are clearly two aspects to the ROSCA. There is the lending side, and the saving side. The attraction of the scheme depends on the perspective of the individual. For example, in a traditional ROSCA, no interest is paid, so it is not particularly attractive as a savings mechanism. However, if an individual is a member of a ROSCA because they need a loan, then the lack of interest is an attractive feature.

Aside from the financial intermediation role played by ROSCAs, Bouman sees that there is an illiquidity role. Contributions that are made to a ROSCA are recognised as being obligatory, and constitute a senior claim that must be respected by others. Thus, according to Bouman, individuals with money that they want to keep safe from greedy relatives will join a ROSCA in order to become illiquid.

Adams and Canavesi (1989) performed a study of ROSCAs in Bolivia. They note that a significant proportion of the adult population participate in many countries, at least occasionally. Interestingly, they found that such associations were common among employees of most formal financial intermediaries, suggesting that they offered benefits that could not be obtained from the financial intermediary in which they worked.

They discover that part of the attraction of participation in ROSCAs, in Bolivia at least, is the gambling element involved. Given that such associations are used more for saving motives than borrowing, the perceived benefits of being lucky and drawing an early lot exceeds the cost of being unlucky and getting a late position. The flexibility of the system comes from the informality. While there are mechanisms in place to determine the order of rotation, these are sometimes waived, for example in the case of those with greater need. This is in contrast with the inflexible terms offered by the formal financial institutions. Another method of determining the rotation is through an auction-style system - this introduces an element of interest payment into the process, and differentiates between those using the ROSCA for saving, and those using it to borrow. In effect, individuals bid to receive funds - those in need

¹⁶ Van Der Brink and Chavas (1997) develop a microfoundations model of a ROSCA based on the fieldwork at the Big Babanki of Cameroon for the period 1979-80; they determine efficiency conditions. They state that the default risk of private money lending unconditional contracting within the context of a networking economy such as a village-characterised by insurance-motivated conditional contracting is probably a major reason for the development of the ROSCA institution (p.761).

of the funds early on, who therefore enter the ROSCA with the intention of borrowing - will bid at a discount, and effectively pay a rate of interest for the funds; this interest will increase the amount received by members who bid later on in the life of the fund.

The schemes offer other advantages to individuals. All (bar one) of the members get funds sooner than if they saved themselves alone. There is no explicit interest charge (although there is an implicit interest charge if an auction system is used to decide rotation); if other, more formal forms of credit were used, the interest charged would certainly exceed that received on deposits. From a finance provider's point of view, for example a merchant, the default risk is mitigated, compared with providing credit. Further, in inflation prone countries, promotional ROSCAs are a way for both seller and buyer to manage and reduce inflation risks.

As ROSCAs have evolved in response to the specific needs of individuals, weaknesses in their structure tend to have been resolved over time. For example, under the standard, non-bid rotation of the funds, no interest is charged, meaning that late receivers save interest free. The auction system of rotation gets around this problem, providing a more effective form of financial intermediation. The auction system also addresses another criticism of the traditional ROSCA, namely that a player cannot be sure when the fund will be received - by bidding appropriately, the element of chance is mitigated.

In some countries, the concept of interest payments on loans is still not culturally accepted. In these countries, a more acceptable way may be a last first arrangement, such that those who receive their share later in one scheme, receive it earlier in the next. Where interest payments are used, there is the risk identified by Adams and Canavesi (1989) that an individual could offer a deeply discounted bid in order to receive finance early on, and then renege on the repayments. To address this risk, many ROSCA agree beforehand on a maximum bid that may not be exceeded. Adverse selection suggests that anyone offering an excessively high bid wants to benefit by being an early winner, and renegeing.¹⁷

Adams and Canavesi found that 91% of the individuals that they interviewed in Bolivia gave their reason for entering a ROSCA as being to save, not to get a loan. The widespread participation indicated that individuals were keen to save in financial forms, even in the face of high inflation.

ASCRA

The term ASCRA was coined by Bouman (1995) as a generic term to describe non-rotating savings and credit associations. They differ from ROSCAs¹⁸ in that savings are not immediately redistributed between the members, but are allowed to accumulate to make loans. Usually the cycle lasts a year, after which partial or complete redistribution of the proceedings takes place and a new cycle starts. The main purpose of the ASCRA is to save for specific purposes highly regarded by the members, such as community and social events. There is an order of priority for loans: emergencies and misfortunes, consumption loans and production loans. Contributions, interest payments and fines build up the fund. The contributions come

¹⁷ Seibel and Shrestha (1988) report that the Nepalese Dhikuti has incremental payments in addition to the amounts bid. The recipient (winner) of the first fund pays more than the winner of the second, and so forth, diminishing step-wise to the last recipient who pays nothing.

¹⁸ For a detailed list of differences see Bouman (1995, p.377).

from a more heterogeneous base of society. The amounts and regularity of payments are set in the membership agreement, but tend to be more flexible than ROSCA. The ASCRA has a broader set of objectives than the ROSCA, and fulfills group rather than individual goals. To perform the lending activity, the ASCRA has higher overheads than the ROSCA; they must hold records, higher administration and supervision. There is also a magnitude difference: most ROSCA are composed of no more than 50 members, while the ASCRA membership could be greater than a thousand. This increases the chances of embezzlement and fraud, because of diminishing social control (Bouman (1995)).

Take-up of informal finance

Bouman (1995) cites evidence on take-up of ASCRAs and ROSCAs from a number of sources. According to Siebel (1986) membership ranges from 50-95% of the adult population in certain central African countries. However, the spread of membership is far from uniform, and can be as low as 10-25% in both rural and urban areas. Bouman (1995) notes that research in the Gambia and Uganda suggests that ROSCA are more common in urban areas, and ASCRA in rural areas.

It is the role of such informal financial institutions as savings vehicles that comes a surprise to many. In many countries, these associations are the sole deposit agents, either due to the absence of formal financial institutions, or because the formal institutions tend to tie savings in with borrowing, as discussed below. Schreider and Cuevas (1992) report that the informal financial groups in Cameroon handle about half of the total national savings of the country.

There is evidence of the formal financial institutions' recognition of the importance of the role played by informal institutions. The work of Adams and Canavesi on Bolivia (1989) has shown banks using formally organised schemes to enable individuals to raise the finance required for deposits on houses, to obtain mortgages.

Microcredit Institutions (MCI)

The Micro Credit Institutions (MCI) have been a success story in Bangladesh and are seen as the example to follow in the rest of the developing world. The Grameen Bank,¹⁹ the Bangladesh Rural advancement committee (BRAC) and the Association for Social Advancement (ASA) are based on the capacity of the poor to make savings out of their normal income. MCI lending provides loans, with small frequent repayments. In effect, such lending is advances against savings. Use of such loans varies, tending to be either for consumer purchases or for business reasons. In the latter case, they may be repaid by the additional returns provided by the business expansion, that the loan funds, but in general they are repaid through weekly saving. MCIs are first and foremost money lenders; they act as financial intermediaries only to the extent that they supplement their loan funds, which come mainly from donor grants, with forced savings taken from customers. They are not in the business of acting as general deposit takers: all of their customers have outstanding loans. This means that such institutions are not attractive to the poorest groups; the poor are often unwilling to borrow, and under the group collateral approach of the MCIs, which means that grouped customers are jointly responsible for each others' loan repayments, there is an incentive to keep the poorest individuals out. Work by Rutherford (1998) on Bangladesh found a further reason why MCI tended to discriminate against the poor: branch staff are formally threatened with the loss of their job if repayment rates fall below 95%. It appears that those excluded are

¹⁹ See **Box 1** concerning Grameen Bank.

those whose introduction to formal financial services would most conveniently have come via the opportunity to save.

MCI's are not ideal financial intermediaries by any means. Rutherford points out a number of reasons why this is so:

- the poor's capacity to save can only be exploited by going into debt, at high rates of interest. It is reported that interest of up to 32% p.a. against advances against saving is charged.
- Part of the condition of the advance is compulsory daytime attendance at meetings, which is costly for the labouring poor.
- Borrowers do not generally need the loans which they take out. They have little influence over the timing or size of the loan, and as a result the loans may not be appropriate for the borrowers needs.

Credit Unions

Savings and loans co-operatives, also known as Credit Unions²⁰, are organisations owned and operated on a non-for-profit basis by its members according to democratic principles. Their purpose is to encourage savings, to use pooled funds to make loans, and to provide other related services to members and their families (Cuevas, 1988 p.5). The democratic structure, the operating principles governing service to members and the social goals that characterise credit unions are likely to blend with and build upon the implicit principles of mutual trust and co-operation that exist in rural communities. They mainly flourish in rural areas and the established network usually exceeds the bank branches. Many observers regard them as the first step in the development of institutional finance. Worldwide, loans from credit unions grew at average annual rates substantially higher than credit received by the private sector from the banking system (p.9). The explanation for this fact is the different regulatory environment affecting the two types of institutions. Banks and other non-cooperative financial institutions are more likely influenced by policies aimed at increasing credit to the public sector than Credit Unions. Banks are also more prone to invest in government instruments if they perceive their loan demand is riskier than usual, thus reducing private sector credit. On the other hand, Credit Unions are in most cases unregulated or less regulated by the monetary authority, and the nature of the organisation makes the level of risk implicit in their loan demand more stable than that faced by the banking institutions.

For Van Der Brink and Chavas (1997) the main limitations for the development of Credit Unions are that (1) an individual cannot withdraw savings that serve as a guarantee for another individual loan, and (2) the limited capacity to reinvest savings locally, what constraint the operations of the institution (p.763). According to Bouman (1998, p. 374) the disadvantage of the cooperative type models is that as they become permanent institutions they tend to become formalised, static, bureaucratic and have greater operating costs, are more likely of mismanagement and diminishing social control.

²⁰ Other names for the institution in Francophone Africa are *Co-operatives d'Epargne et de credit*, *Caisses populaires* or *Banques Populaires*. In Latin America they are known as *Cooperativas de Ahorro y Credito*.

Box 1: *The Grameen Bank in Bangladesh: A Model Bank?*

Commercial operations began in 1983.

Managing Director: Muhammad Yunus

Size of Bank: \$100 million in equity; \$275 million outstanding loan portfolio; has lent more than \$2 billion to 2.3 million low-income borrowers in rural Bangladesh, 94% of them women.

Loan Size: average is local currency equivalent of \$160, but can range from \$1 or less to \$300 or more.

Ownership: Grameen borrowers 93%, government 7%.

Working Principle: if any member of the group defaults, all are cut off from new lending until the outstanding debt is repaid.

Business Strategy: lend without collateral to small groups of peers, not individuals, via a system based on mutual trust, accountability, participation and creativity .

Number of Villages served: 37,000.

Repayment Rate: 98%.

Number of Employees: 12,000.

Definition of Credit: the entry point for breaking the vicious cycle of poverty .

Portion of Borrowers who have escaped poverty: 33.3% (World Bank/Grameen Bank estimate).

Source: Impact, Vol.2, No.3, 1998, The IFC Review of Private Investment in Developing Countries, International Finance Corporation, The World Bank, Washington DC.

5. Conclusion

There is a vast literature looking at issues related to savings and development, the main elements of which have been reviewed here. The link between financial sector development and saving is very important, though largely overlooked, with most authors examining the relationships between either financial sector development and growth, or saving and growth. There are clearly a number of areas identified in the paper that require further investigation. An issue that has not been discussed in the present paper is related to the measurement of financial liberalisation in order that the relationship between financial sector development and savings mobilisation is tested empirically. Measuring financial liberalisation is a difficult task. Williamson and Mahar (1998) have recently constructed an index of financial liberalisation which suggests six dimensions: the elimination of credit controls; the deregulation of interest rates; free entry into the banking sector or more generally, the financial-services industry; bank autonomy; private ownership of banks; liberalisation of international capital flows. Along the above lines, they classified countries (34 economies in total) over the period 1973-96 in each of the above six dimensions of financial liberalisation as repressed economies, partly repressed economies, liberalised economies and largely liberalised economies. A much more advanced methodology in constructing indices of financial liberalisation is related to a recent study by Bandiera *et al.* (1998). The authors use the principal components method to construct an overall index of financial liberalisation for the countries covered in their study.

Their index includes variables related to domestic financial liberalisation (e.g. interest rates, pro-competition measures, reserve requirements, directed credit variables, variables related to banks ownership and prudential regulation dummies), variables related to securities markets and finally, variables associated with international financial liberalisation (e.g. the degree of liberalisation for capital movements and exchange rates). The above clearly suggest that this area should be the subject for further research in the near future along with the issues already identified in this paper.

Appendix I: A Summary of recent work on savings mobilisation: methodologies used, and results obtained in the literature.

Authors :	Outline:	Findings:
Honohan (1999)	Examines data on money market and bank interest rates for evidence of whether financial liberalisation led to increased volatility of interest rates and asset prices, had distributional consequences.	As more countries liberalised, the level and dynamic behaviour of developing country interest rates converged to industrial country norms. There was an increased short-term volatility in both real and nominal money market interest rates. While quoted bank spreads in industrial countries contracted again in the late 1990's, spreads in developing countries remained higher, possibly reflecting the increased risk of lending in the developing world.
Bandeira, Caprio, Honohan and Schiantarelli (1998)	Use Principal Components to construct a 25-year time series index of financial liberalisation for each of eight developing countries, which is employed in an econometric analysis of private saving in these countries.	Find that effects of financial liberalisation differ across countries; there is no evidence of significant, private and sizeable interest rate effects. Overall, there is no firm evidence that liberalisation increases saving; often it will reduce it.
Rutherford (1998)	Looks at the development of financial service provision in the form of micro-credit institutions in Bangladesh, which exploit the capacity of the poorest to save.	MCI's should be encouraged to concentrate on key issues in the provision of financial services for the poor, namely the intermediation of savings into loans, elimination of entrance barriers, lowering transaction costs and flexibility. Provision of services should be seen as a worthwhile service in its own right.
Cardenas and Escobar (1998)	An intertemporal model of a one-good, small open economy is used to analyse the determinants of saving in Colombia, using time series data.	Higher government spending is found to result in lower national saving, and so the hypothesis of Ricardian equivalence is refuted. Changes in national savings and changes in investment are found to be perfectly

Samwick (1998)	<p>The paper uses a life-cycle model of consumption to estimate the distribution of household rates of time preference, and to use the estimates to simulate the savings response to a pension buy out program. A key feature of the model is that the presence of income uncertainty and liquidity constraints makes the dedicated retirement account an imperfect substitute for private savings - if this were not the case, every worker would buy out completely</p>	<p>correlated, and savings granger-cause growth. Increases in urbanisation and age dependency have had a significantly negative effect on private saving in Colombia</p> <p>The long term benefits of a privatisation of social security include a higher savings rate, but there is a real danger of a reduction in national savings when the reform is implemented, as if households expect a reform to make them better off, they may consume more immediately. Samwick's scheme shows that there is a simple scheme that circumvents this problem by making the amount that households benefit directly proportional to the amount they save in a dedicated account.</p>
Aizenman and Powell (1998)	<p>A two period model is used to investigate the behaviour of political parties in the absence of a dictator, and consequently its effect on saving.</p>	<p>A collective action problem may result in public savings being too low. In the extreme, government borrowing may be determined by outside borrowing constraints rather than the internal solution from maximising a specified social welfare function. Mitigating factors will be high discount rates, which will result in cooperation between competing parties, frequent elections, which act as a monitoring device, and the presence of international agencies.</p>
Lane and Tornell (1998)	<p>A non-representative agent intertemporal macroeconomic model is built to rationalise the observation that, contrary to the predictions of the life-cycle model, Latin American savings</p>	<p>The result is modelled as the equilibrium outcome of interaction between multiple groups that have common access to aggregate income. They suggest that institutional reform may hold the key to improving the cyclical behaviour of Latin</p>

	rates are substantially less procyclical than those of OECD countries.	American savings.
Hunte (1997)	Tests the sensitivity of savings deposits to changes in interest rates using individual financial records of 584 clients applying for loans through 42 Peoples Cooperative Banks in Jamaican rural financial markets.	Reducing inflation, utilising real positive interest rates and allowing DFI" to be transformed into providers of deposit and other financial services are some of the critical elements necessary for strengthening financial deepening.
Edwards (1996)	Performs a theoretical and empirical assessment of the determinants of savings rates, using cross-country, time series data. A distinction is drawn between private and public savings: public savings are assumed to be endogenously determined by economic and political variables	Per capita income growth is the most important determinant of private and public savings. Public saving is lower in countries with higher political instability. Public savings crowd out private savings, but less than proportionately.
Shahin (1996)	Highlights the assumptions and arguments behind, and the results of, financial repression, financial liberalisation, and the neo-structuralist critique.	Even if the direction of the change in economic activity after liberalising interest rates were to be in line with the results of the McKinnon-Shaw school, the effects of the policy changes on informal finance cannot be ignored.
Palley (1996)	A VAR analysis is presented in order to examine the question of causality in the savings-investment relationship.	Overall, using VAR and Granger-Causality methods, investment spending is independent of personal saving and government saving. Increases in personal saving actually have a negative effect on investment and government saving, whilst increases in government saving have no effect on investment spending. Thus policies to increase private an public saving are unlikely to increase investment.
Schwarz (1995)	Examines the contradictions between state-run,	Proposes a multipillar scheme, which has one pillar devoted to providing

	unfunded pension schemes, and defined contribution schemes, and identifies potential areas for reform.	a saving mechanism, and the other to alleviating poverty.
Bouman (1995)	Compares ROSCAs and ASCRAs, discussing the weak and strong points of both, and looks at hybrids that has emerged.	Development aid in the form of imposition of financial systems is frequently not the ideal; indigenous self-help societies have their own ways of helping themselves and their own idea as to the speed and development of systems.
IMF, World Economic Outlook (May 1995)	Undertakes a general review of determinants of savings and development.	Aggregate savings provide the ultimate constraint on global investment spending. Since investment spending provides a key link to productivity and real income growth, there must be an adequate supply of saving for the world economy to advance at an acceptable pace.
Schmidt-Hebbel, Webb and Corsetti (1992)	Uses household data to estimate savings functions using combined time series and cross country observations in order to test households' responses to income and growth, rates of return, monetary wealth, foreign saving and demographic variables.	Income and wealth affect saving strongly in ways consistent with standard theories. Inflation and interest rate show no clear effects, consistent with the theoretical ambiguity. Foreign savings and monetary assets show strong negative effects, suggesting the importance of liquidity constraints and monetary wealth in developing countries.
Webb and Zia (1989)	Focuses on the implications for savings of an end to rapid population growth in developing countries. A life-cycle model is used, which differs from the usual assumptions of steady state populations, and examines the effects of deviations from the steady state occurring during demographic transitions.	Demographic transitions would increase aggregate saving by 5% or more of GDP. This increase will have a significant impact on per capita growth rate. In general an inverse relationship is found between dependency ratios and savings. The greatest fluctuations of savings occur when the population systems deviate furthest from steady state.
Adams and Canavesi (1989)	Report on research in Bolivia on informal rotating savings and	Substantial capacities to save voluntarily exist, even in the poorest countries.

	credit associations	Defects in policies, rather than deficiencies in human savings behaviour inhibit the mobilisation of more of these savings in to formal financial markets.
Deaton (1989)	A standard intertemporal utility maximisation model is developed of households that cannot borrow, but which accumulate assets as a buffer stock to protect consumption when incomes are low.	Saving is not simply a matter of accumulation, it is also a matter of consumption smoothing in the face of volatile incomes, and providing insurance for poor people whose lives are uncertain.

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