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**THE MOBILISATION OF SAVINGS FOR GROWTH AND
DEVELOPMENT IN DEVELOPING COUNTRIES**

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Introduction

The growth of output of any economy depends on capital accumulation, and capital accumulation requires investment and an equivalent amount of saving to match it. Two of the most important issues in development economics, and for developing countries, are how to stimulate investment, and how to bring about an increase in the level of saving to fund increased investment.¹

In this paper, I discuss a number of issues in a general way, but which may be thought of in the context of any particular country including the **Dominican Republic**. First, I introduce the famous (and simple) Harrod growth formula for estimating the savings requirements for growth and define the notion of the savings-investment gap for the closed economy, and the export-import (or foreign exchange gap) for the open economy. Secondly, I distinguish between the different types of saving – voluntary, involuntary and forced – and discuss the determinants of voluntary saving. Thirdly, recent research on explaining differences in the domestic savings ratio across countries is discussed. Fourthly, I turn to the controversial issue of the role of financial liberalisation in stimulating saving, investment and growth, and give reasons for the disappointing results of financial liberalisation programmes and why countries need to tread with great care in the liberalisation process. Fifthly, I briefly mention involuntary saving and the measurement of tax effort. Lastly, I turn to foreign

¹ Note that the *funding* of investment is not the same as the *financing* of investment which merely requires financial institutions willing to lend for investment purposes in advance of prior saving. Investment is not constrained by prior saving; but ultimately saving must match planned investment for *real* capital accumulation to take place.

saving and the conditions that need to be met for borrowing from abroad to raise the growth of national income on the one hand, and the growth of national output on the other.²

Saving Requirements for Growth

Mathematically, the growth of output ($\Delta Y/Y$) can be expressed as the product of the ratio of investment to national output (I/Y) and the productivity of investment ($\Delta Y/I$), i.e.

$$\frac{\Delta Y}{Y} = \left(\frac{I}{Y}\right)\left(\frac{\Delta Y}{I}\right) \quad (1)$$

This is definitionally true, and identical to Harrod's famous growth formula for the actual rate of growth (Harrod, 1939) of:

$$g = \frac{s}{c} \quad (2)$$

where g is the growth rate ($\Delta Y/Y$); s is the savings ratio (S/Y), and c is the incremental capital-output ratio ($I/\Delta Y$) i.e. the amount of investment or increase in the capital stock required to increase the flow of output by one unit (which is the reciprocal of the productivity of investment, $\Delta Y/I$). The Harrod formula for the actual rate of growth is definitionally true since in the national accounts (*ex-post*) saving (S) and investment (I) are always equal.

The simple Harrod growth formula has proved to be remarkably useful for the purposes of planning and forecasting, and the development plans of many developing countries invariably make reference to it. It is clear, for example, that given the capital-output ratio for a country, the ratio of saving and investment to national income can be calculated for any target rate of growth stipulated. Suppose a country wishes to grow at 5 percent per annum, and the capital-output ratio is 3, it can be seen from equation (2) that it must save and invest 15 percent of its national income. If it saves less, growth will be slower,

² National income differs from national output to the extent of net income from abroad (positive or negative).

unless the country can somehow reduce the incremental capital-output ratio or raise the productivity of investment.

If there is a difference between the actual savings ratio and that required to achieve a target rate of growth, there is said to exist a savings-investment (S-I) gap. In the example given above, if the required savings ratio is 15 percent and the actual ratio is 10 percent, the S-I gap is 5 percent. This needs to be filled if the target growth rate is to be achieved. This can be done by either attempting to raise the domestic savings ratio or by borrowing from abroad i.e. by foreign saving.

This is a very simple framework for analysing the relation between savings and growth in a closed economy. In the case of an open economy with foreign trade, not even 5 percent foreign borrowing may be enough if the difference between the import requirements for growth and export earnings is more than 5 percent of output. In this case, a dominant export-import (X-M) gap is said to exist which would need to be financed by foreign capital inflows of various types. This leads to the concept of dual-gap analysis, originally pioneered by Chenery and collaborators (e.g. Chenery and Strout, 1966), which argues that foreign borrowing will be necessary to fill whatever is the largest of the two gaps if the target rate of growth is to be achieved. In other words, if the X-M gap is the larger (or the dominant constraint) foreign borrowing has a dual role – not only to supplement domestic saving, but also foreign exchange.

The **Dominican Republic's** saving and investment record from 1970-2000 is shown in Table 1. The average gross investment ratio is 22.3 percent. An investment ratio of this order, combined with the **Dominican Republic's** average GDP growth of 5.7 percent per annum since 1970, implies an incremental capital-output ratio of approximately 4, which is

about the average for developing countries³. The average savings ratio of 15.3 percent is some 7 percent lower than the investment ratio, implying on average that the **Dominican Republic** has been a net importer of capital from abroad.

Let us now turn to a consideration of the determinants of the domestic savings ratio, and then at the end I will consider foreign saving and the problems to which it may give rise.

Table 1
Saving and Investment in The Dominican Republic

Year	Gross Capital Formation as Percent of GDP	Gross Domestic Saving as Percent of GDP
1970	19.1	11.8
1971	17.9	9.7
1972	19.7	14.9
1973	22.1	18.3
1974	23.5	12.1
1975	24.5	22.2
1976	22.5	15.2
1977	21.8	17.6
1978	23.7	16.8
1979	25.4	19.0
1980	25.1	15.4
1981	23.6	19.4
1982	20.0	15.1
1983	21.1	17.2
1984	21.3	16.7
1985	17.6	8.7
1986	19.8	10.7
1987	24.2	12.4
1988	24.6	15.8
1989	28.5	17.4
1990	25.1	15.3
1991	21.8	14.5
1992	22.6	10.9
1993	26.5	19.1
1994	21.4	16.0
1995	19.5	16.1
1996	18.9	14.1
1997	19.8	15.0
1998	23.4	14.5
1999	24.2	16.8
2000	23.7	14.2

³ If the period of very rapid growth from 1970-73 is excluded, the average growth of GDP is 4.6 percent per annum, and the capital-output ratio would be 5.

Average	22.3	15.3
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Source: World Development Indicators

Types and Determinants of Domestic Saving

There are basically three types of private domestic saving, each with their own different determinants, namely: voluntary saving; involuntary saving, and forced saving. Voluntary saving relates to the voluntary abstinence from consumption by private individuals out of personal disposable income and by companies out of profits. Involuntary saving is saving brought about through involuntary reductions in consumption. All forms of taxation and schemes for compulsory lending to governments (including national insurance contributions) are forms of involuntary saving. Forced saving is saving that comes about as a result of rising prices and the reduction in real consumption that inflation involves if consumers cannot (or do not) defend themselves. Rising prices may reduce real consumption for a number of reasons. Firstly, people may suffer money illusion. Secondly, they may want to keep constant the *real* value of their money balance holdings, so they accumulate more money and spend less as prices rise (the real balance effect). Thirdly, inflation may redistribute income to those with a higher propensity to save, such as profit earners. Inflation initiated by monetary expansion will certainly redistribute income to the government as the issuer of money. This is the notion of the inflation tax. As Keynes once said '[inflation is] a form of taxation that the public finds hard to evade and even the weakest government can enforce when it can enforce nothing else' (Keynes, 1923). I will concentrate here on the determinants of voluntary and involuntary saving and leave the issue of the inflation tax on one side. I believe myself, however, that in certain circumstances there is a case for mild demand inflation initiated by government as a stimulus to investment. The empirical evidence across countries (Thirlwall 1974a, 1974b; Sarel, 1996; Bruno and Easterly, 1998) suggests a positive relation between inflation and growth up to 6-8 percent inflation, and only

when inflation exceeds 10 percent do the consequences for growth become seriously detrimental.

Voluntary saving depends on the capacity to save and the willingness to save. The capacity to save depends on three main determinants: the level of per capita income; the growth of income, and the distribution of income. The willingness to save depends, in turn, on: the rate of interest; the existence of financial institutions; the range and availability of financial assets, and the rate of inflation.

One of the most important innovations that Keynes made in his *General Theory of Employment, Interest and Money* (1936) was to link, for the first time, consumption (and therefore saving) to the level of income through the concept of the consumption (or savings) function. More explicitly, there is the suggestion that the consumption or savings function is non-proportional; that is, that the rich (people or countries) consume proportionately less, and save proportionately more, of their income than the poor. One way of expressing this idea is to start with the savings function:

$$\frac{S}{P} = -a_1 + b_1 \left(\frac{Y}{P} \right) \quad (3)$$

where S/P is the level of savings per head of population (P), and Y/P is per capita income. The negative constant term means that the marginal propensity to save is above the average, so raising the average as Y/P rises.

To convert this function so that the savings ratio is the dependent variable, multiply both sides of the equation by P and divide by Y . This gives:

$$\frac{S}{Y} = b_1 - a_1 \left(\frac{Y}{P} \right)^{-1} \quad (4)$$

where the savings ratio is a non-linear function of per capita income i.e. as Y/P rises, S/Y rises but at a decreasing rate to the asymptote b_1 . This is broadly the pattern observed across countries (Hussein and Thirlwall, 1999). The savings ratio is lower in poor countries than in

rich countries, but does not rise linearly as income increases. It increases at a diminishing rate and then levels off (at approximately 25 percent of national income). The **Dominican Republic's** average domestic savings ratio over the period 1970-2000 was 15.3 percent with an average per capita income of \$US 1385 (at 1995 prices). On the basis of the international cross-section evidence, this ratio is substantially below the savings ratio that would be expected on the basis of the level of income alone. The predicted savings ratio at \$US 1385 is 21.3 percent.⁴

Apart from the level of per capita income, another major determinant of the domestic savings ratio is likely to be the *growth* of income as suggested by the life-cycle hypothesis of saving. The basis of this hypothesis is that individuals and households attempt to spread out consumption evenly over their lifetime. A typical pattern of behaviour would be dissaving in youth, positive saving in middle-age, and dissaving in retirement, breaking even on death (on the assumption of no bequests). Consider now the effect of income growth within this framework. If income is rising over time, it means that the life earnings and consumption of each successive age group will be higher than the preceding one. If each successive age group is aiming for a higher level of consumption in retirement, the volume of saving of the active households will exceed the dissaving of the currently retired households with a lower level of lifetime consumption. The savings ratio will then tend to rise with the rate of growth of income because the higher the growth rate, the greater the gap between the target levels of consumption of the current generation of working households and the dissaving of retired people from a less prosperous generation. Thus, countries with higher growth rates might be expected to have at least higher personal savings ratios than countries with lower growth rates. The exceptions will be countries where population is not in balanced growth; where, for example, population growth has accelerated or slowed down dramatically changing the

⁴ Taken from an estimated equation across 62 countries of: $S/Y = 23.97 - 3665.4 (Y/P)^{-1}$ (see Hussein and

balance between active and non-active households (i.e. changing the dependency ratio). For this reason, in testing the life-cycle hypothesis, the growth of income is typically split into its two components: the growth of per capita income and the growth of population, with the expectation that the magnitude and significance of the coefficients will not normally be the same.

Another potentially important factor determining the capacity to save is the distribution of income. If the propensity to save of the rich is higher than that of the poor, the aggregate savings ratio will be positively related to the degree of inequality both in the personal distribution of income, and also in the functional distribution between wages and profits on the assumption that the propensity to save out of profits is higher than out of wages. Indeed, movements in the income distribution, both personal and functional, may be an independent explanation of why the savings ratio first rises with the level of per capita income and then levels off. The transformation of countries from traditional agricultural economies through Rostow's 'take-off' stage to maturity is bound to be accompanied in the early stages by widening disparities between individuals, and a rise in the share of profits in national income. Some individuals are more enterprising, and more adept at accumulating wealth, than others.

As far as the *willingness* to save is concerned, it might be expected that the price of present consumption, namely the real rate of interest, will affect saving positively. This classical idea lies behind the financial liberalisation programmes in developing countries which seek to raise the real interest rate to 'market clearing levels' in order to maximise saving, investment and growth. In the last twenty years or so there has been extensive testing of the financial liberalisation hypothesis, and particularly the impact of interest rates on saving, with mixed and largely inconclusive results (see later). Perhaps this is not surprising

for two main reasons. Firstly, the financial liberalisation argument largely refers to financial saving, but financial saving is only one component of total saving. When interest rates rise, agents may simply switch between assets, leaving total saving unchanged. Secondly, it is standard theory that any price change (in this case, the interest rate) has both income and substitution effects. The substitution effect promotes saving, but the income effect reduces saving, and the two effects may cancel each other out. I will have more to say below about financial liberalisation programmes in developing countries.

A more important determinant of the willingness to save is likely to be the existence of financial institutions, and the range and availability of financial assets to suit savers with different needs. There is no single measure that can capture these institutional determinants of the willingness to save. The number, diversity and distribution (or proximity) of financial institutions serving the different interests of savers could be important. Athukorala (1998), for example, finds the bank density index (population per bank branch) a highly significant variable in explaining inter-temporal savings behaviour in India. Equally, the volume and range of financial assets with different terms and maturities might matter as a measure of financial deepening. Indicators of financial deepening include: the ratio of money and quasi-money to GDP; the growth of money and quasi-money, and quasi-liquid liabilities as a percentage of GDP. Hussein and Thirlwall (1999) take this last measure⁵, and find it statistically robust in explaining differences in the savings ratio across countries (see later).

Finally, the rate of inflation can be expected to affect the willingness to save, but the effect is ambiguous. On the one hand, inflation acts as a tax on real money balance holdings, as described earlier. On the other hand, it is natural to expect individuals to avoid the tax if it becomes burdensome in relation to the convenience of holding money. It can be shown

⁵ Quasi-liquid liabilities are defined as the sum of currency and deposits in the central bank (M_0), plus time and savings deposits, foreign currency transferable deposits, certificates of deposit, and securities repurchase agreements, plus travellers cheques, foreign currency time deposits, commercial paper, and shares of mutual

(Friedman, 1971) that the yield from the inflation tax will be maximised when the elasticity of the tax base (the level of real money balance holdings) with respect to the rate of inflation is minus unity. Even if private saving does increase, however, total saving may not increase if the government fully consumes the proceeds of the inflation tax. Inflation may also discourage other forms of voluntary saving because its real value is falling. The most likely relation between inflation and the savings ratio is a quadratic showing saving rising with mild inflation and then falling as inflation becomes excessive. This is what the empirical evidence shows.

Research on the Determinants of Saving Across Countries

Recent research on the determinants of differences in the domestic savings ratio across countries confirms the overwhelming importance of the level of per capita income (PCY, hereafter), the growth of income, and financial deepening. Three studies may be mentioned: Edwards (1996); Masson, Bayoumi and Samiei (1998), and Hussein and Thirlwall (1999). Edwards takes panel data (i.e. pooled time series and cross section data) for 36 countries over the period 1970 to 1992, distinguishing between private and government saving. As explanatory variables, he takes the level of PCY; the growth of income (reflecting the life-cycle hypothesis of saving); various monetary and fiscal variables (including measures of macroeconomic stability); foreign saving, and political variables. The major conclusions highlighted by Edwards are: per capita income growth is an important determinant of private and public saving; financial development is important as a determinant of private saving; higher government saving crowds out private saving, and higher foreign

_____ funds or market funds held by residents. They equal the M_3 money supply less transferable deposits and electronic currency (M_1).

saving is associated with lower domestic saving.⁶ Surprisingly, PCY is not highlighted as an important determinant of savings performance because its statistical significance is relatively low compared with other variables, but this is because the PCY variable is entered in linear form whereas in practice (as mentioned earlier) the relation between PCY and the savings ratio is non-linear, especially when the sample includes high income countries.

The study by Masson et al. recognises this non-linearity using a quadratic specification, taking panel data for 21 developed countries (1971-93) and 40 less developed countries (1982-93) to explain differences in the ratio of private saving to GDP. Many of the other explanatory variables are similar to those of Edwards, and similar conclusions are reached except much greater importance is given to the level of PCY.

Hussein and Thirlwall use panel data for 62 countries over the period 1967-95, distinguishing between the determinants of the capacity to save and the willingness to save. The data on the average domestic savings ratio across countries (including the **Dominican Republic**) and the level of PCY are shown in Appendix 1. The model is tested in step-wise fashion testing each variable separately, and then for its robustness (whether it retains its significance) when other variables are added. The variables that proved to be significant and robust are: the level of PCY entered non-linearly (PCY^{-1}); the growth of PCY (GPCY); the growth of population (POPG); the ratio of quasi-liquid assets to GDP (QLL), and the inflation rate entered as a quadratic (π and π^2). A measure of the personal distribution of income within countries, and the real rate of interest, proved not to be significant as determinants of inter-country differences in the savings ratio. The final estimating equation using panel data (1540 observations) with fixed effects (i.e. allowing for differences in the constant term between countries) is:

⁶ One must be careful not to attribute causality to this association. If domestic saving is defined as the difference between domestic investment and foreign capital inflows, and not all capital inflows are invested, domestic saving and foreign saving must be inversely related by definition.

$$\frac{S}{Y} = 23.68 - 6397.3(PCY^{-1}) + 0.22(GPCY) + 1.34(POPG) + 0.43(QLL) + 0.15(\pi) - 0.54(\pi^2)$$

(20.3)
(12.7)
(6.6)
(5.8)
(2.4)
(4.1)
(3.7)

$$r^2 = 0.75 \tag{5}$$

The bracketed terms are t statistics. All the variables are significant at the 95 percent confidence level or above, and the proportion of the variance in the savings ratio explained by the independent variables is 75 percent. The impact of the variables is to be interpreted as follows: As far as PCY is concerned, since its impact on the savings ratio is non-linear, it will depend on the level of PCY taken. Differentiating equation (5) with respect to PCY⁻¹ gives the change in S/Y as 6397 [1/PCY²]. For example, at PCY level \$1000, the change in S/Y for a \$100 change in PCY would be approximately 6397 (1/1000²) 100 = 0.64 percentage points. At PCY level \$5000, the change in S/Y for the same change in PCY would be 6397 (1/5000²) 100 = 0.025 percentage points. The **Dominican Republic** lies within this range with a PCY of \$US 2320 in 2002. For the three variables entered linearly – GPCY, POPG and QLL – the coefficients show the effect of a one percentage point change in each of the variables on the savings ratio of a country. For example, a one percentage point difference in the growth of PCY is associated with a difference in the savings ratio of 0.22 percentage points. A one percent difference in the quasi-liquid assets ratio is associated with a 0.43 percentage points difference in the savings ratio (all other things equal, of course). As far as inflation is concerned, the savings ratio rises with inflation, but very soon turns negative. Indeed, solving for the rate of inflation which maximises the savings ratio gives a very low rate of 0.15 percent. This is much lower than in other studies.

The conclusions and policy implications of the research discussed above are fairly clear-cut, but not so easy to act on directly. A rise in PCY, which should bring about a rise in

the savings ratio automatically, is a function of many factors not under the direct influence of policy-makers. The major determinant of the level of PCY is labour productivity which depends on investment per worker and technical progress. How to raise the level of investment (which is not the same as saving) and to enhance technical dynamism is the major challenge facing all developing countries. The growth of income and growth of PCY are also important determinants of saving, and again will be a function of investment and technical dynamism. Investment will be promoted by a stable macroeconomic environment, and through the creation and growth of financial institutions willing to lend. Research shows that the degree of financial deepening clearly matters for saving, and governments have a role to play here in providing the proper regulatory and legal framework in which the banking system can operate safely and efficiently. This leads us on to the topic of financial liberalisation; its strengths and weaknesses.

Financial Liberalisation

The importance of financial deepening for economic development has been stressed in the development literature for a long time (e.g. Schumpeter (1911), Lewis (1955), Gurley and Shaw (1960), Tun Wai (1972)), but it was Mckinnon (1973) and Shaw (1973) who, independently in 1973, first highlighted the dangers of financial repression in a rigorous way, and argued the case for maximum financial liberalisation. Financial repression may be defined as a situation in which government and Central Bank regulations distort the operation of financial markets. These regulations include interest rate ceilings, the imposition of reserve requirements on the commercial banks, and compulsory credit ceilings with or without subsidised interest rates. The consequence, so the argument goes, is to reduce the flow of funds to the formal financial sector and to distort the most productive allocation of resources, leading to lower levels of saving, investment and growth than otherwise would be

the case. The views of Mckinnon and Shaw became highly influential in the thinking of the IMF and World Bank in the design of programmes for the financial restructuring of countries as part of Structural Adjustment Programmes.

The arguments of Mckinnon and Shaw differ, however. Mckinnon's argument is that money holdings and capital accumulation are complementary in the development process. Because of the lumpiness of investment and the reliance on self-finance, agents need to accumulate money balances before investment can take place. Positive (and high) real interest rates are necessary to encourage agents to accumulate money balances, and investment will take place as long as the real rate of return on investment exceeds the real rate of interest. Shaw, on the other hand, stresses the importance of financial liberalisation for financial deepening, and the beneficial effect of high real interest rates on the encouragement to save, and the discouragement to invest in low yielding projects. The increased liabilities of the banking system, resulting from higher interest rates, enable the banking system to lend more resources for productive investment in a more efficient way. To quote Shaw 'measures to raise real rates of return on financial assets, to reduce the variance of returns, and to improve financial technology, along with measures in non-financial areas, extend savers' horizons over both space and time'.

Many of the arguments for financial liberalisation sound convincing on the surface, but a number of qualifications need to be made. The experience of financial liberalisation across the globe has been very mixed and we shall consider below some of the empirical evidence relating to the effect of liberalisation on saving, investment and growth as we examine some of the major criticisms of the financial liberalisation argument.

Firstly, the argument refers to *financial* saving, but financial saving is only one type of saving. Financial saving may increase as interest rates are liberalised, but, as mentioned earlier, there may simply be a substitution between financial assets and other assets, leaving

total saving unchanged. Most studies of saving in relation to the rate of interest do not distinguish between financial saving and total saving, but where they do, financial saving is shown to be very responsive, while total saving is not. Warman and Thirlwall (1994) in their study of Mexico show the sensitivity of financial saving to the real rate of interest (and also to the interest rate differential between Mexico and the US).

As far as total saving is concerned, however, most of the empirical studies and surveys of the results of financial liberalisation are extremely cautious in their conclusions. Research by Gupta (1987) on 22 Asian and Latin American countries over the period 1967-76 suggests that there is little support for the hypothesis of financial repression, and that the most important determinant of saving is real income. Giovannini (1983) concludes from his research on eight Asian countries that his results 'cast serious doubts on the view that the interest elasticity of savings is significantly positive and easy to detect in developing countries'. Similarly, a study by two World Bank economists (Cho and Khatkhate 1990) of the financial liberalisation experience of five Asian countries concluded that: 'financial reform, whether comprehensive and sweeping or measured and gradual, does not seem to have made any significant difference to the saving and investment activities in the liberalised countries. It was believed until recently that removal of the repressive policies would boost saving. The survey in this paper of the consequences of reform does not reveal any systematic trend or pattern in regard to saving... it lends support to the conclusion that decisions to save are determined by several factors and the relationship between saving and real interest rates is at best ambiguous.'

Fry (1995), a leading authority on finance and development and an ardent advocate of financial liberalisation, now concedes that 'what is agreed... is that if an effect [on saving] exists at all, it is relatively small' and that 'positive interest effects are easier to find in Asia

than in other parts of the world, but even in Asia the effects appear to have diminished over the past two decades'.

If financial liberalisation does not increase aggregate saving, its positive impact on development must come through a more efficient allocation of resources, which raises the productivity of investment. There is not much evidence on this point, but the World Bank, which devoted its 1989 *World Development Report* to the topic of financial systems and economic development, claims that in countries with positive real interest rates, the average productivity of investment (as measured by the incremental output-capital ratio) was four times higher than in countries with strongly negative real interest rates. This is an area where much more research needs to be done.

A second major criticism of the financial liberalisation argument is that the model treats banks simply as savings depositories, with the presumption that the supply of loans from the banking system depends on deposits held by the banks, and if deposits increase, loans will automatically increase. In short, the supply of credit is treated as exogenously determined. However, if banks have the power to create credit (which they do), backed by a central bank acting as lender of last resort, the supply of loans will depend on the demand for loans, not on the supply of deposits. The supply of loans becomes endogenous. Within this framework, what is important is not so much incentives for saving, but incentives for investment, which may require *lower* interest rates. This is part of the Keynesian and Post-Keynesian critique of the financial liberalisation school.

How the supply of credit responds to the interest rate, and how investment is affected by the supply of credit and the rate of interest, becomes very much an empirical matter. In research by the present author and Fanny Warman of the Bank of Mexico (Warman and Thirlwall, 1994), it was found that, for Mexico over the period 1960-90, financial saving responded positively to the rate of interest, and this led to an increase in the supply of credit

from the banking system to the private sector. However, while the increased supply of credit affects investment positively, there is a strong negative effect of interest rates on the level of investment, holding the supply of credit constant, and the *net* effect of higher real interest rates on investment is adverse. This behaviour is supported by Demetriades and Devereaux (1992) from research on 63 developing countries over the period 1961-90. They find that the negative effect of a high cost of capital on investment outweighs the effect of a greater supply of investible funds. Greene and Villanueva (1991), in a sample of 23 developing countries over the period 1975-87, likewise show a negative effect of real interest rates on investment.

This leads to a third worry about the financial liberalisation model, which is that it ignores the adverse effect that high real interest rates can have on costs and the level of demand in an economy, which may lead to stagflation (a combination of cost inflation and rising unemployment). This is another aspect of the post-Keynesian critique of the financial liberalisation model. High interest rates not only discourage investment, but may also lead to currency overvaluation by attracting capital from overseas, which leads to a fall in exports, and also increases the cost of servicing government debt, which leads to cuts in government expenditure. This has occurred in Africa (see *African Development Report, 1994*). Currency overvaluation and cuts in government expenditure are both deflationary.

A fourth critique of the financial liberalisation school concerns the relationship between the formal and the informal financial sectors. Higher real interest rates are likely to attract funds away from the informal money market, or curb market, where there is no regulation over the use of funds. If banks are subject to reserve requirements and are forced to lend compulsorily to governments, the diversion of funds away from the informal sector may lead to the total supply of loans to the private sector being reduced. This is part of the argument of the neostructuralist school (see Buffie, 1984).

A final point to make is that it does not follow that credit rationing will necessarily be eliminated and resources allocated more 'efficiently' if interest rates are not controlled and are allowed to reach their market clearing level. As Stiglitz and Weiss (1981) showed in a classic paper, banks suffer from the problem of adverse selection because of asymmetric information on the part of borrowers and lenders. Borrowers know more than lenders about the risks involved in a loan transaction. A rational profit-maximising bank may therefore be expected to practice credit rationing to reduce risk, and not simply lend to those projects that seem to offer the highest return but with more risk attached.

Where do these various criticisms leave the financial liberalisation argument? Clearly, the existence of financial repression has to be taken seriously, but it does not follow that the more liberalisation the better when we know that financial markets have many imperfections, and that competition between banks and other financial institutions can lead to financial distress if there are not institutional structures in place with adequate standards of accounting and auditing to prevent bad loans. Governments will always need to intervene for prudential reasons, and also for strategic reasons either as a major borrower or to direct credit. Particular care needs to be exercised in the liberalisation of interest rates because of their impact on costs, investment demand, the exchange rate and the cost of financing government deficits. This raises the intriguing question of what is the 'optimum' real rate of interest for a country? This is virtually impossible to answer, but even in classical terms it is not clear that the optimum real interest rate is necessarily positive. The savings and investment curves could intersect at a negative real rate of interest if liquidity preference is very high and investment demand is very weak.

Ultimately, financial liberalisation has to be judged by its impact on economic growth and development, and here the evidence is very mixed. In a major cross-section study of 80 countries over the period 1960-89, King and Levine (1993) conclude that 'higher levels of

financial development are significantly and robustly correlated with faster current and future rates of economic growth, physical capital accumulation and economic efficiency improvements'. Using cross-section analysis, however, it is difficult to test for causality. It could be that financial development is itself the product of growth and economic development. In fact, Demetriades and Hussein (1996), taking time series data for 16 countries, find considerable evidence of bi-directional causality between levels of financial deepening and economic development, and conclude that different countries exhibit different causality patterns, reflecting differences in financial sector policies and institutional structures. Arestis and Demetriades (1997) find that in South Korea the real interest rate and growth performance have been negatively related. South Korea, despite financial liberalisation, has deliberately pursued a policy of keeping real interest rates low in order to encourage investment. This is also the message from the World Bank's analysis of the East Asian Miracle (1993). It says 'a policy of moderate financial repression at positive real interest rates may have boosted aggregate investment and growth in the HPAEs [high performing Asian economies] by transferring income from depositors, primarily households, to borrowers, primarily firms'.

De Gregorio and Guidotti (1995) suggest that the relationship between real interest rates and growth is likely to be an inverted U-shape because negative real interest rates are not conducive to financial development and growth, and very high real interest rates are also likely to reduce growth by adversely affecting investment and leading to a concentration on risky projects. Somewhere in between, growth is likely to be maximised. Fry (1997) tests this hypothesis across 85 countries for the period 1971-95 and finds broad support for the idea, with the growth rate maximised with the real interest rate at zero!

What is clear from all the evidence across countries and continents is that if financial reforms are to succeed, they must be implemented in an appropriate macroeconomic,

financial and institutional framework and with proper sequencing between internal and external liberalisation. Sequencing is important because if countries liberalise their external sector before or at the same time as internal liberalisation, it can have severe repercussions for the exchange rate. If there is no confidence in the country, the relaxation of capital controls could lead to capital flight and downward pressure on the exchange rate. On the other hand, higher real interest rates could attract massive capital inflows, leading to excessive currency appreciation. Either way, exchange rate instability is not conducive to macroeconomic stability.

Macroeconomic stability means manageable fiscal and balance of payments deficits and low inflation to encourage the holding of financial assets. Confidence in the banking system is also important and requires the restructuring of bank balance sheets, the removal of bad debts and a strengthening of the management and risk evaluation capabilities of bank managers in order to avoid bankruptcies. Governments must strengthen banking regulation and supervision at the same time that liberalisation takes place.

Involuntary Saving

The major form of involuntary saving is that brought about by taxation. How much tax revenue a country raises as a proportion of national income depends on two major factors: first, the taxable capacity of the country, and secondly, the tax effort made by the country in relation to its taxable capacity. Taxable capacity depends on such factors as the overall level of per capita income, the distribution of income, the level of literacy and urbanisation, the size of the industrial (capitalist) sector, the importance of trade, whether a country has mineral resources and the amount of foreign investment. Tax effort, in turn, depends on the extent to which a country exploits these various tax bases, and the rates of tax applied to the bases.

One way of measuring tax effort, pioneered by the IMF (see Chelliah et al. 1975, and Tait et al. 1979) is first to take a cross section of countries and to relate their ratios of tax revenue to national income to the various measures of taxable capacity mentioned above e.g.

$$\frac{T}{Y} = a + b_1(PCY) + b_2 \left[\frac{(X + M)}{Y} \right] + b_3 \left(\frac{I}{Y} \right) \text{etc.} \quad (6)$$

where T/Y is the tax ratio; PCY is per capita income; $(X + M)/Y$ is the ratio of exports plus imports to national income (the trade ratio); I/Y is the ratio of industrial output to GDP, and the coefficients b_1, b_2, b_3 etc measure the average effect of each of the independent variables on the tax ratio across countries. For example, if b_2 was estimated as 0.5, this would mean that a country with a trade ratio one percentage point above the average would have a tax ratio of 0.5 percentage points above the average for all countries (other things being the same). By this method, a country's tax effort can then be measured by substituting values for $PCY, (X + M)/Y$ and I/Y etc. into equation (6), predicting what the tax ratio should be if it was an 'average' country and comparing the actual tax ratio with the predicted value. If the actual is greater than predicted, the country can be said to be making a good tax effort; if it is less, the tax effort can be regarded as weak.

In the study by Tait et al. (1979), the **Dominican Republic** was shown to have made an average tax effort in the years 1972-76 with an actual tax ratio of 15.4 percent compared with a predicted ratio of 16.2 percent based on the country's income per head and economic structure. For the more recent period 1985-95, Piancastelli (2000) finds that the **Dominican Republic's** tax effort has worsened. Using panel data with individual country fixed effects, he estimates the following equation across 75 developed and developing countries:

$$\log \frac{T}{Y} = 0.793 + 0.173 \log PCY + 0.183 \log \frac{(X + M)}{Y} \quad (7)$$

(3.4) (7.5) (4.8)

Substituting values for PCY and the trade ratio for the **Dominican Republic** (plus the fixed effect) gives a predicted tax ratio of 16.4 percent compared to the actual tax ratio of 12.7 percent (average). In other words, the actual ratio is 23 percent below predicted.

Foreign Saving

It was mentioned at the beginning that a deficiency of domestic saving, or a savings-investment gap, can be compensated for by foreign saving or foreign borrowing. Foreign resource inflows permit investment to exceed domestic saving by allowing imports to exceed exports. This can be seen from the national accounts: $Y = C + I + X - M$, where Y is income, C is consumption, I is investment, X is exports and M is imports. Since saving (S) is income (Y) minus consumption (C), we have: $I - S = M - X = F$, where F is foreign capital inflows. Ignoring for the moment any interest payments or profit repatriation, so that the value of national income and output are equal, and assuming nothing else changes, it can be shown that foreign borrowing raises unambiguously the growth of income and output. Using equation (1) (letting $g = \Delta Y/Y$ and $\sigma = \Delta Y/I$), we have:

$$g = \frac{I}{Y} \sigma \quad (8)$$

and since $I = S + F$, we have:

$$g = \left[\frac{(S + F)}{Y} \right] \sigma \quad (9)$$

or

$$g = \left(\frac{s + F}{Y} \right) \sigma \quad (10)$$

where s is the savings ratio and F/Y is the ratio of foreign borrowing to national income. In the closed economy, $g = s\sigma$ (or $g = s/c$ using the Harrod notation – see equation (2)). In the

open economy, F/Y raises g provided s and σ are not adversely affected by the process of foreign borrowing.⁷

Foreign borrowing, however, must be paid for (unless it is in the form of pure grants, or the resource inflow is direct foreign investment and no future profits flow out). If borrowing is in the form of loans, interest payments abroad reduce national income below the value of national output, and then the income loss reduces saving which affects the growth of output. In these circumstances, equation (10) is not sufficient for analysing the effect of foreign saving on economic growth. We need to derive and state more formally the conditions for foreign saving to (i) raise the growth of income, and (ii) raise the growth of output. Here, I will simply state the conditions, without going into their mathematical derivation.⁸

The rate of growth of *income* will be higher as long as the productivity of the foreign borrowing (or capital inflow) exceeds the cost of borrowing (i.e. the rate of interest) i.e.

$$\frac{\Delta Y}{Y} = s\sigma + \left(\frac{\Delta D}{Y}\right)(\sigma - r) \quad (11)$$

where $\Delta D/Y$ is the ratio of new debt to income, and r is the interest rate. This result should not be difficult to grasp intuitively; indeed, it is the same condition under which it will be profitable for a firm to borrow money – if the rate of return on the investment exceeds the rate of interest.

The rate of growth of *output* will be higher provided the creation of new debt exceeds the loss of savings from repayments on old debt i.e.

$$\frac{\Delta O}{O} = \sigma(s + \underline{\Delta D - srD}) \quad (12)$$

⁷ Some economists argue that foreign borrowing does weaken the domestic savings effort and reduce the productivity of capital, but we shall not go into these arguments here.

⁸ The results are derived in Thirlwall (2003) pp.554-56.

where $\Delta 0/0$ is the growth of output and D is existing debt (so that srD is the reduction in saving resulting from repayments on old debt).

Both conditions raise the whole question of the debt burden, debt-servicing and whether a country can borrow too much. The question is too complex to tackle here, but two issues need to be borne in mind. First, as far as raising the growth of income is concerned, it may be the case that the productivity of capital exceeds the rate of interest ($\sigma > r$) in equation (11), but it needs to be remembered that repayments of foreign borrowing have to be made in *foreign* currency. The fact that it is profitable to borrow, therefore, does not mean that a debt problem is avoided, if the returns cannot be converted into foreign exchange. Measuring rates of return at world prices is not much help either because it is impossible for countries to know what the state of the world economy is going to be in the future. The debt crisis that erupted in the early 1980s, and which still lingers today, was largely the result of a contraction of the world economy and world trade, and a dramatic fall in commodity prices, making it impossible for debtor countries to earn enough foreign exchange to pay debt service. Both falling world output and prices were beyond the control of the debtors.

As far as raising the growth of output is concerned, it can be seen in equation (12) that in any one year the condition may be a stringent one because new inflows (ΔD) may dry up, but outflows still take place, reducing saving. Indeed, some Latin American countries were in this situation in the mid-1980s in the aftermath of the debt crisis. This does not mean, however, that borrowing may not be beneficial, because the outflows in the present are a reflection of past borrowing when the condition in equation (12) may have been satisfied. A full and proper analysis of the effect of foreign saving on the growth of output (above what it would otherwise have been) needs to take the long time span of history.

Conclusions

From the Harrod growth formula, it is easy to calculate the savings ratio required for a given target rate of growth of GDP. The **Dominican Republic's** investment record has been reasonably good over the last thirty years, which has produced an average GDP growth rate of over 5 percent per annum. The **Dominican Republic's** savings record has not been so good. On the other hand, it is not sensible for any developing country to be a capital exporter!

Domestic saving can be categorised into three types – voluntary, involuntary and forced. Voluntary saving depends on the ability and willingness to save. The ability to save depends primarily on the level of per capita income, the growth of income and the distribution of income. The willingness to save depends (potentially) on the rate of interest, the level of financial deepening and the rate of inflation.

The **Dominican Republic's** savings ratio is below what might be predicted on the basis of its current standard of living. The savings ratio will continue to rise with per capita income, but only very slowly. High interest rates are likely to have only a limited effect, but in any case they discourage investment.

Involuntary saving depends mainly on tax effort. The **Dominican Republic's** tax effort is relatively poor by international standards.

Forced saving is the result of inflation induced by monetary expansion. Countries must tread with great care in imposing an inflation tax, not the least because it affects international competitiveness.

Foreign saving raises unambiguously the growth rate of a country, ignoring debt servicing, and assuming that domestic saving and the productivity of capital are not adversely affected. With debt servicing, foreign borrowing raises the growth of national income if the

rate of return exceeds the rate of interest, and raises the growth of national output if new inflows exceed lost saving from debt servicing on past borrowing. On balance, the **Dominican Republic** has been a capital importer over the period 1970-2000, raising the growth of output above what it would otherwise have been based on domestic saving alone.

Appendix 1

THE AVERAGE DOMESTIC SAVINGS RATIO FOR 62 COUNTRIES OVER THE PERIOD 1967-95

	Country	Savings Ratio (%)	Per Capita Income (PCY) US\$
1	Algeria	33.5	2472
2	Argentina	23.0	3599
3	Benin	2.9	344
4	Brazil	21.7	1737
5	Burkina Faso	2.0	235
6	Cameroon	19.5	841
7	Canada	23.0	13324
8	Central African Rep	2.4	458
9	Chile	20.2	1623
10	Colombia	19.6	1020
11	Congo Dem. Rep.	10.8	239
12	Congo Rep.	20.3	907
13	Costa Rica	19.5	1608
14	Cote d'Ivoire	22.0	1023
15	Denmark	20.8	17519
16	Dominican Rep	15.9	760
17	Ecuador	20.6	1064
18	Egypt	13.1	671
19	El Salvador	9.8	950
20	Fiji	17.5	1689
21	Finland	25.7	14947
22	Gambia	3.6	266
23	Ghana	7.0	427
24	Guatemala	11.5	889
25	Guyana	19.1	517
26	Honduras	16.6	881
27	Israel	22.7	17252
28	India	19.5	296
29	Jamaica	19.6	1431
30	Japan	33.5	17161
31	Kenya	20.0	344
32	Korea	27.1	2521
33	Madagascar	3.8	285
34	Malawi	9.8	152
35	Malaysia	31.5	1746
36	Mauritania	11.9	516
37	Mauritius	20.2	1516
38	Mexico	21.3	1720
39	Morocco	14.9	749
40	Nepal	9.2	167
41	Nicaragua	7.6	1432
42	Niger	6.3	403
43	Nigeria	20.0	309

	Country	Savings Ratio (%)	Per Capita Income (PCY) US\$
44	Pakistan	10.2	279
45	Paraguay	17.8	872
46	Peru	21.0	319
47	Philippines	21.1	588
48	Rwanda	1.6	294
49	Saudi Arabia	41.4	7181
50	Senegal	6.0	685
51	Sierra Leone	4.8	232
52	Singapore	35.8	6842
53	South Africa	27.0	2572
54	Thailand	26.3	862
55	Togo	18.1	398
56	Trinidad and Tobago	28.5	4016
57	Tunisia	23.6	1104
58	Turkey	15.3	1443
59	USA	17.9	17106
60	Uruguay	16.7	2284
61	Venezuela	30.0	2940
62	Zambia	22.5	371

Source: Hussein and Thirlwall (1999).

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