

Dependency Ratio, Foreign Capital Inflows and the Rate of Savings in Pakistan

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I. INTRODUCTION

National savings are critically important to help maintain a higher level of investment which is a key determinant of economic growth. Although savings rates have fallen in many developing countries during the last two decades, Pakistan presents a unique picture of experiencing high rates of economic growth along with very low savings rates. In fact, the national savings rate of Pakistan is not only low compared to that in many countries with per capita income about the same as Pakistan's but it is even lower to that in some South Asian countries with lower per capita income.

Pakistan's economic performance during the last three decades has been impressive. Real gross national product (GNP) has grown at an average rate of 6.0 percent per annum since 1960. The national savings rate, on the other hand, has fluctuated around an almost horizontal trend (15 percent) during the same period. Thus, Pakistan's saving performance and its overall economic performance appear to be incongruous.

Although the low savings rates have become a major source of concern in recent years, not much attention has been devoted to highlight the key determinants of saving in Pakistan. In recent years, few studies have been done on this issue using both the time-series and cross-section data. Qureshi (1981); Abbot and DeRosa (1984) and Khan (1988) using time-series data have examined various determinants of household/national savings. Qureshi (1981) concentrated on economic determinants and found income and its rate of growth, the rate of return on financial assets and rate of inflation as key factors influencing household savings in Pakistan.¹ Abbot and DeRosa (1984) analysed the financial sector of the country and summarised the findings of various studies on resource mobilisation in Pa-

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¹Qureshi (1981) estimated separate equations for each factors affecting household savings. In other words, he used piecemeal approach to measure the impact of these factors on household savings.

kistan. Khan (1988), in order to seek an answer for the causes of low savings in Pakistan, tested two hypotheses, namely, the financial repressionist and the financial structuralist and found overwhelming support for them.² Besides real income, the rate of return on deposits, unanticipated inflation, the variability of inflation and financial intermediation ratio (a measure of financial development) are found to have significant impact on aggregate savings in Pakistan.

Burney and Khan (1992) and Akhtar (1986, 1987), using Household Income and Expenditure Surveys (HIES) for the period 1984-85 and 1979 respectively, attempted to examine the impact of various socio-economic and demographic factors on household savings in Pakistan. Besides household income, the dependency ratio, various categories of education and age structure of the household head are found to be important factors influencing household savings.³

All these studies contribute to a better understanding of the various factors affecting savings in Pakistan. However, we believe that there are several other factors, besides income and interest rates, such as dependency ratio (within the context of time-series data), foreign capital inflows, foreign aid (project and non-project aid), changes in terms of trade and openness of the economy which may have contributed to the dismal performance of savings in Pakistan. The impact of these factors on savings rates have been examined extensively in many developing countries but to the best of our knowledge, these factors have never appeared together in the saving function of Pakistan.⁴

The purpose of this paper is to examine the impact the of above listed factors along with other economic and financial variables on the national savings rate of Pakistan using time-series data for the period 1959-60 to 1987-88.

The plan of the paper is as follows. The methodology and data are discussed in Section II while the results are reported and discussed in Section III. The policy implications that arise from the analysis are presented in the final section along with the concluding remarks.

²Financial repressionist argues that the low (or negative) real return on deposits caused by arbitrarily set ceiling on nominal interest rates and high and variable inflation rates are the major impediments to savings, financial deepening, capital formation and growth. Financial structuralist asserts that a widespread network of financial institutions and a diversified array of financial instruments will have a beneficial effect on the saving-investment process and hence, on growth. See Khan (1989) for a detailed discussion.

³Akhtar (1986, 1987) examines the impact of dependency ratio, urbanisation and education on household saving on a piecemeal basis that is, the impact of each of these factors on household savings is examined separately.

⁴See Fry (1989) for a discussion on these factors.

II. METHODOLOGY AND DATA

The national savings in this paper is derived from the basic national income identity;

$$Y \equiv C + I + X - M \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (1)$$

where Y is the gross national product, C is total (private and public) consumption, I is total (private and public) domestic capital formation, and $X-M$ is net exports of goods and services. National savings are derived by rewriting Eq. (1) as

$$Y - C \equiv I + X - M \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (2)$$

$$S \equiv I + X - M \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (3)$$

where S is national savings and is identical to total domestic capital formation adjusted for current account deficit.

Having defined national savings we write down the saving function in Equation (4) which we intend to estimate to achieve the main objectives of the paper.

$$S/Y = \alpha_0 + \alpha_1 y_p + \alpha_2 y + \alpha_3 \gamma + \alpha_4 D_R + \alpha_5 XM \\ + \alpha_6 TOT + \alpha_7 FCI + \alpha_8 A_d \quad \dots \quad \dots \quad (4)$$

where S/Y is the savings rate and is expressed as the ratio of national saving to GNP (both in current prices), y_p is real per capita income, y is growth rate of real GDP, γ is real interest rate defined as nominal interest rate adjusted for expected rate of inflation, D_R is dependency ratio, XM is the total trade (export plus import) as a ratio of GDP, used to measure the openness of the economy, TOT is the terms of trade, FCI is foreign capital inflows and A_d is foreign aid to GNP ratio.⁵

Before we close this section a few words regarding data and their sources are in order. The data corresponding to national savings have been derived from Equation (3) for which all the information pertaining to various components of national income account are taken from *Pakistan Economic Survey, 1989-90*. The data pertaining to per capita income, growth rate of real GNP, terms of trade, openness of the economy measured by percent share of exports plus imports in the GDP are taken from the various issues of *Pakistan Economic Survey*. The data for one year and over but less than two years time deposits rates are taken from the various issues of *Monthly Bulletin* of the State Bank of Pakistan. Finally, the data for

⁵For theoretical justification of different variables included in Eq. (4), see Khan *et al.* (1992).

foreign capital inflows, as measured by current account deficit, are taken from the various issues of *Pakistan Economic Survey*. These are reported in US dollars but converted to rupees by multiplying with the average exchange rate of the respective years.

III. EMPIRICAL RESULTS

Equation (4) was estimated by using time-series data for the period 1959-60 to 1987-88, applying the technique of Ordinary Least Squares (OLS). Since we identified several factors that may affect the savings rate, our initial run suggests that not all the factors are important in explaining this rate in Pakistan. Hence, we searched for the key factors affecting adversely or otherwise the savings rate. While the most preferred results corresponding to Equation (4) are reported in Table 1 the other results are documented in Appendix A.

Table 1

Estimates of National Saving Rate [The Preferred Results]

Variables	I	II	III	IV
Intercept	1.30 (3.83)*	1.38 (5.00)*	1.50 (5.72)*	1.69 (4.56)*
Per Capita Income (y_p)	0.00015 (3.43)*	0.00015 (4.35)*	0.00017 (5.29)*	0.00019 (4.16)*
Dependency Ratio (D_R)	-1.79 (3.50)*	-1.89 (4.52)*	-2.06 (5.22)*	-2.36 (4.32)*
Real Interest Rate (γ)	0.002 (2.56)*	0.0008 (1.20)		
Foreign Capital Inflows (FCI)		-0.47 (3.50)*	-0.54 (4.51)*	
Foreign Aid (A_d)				-0.0025 (0.89)
\bar{R}^2	0.56	0.70	0.70	0.44
DW	1.69	1.46	1.56	1.72
SER	0.016	0.013	0.013	0.018

Note: *t*-statistics are given in parentheses.

*Denotes significance at 5 percent level.

The empirical results, corresponding to four alternative specifications of Equation (4), are reported in Table 1. On the whole, the results are quite satisfactory. The explanatory power (\bar{R}^2) and Durbin-Watson (DW) statistics are both acceptable, and the standard error of the regression (SER) is low, suggesting a good specification of the model.

As regards *per capita income*, it is found to have a strong effect on the national savings rate. Table 1 shows that the coefficient is positive and statistically significant and accords with most of the previous studies for developing countries. The marginal propensity to save (MPS), calculated at the mean value, is 0.10. The income elasticity of saving, again calculated at the mean value, is 0.76 which suggests that a one percent increase in real income (GNP) raises national savings by 0.76 percent in Pakistan.

The *growth rate of real income* has very little effect on the national savings rate [See Appendix A]. The coefficient, though bears a positive sign, never reached the traditional level of significance. This finding is not altogether surprising because Fry (1991, 1989) has pointed out that the acceleration in the growth rate of real income will raise the national savings rate by a smaller amount, the higher is the dependency ratio. Pakistan can be characterised as a country with a very high dependency ratio (it ranged from 6.8 to 7.2). Hence, one earning member has to take care of 6 to 7 non-working members of the household. In such an environment it is hardly expected that the rate of growth of real income will have a significant impact on the savings rate. Hence, our finding does not accord with others who found positive and usually significant effects on the national savings rate.⁶

The *dependency ratio*, as shown in Table 1, has a strong effect on the national savings rate. The coefficient bears a negative sign and is statistically significant at the 5 percent level. The estimated parameter suggests that a one percentage point increase in the dependency ratio would reduce the national savings ratio by almost 2.0 percentage points. The negative effect of the dependency ratio on national savings rates found in this paper, is in complete agreement with the pioneering work of Leff (1969) and the subsequent work of Lahiri (1989); Fry (1991) and Burney and Khan (1992).

As regards the impact of the *real interest rate* on the savings rate, the coefficient is statistically significant with a positive sign [See Table 1 as well as Appendix A]. On balance, the substitution effect dominates the income effect which implies that an increase in the real interest rate increases national savings rate in Pakistan. Our findings are in complete agreement with Khan (1989) and Fry (1988, 1991)

⁶See for example, Collins (1989); Mason (1988); Fry (1989, 1991) and Giovannini (1983, 1985).

on the positive and significant impact of the real interest rate on national savings.⁷ The interest elasticity of saving calculated at the mean value is 0.07 which suggests that a one percent increase in the real interest rate will raise national savings by 0.07 percent. The low interest elasticity found in the case of Pakistan is consistent with Fry (1988, 1991) who concedes that the magnitude of the effect is small.

The changes in *terms of trade* do exercise a significant influence on the national savings rate in Pakistan [See Appendix A]. The coefficient is statistically significant with a positive sign and therefore, suggests that a deterioration in the terms of trade increases the savings rate. Our finding, thus provides empirical evidence to Obstfeld's (1982) recent theoretical work where he argued that saving may increase with the deterioration of the terms of trade.⁸ Although, we do not find empirical evidence for the classical Harberger-Laursen – Metzler effect, our result should be taken with great caution for the following reasons. First, the most recent theoretical work shows that terms of trade responses depend on whether or not the terms of trade change is anticipated [See Fry (1989) for further detail]. Second, whether or not the change is perceived to be permanent or temporary.

The *openness of the economy*, as defined by the share of total trade (export plus imports) in GDP, has a significant impact on the national savings rate in Pakistan. The coefficient is statistically significant with a positive sign [See Appendix A] and suggests that greater openness of the economy raises the savings rate in Pakistan.

Foreign capital inflows have a strong effect on the national savings rate in Pakistan. A cursory look at Table 1 shows that the coefficient of foreign capital inflows is statistically significant with a negative sign. The elasticity of saving with respect to foreign capital inflows, calculated at the mean value, is -0.21 , which suggests that a one percent increase in foreign capital inflows reduces national savings by 0.21 percent. Contrary to the orthodox viewpoint, our finding provides abundant support to the Griffen-Enos hypothesis and accords with most of the subsequent studies on this topic for developing countries. The negative impact of

⁷The positive and significant impact of real interest rate on national saving rate confirms the existence of financial repression in Pakistan. For detailed discussion on this issue, see Khan (1989).

⁸We argue that the effect of terms of trade deterioration on saving ratio will depend crucially on the income elasticity of savings. The terms of trade deterioration will increase saving ratio if the income elasticity of saving is less than unity and *vice-versa*. Harberger and Laursen and Metzler have postulated that real income falls with a terms of trade deterioration and if the income elasticity of saving is less than unity then fall in income will reduce savings by less than proportionately. Hence, the saving ratio will rise with terms of trade deterioration. In the case of Pakistan, the income elasticity of saving is less than unity (0.76) and as such the result is contrary to Harberger and Laursen and Metzler.

foreign capital inflows suggests that the most part of external assistance has been used for consumption purposes and that it has discouraged saving efforts by both the private and public sector in Pakistan.

Apart from *foreign capital inflows* we also used foreign aid as well as its component, such as project and non-project aid and examined their impact on the national savings rate. It can be seen from Table 1 as well as Appendix A that at no time were these variables found statistically significant. The coefficient of foreign aid, though statistically insignificant, bears a negative sign and hence accords with most of the studies for developing countries. The coefficient of project aid bears a positive sign but failed to reach the significance level. Overall, foreign aid (project as well as non-project) did not exercise any significant influence on the national savings rate in Pakistan.

IV. CONCLUDING REMARKS

Domestic resource mobilisation is one of the key determinants of sustained economic growth. Pakistan's performance with regards to domestic resource mobilisation has been poor despite maintaining a respectable economic growth rate. In fact, the savings rate in Pakistan is one of the lowest in the developing countries and as such the policy-makers are faced with the problem of harnessing sufficient resources for financing economic development.

Why the savings rate in Pakistan so low and what should be done to raise its level? The findings of this paper provide some answers to these questions. The most important factors that affect the national savings rate in Pakistan are per capita income, dependency ratio, real interest rate and foreign capital inflows. Raising per capita income, either by reducing the population growth rate or by raising the GNP growth rate, is bound to increase the national savings rate.

The high dependency ratio caused by the rapid increase in population has been the most important factor causing the savings rate to remain depressed. One earning member has been taking care of 6 to 7 non-earning members of the household. Hence, savings rates remain depressed. Slowing down population growth should be the key policy objective of the government.

The positive and significant effect of the real interest rate on the savings rate confirms the existence of financial repression in Pakistan. The findings of the paper suggest that the national savings rate is sensitive to changes in the real interest rate. A one percent increase in real interest rate is likely to increase the savings rate by 0.07 percent. What is required is the pursuit of realistic interest rate policies in the context of a liberalised financial market. The whole idea is to make the real interest rate sufficiently positive.

As regards the inflows of foreign capital the findings of this paper confirms its depressing effect on national savings in Pakistan. A one percent increase in the inflows of foreign capital reduces savings by 0.21 percent.

The empirical findings of this paper also suggest that a more open economy will raise the savings rate. The government has already taken steps in liberalising the foreign trade and payments sector. This measure is likely to raise savings rate in the years to come.

Appendix - A

Estimates of National Saving Rate

Variables	I	II	III	IV	V	VI
Intercept	1.25	0.97	1.44	1.42	1.31	1.14
Term	(3.45)*	(2.60)*	(4.82)*	(5.31)*	(3.47)*	(2.94)*
Per Capita Income	0.00014	0.00018	0.00016	0.00016	0.00015	0.00015
	(3.22)*	(4.12)*	(4.31)*	(4.69)*	(3.33)*	(3.38)*
GDP Growth Rate	0.0007	0.0005	0.0008			
	(0.45)	(0.37)	(0.57)			
Dependency Ratio	-1.72	-1.45	-1.97	-1.95	-1.80	-1.58
	(3.19)*	(2.72)*	(4.40)*	(4.82)*	(3.25)*	(2.76)*
Real Interest Rate	0.0018	0.0013	0.0008	0.0006	0.0018	0.0016
	(2.48)*	(1.98)*	(1.16)	(0.99)	(2.31)*	(2.14)*
Change in TOT		0.0002			0.0002	
		(1.96)*			(1.60)	
Openness of Economy		0.49				
		(1.92)*				
Foreign Capital Inflows			-0.49	-0.44		
			(3.47)*	(3.40)*		
Total Aid					-0.0002	
					(0.07)	
Project Aid						0.0023
						(0.83)
\bar{R}^2	0.54	0.62	0.64	0.73	0.53	0.55
DW	1.70	1.99	2.00	1.47	1.69	1.64
SER	0.017	0.015	0.015	0.013	0.017	0.016

Note: *t*-statistics are given in parentheses.

* Denotes significance at 5 percent level.

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Comments on
“Dependency Ratio, Foreign Capital Inflows
and the Rate of Savings in Pakistan”

Khan, Hasan and Malik’s paper turns to one of today’s most important issues in development economics. The question about domestic savings mobilisation in low-income countries which they address has been gaining increasing importance on the political and scientific level since the beginning of the international debt crisis. The paper is built on the implicit assumption that an increasing savings rate will stimulate economic growth. The authors give an excellent and valuable overview over the relevant literature in the field and clearly point out their procedures and computations, thus attracting the reader’s interest from beginning to end.

The first hypothesis about the interlinkages between the dependency ratio and the rate of savings most often is that they are inversely related, resulting in economic depression, due to the ensuing lack of investment. Such assumptions were already expressed in Nurkse’s classical theory of the vicious cycle of capital formation [Nurkse (1953, 1957)]. The inflow of foreign capital as a means to escape from this trap and to pull the economy out of economic stagnation had been widely recommended for a long time. Theories stressing the pivotal role of capital have been challenged, however, over the last decade by the international debt crises which demonstrated that a massive inflow of foreign capital does not forcibly promote economic growth. In many countries, in contrast, it has led to tremendous economic, social and political problems. Attempts to resolve the debt crises, moreover, often imply high social costs and a loss of national independence in economic decision-making. These experiences redirect the attention of policy-makers, international development agencies, and economists to domestic capital formation and savings mobilisation in poorer countries. This is the issue Khan, Hasan and Malik’s paper deals with. Three questions need to be discussed in this context: (a) is the method used appropriate for answering the raised question? (b) are all important components included? (c) does an increase in the savings rate really imply the economic growth that many (including the authors) expect?

(a) Regression analysis – which the authors apply – in principle is appropriate for establishing quantitative relationships between the savings rate and its determinants. However, the way they implement it only reveals *correlations* between the savings rate and other macro-aggregates. The *causal relationships* remain open to discussion. This applies for example to the positive correlation between per

capita income and savings rate. Increasing per capita income – it is hypothesised – has a positive influence on savings. It is also hypothesised, yet, that increasing savings rates have a positive influence on GDP growth. Computation with time lags and tests of auto-correlation might have been helpful in this respect. Using time lags at the same time would provide more insight into other interrelations, since the economic agents often react with considerable delay to a changing economic environment. The only dynamic component introduced into the model is the growth rate of GDP.

(b) The paper raises but does not answer the question how to explain Pakistan's economic growth without increasing savings rate. This suggests the hypothesis that important determinants of growth and/or savings forms are excluded in the presented model. One of them is human capital which is not contained in the savings or investment definition, although its importance for economic development is beyond doubt. Some indicator for it as, e.g., the literacy rate, or expenditure on education and skill training, should have been introduced. They might explain much of the country's growth. Moreover, workers' remittances which amounted to US\$ 2 billion in 1988, i.e. nearly 40 percent of the country's export earnings, and more than 5 percent of its GDP (based on World Bank data), might well explain a considerable share of the country's economic growth. In fact, regression analysis reveals a significantly positive elasticity (+0.18) of GDP growth in reaction to the inflow of remittances [Knerr (1992)]. An important explanatory variable of the aggregate savings rate which is neglected in the model is the income distribution. Since the upper income groups usually display a higher savings rate than the lower groups, a more equal distribution of income should imply a lower aggregate savings rate and *vice versa*. If in the course of Pakistan's economic growth the country also has experienced an increasingly equal income distribution, this might provide an explanation for the stagnant aggregate savings rate.

When approaching the question how the country's saving rate may be raised, some other issues are worthwhile considering, such as the role of hoarding and of savings in form of physical assets like gold, jewelry, animals, or land; differences in the savings behaviour of various groups of the population; and the role of and reasons for capital flight.

It would also be helpful if the authors would have further disaggregated total savings. A major question in this context is whether the low aggregate savings mainly result from high foreign indebtedness (negative balance of trade and current accounts) which on balance depresses the net domestic savings rate.

A result that surprises the commentator less than the authors is that decreasing terms of trade seem to stimulate Pakistan's GDP growth. In fact, with a sufficiently

high price elasticity of demand on the world market, declining export prices imply rising export revenues which easily explains their positive growth effect. In fact, the structural adjustment programmes of the World Bank and the IMF are usually built on this assumption, although it may not always be justified [Quarcoo (1990)].

The authors conclude that the inflow of foreign capital should be largely rejected when it comes in the form of foreign aid but appears to be useful when it takes the form of direct investment. Direct investment from abroad may promote economic development in the long run for a number of reasons, such as employment creation, technology transfer, forward and backward linkages to other sectors of the economy etc. On the other hand, foreign capital inflows require a most careful consideration when keeping in mind the negative experiences made in the course of the international debt crisis. It has to be observed in this context that attracting foreign investors may require a lot of national investment in advance, e.g. for infrastructure and education. What may be most important in the discussion of foreign investment are the other goals a society may wish to pursue besides economic growth, first of all national independence. The rejection of foreign aid advocated by the authors, in contrast, might not generally be justified. There are social and ethical reasons for accepting it, particularly if it is directed to the most vulnerable groups. It may also be justified for economic reasons but as certain effects of such aid reveal their positive influence only in the very long, as is typical for programmes of human resource building such as education or health care, they are easily overlooked.

(c) A fundamental question that has not been discussed in the paper although the answer to it provides the justification for the presented investigation is that if a higher saving rate is really desirable for achieving economic growth. In fact, when idle production capacities are available a higher rate of consumption and not a higher savings rate will promote growth, at least in the short run. There may be a conflict between short-term growth (with given resources) and long-term growth (with saving and investment for extended future production capacities). In this context the politician may, for strategic reasons of his own career, prefer the short-term Keynesian multiplier in order to immediately satisfy the population.

When drawing conclusions from the results of the presented model it seems extremely important to bear in mind that its framework is essentially short-term. Observing the long-term repercussions might significantly alter the results. A striking example to this is the dependency ratio. It may in practice increase just because children or youngsters go to school for a longer time instead of starting to work early. In the short turn, this implies a higher rate of consumption, and thus less potential for physical investment, hence according to the authors' premises, less

economic growth. In the longer run, however, the opposite may be true: a better educated labour force can considerably contribute to accelerating economic growth. Against this background, it seems worthwhile to elaborate the presented model in a direction which takes care of such a long-run effect.

Before concluding, the commentator wishes to stress that she agrees with most of the paper, and that she has concentrated her comments on the parts where she does *not* agree.

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