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The Impact of Financial Reform on Private Savings in Bangladesh

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Abstract

Over the course of the last decade, Bangladesh has implemented a broad-based program of financial and market reforms, encompassing changes in the structure of the financial system, prudential and supervisory frameworks, and monetary management. This paper estimates a savings function to evaluate the impact of various determinants of private savings in Bangladesh—with special emphasis on the impact of financial reform. The results show that the level of income, real interest rates, and the share of agriculture in GDP have a positive impact on the savings rate. Dependency rate and public savings rate, on the other hand, have a negative impact on private savings. Interestingly, the financial reform index has a negative impact on private savings. Hence reforms that were initiated since the late 1980s had actually reduced savings. …/…

Keywords: private savings, financial reform, Bangladesh, time series analysis

JEL classification: O16, O53, E21

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An explanation for this result can be traced to the state of the banking sector beginning as early as 1972. Political interference dominated the selection of bank management and loan portfolios. Loans were extended to institutions and individuals with high credit risks leading to a high default rate. Moreover, the high proportion of effectively non-performing assets also contributed to high interest margins and relatively low degree of financial intermediation. Despite a number of positive changes that have been introduced in the financial sector following reforms, these factors have adversely affected private savings in the economy. The pace of reform has not kept in line with the severity of the situation and further reforms in a timely fashion are necessary.

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1 Introduction

Since the early 1980s many developing countries have started to liberalize their financial sector as part of wider structural adjustment programs that included fiscal consolidation, reforms of the exchange rate and foreign trade system, price liberalization, deregulation of activities, and other reforms with a view to improve the supply responsiveness of the economy. This has been a part of a broader move towards a reduced role for the government in the economy. The process has varied widely, however, in terms of both speed and sequencing.

The theoretical support for financial liberalization as a policy goal can be traced to the fundamental theorem in welfare economics and the efficient market hypothesis. The fundamental theorem suggests that competitive markets lead to Pareto optimal equilibria, while the efficient market hypothesis argues that the financial markets use information efficiently. A combination of these two ensures the efficiency of the real economy and the reflection of the fundamentals of the economy in the financial markets. Reform of the financial system removes any market distortions that impede these free market conditions (Eatwell, 1996; Mavrotas and Kelly, 2001).

Proponents for the reform of the financial sector argue that it will lead to significant economic benefits, in particular through a more effective domestic savings mobilization and a more efficient resource allocation process, by reducing intermediation spreads, financial deepening, and enhanced access to credit. This follows from Mckinnon (1973) and Shaw's (1973) argument that in a financially repressed economy, interest rates remain below its market clearing value thereby generating less than the optimal amount of savings and thus detracting from the pool available for investment.[1] A World Bank study has also found that the paucity of financial savings, due to government rationing of available credit to so-called priority sectors, has an adverse effect on economic growth by reducing both the volume and the productivity of investment (World Bank, 1989).[2]

Various studies have tried to evaluate the impact of financial liberalization on private savings in a number of both developed (Bayoumi, 1993a, 1993b; Caporale and Williams, 2001; Chapple, 1991) and developing countries (Bandiera *et al.*, 2000; Dayal-Gulati and Thimann, 1997; Demetriades and Luintel, 1997; Fry, 1995; Hussain, 1996; Jbili *et al*., 1997; Loayza and Shankar, 2000; Melo and Tybout, 1986).[3] However, the results have been inconclusive.

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1 The difference between McKinnon (1973) and Shaw's (1973) hypothesis is in the transmission mechanism through which a change in interest rates lead to a positive impact on savings.

2 An alternative view considers the effect of including the informal loan market into the original Mckinnon-Shaw models, and finds that interest rate liberalization may, in fact, lower output growth (see Mavrotos and Kelly 2001 on this issue).

3 See Williamson and Mahar, 1998, for a detail literature review.

Some of these studies have shown that financial reform may increase the level of savings by widening the range of available savings instruments and increasing the expected return through higher real interest rates and reduced risks, as deeper markets make financial assets more liquid. On the other hand, it has also been argued that financial reform may actually decrease savings by reducing liquidity constraints through, say, improved access to consumer credit (see, for example, Bayoumi, 1993 and Ostry and Levy, 1995).

Most of the studies on the developing countries have concentrated on specific regions, for example, East Asia (Fry, 1995; Lahiri, 1989), North Africa (Jbili *et al.*, 1997) and Latin America (Melo and Tybout, 1986). One region that has not received much attention is South Asia.[4] This study intends to fill the gap in the literature by empirically analyzing the behavior of the determinants of private savings in Bangladesh, with special emphasis on the impact of financial reform.

The hypothesis in this paper is that there exists a stable relationship between the level of private savings and its determinants including a measure of financial reform. This information is crucial to the actual impact of financial reform on savings, as an accurate calibration of both long-run and dynamic effects of various government policies on private savings would allow inferences about the macroeconomic implications of financial liberalization.

Developing countries have historically been characterized by financial repression. Bangladesh has been no exception. Prior to the late 1980s, the financial sector in Bangladesh was characterized by complex guidelines for credit allocation, centralized lending by the central bank to public enterprises, absence of indirect monetary policy instruments, fixed and negative (in real terms) cost of funds, lax business supervision, and an inadequate accounting system.

Beginning in the late 1980s, Bangladesh became one of the first countries in South Asia to embrace reform. It has adopted a gradual approach to financial sector reform and has implemented a broad-based program of encompassing changes in the structure of the financial system, prudential and supervisory frameworks, and monetary management. A number of features characterize the opening up of the markets. First, monetary authorities have dismantled a number of directed-credit schemes and eased interest rate controls with financial institutions being given the freedom to determine interest rate structure. Second, interest rates have increased to positive real levels by the mid 1990s. Third, the capital base of the banks have been somewhat strengthened by recapitalization and public issues. Fourth, identification of non-performing assets, classification of assets, provision for bad debts and recognition of income have been tightened up and prudential norms have been introduced. Finally, access to the equity market have been substantially widened.

For estimation purposes, cointegration tests are conducted and error correction models are generated. The results show that although most of the traditional determinants of private savings had their expected impact, financial reform had an adverse effect on savings. Explaining this adverse effect is important for at least three reasons. First, if

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4 Exceptions include studies by Khan *et al*. (1997) on Pakistan and Demetriades and Luintel (1997) and Loayza and Shankar (2000) on India.

reforms have led to a reduction in savings and, thus potential growth, then some reforms would have to be reversed to achieve potential growth. Second, given the adverse effect on savings it can be argued that reliance on external savings to finance investment has introduced an element of volatility by making macroeconomic management more difficult and the economy more vulnerable. Third, understanding the causes behind the adverse impact of reform on private savings is important for determining the sustainability of the current account deficit in Bangladesh. In fact, if the underlying cause of this particular response of private savings was a consumption boom caused by financial reform and an increase in asset prices, the sustainability of the current account deficit would be a matter of concern (Lopez-Mejia and Ortega, 1998).

The paper is organized as follows. Section 2 discusses the theoretical link between financial reform and the level of savings and introduces a number of empirical studies; while Section 3 presents the financial sector reforms undertaken in Bangladesh. The estimating model is introduced in Section 4 and the estimation results are presented and discussed in Section 5. Section 6 analyzes the policy implication of the results. The paper ends with concluding remarks in Section 7.

2 Financial reform and savings

2.1 Theoretical issues

Before formally modeling the impact of financial reform on savings, it would be useful to establish how these two variables may be linked to one another.

Financial reform involves the elimination of credit controls, deregulation of interest rates, easing of entry into the financial services industry, development of capital markets, increased prudential regulation and supervision, and liberalization of international capital flows.

Reform increases competitive efficiency within the financial market in at least three ways. First, the removal of regulations and price distortions permit savings to be directed into highest-yielding (risk-adjusted) forms of investment (improved allocative efficiency). Second, increased competition reduces the cost of financial intermediation (higher operational efficiency). Third, the reform measures generate an improved range of financial products and services adaptable to changing consumer needs (dynamic efficiency). Although financial reforms can increase the efficiency with which resources are channeled into productive use, its impact on the quantity of savings is theoretically ambiguous.[5]

From an analytical point of view, the impact of financial reform on savings include a direct, short-term, and an indirect, long term, effect. The direct effect works through the price and quantity channels. The price channel reflects the impact of reforms on savings through changes in the real interest rates. Fry (1978, 1995) reports that, across a sample of fourteen Asian countries, the gross national savings rate is positively affected by

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5 Financial liberalization and financial reform are used interchangeably in this paper.

higher real interest rates. However, the positive response is small and diminishes in later years.[6] Reynoso (1989) finds that savings increase rapidly as real interest rates move from sharply negative to just below zero, but that the effect levels off at low positive real interest rates and becomes negative as interest rate rises. This raises the possibility of a nonlinear relationship between interest rates and savings, perhaps involving threshold effects. Bangladesh moved away from negative real interest rates after the liberalization process started.

The quantity channel affects savings by expanding the supply of credit to credit-constrained consumers. A number of studies have argued that the high level of savings evident in countries in East Asia and Japan can be contributed not to high interest rates but to bank expansion in rural areas and the availability of low-yielding but safe deposit instruments (Loayza *et al*., 2000).They estimated that a one percentage point increase in the ratio of private credit flows to income reduces the long-term private saving rate by 0.74 percentage point. This seems to indicate that the expansion of credit reduces private savings as economic agents are able to finance increased consumption at their current income level.

Financial liberalization, that leads to large capital flows, can also have short term implications for savings. Bandiera *et al.* (2000) have argued that the impact on savings of financial liberalization comes through the related changes in the availability and cost of credit, expected income growth, and increased wealth due to higher property values.

2.2 Empirical results

The empirical results, however, have not been consistent across countries. Hussain (1996) estimated that, in the three years following reforms, savings in Egypt increased by about 6 percent of GDP over the level that would have occurred in the absence of financial liberalization. However, Bayoumi (1993a) showed that financial deregulation in the United Kingdom led to a decline in the personal savings ratio of 2.3 percentage points over the 1980s. Chapple (1991) also reported a decline in both household and corporate savings in New Zealand following liberalization. Evidence from Turkey during the 1970s and 1980s demonstrated that a negative income effect from higher interest rates outweighed the positive substitution effect on the private savings rate (Uygur, 1993).

Financial liberalization has also been shown to lead to consumption boom and consumer lending in a number of countries, including, the United Kingdom (Bayoumi, 1993b), Mexico, and Thailand. Using the overlapping generation framework, Bayoumi (1993b) has shown that a move from a financially regulated to a deregulated system will make savings more sensitive to changes in income, wealth, demographics, and real interest rates. In addition, there will be a transitional decline in savings associated with higher real interest rates and a larger current account deficit. While transitional, the duration of this effect depends upon overlapping generations within the economy. In summary, there is conflicting evidence in the literature regarding the impact of financial

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6 Giovannini (1983) showed that Fry's results are sensitive to changes in the sample period or region employed.

liberalization on domestic savings. No clear pattern of results or consistent conclusions emerge from the studies.

3 Financial sector reforms in Bangladesh[7]

Bisat *et al*. (1992) and Jbili *et al*. (1997) have discussed the actual and ideal sequencing of financial sector reform in a developing country. Usually, reform begins with interest rate liberalization, the introduction of market-based instruments of monetary policy, such as government or central bank securities with market-determined interest rates, and initial measures to strengthen banking supervision. Steps to increase competition among banks, and the development of the equity markets and nonbank financial services, are usually later measures in the reform process.[8]

3.1 Historical overview of financial reform

At independence in 1971, Bangladesh inherited a repressive financial system, incorporating controls over interest rates, directed credit, complex rules for money and capital markets, and overvalued exchange rates. The problem was worsened by the nationalization of all financial institutions in the country.

After an extended period in the 1970s of political uncertainty, extensive government intervention in the economy, and poor growth performance, the government initiated an ambitious growth-oriented strategy in 1979. This strategy targeted increased saving and investment combined with extensive structural reforms.

Even in the early 1980s, the financial sector was highly repressed. The small and relatively underdeveloped sector was dominated by government-owned commercial banks which accounted for more than 90 percent of the system's total assets. The complex structure of interest rates were subject to controls; while extensive quantitative credit controls were in place. Weak supervisory banking frameworks and political interference led to an alarmingly growing share of non-performing bank loans. There was no active capital market. Foreign currencies were strictly regulated and the domestic currency, taka, was highly overvalued.

Changes in the financial system since the onset of liberalization around 1989 have been substantial, with steady progress toward a more open and market-oriented system. The process initially began with the privatization of state-owned enterprises in the

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7 For a more detailed discussion on the extent of financial reform in Bangladesh see Chowdhury, 2000, Hossain *et al*., 1999, and Willem van der Geest, 2001.

8 With respect to the sequencing of different elements of structural reforms, the conventional wisdom is first to liberalize the trade and the exchange rate systems for current account transactions, then liberalize the domestic financial system, and eventually open up the capital account. According to this view, the creation of a rational system of relative prices reflective of conditions in world goods markets need to precede financial sector reform (see, among others, McKinnon, 1982; Blejer and Sagari, 1987; and Jbili *et al.*, 1997 on this issue). The reform of the capital account should come later due to the potentially destabilizing effects of reversible capital flows, which may aggravate any negative effects of domestic financial reform.

mid-1970s in the backdrop of a significant deterioration of the general economic condition in the country (Chowdhury, 2000). Attempts were made to implement reforms with the encouragement and technical support of the country's principal donors. This led to the privatization of two nationalized commercial banks (NCBs) in 1982 and permitting private commercial banks to operate.

However, the economy had been suffering from a lack of soundness in the banking sector for more than a decade. This reflected the underlying weaknesses in the banks and in their surrounding environment, such as, the regulatory framework and the legal and judiciary system. A second phase of the adjustment process started in the mid-1980s, when the combination of fiscal tightening and structural reforms, especially unification of the foreign exchange market and trade liberalization, helped in reducing inflation and improving the external current account situation. Real per-capita GDP growth remained low, however, in part because of continuing structural distortions.

The process of investigating the nature of the banking problem culminated in the formation of the National Commission on Money, Banking and Credit in 1984. In response to the Commission's report submitted in 1986, the government launched the Financial Sector Reforms Program (FSRP) in 1990 with financial assistance from a number of donor agencies.

3.2 Financial sector reform program

The key reform areas in the Financial Sector Reform Program (FSRP) were (Van Der Geest, 2001):

- interest rate liberalization for both deposit and lending
- purposes
- abolition of sectorally directed lending
- improving the assessment of quality of loan portfolios through the adoption of international standards of loan classification
- strengthening banking supervision
- improving the operation of money market instruments
- improving the operation of capital markets
- improving loan recovery through improved legislation on bankruptcy and improved credit information.

After the financial reform process started, considerable progress was made in moving away from the previous system of direct controls in the banking system as well as in revising loan classification and provisioning criteria to make loan recovery issue more transparent, revising the legal provisions and procedures for enforcing loan recovery, and improving availability of credit risk information.

An interest amnesty program was also introduced and the Financial Loan Courts Act was passed to facilitate prosecution of defaulters. The Credit Information Bureau was established in the Bangladesh Bank to record the performance of borrowers, and the Large Loan Review Cell was set up to review all newly sanctioned bank loans over Taka 10 million (now less than $200,000).

Interest rate controls were withdrawn on deposits in February 1997. For the purpose of lending, interest rate bands were provided to the banks, ranging from 8-10 percent annually on loans for exports, and to 10-14 percent annually on loans to agriculture. The aim of these bands was to allow the banks some flexibility in pricing their loans but, in effect, did little more than limit competition since the actual rates charged clustered around the upper limits. As part of the Bangladesh Bank's continuing efforts to reform the system, however, these bands were also withdrawn in July, 1999 (ADB, 2000).

3.3 Macroeconomic overview

The overall macroeconomy has on balance provided a relatively stable and favorable environment for financial sector development during the last decade (see Table 1). The economy can be characterized by reasonably prudent macroeconomic management reflected in fairly high and stable real GDP growth rate; and exports and workers' remittances from abroad rising over the period. This has boosted banking sector liquidity through a steady increase in deposits that have grown faster than nominal GDP. Inflation has been relatively low and the exchange rate fairly stable. Fiscal deficits have been manageable, averaging less than five percent of GDP, and in general prudence has limited the part of deficit financing coming from the banking system (World Bank, 2000).

The liberalization of trade and current foreign exchange transactions were undertaken in parallel with the liberalization of foreign direct investment and portfolio equity investment. Rapid progress have also been made in liberalizing current foreign exchange transactions with the debt/export ratio decreasing significantly. Still many microeconomic distortions present a serious structural imbalance to the economy. This can be seen in the high external debt/GDP ratio and increases in gross capital formation/GDP ratio which is reflected in chronic current account deficit.

Table 1 Major Economic Indicators, Bangladesh

	Ann. Ave. **1983-92**	Ann. Ave. **1993-2000**	**1998**	**1999**	**2000**
Real GDP Growth	4.6	4.89	5.2	4.9	5.5
Inflation Rate	8.8	6.15	7.0	8.9	3.4
M2 Growth	17.33	12.67	11.4	15.4	18.6
Fiscal Balance/GDP	1.13	2.08	-4.1	-4.8	-6.1
Curr. Acc. Balance/GDP	-1.09	-1.23	-1.1	-1.4	-1.0
Debt-service ratio			8.6	9.0	9.5

	1980	**1990**	**1999**	**2000**
Gross Domestic Savings/GDP	2.2	12.9	17.7	21.4
Gross Capital Formation/GDP	14.8	17.1	22.2	22.4
Resource Gap/GDP	12.6	4.2	4.5	1.0
Fiscal Balance/GDP	-9.1	-0.4	-6.1	-6.1
Trade Balance/GNP	-9.8	-7.3	-5.7	
Total External Debt/GNP	24.4	41.8[1]	37.1[2]	
Total External Debt/Exports	308.5	244.1	182.4	

Notes: [1] 1995 figure; [2] 1998 figure

Source: Asian Development Bank: *Asian Development Outlook* (2001), Table 2.18, Asian Development Bank: *Key Indicators of Developing Asian and Pacific Countries* (2000).

3.4 Assessment of reform

Table 2 provides an assessment of the position held by Bangladesh with respect to the various dimensions of financial liberalization, such as, capital controls, interest rates, entry barriers, government regulation of operations, privatization, and international capital flows. Comparisons are made between 1973, the year the Mckinnon-Shaw hypothesis was developed for arguing the case for financial reform (Mckinnon, 1973; Shaw, 1973), and 1999. The conditions are classified as repressed (*R*), partly repressed (*PR*), or largely liberalized (*LL*) in each dimension. Williamson and Mahar (1998) describe a 'repressed' system as one in which virtually all decisions in the relevant dimension are made by the government; a 'largely liberalized' system indicates a system that is basically market oriented but still shows signs of government control in certain areas; and partly repressed represent a system which is much closer to the 'repressed system' than to the 'largely liberalized' system.

The Table shows that financial repression was almost universal in 1973. The country had directed-credit and interest rates that were regulated by the government. Entry to the banking system was rigidly controlled, and commercial banks, most of which were state owned, had little autonomy. Exchange controls on current account transactions prevailed.

In comparison, the current situation is significantly different. Since the beginning of reform in 1989, monetary authorities have scaled back directed credit, liberalized interest rates, and allowed some competition in the banking sector. Most interest rates are determined by market forces. The remaining five dimensions in Bangladesh show partially repressed system.[9]

Table 2 History of Financial Liberalization in Bangladesh, 1973-1999

Financial Reform Begins in	1989 [a]
Credit Controls	
1973	R
1999	PR
Interest Rates	
1973	R
1999	LL
Entry Barriers	
1973	R
1999	PR
Gov't Regulation of Operations	
1973	R
1999	PR
Privatization	
1973	R
1999	PR
International Capital Flows	
1973	R
1999	PR
State-owned Bank's Share of Total Banking Assets	
1973[b]	74
1999[c]	68
Overall Budget-deficit[d]	
Before Reform	-0.7
After Reform	-1.1

Notes: [a] LL = largely liberalized; R = repressed; PR = partly repressed; [b] one year prior to reform; [c] figure shows the share of total deposits; [d] calculated as a percentage of GDP, five year average.

Source: Williamson and Mahar (1998), Asian Development Bank and author's calculation.

9 A detailed list of the changes in the financial sectors in Bangladesh are given in Appendices I and II.

In Table 3a, the performance of the financial indicators after reform is compared with comparable data from about a decade preceding the reform. In a number of areas, the indicators improved in the reform period over the pre-reform era. The financial deepening variable (*M2/GDP*) showed progress in financial development; while the efficiency of intermediation as measured by the ratio of reserve money to total deposits and the ratio of reserve money to quasi-money also confirmed strong progress in financial development. Real interest rates also increased in the post-reform period. When financial depth is measured as broad money minus currency in circulation, divided by GDP, the post-reform period show a substantial increase in the ratio compared to the earlier period.[10]

Table 3b shows the correlation coefficient between the level of private savings and the indicators of financial sector reform. During all three periods reported, the correlation coefficient between savings and the financial deepening and financial development variables have the expected signs and are all statistically significant at the 1 percent level. Private savings and real interest rates show a negative correlation during the entire sample as well as the post-sample period; while it is positive in the pre-reform period. In absolute terms, the interest rate variable shows a higher degree of correlation with private savings during the pre-reform than the post-reform period.

Table 3a Indicators of Financial Sector Reform (in percent)[a]

	Pre-reform	Post-reform
M2/GDP	27.80	36.80
Real interest rate	2.08	3.61
Reserve money/Time Deposit	31.50	27.80
Reserve money/Quasi money	42.50	33.40
Quasi money/GDP	17.59	20.38
Spread[b]	0.67	4.92

Table 3b Correlation of Financial Variables with the Private Savings Rate[c]

	Entire period	Pre-reform period	Post-reform period
Savings	1.00	1.00	1.00
RINT	-0.05	0.32	-0.06
M2GDP	0.87	0.74	0.65
RESTOT	-0.71	-0.14	-0.62
RESQUASI	-0.88	0.76	-0.68

Notes: [a] Pre-reform: 1982-89; Post-reform: 1990-2000

[b] Spread = lending rate - deposit rate.

[c] At the 5 percent significance level, a correlation coefficient is statistically significant, if its absolute value exceeds 0.05.

Variables: Savings—private domestic savings as percent of GDP; RINT—real interest rate; M2GDP—ratio of M2 to GDP; RESTOT—ratio of reserve money to total deposit; RESQUASI—ratio of reserve money to quasi-money.

The entire period refers to 1982-2000, a period covering a decade approximately before and after the reform process started. The pre-reform period covers from 1982 to the start of the reform process in each country, while the post-reform period covers from the start of the reform process to 2000.

Source: *International Financial Statistics,* IMF; Asian Development Bank.

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10 In measuring the effect of financial intermediation, it is essential to distinguish the liquidity function of the financial systems from the credit creating function. Hence currency and demand deposit should be deducted from M2 as they are not expected to be responsive to interest rate changes. Moreover, including liquid assets make it difficult to distinguish the effects of financial development from the evolving process of monetization, as these assets relate to the ability of the financial system to provide liquidity and do not reflect the development of the financial sector, which is what the financial intermediation ratio attempts to capture. (see De Gregorio and Guidotti (1995) on this issue).

4 The savings equation

4.1 The model

Based on the discussion in Section 2, an empirical savings function can be derived for this study. Specifically, the savings rate $(s/y)_t$ can be modeled as a function of the natural log of real per capita income (y_t), real interest rate (r_t), financial liberalization index (fl_t), dependency ratio (dep_t), share of agriculture in GDP (agr_t), and the ratio of public savings to gross national disposable income ($pubs_t$).[11] Thus,

$$(s/y)_t = a_0 + a_1 y_t + a_2 r_t + a_3 fl_t + a_4 dep_t + a_5 agr_t + a_6 pubs_t \qquad (1)$$

where, following Dayal-Gulati and Thimann (1997), private savings is calculated as domestic investment plus the current account surplus minus public savings.

4.2 Rationale for including various determinants

The inclusion of real per capita income is pretty standard in the savings literature (Lahiri, 1989). First, because savings and economic growth have been highly correlated over long time horizons as well as for many regions and stages of development (Dayal-Gulati and Thimann, 1997). Second, because savings is directly associated with output through investment, so that, to the extent that it increases domestic investment, higher domestic savings will generally result in higher growth if the economy is below its steady state. However, the impact of income on savings has been inconclusive. The simple permanent income theory predicts that higher economic growth reduces private savings because forward-looking consumers who expect their permanent incomes to rise will dissave against future income. In contrast, the intertemporal optimizing models, such as, the life-cycle model, suggest that individuals save mainly to smooth their consumption path over time in accordance with their anticipated lifetime income. Subsequent extensions of the basic life-cycle model of savings have incorporated the idea that individuals also save for bequest motives and for unexpected expenses suggesting a positive relationship between income and savings.[12]

There are additional channels through which growth can positively affect savings in a developing country. Growth and higher incomes raise more households above the subsistence level, below which they cannot save, and make households more responsive to changes in the interest rate (Ogaki *et al.*, 1996). Most of the cross-country empirical studies find that permanent increase in income have a positive effect on private savings rate (Maddison, 1992; Bosworth, 1993).[13]

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[11] In addition, a number of other factors have been theorized to affect private savings. These include, but are not limited to, macroeconomic stability measured by inflation, external factors including current account balance, foreign savings, and terms of trade, etc [Williamson and Mahar (1998), Dayal-Gulati and Thimann (1997)]. However, given the small sample size available for this study, inclusion of any additional variables would have led to serious degrees of freedom problem.

[12] See, for example, the paper by Blanchard and Fischer (1989).

[13] Ogaki *et al.* (1995) have shown that private savings in low- to middle-income countries are positively affected by the per-capita income relative to that of the United States. Initial estimates with this

The real interest rate captures the effects of financial reform and deepening. It is measured as the difference between one year time deposit rate and the expected rate of inflation. To overcome the problem of unobservable expected inflation rate, it is assumed that expectations are formed according to the adaptive expectation model, that is,

$$p^e_t - p^e_{t-1} = b(p^e_t - p^e_{t-1}) \qquad (2)$$

where b is the coefficient of expectations such that $0<b<1$.[14]

The theoretical literature is ambiguous about the effect of a change in interest rates on savings because the income and substitution effects of such a change work in opposite directions.

The next variable, dependency ratio (dep_t), captures the life-cycle effect and is included to measure the impact of demographic variables on the savings rate. In the life-cycle model of household behavior, savings is viewed as being motivated by the desire of households to smooth lifetime consumption in the face of uneven income flows. The savings rate of the working age population is positive, whereas that of the retired and young population is negative. An increase in the ratio of the non-working age population to the working age population thus lowers the savings rate.[15] Following Khan *et al*. (1994), the dependency ratio is defined as the ratio of the difference between the total population and the employed labor force to the total population. An inverse relationship is expected between the dependency ratio and private savings (Lahiri, 1989; Bosworth, 1993). Loayza *et al*. (2000) have used panel data to show that an increase in the young-age dependency ratio by, say 3.5 percentage points leads to a decline in the private savings rate of about 1 percentage point. Lahiri (1989) and Muhleisen (1996) also finds the age-dependency ratio to be an important determinant of private savings in a number of Asian countries.

Given the predominance of agriculture in economic activity in Bangladesh, it is clear that a large share of the population face uncertain income. Theory predicts that greater uncertainty should increase savings as risk averse consumers set aside resources as a precaution against possible adverse changes in income (Skinner, 1988). Rural incomes are more uncertain than urban incomes and, in the absence of financial markets through which risks can be diversified, rural residents would save a greater fraction of their income. Edwards (1996) reports empirical support for this view. The share of agriculture to GDP captures the impact on savings of such an occupation structural variable.

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variable showed that the results are similar to those reported in the paper. Hence further analysis was not performed.

14 Khan and Hasan (1997) uses a similar adaptive expectation model. We have also experimented with alternative expectation scheme, such as, perfect foresight (a=1) and static expectations (a=0). Initial estimates gave results which are similar to those reported in this paper.

15 An alternative view follows from evidence suggesting that the savings rate of the elderly is not significantly lower than that of the younger population, a phenomenon that is sometimes attributed to the existence of an altruistic bequest motive for savings. An inference drawn from the similarities of savings rate found among different age groups is that a shift toward a more elderly population will have little effect on the savings rate. See Leff (1984) on this issue.

Fiscal policy can potentially affect private savings through revenue policy (say, tax structure), expenditure policy (say, income redistribution), or the extent of public savings. The rationale is to find out the extent to which the private sector in Bangladesh internalize the government budget constraint and hence the extent to which an increase in public savings is offset by an increase in private savings. Hence public savings is included here. The variable is measured as the ratio of public savings to gross national domestic income.

4.3 Measuring financial market reform

Our next variable for measuring financial market reforms is difficult to quantify. Virtually, all studies have used the degree of monetization of the economy—generally measured as the ratio of M2 to GDP—to capture the degree of financial development (Dayal-Gulati and Thimann, 1997). The coefficient has been found to be significant in a number of studies (see, among others, Edwards, 1996; Johansson, 1996) leading to the conclusion that financial markets development has a positive net effect on savings.

A more rigorous measure of financial reform for Bangladesh is developed here. The resulting variable measures exogenous changes in the six dimensions of financial reform as described in Williamson and Mahar (1998): the elimination of credit controls; the deregulation of interest rates; free entry into the financial services sector; government regulation of operations in financial institutions; privatization; and, liberalization of international capital flows. Based on an analysis of the historical evolution in each case (as described in Appendix I), we have identified the timing of major moves towards a more liberalized financial structure. Following Bandiera *et al.* (2000) and Demetriades and Luintel (1997), we have created a 0-1 dummy variable, with 1 representing the more liberalized regime. This gives us a matrix of 0-1 variables. Demetriades and Luintel (1997) have shown that the use of all these dummy variables in the estimation process would lead to an unacceptable reduction in degrees of freedom—a common problem in the developing countries where long time series on macroeconomic aggregates are rarely available. We avoid this problem by calculating a summary measure of financial liberalization using the principal-components theory (Theil, 1971).

For this purpose, we construct the principal components of the matrix. Then we estimate the financial reform index by using the weighted average of the more important principal components, using as weights the fraction of the total standard deviation explained by each component.[16] The index includes the five largest principal components accounting for about 95 percent of the total variation in the six dimensions of liberalization. A strong positive correlation is found between the index and each of the six dimensions. With reforms in the financial sector, the value of the financial reform index will increase.

A linear transformation of the financial reform measure, with *1972=100*, is shown in Figure 1. The Figure corresponds reasonably well with the policy shifts that has taken place during the sample period, 1973-1999. The year 1973 shows a big drop in the

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[16] This is same as including the principal components separately and imposing the restriction that their coefficient is proportional to the fraction of the total variance explained by each one of them.

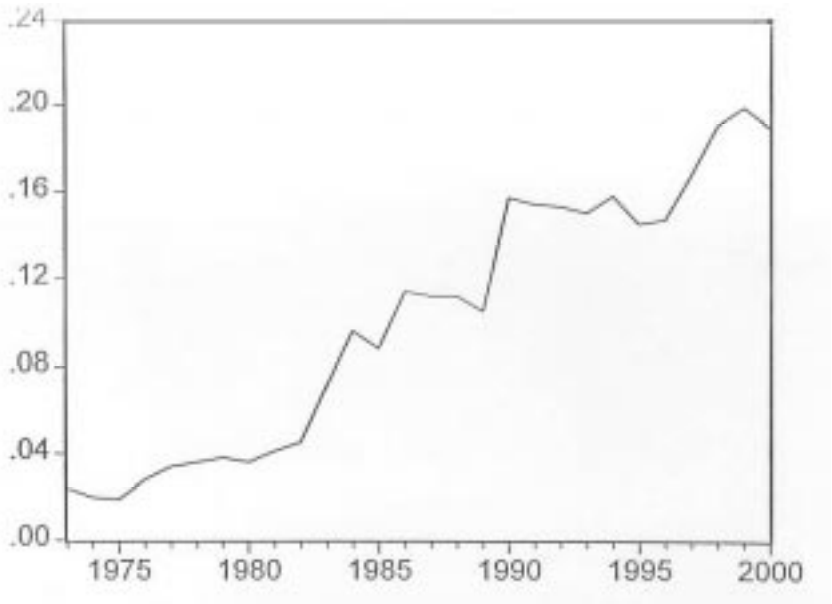
index. This reflects a financial sector that is characterized by directed credit for agriculture with extensive credit guarantees from the Bangladesh Bank. The complex structure of interest rates were subject to government controls. This period also saw the nationalization of all domestic commercial banks and public enterprises abandoned by the former owners from West Pakistan. The banking sector was hobbled with low-productivity and inadequate internal supervision.

After 1975, there was a gradual privatization of public industrial enterprises. This is reflected in the gradual increase in the index in late 1970s. The index rose sharply in 1982 when two nationalized banks were privatized and the government permitted new private commercial banks to operate.

Pervasive political patronage in the allocation of resources practiced during General Ershad's military government of 1982-90 had severe consequences for the quality of loan portfolios of both the nationalized and private commercial banks (Van Der Geest, 2001). Even the privatization of the two bank in 1982 were financed through borrowing from the other nationalized commercial banks. Consequently, the index decreased in the mid-eighties. During 1988-89, the index was stable. Corresponding to the reform process started by the government under the Financial Sector Reform Program (FSRP), the index started to increase in 1990 and continued its upward trend in the early 1990s. In February, 1997 interest rate controls were replaced by interest rate bands where banks were allowed some flexibility in pricing their loans. This is reflected by a rise in the index in 1997. A further increase occurred in 1999 when the government withdrew interest rate bands.

Figure 1

Trends in private saving/GDP ratio in Bangladesh



5 The estimation results

Equation (1) assumes an instantaneous adjustment of the actual stock of private savings to its desired level, that is, an equilibrium state between the supply and demand for private savings. This is unlikely, given the existence of transaction costs and uncertainty. Moreover, the desired level of private savings is unobservable. So a distinction is made between the long- and short-run behavior of private savings by specifying an error-correction mechanism (ECM) of actual private savings toward their desired (long-run) level. The advantage of the ECM formulation is that, while retaining the long run equilibrium information, parameters describing the extent of short-run adjustment are immediately provided for by the regression equation.

The empirical investigation begins with an analysis of the time series properties of the variables of interest for the savings function. This would help to avoid the spurious regression problem that arises when statistical inferences are drawn from non-stationary time series. Unit root tests and cointegration techniques are employed to deal with the spurious regression problem. The dynamic ordinary least squares estimator (Stock and Watson, 1993) is used to determine empirically the number of cointegrating vectors and the adjustment parameters. While the presence of cointegration would show the long-term relationship among the variables included in this study, the ECM would shed light on the short-term dynamics in the model. The sample period covers 1973-99. While we considered using higher frequency data to increase the number of observations, there is little to be gained by simply increasing the frequency of observations while maintaining the same time span (Hakkio and Rush 1991).[17] Data for all the variables are collected from two sources: Statistics and Data Systems Division of the Asian Development Bank and the *International Financial Statistics* published by the International Monetary Fund.

5.1 Unit root tests

As a first step in the empirical analysis, we use the Augmented Dickey Fuller (ADF) and Phillips-Perron (PP) tests to investigate the presence of unit roots in the level variables as well as in their first differences. The null hypothesis tested is that the variable under consideration has a unit root against the alternative that it does not. The lag length is selected by the Final Prediction Error (FPE) criterion.[18] Table 4 reports tests of stationarity around a non-zero constant. As shown in the Table, the null hypothesis of a unit root cannot be rejected for the levels.[19] The results of testing for unit roots after differencing the data once are shown in the bottom section of the Table. In this case, both tests reject the null hypothesis. The analysis in this paper, therefore, treats all variables as integrated of order one.

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[17] Moreover, the use of higher frequency data would require extrapolating some series which are available only on an annual basis.

[18] The FPE method is based on an explicit optimality criterion of minimizing the mean squared prediction error. The criterion tries to balance the risk due to bias when a lower order is selected, and the risk due to increase in the variance when a higher order is selected.

[19] We also tested for stationarity around a deterministic linear time trend. The results (not shown here) are similar to those reported.

Table 4 Stationarity Test Results

	ADF	PP
Levels		
$(s/y)_t$	-1.60	-1.74
y_t	-1.65	-1.29
r_t	-0.88	-1.36
fl_t	0.29	-0.65
dep_t	-1.21	-0.76
agr_t	-1.62	-1.86
$pubs_t$	1.51	-0.75
Differences		
$d(s/y_t)$	-6.21	-17.76
$d(y_t)$	-4.76	-19.09
$d(r_t)$	-3.67	-14.99
$d(fl_t)$	-3.18	-13.09
$d(dep_t)$	-8.05	-18.30
$d(agr_t)$	-6.34	-26.90
$d(pubs_t)$	-4.76	-32.35

Note: *d* denotes the first difference of a variable.

For a variable *x*, the Augmented Dickey-Fuller (1979) statistic is calculated from the regression:

$$d(x_t) = a_0 x_{t-1} + b_i d(x_{t-i}) + c + u_t$$

The critical values are given in Mackinnon (1991). The 5 and 1 percent critical values are -2.94 and -3.61, respectively.

Table 5 Estimates of the Cointegrating Vector of Savings

Variables	Estimate	Test for Statistical Significance
Constant	-0.720	
	(-1.94)	
y_t	0.104	15.143
	(3.78)	(0.03)
r_t	0.077	26.029
	(2.68)	(0.00)
fl_t	-0.026	19.291
	(-3.72)	(0.02)
dep_t	-0.633	23.166
	(-7.24)	(0.00)
agr_t	0.740	38.140
	(3.78)	(0.00)
$pubs_t$	-0.336	30.151
	(-6.12)	(0.00)
Cointegration Tests		
Dickey Fuller:	-3.070	
Augmented Dickey Fuller (1):	-3.642	
Augmented Dickey Fuller (2):	-4.151	

Note: The dependent variable is the savings ratio.

The figures in parentheses below the coefficient estimates are the t-statistics.

The estimates include lags and leads of up to second order of the first difference of each of the regression. In order to avoid overparameterization due to the small number of observations, only the significant lags and leads are retained.

The statistical significance test has a chi-square distribution with one degree of freedom. Figures in parentheses below the statistical significance tests are the *p*-values.

5.2 Cointegration test

Since all the variables have a unit root, the existence of a cointegrating vector is a necessary condition for any sensible interpretation of the results (Engle and Granger, 1987). So cointegration tests are performed to test for the presence of a long-run relationship among private savings and its various determinants. The cointegration results are summarized in Table 5. Given the relatively small sample size, a single equation estimation method is employed. Specifically, the dynamic ordinary least squares (DOLS) estimator (Saikkonen, 1991; Stock and Watson, 1993) is used. This is asymptotically equivalent to Johansen's (1988) maximum likelihood estimator in the case where the variables are integrated of order one and there is a single cointegrating vector. The primary reason for selecting the DOLS estimator is its good small sample properties. This criterion is specifically important for this paper given the small sample size.[20]

In Table 5, using the Dickey-Fuller (1979) critical values as suggested in Stock and Watson (1993), the null hypothesis of no cointegration is rejected at least at the 5 percent level. The null hypothesis in favor of more than one cointegrating vector is also rejected when these statistics are adjusted for degrees of freedom. The presence of one cointegrating vector indicates a stable long-run equilibrium relationship between private savings and its determinants. Moreover, the last column in Table 5 reports chi-squared statistics for testing the significance of individual variables in the cointegrating vector. Each variable is significant with the p-value less than or equal to 0.02.

5.3 Error correction model

Given the presence of cointegration, the Representation theorem developed in Engle and Granger (1987) can be used to show that an error correction model (ECM) exists for the cointegrating vector estimated earlier. So these results are supplemented by the estimation of an ECM for savings:

$$d(s/y)_t = a_0 + a_1 d(s/y)_{t-1} + a_2 d(y_t) + a_3 d(r_t) + a_4 d(fl_t)$$

$$+ a_5 d(dep_t) + a_6 d(agr_t) + a_7 d(pubs_t) + a_8 ec_{t-1} \qquad (3)$$

where ec_{t-1} is the lagged residual from the cointegrating regression. The model includes the lagged cointegrating vector, first order lag of the first differences of the regressors included in the cointegrating equation, and lagged value of the dependent variable.

The statistical adequacy of the error correction equation is checked using a battery of tests. These diagnostic tests, reported in the bottom half of Table 6, indicate that the ECM performs well on purely statistical grounds. The diagnostic statistics test against several alternative hypotheses—residual autocorrelation (DW and AR), autoregressive conditional heteroscedasticity (ARCH), and heteroscedasticity (RESET), and skewness

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[20] Another available estimator would be the Engle-Granger (1987) static ordinary least square estimator. However, Stock and Watson (1993) have shown that the Engle-Granger estimator would exhibit substantial bias due to the small sample size. The asymptotically normal distribution of the DOLS, as opposed to the nonstandard asymptotic distribution of the Engle-Granger estimator, is another factor for its choice (See Park and Phillips (1988) on this issue).

and excess kurtosis (Normality). None of the diagnostic statistics reveal a problem and hence the model is adequate for further analysis. The adjusted R^2's value of 0.62 is normal for regressions based on first differences in variables.

Table 6 Error Correction Model for the Savings Function

$$d(s/y)_t = a_0 + a_1 d(s/y)_{t-1} + a_2 d(y_t) + a_3 d(r_t) + a_4 d(fl_t)$$

$$+ a_5 d(dep_t) + a_6 d(agr_t) + a_7 d(pubs_t) + a_8 ec_{t-1}$$

Variables	Estimates
Constant	0.014 (3.51)
$d(s/y)_{t-1}$	0.138 (4.70)
$d(y_t)$	0.377 (4.85)
$d(r_t)$	0.042 (2.16)
$d(fl_t)$	-0.019 (3.15)
$d(dep_t)$	-0.235 (-5.26
$d(agr_t)$	0.454 (2.72)
$d(pubs_t)$	-0.202 (-3.82)
ec_{t-1}	-0.138 (-2.56)
R^2	0.62
D.W.	1.91
AR F[4,14]	1.00
ARCH F[4,10]	0.74
RESET F[1,17]	0.19
NORMALITY $x^2(2)$	1.66

Note: Figures in parentheses are the t-statistics.

D.W. tests first-order serial autocorrelation.

AR F[q,T-k-q] test q^{th} order residual autocorrelation.

ARCH F[q,T-k-2q] is the F-test for autoregressive conditional heteroskedasticity.

RESET F[q,T-k-q] is the qth order Ramsey-Reset Statistics.

NORMALITY is the Jarque-Bera test for skewness and excess kurtosis. It has a chi-square distribution with two degrees of freedom.

There are T observations and k regressors in each model under the null. The value of q may differ across statistics, as may those of k across models. T=27.

5.4 Interpretation of the results

Next, we compare the long- and short-run relationship between savings and its determinants. The income coefficient has a positive and statistically significant impact at both the long and short time horizon. This tends to confirm the theoretical relationship as shown in an intertemporal optimizing model, such as, the life-cycle model. It also reconfirms the findings reported in several cross-country empirical studies (Maddison, 1992; Bosworth, 1993; and Carroll and Weil, 1994).

The real interest rate exerts a statistically significant positive impact on private savings rate. This means that the positive substitution effect of an increase in real interest rate

outweighs the negative income effect.[21] This result is different from several other studies using pooled time series-cross country data that couldn't pin down a positive effect of increases in the interest rate on savings (see Bandiera *et al.* (2000) on this issue).

The coefficient on the dependency ratio has the expected negative sign and is statistically significant implying a positive relationship between the private savings rate and the share of working-age people in the total population.

As expected, the sign on the share of agriculture in GDP variable is positive and significant providing support to the precautionary savings motive. Given the predominance of agriculture in economic activity in Bangladesh and given the uncertainty related to agricultural income, the positive coefficient shows that farmers have a higher propensity to save than people in other profession.

The coefficient for public savings is negative and statistically significant in both Tables. This provides evidence that the private sector internalize the government's budget constraint. The 'offset' coefficient, in absolute terms, is 0.202. This is within the range found in other developing countries where the value ranges from 0 percent (Haque and Montiel, 1989) to 50 percent (Corbo and Schmidt-Hebbel, 1991; Bandiera *et al.*, 2000) also reported a negative relationship between private and public savings rate in eight developing countries.

Interestingly, since the coefficient on public savings is statistically less than one, we can reject full Ricardian equivalence.[22] In a Ricardian world, an isolated cut in taxes or an increase in government expenditures would lead to an equivalent rise in private spending because individuals would expect an equivalent discounted tax increase in the future. Under these conditions, as articulated in Barro (1974), fiscal policy is unable to directly affect savings.

Ricardian equivalence assumes that individuals' consumption choices fit a life-cycle model of consumption, they are forward looking and effectively 'infinite-lived' through a bequest motive that is inspired by each generation's concern about the welfare of the next generation. However, once the generational linkage breaks down, there isn't a complete offset. Further, even in the presence of bequest motives, Ricardian equivalence may not hold if some individuals are liquidity constrained or if markets are incomplete. In a developing country like Bangladesh, a large percentage of private saving is carried out by the wealthiest individuals. They usually leave bequests to their heirs, do not face binding liquidity constraints, and, consequently, might smooth their

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[21] It should be pointed out that the real interest rate variable was found to be highly correlated with the inflation rate. The correlation coefficient was found to be 0.76. It implies that during our sample period, the nominal rates adjusted rather slowly to changes in economic fundamentals and that, on average, changes in inflation were dominating the movements in real interest rates. In addition to government controls, the rigidity in nominal interest rates has been due to a number of factors, including the oligopolistic nature of the domestic banking system; inadequate banking supervision; and thin domestic money, credit, and capital markets.

[22] The Ricardian equivalence doctrine states that public debt issues are macroeconomically indistinguishable from tax increases, and thus a change in public savings should be offset by an equal and opposite change in private savings.

consumption over the life-cycle. This may explain why the Ricardian equivalence may seem counterintuitive in Bangladesh.

Loayza and Shankar (2000) and Edwards (1996) also rejected the Ricardian equivalence for India and a number of Latin American countries, respectively. Bandiera *et al*. (2000), however, found support for the Ricardian equivalence in three (and depending upon specification, five) out of eight developing countries considered in their study.

Of particular interest is the finding that, irrespective of the time horizon, the financial liberalization index has a statistically significant negative impact on private savings indicating that Bangladesh cannot rely on financial liberalization to stimulate growth through higher levels of savings. This confirms similar findings reported for Korea and Mexico in Bandiera (2000). It, however, doesn't eliminate the possibility of at least reducing the less productive uses of loanable funds in these countries through reforms that strengthen market discipline and provide more autonomy to financial institutions.

5.5 Policy multipliers

Finally, in order to analyze the effect of each policy change on financial depth, impact and long-run policy multipliers are calculated. Following the method described in Demetriades and Luintel (1997), we first calculate the total contribution of each standardized policy variable in the financial reform index (say, a_i). This is performed by adding up the cross-product terms between the weight of each principal component in the index and the element in the companion eigenvector which corresponds to a given policy, i. Next, we take the product of a_i and the estimated regression coefficient to get the long-run influence of each standardized policy variable, b_i. Finally, we divide each of the calculated b_i by the sample standard deviation to find the influence of a unit change in each of the policy variables.

The impact multipliers are also calculated in a similar manner. The a_i's and b_i's are multiplied by the regression coefficients of the change in the index and the lagged error correction term. This gives us the dynamic responses due to the error correction and the direct impact of the index, respectively. These two responses are then added and the sum divided by the corresponding sample standard deviation to obtain the impact multipliers.

The multipliers are reported in Table 7. The values indicate that various financial repression policies had a significant impact on financial depth in Bangladesh. The cost of controlling the deposit rates either through fixing the rate or imposing ceiling or floors, has been very high. The policy of fixing the deposit rate, for example, led to a long run reduction in financial depth by 9.43 percent; while enforcing deposit rate ceilings and floors reduced financial depth in the long run by 8.14 and 7.58 percent, respectively. The reduction in financial depth due to lending rate controls ranged from a low of 4.02 percent to a high of 5.72 percent. The impact of a lending rate ceiling (4.02 percent) is almost half the impact of a deposit rate ceiling (8.14 percent). Fry (1995) has attributed this difference to the fact that lending rate ceilings are more easily evaded than deposit rate ceilings. Demetriades and Luintel (1997) also report similar findings for India. In case of an increase in the intensity of the directed credit program, the long-run reduction in financial depth is around 9.77 percent. This is almost twice the figure reported for India in Demetriades and Luintel (1997).

Table 7 Impact and Long Run Multipliers on Financial Depth[a]

Policy	Impact Multiplier	Long-run Policy Multiplier
Fixed Lending Rate	-4.95	-5.72
Lending Rate Ceiling	-3.15	-4.24
Lending Rate Floor	-2.90	-4.02
Fixed Deposit Rate	-7.10	-9.43
Deposit Rate Ceiling	-5.26	-8.14
Deposit Rate Floor	-5.12	-7.58
Reserve ratio (1% increase)	-0.04	-0.66
Liquidity ratio (1% increase)	-0.28	-1.32
Directed credit (intensity inc.)	-6.14	-9.77
Real interest rate (1% decrease)	-0.92	-1.40

Note: [a] percentage change in financial depth

The Table also reports the effect of a permanent one percentage point reduction in the real interest rate. This would lead to a fall in financial depth of 1.4 percent. Alternatively, for every one percentage point increase in the real interest rate, financial depth increases by 1.4 percent. Note that this number is lower than the increase in financial depth that can be achieved by removing restrictions on deposit and lending rates.

6 Search for an explanation

There is now an extensive body of research highlighting the economic benefits that can be reaped from reforms in the financial sector, in particular through a more effective domestic savings mobilization and a more efficient allocation of resource (see World Bank (2001) for a detailed discussion on this issue).

The widely held view of a strong positive correlation between the opening up of the financial sector and the level of household savings has been the cornerstone of reform policies advocated by the donor agencies. However, our results from Bangladesh contradict this view by showing that financial reform policies have, in fact, led to a decrease in private savings. Now the question is, how can the widely held view in the literature and also among donors and policy makers be reconciled with these empirical findings? The answer can be found by analyzing the current state of the financial sector in Bangladesh.

6.1 Overview of the financial system

Let us begin our analysis by looking at the formal financial sector. It is at a relatively early stage of development in terms of both diversity as well as the range of products offered. The banking sector dominates the financial system, accounting for more than 95 percent of its total assets. The banking institutions comprise of the central bank—Bangladesh Bank, three nationalized banks, one partially nationalized bank, twenty-

seven private domestic banks, thirteen foreign banks, and five government-owned specialized development banks.[23]

The nationalized commercial banks (NCB) dominate the commercial banking sector accounting for about two-third of its assets, although the share has been declining over the last two decades due, in part, to the privatization of two nationalized commercial banks in 1982 (IMF, 1998). The specialized banks were created with special mandates to address the financial needs of clients in a specific sector, for example, agriculture or manufacturing, and used as a means of granting subsidies to these sectors. Although their deposit-taking is relatively small (less than 5 percent of all bank deposits), they provide 17 percent of all bank advances, financed by large borrowing from the Bangladesh Bank. The foreign banks with a stable share of around 8 percent of bank assets in recent years are active mainly in international transactions (IMF, 1998). Other segments of the financial sector include two government-controlled and about three dozen private insurance companies, and two stock exchanges.

6.2 Bank soundness

By most measures, the banking system in the country is unsound and has seen very little improvement in recent years. One way to assess bank soundness would be to evaluate the banks' solvency or capital adequacy, quality of their loan portfolio, and the liquidity position. By each of these standards, the banking system falls far below the accepted international norm. Almost all banks suffer from highly inadequate capital and provisioning measures, low quality assets, and unsatisfactory management and operating environment (IMF, 1998).

The problems in the banking system that have adversely affected private savings since the start of the reform process can be traced to its large non-performing loan (NPL) portfolio and high spreads to cover provisioning and management costs. In addition, low loan recovery rates, an inadequate legal framework, poor governance, and limited capacity of the Bangladesh Bank to effectively perform its regulatory and supervisory role have also exacerbated the problem.

6.3 Non-performing loans

The loan classification and loss provisioning criteria in Bangladesh are less rigorous than the international ‘best practice’ standards as reflected in the ‘Basel Core Principles for Effective Banking Supervision’ (IMF, 1998). Table 8 reveals the lack of rigor in the loan classification criteria used in the banking circle. In 1997, for example, loans were classified as ‘substandard’ when overdue for 9 to below 24 months (international standard: 4-6 months); ‘doubtful’ for 24 to below 36 months (international standard: 7-12 months), and ‘bad’ for 36 months or more (international standard: 13 months or more).

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[23] These figures are as of June 2000. The number of private banks are increasing rapidly as the government has decided to provide permission to open new banks on a regular basis.

Table 8 Bank Loan Classification and Loss Provisioning Criterion

Loan Classification	Bangladesh Standard	Global Standard	Provisioning Requirement For Loans
Sub-standard	9-23 months	4-6 months	10 percent
Doubtful	24-35 months	7-12 months	50 percent
Bad	36 months and more	13 months and more	100 percent

Source: International Monetary Fund (1998) and author's calculation.

Despite a less rigorous loan classification and loss provisioning criteria in Bangladesh relative to the international 'best practice' standards, the problems with non-performing loans would become evident even to a casual observer. Table 9 provides a list of summary performance indicators for the banking system. It shows that the share of non-performing loans is very high and has been rising in recent years. The classified loans ratio rose from around 34 percent in early 1990s to more than 38 percent in late 1999. While the proportion of substandard and doubtful loans in classified loans decreased in the 1990s, the proportion of bad loans actually increased from 58 to 80 percent over the same period. What is alarming is the performance of the nationalized commercial banks. Their classified loans share increased steadily from 32 percent in 1994 to 47 percent in 1999. On the other hand, the private domestic banks reduced their share of non-performing loans from a high of 45 percent in 1994 to 29 percent in late 1999. The foreign banks cut their share of NPL by half over the same period. Further, NPLs were particularly pervasive in the specialized development banks where the ratio exceeded 65 percent and was increasing.

The provisioning shortfall situation of the domestic banks have significantly worsened in recent years. Table 9 shows that for domestic banks, actual provisioning as a percent of required provisioning fell from 59 percent in 1994 to 42 percent in 1999. Nationalized banks saw the ratio drop by half from 67 percent in 1994 to 36 percent in 1999. Private domestic banks, however, saw an increase in the ratio from 46 percent to 57 percent over the same period. Only foreign banks met their provisioning requirments. As the loan classification standards, on which the required provisions are calculated, are less rigorous in Bangladesh than international practice, estimates based on the latter would show larger provisioning shortfalls. Similar arguments can be made to show that the Table, in fact, understates the non-performing loan problem when measured by the more stringent international standards.

The World Bank has estimated that, based on international standards, the NPL ratio in Bangladesh would be around 50 percent for all domestic commercial banks. For purposes of comparison, we can look at Table 10 which gives the NPL figures for the countries affected by the Asian currency crisis in 1997. NPL as a proportion of total loans varied from a low of 35 percent in Malaysia to a high of 75 percent in Indonesia.

Another interesting feature of the NPL is that about nine-tenths of the NPL are to the private sector and within this group the NPLs are highly concentrated. Some initial estimates by the IMF put the expected loan losses of the banking sector at about 6 percent of GDP [IMF (1998)].

Table 11 shows the capital adequacy ratio (CAR) of the banking sector during 1996-99. The ratio for the domestic banks hover around single digit while those for the foreign banks reach high teens. As the CAR for the domestic banks are less than the share of

NPL in total loans, capitals in domestic banks have been practically wiped out in Bangladesh. Only the foreign banks have enough capital to cover their required quota.

Table 9 Summary performance indicators in the banking system, 1994–99

	1994 Dec.	1996 Dec.	1996 Dec.	1997 Dec.	1984 Dec.	1999 Dec.
Classified loans by group of bank [1]	34.8	32.0	31.5	32.7	35.4	38.3
Domestic banks	36.3	33.9	33.3	34.8	37.7	40.7
Nationalized commercial banks	32.1	31.0	32.6	36.6	40.4	47.0
Private domestic banks	44.5	39.4	34.8	31.4	32.7	29.0
Foreign banks	8.8	5.4	4.7	3.4	4.1	4.2
Memorandum item: Specialized development banks	—	—	50.9	65.7	66.7	67.9
Total classified loans by category [1,3]	34.8	32.0	31.5	32.7	35.4	38.3
Substandard [2]	19.2	13.1	13.4	10.6	5.2	8.0
Doubtful [2]	17.6	12.4	12.3	15.7	8.2	11.7
Bad [2]	58.6	69.8	74.3	73.8	86.7	80.3
Loan market shares [1]	100.0	100.0	100.0	100.0	100.0	100.0
Domestic banks	94.6	93.6	93.7	93.4	93.1	93.3
Nationalized commercial banks	62.7	61.9	62.1	61.5	60.7	60.8
Private domestic banks	32.0	31.7	31.6	31.9	32.4	32.5
Foreign banks	5.4	6.4	6.3	6.6	6.9	6.7
Actual provisioning in % of required provisioning	60.3	48.3	53.9	48.6	44.2	42.8
Domestic banks	59.4	47.0	52.8	47.4	43.0	41.8
Nationalized commercial banks	67.0	47.2	50.0	45.2	38.5	36.2
Private domestic banks	45.8	46.6	58.3	52.2	54.4	56.8
Foreign banks	103.2	112.5	122.4	137.5	132.4	128.3

Source IMF (2000), Table 29.

Notes
1 In per cent of total loans.
2 In per cent of classified loans.
3 Includes overdue agriculture short-term loans of 4.6 and 4.8 per cent of all classified loans in 1994 and 1995 respectively.
4 Adjusted to exclude interest suspense and in per cent of total loans excluding interest suspense.

Table 10 Non-performing Loans in Countries Affected by the 1997 Asian Currency Crisis

Country	NPL[a]
Indonesia	75
Korea	50
Malaysia	35
Thailand	55

Note: [a] NPL = non-performing loans as a percentage of total bank loans in 1997

Source: *The Wall Street Journal*, 9 December, 1998.

Table 11 Capital Adequacy Ratio, 1996-1999 (in percent)

	Dec. 1996	Dec. 1997	Dec. 1998	June 1999
Capital Adequacy Ratio	**6.6**	**7.5**	**7.3**	**7.2**
Domestic commercial banks	6.0	7.2	6.5	6.5
NCBs[a]	5.6	6.6	5.2	5.4
Specialized banks	6.2	6.0	7.0	7.1
Private banks	7.1	8.4	9.2	9.2
Foreign banks	17.8	16.5	17.0	14.7
Actual capital in percent of required capital	**80.5**	**91.8**	**90.6**	**88.6**
Domestic commercial banks	73.5	87.9	81.3	81.2
NCBs	69.6	82.8	65.3	67.1
Specialized	77.1	75.1	87.1	89.1
Private banks	81.2	98.9	113.5	113.9
Foreign banks	181.0	172.4	184.4	163.6

Note: [a] NCBs = nationalized commercial banks.

Source: *IMF: Bangladesh: Recent Economic Developments*, March 2000, Table 31.

6.4 Factors contributing to large non-performing loans

The reasons for the increase in the NPLs in the banking system can be traced to events as early as 1972. Following independence in 1971, the banking sector was nationalized and remained strictly under government-control. The high degree of state control is reflected in political interference in the selection of Directors to the Bank Boards, composition of their management teams, and in their loan portfolios. Political pressure is exerted for lending to institutions and/or individuals with high credit risks. Consequently, commercial banks have failed to follow true banking practices and skills leading to inadequate banking supervision. Bank loans were disbursed mainly to the publicly-directed sectors without proper commercial consideration; the internal control and account systems of the banks were weak, and the quality of bank assets was not evaluated on strict accounting principles (IMF, 1998). This led to an unabated increase in NPL.

6.5 Direct efficiency loss due to non-performing loans

Much of the borrowing in developing countries come from banks, and the cost of this finance accordingly also depends on the operational efficiency and competitiveness of the banking market. One measure of this performance is the intermediation spread. Recent evidences have suggested that liberalization of bank interest rates has widened this spread in many countries. While the median of average quoted spreads in the developed economies shrank during the second half of 1990s to just over 300 basis points, the corresponding figure for developing economies continued to widen beyond 800 basis points (Honohan, 2001). Some of this increase is due to more refined loan pricing in the liberalized environment, better reflecting the higher default risk in a typical developing country bank portfolio.[24] Some, however, will reflect an increased exercise of market power by banks and bankers in internally liberalized banking

[24] Another plausible explanation could lie in the link between high funding interest rates and the higher risk of lending (Agenor *et al*., 1999).

markets; especially where capital has been eroded for various reasons, banks will be keen to use their new freedoms to build up capital through the exercise of market power (World Bank, 2001).

Van Der Geest (2001) has shown that the direct efficiency losses due to the NPLs in Bangladesh have kept the spreads between deposit and lending rates artificially high. Figure 3 shows the spread, calculated as the difference between the lending and deposit rate (see also Table 12). Interest rates in Bangladesh have been characterized by low deposit rates on bank accounts, high interest rates on loans in domestic currency, and a high and relatively stable margin between loan and deposit rates.

Figure 2

Financial reform index in Bangladesh, 1972–2000

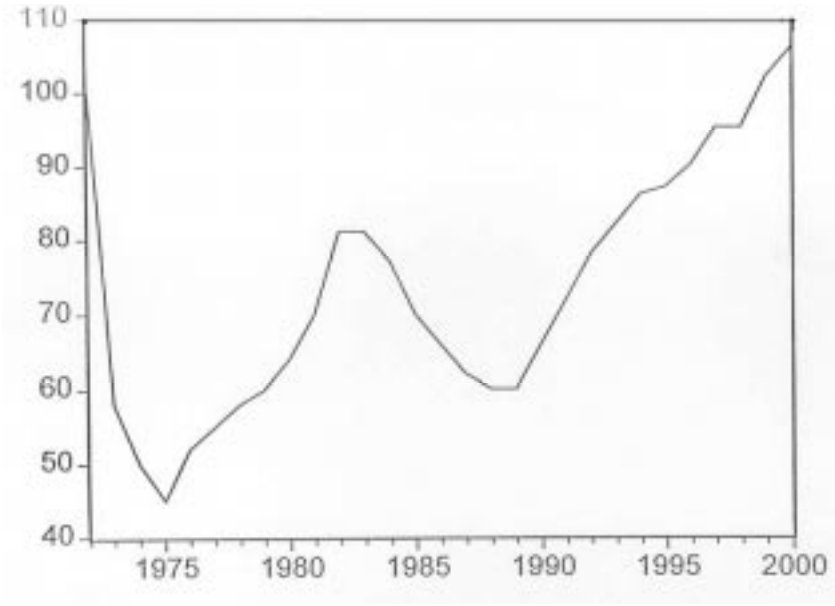

Figure 3

Interest rate spread in Bangladesh

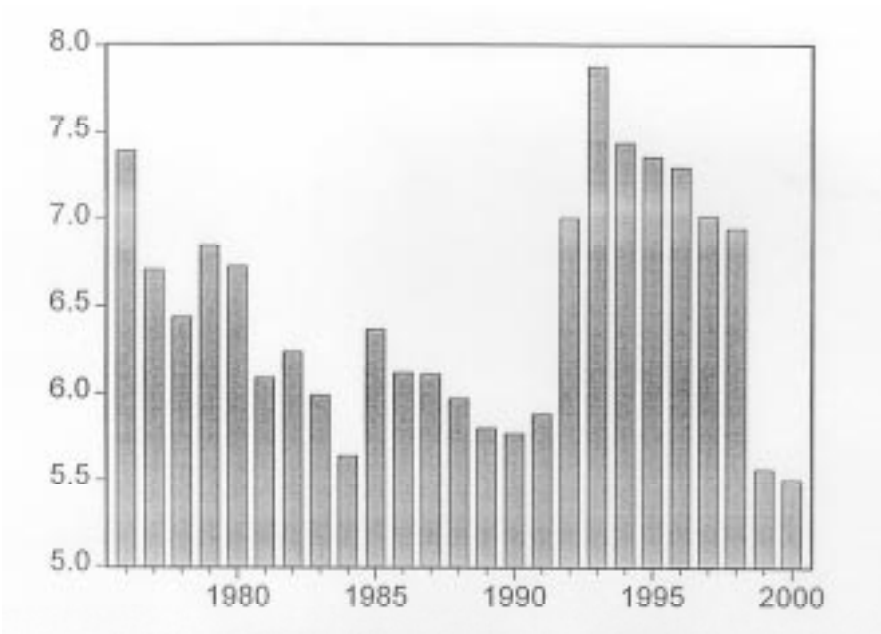

Table 12 Deposit Rate and Lending Rate of Scheduled Banks

Year	Deposit Rate	Lending Rate
1975-76	4.23	11.62
1976-77	4.32	11.03
1977-78	4.22	10.66
1978-79	4.27	11.12
1979-80	4.31	11.04
1980-81	6.98	13.07
1981-82	7.29	13.53
1982-83	7.36	13.35
1983-84	8.11	13.75
1984-85	8.13	14.50
1985-86	8.54	14.66
1986-87	8.59	14.70
1987-88	8.69	14.66
1988-89	8.88	14.68
1989-90	9.06	14.83
1990-91	9.11	14.99
1991-92	8.11	15.12
1992-93	6.51	14.39
1993-94	5.34	12.78
1994-95	4.86	12.22
1995-96	6.11	13.41
1996-97	6.67	13.69
1997-98	7.07	14.02
1998-99	8.90	14.46
1999-2000	9.10	14.60

Note: Rate of interest on scheduled banks (weighted average as at end quarter)

Source: Bangladesh Bank, Economic Trends and Chowdhury (2000), Table 3.

6.6 Cost of large spread

The large spread had a negative impact on both savings and investment in the economy. Low deposit rates have discouraged private savings whereas the high real commercial lending rates have discouraged investment. The spread is the result of the quasi-monopolistic role played by large nationalized banks that are burdened with non-performing loans and other operating inefficiencies. If one adds the implicit cost of holding large unremunerated cash reserves and excess reserves for clearing and payments, and also considers the risks involved in lending to borrowers with limited collateral, the courts' inefficiency in collecting nonperforming loans, and, ultimately, the profit margin of the investors, it is not surprising that the spread between deposit and lending rates is so high. Inability to fully use the indirect instruments of monetary policy and the lack of efficient interbank market activities have also contributed to this large spread. Spread made domestic savings instruments very expensive, and hence unattractive, and discouraged financial intermediation, thus depressing both savings and lending volumes.[25]

[25] Seck and Neli (1993), on the other hand, has suggested that the high spread between lending and deposit rates can be viewed as an implicit tax through high reserve requirements on the banking sector by the monetary authorities.

7 Conclusions

Over the course of the last decade, Bangladesh has implemented a broad-based program of financial and market reforms, encompassing changes in the structure of the financial system, prudential and supervisory frameworks, and monetary management.

This paper evaluates the impact of various determinants of savings in Bangladesh—with special emphasis on the impact of financial reform. A savings function is estimated. Initial estimates show that the level of income, real interest rates, and the share of agriculture in GDP have a positive impact on the savings rate. Dependency rate and public savings rate, on the other hand, have a negative impact on private savings. We do not find any support for the Ricardian equivalence theorem.

Interestingly, the financial reform index has a negative impact on private savings in Bangladesh. Hence reforms that were initiated since the late 1980s had actually reduced savings. This is counterintuitive to the conventional wisdom which argues, based on the McKinnon-Shaw hypothesis, that financial reform leads to significant economic benefits, in particular through a more effective savings mobilization and a more efficient resource allocation process, by reducing intermediation spreads, financial deepening, and enhanced access to credit.

An explanation for this result can be traced to the state of the banking sector beginning as early as 1972. Following independence in 1971, banks were nationalized and remained strictly under government control. This led to political interference in the selection of bank management and in loan portfolios. Loans were extended to institutions and individuals with high credit risks leading to a high default rate. Moreover, this high proportion of effectively non-performing assets also contributed to high interest margins and relatively low degree of financial intermediation.

Despite a number of positive changes that have been introduced in the financial sector following reforms, these factors have adversely affected private savings in the economy. The pace of reform has not kept in line with the severity of the situation and further reforms in a timely fashion are necessary. In the absence of any such reform, the costs to the economy in terms of lower savings and investment due to an increasingly impaired financial system will continue to grow. This would jeopardize the widely held expectation of raising economic growth rates in both the short and medium term.

Finally, financial reform in Bangladesh has been an on going process that has accelerated during the last decade. Given the time dimension of this study, we are essentially looking at a transitional economy. Thus the results presented here can only indicate the direction of change during the early years of liberalization, rather than a complete evolution of the effect of financial liberalization on savings.

Appendix I: Changes in financial sector policy, 1973-1999

Credit Controls: Directed and controlled credit largely phased out after 1989. Politically motivated lending remains prevalent. Cash reserve requirements lowered to 5 percent in the 1990s.

Interest Rates: Interest rates raised to positive real levels in the early 1980s. After 1989, deposit rates on savings and time deposits subject to a floor. Floor abolished in 1996. Lending rates for loans freed, except for priority sectors. Priority sector interest rate bands fixed by the Bangladesh Bank.

Entry Barriers: Private banks permitted, with approval, since early 1980s. More than a dozen new banks have been established, including some foreign joint ventures. New banks largely occupy niche markets. Only public banks may lend to priority and public sectors. The equity market is in its infancy and remain weak. Money markets are almost nonexistent.

Government Regulation of Operations: Branching restrictions still in place for private banks.

Privatization: Commercial banks nationalized in the 1970s. Two state-owned banks sold back to original owners in early 1980s. However, these two banks remain uncompetitive.

International Capital Flows: Foreign Exchange markets unified in 1991-92. Restrictions on current account transactions eliminated in 1994. Controls on capital inflows eased after 1991.

Source: Williamson and Mahar (1998), IMF Staff Reports, annual reports of central banks, and news articles.

Appendix II

The following list summarizes the measures which became part of the Financial Sector Reform Programme (FSRP) as set out in 1990:

interest rate liberalization

- floor and ceiling rates for deposits and savings rate
- Nationalized Commercial Banks/Bangladesh Shilpa Bank lending rates raised to market rates and abolish lending quota's
- technical assistance recommending on interest rate levels and monetary programming
- government to reimburse interest subsidies to banks;

strengthen bank supervision

- improve Bangladesh Bank's inspection capability
- rationalize bank reporting requirements including special reports on state-owned enterprise-borrowing
- new accounting rules for provisioning and suspension of interest payments
- establish a credit information bureau
- external auditing of the Bangladesh Bank

Strengthen Nationalized Commercial Banks

- recapitalize the Nationalized Commercial Banks through government bonds to at least 5 percent of deposits
- strengthen management and accounting practices through training and legal advice;
- write-off non-collectable items and improve debt recovery through focus on 100 largest borrowers;

Money market operations

- amend Bangladesh Bank Act to give it legal powers to issue debt instruments

Legal framework

- new Financial Loan Courts Act implemented.

Source: Willem Van Der Geest: Default—but no Reform: Financial Sector Issues in Bangladesh, Paper presented at the International Conference on 'Development and Business Finance' at the University of Manchester, April 5-6, 2001.

Appendix III: Indicators of financial and trade reform

	Pre-Reform	Year of Reform	Post-Reform
Indicators of financial sector reform (in percent)			
Year	1980	1988	1993
Real deposit interest rate	-6.0	1.0	2.0
Real lending interest rate	-1.0	7.0	11.0
Spread[a]	7.0	6.0	9.0
M2/GDP ratio	16.0	29.0	33.0
Private sector's share of total credit	35.0	69.0	66.0
Private Investment/GDP ratio2	8.0	6.0	5.0
Indicators of trade reform			
Year	1980	1989	1993
Average nominal tariff	—	94.0	50.0
Import-weighted average tariff	—	59.0	32.0
Number of tariff bands	24	11	8
Real effective exchange rate[b]	1	-1	1
Parallel market exch. premium	112	200	—
Total trade/GDP	23	23	25

Note: [a] spread between nominal lending and deposit rates
[b] forward-looking three year averages, except in 1993
Source: International Monetary Fund (1996), author's calculation.

References

Agenor, P., J. Aizenman, and A. Hoffmaister (1999). *Contagion, Bank Lending Spreads and Output Fluctuations*, Policy Research Working Paper No. 2186, World Bank, Washington, DC.

Asian Development Bank (2000). *The Role of Central Banks in Microfinance in Asia and the Pacific*, Vol. 2, Manila.

Bandiera, O., G. Caprio, P. Honohan, and F. Schiantarelli. (2000). 'Does financial reform raise or reduce private savings?' *Review of Economics and Statistics*, Vol. 82, No. 2, 239-63.

Barro, R. (1974). 'Are government bonds net wealth?' *Journal of Political Economy*, 82, 1095-117.

Bayoumi, T. (1993a). 'Financial deregulation and consumption in the United Kingdom,' *Review of Economics and Statistics*, 75, August, 536-39.

Bayoumi, T. (1993b). 'Financial saving and household saving,' *Economic Journal*, Vol. 103, November, 1432-1443.

Blanchard, O. and S. Fischer (1989). *Lectures on Macroeconomics*, Cambridge, MA: MIT Press.

Blejer, M. and S. Sagari (1992). *'Hungary: Financial Sector Reform in a Socialist Economy,'* World Bank Policy Paper, WPS 595, Washington, DC: World Bank.

Bosworth, B. (1993). *Savings and Investment in an Open Economy*, Washington DC: Brookings Institution.

Caporale, G. and G. Williams (2001). 'Monetary policy and financial liberalization: the case of United Kingdom consumption,' *Journal of Macroeconomics*, Vol. 23, No. 1, Winter. 177-197.

Carroll, C. and D. Weil (1994). *'Savings and Growth: A Reinterpretation,' Carnegie-Rochester Conference Series on Public Policy'*, Vol. 40, 1994, 133-92.

Chapple, S. (1991). *'Financial Liberalization in New Zealand, 1984-90,'* United Nations Conference on Trade and Development Discussion Papers No. 35, Geneva, UNCTAD, March.

Chowdhury, A. (2000), *'Politics, Society and Financial Sector Reform in Bangladesh,'* World Institute for Development Economics Research (WIDER) Working Paper No. 191, July.

Corbo, V. and K. Schmidt-Hebbel (1991). 'Public policies and saving in developing countries,' *Journal of Development Economics*, Vol. 36, 89-115.

De Gregorio, J., and P. Guidotti (1995). 'Financial development and economic growth,' *World Development*, 23(1).

Dayal-Gulati, A. and C. Thimann (1997). *'Saving in Southeast Asia and Latin America Compared: Searching for Policy Lessons,'* Working Paper WP/97/110.

Demetriades, P. and K. Luintel (1997). 'The direct cost of financial repression: evidence from India,' *The Review of Economics and Statistics*, Vol. 79, No. 2, 311-320.

Dickey, D. and W. Fuller (1979). 'Distribution of the estimators for autoregressive time series with a unit root,' *Journal of the American Statistical Association*, 427-431.

Eatwell, J. (1996). *'International Capital Liberalisation: the Record,'* CEPA Working Paper Series No. 1, University of Cambridge.

Edwards, S. (1996). 'Why are Latin America's savings rates so low? An international comparative analysis', *Journal of Development Economics*, Vol. 51, pp. 5-44.

Engle, R. and C.W.J. Granger (1987). 'Co-integration and error correction: representation, estimation and testing,' *Econometrica*, Vol. 51, 251-276.

Fischer, B. (1993). 'Financial liberalization and sustained interest differentials,' *Intereconomics*, 28, September/October, 241-250.

Fry, M., (1978).'Money and capital or financial deepening in economic development?,' *Journal of Money, Credit and Banking*, Vol. 10, November, 464-475.

Fry, M. (1995). *Money, Interest and Banking in Economic Development*, 2nd edn, London: Johns Hopkins University Press.

Giovannini, A. (1983). 'The interest elasticity of savings in developing countries: the existing evidence,' *World Development*, Vol. 11, 601-607.

Honohan, P. (2001). 'How interest rates changed under liberalization: a statistical review,' in G. Caprio, P. Honohan, and J. Stiglitz (eds), *Financial Liberalization: How Far, How Fast?*, Cambridge, UK: Cambridge University Press.

Hossain, M., I. Islam, and R. Kibria (1999). *South Asian Economic Development: Transformation, Opportunities and Challenges*, London: Routledge.

Hussain, N. (1996). *'Financial Liberalization, Currency Substitution, and Investment: The Case of Egypt,'* African Development Bank Economic Research Papers, No. 24, Addis Ababa, African Development Bank.

Huque, N. and P. Montiel (1989). 'Consumption in developing countries: tests for liquidity constraints and finite horizons,' *Review of Economics and Statistics*, Vol. 71, August. 408-15.

Im, K.S., M.H., Pesaran, and Y. Shin (1996). *'Testing for Unit Roots in Heterogenous Panels,'* University of Cambridge mimeograph.

International Monetary Fund (1996). *'Reinvigorating Growth in Developing Countries: Lessons from Adjustment Policies in Eight Economies,'* Occasional Paper No. 139, July.

International Monetary Fund (1998). *Bangladesh—Selected Issues*, IMF Staff Country Reports No. 98/130, January.

Jbili, A., K. Enders, and V. Treichel (1997). *'Financial Sector Reforms in Algeria, Morocco, and Tunisia: A Preliminary Assessment,'* IMF Working Paper WP/97/81, July 1997.

Johansen, S. (1988). 'Statistical analysis of cointegrating vectors,' *Journal of Economic Dynamics and Control*, Vol. 12, 231-254.

Johansson, S. (1996). *'Private Saving in Indonesia,'* mimeo, Washington, DC: International Monetary Fund.

Joshi, V. and Little, I.M.D. (1996). *India's Economic Reforms: 1991-2001*, New York: Oxford University Press.

Khan, A.H. (1995). 'Need and scope for further reforms in financial sector in Pakistan,' *Journal of Institute of Bankers in Pakistan*, Vol. 61, June. 41-58.

Khan, A. and L. Hasan (1998). 'Financial liberalization, savings, and economic development in Pakistan,' *Economic Development and Cultural Change*, Vol. 46, No. 3, April, 581-98.

Khan, A., L. Hasan, and A. Malik (1994). 'Determinants of national savings rate in Pakistan,' *Economia Internazionale*, Vol. 47, November, 365-82.

Lahiri, A. (1989). *'Dynamics of Asian Savings: The Role of Growth and Age Structure,'* IMF Staff Papers, Vol. 36, 228-61.

Leff, N.H. (1984). 'Dependency rates and savings rates: another look,' *American Economic Review*, 74, 231-233.

Loayza, N. K. Schmidt-Hebbel and L. Serven (2000). 'Saving in developing countries: an overview,' *The World Bank Economic Review*, Vol. 14, No. 3, September, 393-415.

Loayza, N. and R. Shankar (2000). 'Private saving in India,' *The World Bank Economic Review*, Vol. 14, No. 3, September, 571-596.

Lopez-Mejia, A. and J. Ortega (1998). *'Private saving in Columbia,'* mimeo, November. Washington, DC: International Monetary Fund.

McKinnon, R.(1973). *Money and Capital in Economic Development*, Washington, DC: Brookings Institution.

McKinnon, R. (1982). 'The order of economic liberalization: lessons from Chile and Argentina,' *Carnegie-Rochester Conference Series on Public Policy*, No. 17, North-Holland Publishing Co.

Maddison, A. (1992). 'A long run perspective on saving,' *Scandinavian Journal of Economics*, Vol. 94, No. 2, 181-96.

Mavrotas, G. and R. Kelly (2001). 'Savings mobilisation and financial sector development: the nexus,' *Savings and Development*, Vol. XXV, No. 1, 33-65.

Melo, J. and J. Tybout (1986). 'The effects of financial liberalization on savings and investment in Uruguay,' *Economic Development and Cultural Change*, 561-587.

Muhleisen, M. (1997). *'India—Policies to Increase Domestic Savings,'* International Monetary Fund Working Paper, 1997.

Obwona, M., and J. Ddumka-Ssentamu (1998). 'Household savings in developing economies: evidence from microdata from Uganda,' *Savings and Development*, 1-2, 25-40.

Ogaki, M., J. Osty, and C. Reinhart (1996). 'Saving behavior in low-and middle-income developing countries: a comparison,' *IMF Staff Papers*, International Monetary Fund, Vol. 43, March. 38-71.

Ostry, J. and J. Levy (1995). 'Household saving in France,' IMF *Staff Papers*, International Monetary Fund, Vol. 42, June. 375-97.

Park, J. and P. C. B. Phillips (1988). 'Statistical inference in regressions with integrated processes: part 1,' *Econometric Theory*, Vol. 4, 468-497.

Reynoso, A. (1989). *'Financial Repression, Financial Liberalization, and the Interest Rate Elasticity of Developing Countries,'* Ph.D. dissertation, Massachusetts Institute of Technology.

Saikkonen, P. (1991). 'Asymptotically efficient estimation of cointegrating regressions', *Econometric Theory*, Vol. 7, 1-21.

Seck, D. and Y. El Nil (1993). 'Financial liberalization in Africa', *World Development*, Vol. 21, No. 11, 1867-1881.

Shaw, E. (1973). *Financial Deepening in Economic Development*, New York: Oxford University Press.

Skinner, J. (1988). 'Risky income, life-cycle consumption, and precautionary savings', *Journal of Monetary Economics*, Vol. 22, No. 2, 237-55.

Stock, J.H., and M.W. Watson (1993). 'A simple estimator of cointegrating vectors in higher order integrated systems', *Econometrica*, Vol. 61, 783-820.

Theil, H. (1971). *Principles of Econometrics*, New York: Wiley.

Van Der Geest, W. (2001). *'Default—but no Reform: Financial Sector Issues in Bangladesh,'* Paper presented at the International Conference on 'Development and Business Finance', IDPM, University of Manchester, April.

Williamson, J. and M. Mahar (1998). *'A Survey of Financial Liberalization,'* Princeton University: Essays in International Finance, No. 211, November.

World Bank (1989). *World Development Report 1989*, New York: Oxford University Press.

World Bank (2001). *Finance for Growth: Policy Choices in a Volatile World*, New York: Oxford University Press.

Uyger, E. (1993). *'Liberalization and Economic Performance in Turkey,'* United Nation Conference on Trade and Development Discussion Papers No. 65, Geneva, UNCTAD, August.

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