Financial Savings and Economic Growth: An Econometric Analysis in the Context of Bangladesh

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Abstract

Savings is one of the driving factors of economic development. Though Bangladesh economy started its financial system with control over interest rate, directed credit market, complex rules for money, capital markets and over-valued exchange rates. Later the financial liberalization initiative in 1982 and Financial Sector Reform Project (FSRP) in 1990 have been undertaken. This paper aims to estimate financial savings function that would exhibit the savings response to these initiatives. Simultaneous equation model was run to estimate the financial saving function as there exists simultaneity between financial savings and economic growth. Data were collected from secondary sources for the period of the year 1976/1977 to 2005/2006. Empirical results show that the economic growth and number of branches of scheduled banks have positive impact on savings rate though it is statistically insignificant, while the real rate of interest and financial liberalization exerts a statistically significant positive impact on financial savings. Growth function with low explanatory power, however, captures the effect of financial savings rate, foreign direct investment (FDI) inflow and adult literacy rate. This study finally suggests increasing the number of scheduled bank branches, extending the bank services in rural sides, liberalizing interest rates and reducing government intervention in the financial market to foster financial savings and economic growth.

Keywords: Financial Savings, Economic growth, Bangladesh.

Savings is the key factor behind the economic development of any country. For economic development, growth is a must and it cannot be achieved without investment or capital accumulation. Despite the diversity of opinion among various writers about the key factors responsible for promoting rapid economic development, the role of capital formation in economic development has never been denied.

Although investment can be financed by external capital inflow, it involves huge uncertainty, politically humiliating terms and economically unfavorable conditions. Apart from this, the amount of such assistances is very much negligible compared to our need. Since the case is so, it will be beneficial for us to attain the ability to move in the

direction of increasing self-reliance in terms of financing investment or capital formation. It is the national savings that plays a dominant role in achieving self-reliance through growth and stability. It can help a developing economy like Bangladesh to get rid of the so-called low level income equilibrium trap or vicious cycle of poverty by creating a big push. In this paper, we estimate the financial savings function of Bangladesh, and also the economic growth function as a determinant of financial saving.

This paper is organized as: literature review in next section, research objective in the section 3, methodology is presented in section 4, empirical results are analyzed in section 5, major findings of the study are shown in section 6, and concluding words are written in the last section.

Literature Review

Few studies were conducted to estimate savings function of Bangladesh. A partial study was conducted by Alamgir and Rahman (1974). A healthy growth rate is considered as the primary and most important determinant of financial savings in a low-income country like Bangladesh. First, because saving and economic growth have been highly correlated over long time horizon as well as for many regions and stages of development (Dayal-Gulati & Thimann, 1997). Second, saving is directly associated with output growth through investment. However, the impact of growth in income on savings rate has been inconclusive. According to permanent income hypothesis, forward looking consumers expecting their permanent income to rise against their future income (Dornbusch & Fischer, 1990). Thus higher economic growth reduces private savings and thereby savings rate. In contrast, the life cycle model suggests that individuals save mainly to make the consumption path smooth over time in accordance with their anticipated life-time income and also for bequest motive and for unexpected expenses suggesting a positive relationship between income and savings. But in a developing country like Bangladesh, growth can positively affects savings. Growth and higher income can create a big-push to raise more households above the subsistence level and make them having more speculative power. Most of the cross-country empirical studies find that permanent increase in income has a positive impact on private savings. Maddison (1992), Bosworth (1993) and Ogaki, Ostry and Reinhart, (1996) have shown that savings in low to middle income countries are positively affected by the per capita income relative to that of the USA.

Let us discuss the rationale of including determinants of financial savings function. The real rate of interest defined as the difference between the nominal rate of interest and the rate of inflation is

supposed to have a positive effect on savings rate. But the theoretical literature is ambiguous about the effect of a change in interest rate on savings because the income and substitution effects of such a change work in opposite directions. The next regressor, population per branch of scheduled banks, is viewed as a proxy for financial deepening in the sense of increased access of the people to the banking system that has strong policy significance in mobilizing financial savings. A dummy variable is used to see the impact of financial sector reform program initiated since the late 1980s, which 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 inflow.

Again different exponents have expressed their view about the impact of increase in savings rate on the growth of GDP. According to Harrod-Domar Growth model, if the national savings rate can be increased from a lower level to higher one then GDP growth will also increase (Branson, 1989). In fact, Rostow and others defined the take-off stage in precisely this way. Moreover, this growth would then be self-sustaining. The mechanisms of economic growth and development, therefore, are simply a matter of increasing national savings and investment. But one of the key results of neoclassical growth theory is that, with the constant-returns to scale production function, an increase in the savings rate will in the long-run raise only the level of output and capital per head, and not the growth rate of output per head. But in the short run, the higher savings rate increases the growth rate of output. Lastly, neoclassical growth theorists think that marginal product of capital is diminishing. That is why, the higher the savings rate, the higher the growth rate of output. So we can claim that there has a positive relationship between financial savings rate and growth of real GDP. It is expected that foreign direct investment (FDI) will help the growth and development of the LDCs economy by implementing effective rapid technology transfer, management and organizational skill, greater flow of idea and knowledge, marketing know-how, production of quality goods and services as well as exchange of culture etc(Todaro and Smith, 2006). So we can say that FDI inflow affects economic growth positively. A major distinction between neoclassical growth theory and endogenous growth theory is that diminishing returns to capital can be offset through investing in human capital, which can generate external economies and productivity improvements. Even though, the new growth theory reemphasizes the importance of savings and human capital investment for achieving rapid growth. The potentially high rates of return on investment offered by developing economies with low capital-labor ratios are greatly eroded by lower levels of complementary investments in human capital through schooling, on-the-job training or research and

development. Empirically it was found that the positive relationship exists between human capital and growth in output for a cross-section of countries (Barro and Lee, 1993). In our paper, adult literacy rate has served as a proxy for human capital.

Objectives of the Study

The key objectives of the study are:

1. To identify the determinants for financial saving function of Bangladesh and to provide an overall estimate of financial savings through econometric study.
2. To identify different growth accelerating factors under financial savings function.

Research Methodology

Theoretical framework of the study

The low saving rate and hence the low investment rate can possibly be identified as the most serious macroeconomic problem in Bangladesh economy. Savings through investment plays a vital role in the development process. Among other financial institutions, different commercial banks and post office collect a greater portion of private savings through their activities. But unfortunately at independence in 1971, Bangladesh inherited a peculiar 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. It is noticeably observed that, financial liberalization was encouraged through the privatization of two nationalized commercial banks (NCBs) in 1982 and permitting private commercial banks to operate. Eventually, the government launched the Financial Sector Reforms Program (FSRP) in 1990 with financial assistance from a member of donor agencies (Van Der Geest, 2001). After the financial reform process started, it is assumed that savings motive would be improved. Under our research task, Bank Deposits (i.e. Demand Deposits and Time Deposits) plus Post Office Deposits will be considered as the financial savings.

Model and variables

Based on the theoretical framework with special reference to Bangladesh economy an empirical savings function can be derived for this study. Under this study we will try to highlight the recent trend of financial savings in Bangladesh. Specifically, natural log of financial savings or financial savings rate (lnFS) can be modeled as a function of

growth in real gross domestic product (GR), real rate of interest on Deposits (RRI), population per branch of scheduled banks (PPB), and a dummy variable (D) with the value of 0 up to 1982/83 and 1 for otherwise. Thus,

$$\ln FS_t = \sim_0 + \sim_1 GR_t + \sim_2 RRI_t + \sim_3 PPB_t + \sim_4 D_t + U_t \text{.....(1)}$$

And the growth function is,

$$GR_t = {}_0 + {}_1 \ln Fs_t + {}_2 FDI_t + {}_3 LR_t + U_t \text{.....(2)}$$

Where, growth in real gross domestic product (GR) is a function of financial saving rate (ln FS), foreign direct investment inflow (FDI), adult literacy rate (LR) etc.

Sources of data

The focus of this study is over the growth of financial savings in Bangladesh, which is to be regressed on growth in real gross domestic product (GDP), real rate of interest, population per branch of scheduled banks and a dummy variable. Data used in this study are secondary and covers the period from the year 1976/77 to 2005/06, collected from Economic Trends, Statistical Year Book of Bangladesh, Statistical Pocket Book of Bangladesh and Internet Publication of Board of Investment (BoI) of Bangladesh. The nominal GDP series has been converted into a real one taking 1995/96 as the base year.

The simultaneous equation model was established due to the simultaneity between financial savings and growth in real GDP. The semi-log model was run to find out the growth rate of savings under Bangladesh saving function. Two-stage least squares (2-SLS) method has been followed for the estimation purpose which is a simultaneous equation technique (Gujarati, 1995). As a first step in the empirical analysis, we use the Dickey-Fuller (DF) test to investigate the presence of unit roots in the level variables as well as in their subsequent differences (Johnston and DiNardo, 1997). Different computer software Packages like SPSS, SHAZAM have been used during research work.

Results and Discussion

Unit root tests

The null hypothesis tested is that the variable under consideration has a unit root against the alternative that it does not. The following table reports tests of stationary around a non-zero constant.

Table 1: Stationary test results

Levels	τ_e	Type	I(d)
$lnFs_t$	-2.73	Stationary	I(o)
GR_t	-2.72	Stationary	I(o)
RRI_t	-9.60	Stationary	I(o)
PPB_t	-10.38	Stationary	I(o)
FDI_t	-2.65	Stationary	I(o)
LR_t	-0.28	Nonstationary	-
Difference	τ_e	Type	I(d)
d (LR_t)	-1.86	Nonstationary	-
Difference	τ_e	Type	I(d)
d^2 (LR_t)	-4.01	Stationary	1 (2)

Source: Author's calculation
Note:

Ψ τ_e means estimated or computed Dickey-Fuller test statistic.

Ψ The critical values are given in Mackinnon (1991). The 10, 5 and 1 percent critical values are –2.58, -2.89 and –3.50 respectively.

Ψ d denotes the first difference of a variable

Ψ d^2 denotes the second difference of a variable

Ψ I (d) denotes integrated of order d.

As shown in the table above, most of null hypotheses of a unit root can be rejected for the levels except adult literacy rate i.e. the literacy rate series exhibits random-walk with drift for the level. The results of testing for unit roots after differentiating the literacy rate series once and twice are shown in the bottom section of the table. After differencing twice, the null hypothesis of a unit root can be rejected in the literacy rate series. The analysis in this paper, therefore, treats all variables as integrated of order zero except literacy rate, which has been found integrated of order two.

Results

To determine what factors are really significant in determining financial savings rate in a developing country like Bangladesh, the following financial savings function is obtained from secondary sources that used the annual time series data from 1976-77 to 2005-06. Growth, as an important determinant of financial savings, has also been estimated.

Equation 1:

$\ln Fs_t = 11.5239 + 0.0503GR_t + 0.1067RRI_t - 35.5071PPB_t + 1.5462D_t$

t (7.585) (1.170) (2.135) (-0.698) (2.421)

$R^2 = 0.70396$ n =30

Equation 2:

$GR_t = 0.5323 + 0.3356\ln FS_t + 0.000021385FDI_t + 1.1780LR_t$

t (0.038) (0.278) (0.803) (2.954)

$R^2 = 0.28463$ n =30

In interpreting estimated equation 1, we find that it has a moderate explanatory power but in the sense of significance, results are not evenly satisfactory.

Growth in real GDP has a positive impact on savings rate as the theory suggests. That is, over the period 1976/77–2005/06, the financial savings in Bangladesh grew at the rate of 5.155 percent per year due to one percent increase in growth in real GDP. But it is not significant at an accepted level. Several reasons might work behind poor significance of the variable GR. First, high propensity to consume means low propensity to save. According to macroeconomic theory, people in the lower income brackets have a higher propensity to consume than that of higher income group. In 2006-07 fiscal year per capita income was $520 in Bangladesh. In addition, if we exclude the people with exceptionally high income we find that the rest of the people have per capita income ranging from $200 to $250 only. This being the fact, it is unlikely for the people with income below subsistence level to save any portion of their income. Second, the expenditure is alarmingly increasing relative to income in this country. Wage level has increased by 15 to 20 times but price level has increased more than that during the last three decades. That is, the opportunity to save has been decreasing day by day.

The real rate of interest exerts a statistically significant positive impact on financial savings rate. Over the study period, financial savings grew at the rate of 11.255 percent per year due to one percent increase in real rate of interest. This means that the positive substitution effect of an increase in real rate of interest outweighs the negative income effect. This result is different from several other studies using pooled time-series country data that could not pin down a positive effect of increases in the interest rate on savings (Bandiera et al., 2000).

From an analytical point of view, the financial sector reform has a direct effect that works through price and quantity channels. The price channel reflects the impact on savings through changes in the real interest rate. Fry (1978, 1995) reports that, across a sample of fourteen Asian countries, the gross national savings rate is positively affected by higher real interest rate. However, the positive response was small and began to diminish in later years. Reynoso (1989) finds that savings increase rapidly as RRI moves from sharply negative to just below zero, but that the effect levels off at low positive real interest rates.

Population per branch of scheduled banks is found to have a negative relationship with savings rate indicating that if there were more branches of banks, it could have positive effect on savings rate. However, it is found insignificant in determining savings rate. However, it was found significant in Rahman's (2001) study when the number of branches of banks was below the required level. In Bangladesh, the financial system comprises of Bangladesh Bank as the central bank, four nationalized commercial banks (NCBs), five government owned specialized banks (SBs), 32 domestic private commercial banks (PCBs) including 9 foreign commercial banks (FCBs), 6 Islamic banks (IBs), 62 insurance companies etc. As a result, the accessibility of people to the banking system is no more a problem in Bangladesh.

We use the period 1982/83 as the base period for the dummy variable, because financial liberalization has taken place from this period. The coefficient of $D_{t,}$ which is known as the differential intercept term, is statistically significant at an accepted level indicating that savings has been increased following financial liberalization. In the late 1980s, Bangladesh was the first among the South Asian countries to initiate the reform. To expedite the overall improvement of financial sector in Bangladesh, national commission on money, banking and credit was set up in 1984. On the basis of its report and World Bank's recommendation, the government inaugurated the "financial sector reform program (FSRP)" in 1990. It has performed a number of reforms most of which failed to achieve a mentionable improvement. Consequently, government initiated the "commercial banking restricting projects" (CBRP) in 1997 to continue the reform programs. However, in many studies it is found that financial sector has a negative impact on savings in Bangladesh. Chowdhury (2001) concluded with the following remark: "It, however, doesn't eliminate the possibility of at least reducing the less productive use of loanable funds in these countries through reforms so as to strengthen the market discipline and provide more autonomy to financial institutions."

Again in interpreting the estimated growth function (equation 2), we find that though it has low explanatory power, it capture the effect of financial savings rate, foreign direct investment (FDI) inflow and adult literacy rate. According to this equation, growth rate in real GDP is positively related with financial savings, i.e. about 33.56 percent does change in growth rate in real GDP due to one percent increase in financial savings. Although, this is not statistically significant at an accepted level. And over empirical findings about the impact of financial savings on growth rate supports various conventional growth theory, as described in the previous part of this paper.

According to equation 2, growth rate is positively related with FD1 inflow and this is not statistically significant. Good governance, macroeconomic stability and skilled labor force should be ensured for efficient utilization of FD1 inflow. But Bangladesh has not performed well on none of these. Moreover, democracy ensures a congenial environment for investment. So today, the most important determinant for investment in a country is "Democracy". The democratic system of Bangladesh is not so developed. Nevertheless we see that, in the standard of democracy (1991-) in Bangladesh the FD1 inflow increased from the previous autocratic period (1974-1990). So political environment should be kept stable for higher level of FDI inflow, which affects economic growth directly and financial savings indirectly.

Lastly, adult literacy rate, as a proxy of Human Capital, affects economic growth positively, which is statistically significant. The findings like this, supports the statement of endogenous growth theory. If the country is able to raise its literacy rate, its economic growth will also rise to a satisfactory level.

Findings

Before, suggesting the ways to increase financial savings, a discussion of the reasons of low savings seem relevant. Reasons might be as follows:

Chronic Public Sector Dissaving: The chronic erosion in the public sector savings is responsible for low gross national savings in the country. In a developing country government has to face some binding constraints such as inadequacy of resource mobilization, subsidies, tax rebate, growing interest burden, high level of administrative expenditure that results in huge government revenue deficit and thereby public sector dissaving. Chronic negative trade balance and structural imbalance (i.e. total consumption plus investment is greater than GDP) are also responsible for public sector dissaving.

Borrowing from external sources: Most of the external assistances are conditional and thus it failed to mobilize the resources to capital formation and improve the repayment capability of the country. Apart from economic mismanagement, dependence on external assistance create a cultural transaction including unproductive demonstration effects which acts as a major deterrent to rely more on local resources.

Lack of bank soundness: Bank soundness can be assessed by evaluating the bank's solvency or capital adequacy, quality of their loan portfolio and the liquidity position. By each of these standards, we find

the banking system in the country unsound with no improvement in recent years. Almost all banks suffer from highly inadequate capital and provisioning measures, low quality assets, and unsatisfactory management and operating environment.

Large spread between deposit and lending rate: Van Der Geest (2001) has shown that the direct efficiency losses due to non-performing loans in Bangladesh have kept the spreads between deposit and lending rates artificially high. Interest rate in Bangladesh has been characterized by low deposit rates on bank accounts, high interest rate on loans, and a high but relatively stable margin between loan and deposit rates. The large spread has a negative impact on both saving and investment in the economy. Low deposit rates discourage private savings whereas the high real commercial lending rates discourage investment. The spread is the result of the oligopolistic role played by nationalized commercial banks, which are burdened with non-performing loans and other operating inefficiencies. Spread made domestic saving instruments very expensive, and hence unattractive and discouraged financial intermediation, thus depressing both savings and lending volumes.

Conclusion and Recommendations

Though according to macroeconomic theory savings may reflect a paradox in the short- run, it will become a virtue at the end. The financial savings, a greater portion of gross domestic savings, can play a significant role in shifting the growth path to the upper trend. It can guard our economy from massive injection of foreign aids that has a negative impact on domestic resource mobilization. To sum up, the single most critical challenge confronting Bangladesh is to raise our domestic saving rate remarkably.

Core recommendations of this study are:

Increase the number of scheduled bank branches: Growth in financial saving is critically important for an economy. Financial sector development through sustainable reforms is suggested from the findings to be a more efficient means of expediting savings mobilization and channeling loanable funds. The number of scheduled bank branches must be increased in order to have an optimum population per branch and this creates greater access to credit institutions.

Extension of banking services: Bangladesh is a predominantly agrarian economy and the rural areas are most poorly serviced in terms of banking. So, extension of banking services throughout the country including the poorly serviced rural areas must receive priority attention within the adjustment policy package. If private sector does not seem to

be interested due to low profitability; the public sector must come forward. It is a more important determinant of financial savings than the real interest rate. Policies permitting the transformation of financial savings to real savings and investment also need to be focused.

Liberalization of Interest Rates: The government should liberalize the interest rates further, reducing and eventually removing the deposit rate floor so that lending rates can remain as high as the present 10 to 12 percent real levels. While the governments concern about raising private savings and offering high returns to households is welcomed, the evidence is clear that total domestic savings responds more to income growth than to interest rates. Thus, further lowering deposit interest rates will bring down lending rates, and total savings over the medium term would be higher to that extent, i. e. increase in investment will induce additional income hence savings.

Less Government Intervention: Financial market variables should be determined by the free market mechanisms instead of government interventions. This is to some extent possible when domestic norms are operative in an environment of political stability. To do so, to provide incentives for private savings, it must be guaranteed that the rate of interest remains positive in the real term. Government must allow banks to operate independently according to real economic and business cycles so that the banks are able to cover cost of funds, risk premium and a profit margin.

Future Research

For further research, any enthusiastic researcher can consider continuous time-series data with a longer time period as we considered only thirty years data in this study. Many other regressors such as geographical region, income distribution, mean years of schooling, dependency ratio etc. may be considered to provide a basis for future research in this field.

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