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Flawed Interest Rate Policy and Loan Default: Experience from a developing country

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Persistent industrial loan defaults and massive loan loss have become a regular feature in developing countries. Despite application of conventional remedial measures, loan loss continued to haunt the banks and development finance institutions (DFIs) since mid-1980s. This paper tests this hypothesis that loan default is associated with high interest rates. The evidence collected from 89 industrial firms in Bangladesh supported this hypothesis. This suggests that interest rates policy should be rationalized to increase the repayment ability of the borrowers which would reduce persistent loan defaults in developing countries.

JEL Codes: F34, G21 and G24

1. Introduction:

Persistent loan defaults has become an order of the day in developing countries. There has been hardly any bank or development financial institutions (DFI) in developing which has not experienced persistent loan default. This is evidenced by the under-capitalization and illiquidity of 160 DFIs in 33 developing countries (Hoque 2004, World Bank 1993: and Calomiris and Himmelberg, 1993). This malaise in the development finance market has not only impaired the existence of many DFIs, but also adversely affected the economies of developing nations. Despite the application of a number of remedial measures, such as supplying fresh loans, loan rescheduling, imposition of penal interest rates, denial of additional credit to repeat defaulters, management take-over of problem projects, and legal actions, loan default problems continued to reign the credit markets in developing countries. Available literature (Hoque 2004; Gupta 1990; and Sinkey and Greenwalt 1991) suggest that loan default occurs when borrowers are not able and/or willing to repay loans. There are borrowers who are willing but not able to repay loans and there are borrowers who are able but not willing to repay loans. Loan default occurs in either case. This paper advances this argument that unless the banks and DFIs follow a rationalized interest rate policy, loan default and loan loss will continue to haunt the financial institutions in developing countries.

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2. Literature Review

Theoretically, loan defaults occur when borrowers are not willing and or able to repay loans (Hoque 2004). This paper focuses on the borrowers' ability to repay loans. Among the many factors, high interest rates is the most important one which influences borrowers' ability to repay loans. It widely reported (that high interest rates has devastating effect on investment and growth of an economy though McKinnon (1973) and Shaw (1973) underscored the important of higher real interest rates during inflationary pressure to promote savings and investment in financially repressed economies. Rittenburg (1991) found that too high interest rates was detrimental to investment and growth. Keynesian economists recommended that interest rates should be kept low in order to speed the growth of investment and economy at large (Roe 1982). The virtues of low interest rates are : it will increase borrowing, reduce inflation, increase job opportunities and stimulate national economy. The opposite happens with high interest policy though Roe(1982) found that South Korea and Taiwan immensely benefited from high interest rates (which was as high as 20% on deposit) policy during 1950s and 1960s.

High interest rates cause inflation which increases the cost of production or costs of goods sold. Such cost escalation can reduce earnings before interest and taxes (EBIT). At times, interest expense may not be covered by the EBIT which means that nothing is left for loan repayments. That is, high interest rates may end up with higher liabilities and if liabilities are greater than assets, borrowers will not be able to repay loans and hence, debt default occurs(Merton 1974). Though inflation can increase both nominal and market value of assets, such increase may be insufficient to offset the rising cost of interest. Default occur if EBIT is not sufficient to generate any net profit (after paying interest and taxes). These suggest that loan default can be associated with high interest rates.

The question is : how 'high' or 'low' interest rates should be ? Generally, banks do charge high interest rates in developing countries where financial market is imperfect as information asymmetry between borrower and lender prevails, credit-worthiness of borrowers is doubtful, value of collaterals is overstated and inefficiency is the common features at institutional level. No body precisely knows the degree of such imperfection but all banks are addicted to the policy of high interest rates. This is counter-productive as high interest rates may contribute to loan default. This indicates that banks should determine appropriate lending rates on the basis of proven, not hypothetical, degree of market imperfection. Again, lending rates should be lowered or adjusted very frequently with the level of real-world imperfection which decreases with pace of economic development and growth of an economy. Roe (1982) suggested that real rate of interest must be lower than real return on capital. It means that as the financial market becomes more and more efficient with the process of development, lending rates should be lowered than before which may contributes towards reduced level of loan defaults. Failure to do this may result in persistent loan defaults in

developing countries. Rittenburg (1991) has identical findings that high interest rates can be detrimental to investment and growth. High interest rates does not contribute to banks' growing profitability in the long run. Stiglitz and Weiss (1981) believe that high interest rates are responsible for higher defaults and declining bank profit. These clearly provide support to our hypothesis that high interest rates are positively correlated to loan defaults in developing countries.

3. The Case of Bangladesh

Banking sector in Bangladesh has been ravaged by persistent loan default. Despite application of pro-active and reactive measures, loan default continued to haunt these banks and financial institutions in developing countries like Bangladesh. The most significant factor that influences borrowers' ability to repay loans is the government's interest rate policy (IRP). We have studied Bangladesh Shilpa Bank (BSB) which is state-owned development bank. The BSB is a policy-taker and it enjoys little autonomy in determining its interest rates on short - and long-term lending. The BSB borrows from the Government of Bangladesh (GOB) and largest stake of the cost of running the operation of the BSB was claimed by the interest paid to the GOB which borrows at a very cheap rate from the multilateral finance institutions. The benefits emanating from low interest rates or service charges paid on foreign borrowing were not passed on to the industrial borrowers via the development finance institutions (DFIs) such as BSB. Consequently, interest rates charged by the BSB far exceeded those paid by the GOB on foreign borrowing.

The interest rate policy of the GOB led the BSB to charge relatively higher interest rates on term lending throughout the loan period. Moreover, such interest rates remained fixed
from the time of documentation to the time of full liquidation of the loans. Industrial borrowers became casualties of this policy in terms of debt-default. It is rational to expect that industrial firms will also pay low interest rate on term loans. But contrary to such expectations, borrowers are required to pay high interest rate in compliance with the prior loan agreement they had with the BSB to repay loans at a fixed interest rate. This results in paying interest rates which are much higher than those prevailing in the market.

We found that loan default was not sole by attributed to borrowers' unwillingness to repay loans; it was also an in-built problem of the interest policy. In other words, interest rate policy was both a cause and an effect of the high default rate. As high interest rates increase costs of borrowing, debt burden grows which led borrowers to default and, as debt default becomes persistent, the bank loses income and becomes undercapitalised. In order to recover its financial position, it resorts to high interest rates and the cycle is complete. BSB resorts to high

interest rates which, again, compounds default rate. In this way, BSB is caught in the vicious circle of high interest rate and high loan default rate.

Interest rates policy in Bangladesh is administered by the Bangladesh Bank (BB) - central bank - as an arm of the Ministry of Finance, GOB. Banks in Bangladesh are required to comply with the interest rate policy directives of the BB. In addition, the state-owned industrial and development banks such as Bangladesh Shilpa bank (BSB) has also been used to receiving interest rate policy directives from the Ministry of Industries from time to time. Based on these two sets of policy directives, the development banks set interest rates for local and foreign currency loans. Between 1986 and 2006, interest rates on industrial term loans varied from 10% to 16%. The fixation of high interest rates by the GOB through industrial policy directives was not consistent with market driven interest rates and with the industrialisation objective of the GOB. The policy of requiring the firms to pay interest at a fixed rate has not only increased firms' debt burden but also deprived them from benefits which they could reap at the time of lower rates of interest in future. Moreover, there was policy inconsistency between GOB and BB and development banks such as BSB, used this advantage to impose high interest rates on the borrowers as evidenced by the following Table 1

Table 1

Interest Rates on Term Lending to Small Firms

(Figure in Percentage)

Name of the Firm	Interest Rate Recommended by BB	Interest Rate Charged by the BSB
Ellie Biscuits Ltd.	10	14
Sonali Silk Mills Ltd.	10	14.5
Protiva Printers Ltd.	10	14
Shanti Clinic Ltd.	10	16
Pulak Cinema Ltd.	10	16
Mohakhali Plaza Ltd.	10	16
Oram Ltd.	10	16

Sources: BSB, Loan Accounting Department

Table 1 shows that seven small firms were charged interest rates ranging from 14 percent to 16 percent which were higher than those prescribed by the BB. In addition to the above rates of interest on the principal term loans, the BSB charged defaulting borrowers with the same rates of interest on the amount defaulted. In other words, loan amounts not duly paid become capitalised on which interest was charged at the same rate which doubled the debt burden. On

top of this, the BSB charged liquidity damages or penal interest at 2 to 4 percent on the total overdues on a monthly, quarterly or half-yearly basis in order to discourage borrowers from becoming defaulters and to punish wilful borrowers. When the interest rate on the principal loan, interest on capitalised dues and penal interest are lumped together, the effective interest on term lending shoots up beyond 30 percent!

Although flexible and low real rates of interests are required for the success of an economy, the interest rate policy of the GOB led the development banks to charge relatively higher interest rates on term lending throughout the loan period. Moreover, such interest rates remained fixed from the time of documentation to the time of full liquidation of the loans . Industrial borrowers became casualties of this fixed interest rate policy in terms of loan-default. When bank rate set by the BB went down and, consequently, interest rates declined, industrial firms were not able to enjoy the benefit of lower interest rates due to the prior loan agreement with the banks to pay a fixed interest rate until all loan liabilities are liquidated. Rather, they had to pay, at times, higher interest rates than those prevailed in the market. This policy of charging firms high as well as fixed interest rates in contravention of GOB's policy directives has been a contributing factor for the growth of firms' debt burden.

4. The Model :

In order to test our hypothesis, we have conducted an empirical study and we have covered 89 firms financed by the Bangladesh Shilpa Bank (BSB) between 1985 and 2005. We first consider 3 models in our analysis. All 3 models composed of same set of independent variables but with different dependent variables. For example, Model-1 considers y_1 (amount recovered) as dependent variable, Model-2 considers y_2 (amount overdue) as dependent variable and Model-3 considers y_3 (amount outstanding) as dependent variable.

Our Model-1 is expressed as

$$y_1 = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \varepsilon \qquad \text{Model-1}$$

where

y_1 = amount recovered

x_1 = interest rate

x_2 = total loan

x_3 = months taken to go into production

x_4 = months taken for first disbursement

x_5 = gap between first and last disbursement

x_6 = estimated income

Our Model-2 and Model-3 are as follows

$$y_2 = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \varepsilon \qquad \text{Model-2}$$

and

$$y_2 = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \varepsilon \qquad \text{Model-3}$$

where

y_2 = amount overdue

y_3 = amount outstanding.

As stated before, the independent variables are same for Model-2 and Model-3. Secondly, we consider 3 different interest rates for X_1 variable for all of the above 3 models. As a result, we find altogether ($3\times3 = 9$) nine possible models to compare for our analysis.

The each of the models considered for our analysis has been evaluated by the following model selection criteria:

1. signs and magnitudes of the regression co-efficient
2. Coefficient of determination (R^2)
3. Adjusted coefficient of determination ($\overline{R}^2$)
4. standard error of estimates (SEE)
5. F-values

5. The findings:

The findings of our empirical research is placed in following tables;

Table 2: Overall Results for the Regression Analysis

Sample Size n = 89 and Independent Variables X_1 to X_6 are used for all 3 cases		
Y_1 = Amount Recovered	Y_2 = Amount Overdue	Y_3 = Amount Outstanding
R^2 = 75%, Adj R^2 = 73%	R^2 = 21%, Adj R^2 = 15%	R^2 = 66%, Adj R^2 = 64%
Overall F Test	Overall F Test	Overall F Test
All X variables are highly significant at less than 1% level	All X variables are marginally significant at 1% level	All X variables are highly significant at less than 1% level
Individual t-test	Individual t-test	Individual t-test
X_1 : Insignificant X_2 : Significant at α < 1% X_3 : Significant at α = 5% X_4 : Significant at α = 1% X_5 : Significant at α < 1% X_6 : Significant at α < 1%	X_1 : Significant at 5% X_2 : Insignificant X_3 : Insignificant X_4 : Insignificant X_5 : Insignificant X_6 : Significant at α = 5%	X_1 : Insignificant X_2 : Significant at α < 1% X_3 : Significant at α = 10% X_4 : Significant at α = 10% X_5 : Significant at α = 5% X_6 : Significant at α < 1%
Type of Relationships between Y and X's		
X_1 : Positive X_2 : Positive X_3 : Negative X_4 : Positive X_5 : Positive X_6 : Negative	X_1 : Positive X_2 : Negative X_3 : Positive X_4 : Positive X_5 : Positive X_6 : Positive	X_1 : Positive X_2 : Positive X_3 : Negative X_4 : Positive X_5 : Positive X_6 : Negative
Overall Result: Very Good	Overall Result: Very bad	Overall Result: Very Good

Table 3: Results for the Regression Analysis when Interest Rate X_1 = 10

Sample Size n = 37 and Independent Variables X_1 to X_6 are used for all 3 cases		
Y_1 = Amount Recovered	Y_2 = Amount Overdue	Y_3 = Amount Outstanding
R^2 = 15%, Adj R^2 = 2%	R^2 = 82%, Adj R^2 = 78%	R^2 = 88%, Adj R^2 = 86%

Overall F Test	Overall F Test	Overall F Test
All X variables are highly insignificant even more than 20% level	All X variables are highly significant at less than 1% level	All X variables are highly significant at less than 1% level
Individual t-test	Individual t-test	Individual t-test
X_1 : Insignificant X_2 : Insignificant X_3 : Insignificant X_4 : Insignificant X_5 : Insignificant X_6 : Significant at α = 5%	X_1 : Insignificant X_2 : Significant at α < 1% X_3 : Significant at α < 1% X_4 : Significant at α = 15% X_5 : Significant at α = 2.5% X_6 : Significant at α < 1%	X_1 : Insignificant X_2 : Significant at α < 1% X_3 : Significant at α < 1% X_4 : Insignificant X_5 : Significant at α = 5% X_6 : Significant at α < 1%
Type of Relationships between Y and X's		
X_1 : Positive X_2 : Negative X_3 : Negative X_4 : Negative X_5 : Positive X_6 : Positive	X_1 : Positive X_2 : Negative X_3 : Positive X_4 : Negative X_5 : Negative X_6 : Positive	X_1 : Positive X_2 : Negative X_3 : Positive X_4 : Negative X_5 : Negative X_6 : Positive
Overall Result: Very Bad	Overall Result: Very Good	Overall Result: Very Good

Table 4:Results for the Regression Analysis when Interest Rate $X_1 \in$ [12, 13.5]

Sample Size n = 20 and Independent Variables X_1 to X_6 are used for all 3 cases		
Y_1 = Amount Recovered	Y_2 = Amount Overdue	Y_3 = Amount Outstanding

R^2 = 74%, Adj R^2 = 63%	R^2 = 5%, Adj R^2 = 4%	R^2 = 63%, Adj R^2 = 46%
Overall F Test	Overall F Test	Overall F Test
All X variables are highly significant at 1% level	All X variables are highly insignificant even more than 20% level	All X variables are significant at 2.5% level
Individual t-test	Individual t-test	Individual t-test
X_1 : Insignificant X_2 : Significant at α < 1% X_3 : Insignificant X_4 : Significant at α = 15% X_5 : Insignificant X_6 : Significant at α < 1%	X_1 : Insignificant X_2 : Insignificant X_3 : Insignificant X_4 : Insignificant X_5 : Insignificant X_6 : Insignificant	X_1 : Insignificant X_2 : Significant at α = 2.5% X_3 : Insignificant X_4 : Insignificant X_5 : Insignificant X_6 : Significant at α =15%
Type of Relationships between Y and X's		
X_1 : Positive X_2 : Positive X_3 : Negative X_4 : Positive X_5 : Positive X_6 : Negative	X_1 : Positive X_2 : Negative X_3 : Negative X_4 : Positive X_5 : Positive X_6 : Positive	X_1 : Positive X_2 : Positive X_3 : Negative X_4 : Positive X_5 : Positive X_6 : Negative
Overall Result: Very Good	Overall Result: Very bad	Overall Result: Good/OK

Table 5:Results for the Regression Analysis when Interest Rate $X_1 \in$ [14, 18]

Sample Size n = 32 and Independent Variables X_1 to X_6 are used for all 3 cases

Y_1 = Amount Recovered	Y_2 = Amount Overdue	Y_3 = Amount Outstanding
R^2 = 86%, Adj R^2 = 83%	R^2 = 81%, Adj R^2 = 76%	R^2 = 88%, Adj R^2 = 86%
Overall F Test	Overall F Test	Overall F Test
All X variables are highly significant at less than 1% level	All X variables are highly significant at less than 1% level	All X variables are highly significant at less than 1% level
Individual t-test	Individual t-test	Individual t-test
X_1 : Insignificant X_2 : Significant at α < 1% X_3 : Insignificant X_4 : Significant at α = 15% X_5 : Significant at α = 1% X_6 : Significant at α = 15%	X_1 : Significant at α = 10% X_2 : Significant α < 1% X_3 : Significant at α = 1% X_4 : Insignificant X_5 : Insignificant X_6 : Significant at α < 1%	X_1 : Insignificant X_2 : Significant at α < 1% X_3 : Insignificant X_4 : Insignificant X_5 : Significant at α < 1% X_6 : Insignificant
Type of Relationships between Y and X's		
X_1 : Positive X_2 : Positive X_3 : Negative X_4 : Positive X_5 : Positive X_6 : Negative	X_1 : Negative X_2 : Negative X_3 : Positive X_4 : Negative X_5 : Positive X_6 : Positive	X_1 : Negative X_2 : Positive X_3 : Negative X_4 : Positive X_5 : Positive X_6 : Positive
Overall Result: Very Good	Overall Result: Very Good	Overall Result: Very Good

It appears from able tables that there industrial loans defaults are highly correlated to high interest rates. Since borrowers were unable to repay loans, there overdue has grown beyond their repayment capacity. This is also evident from the previous tables that growth of overdue loan amount is positively related to high interest rates charged by the BSB.

The World Bank (1995) mentioned that a Bangladeshi bank assuming 40 percent of loans to be non-performing required a spread of 20 percent between lending rates and the bank's costs of funds just to break-even. Owing to the existence of a large number of non-performing firms (201firms) as well as high default rates, banks in Bangladesh resort to high interest rates which, again, compounds the default rate. In this way, banks were caught in the vicious circle of high interest rate and high loan default rate. It means a higher interest rate is positively related to a higher incidence of loan default is reinforced. Though several studies (World Bank 1995, and Sobhan 1991) a found that a high interest rate was one of the contributing factors to loan default in the industrial sector, particularly in the manufacturing sector in Bangladesh. These suggests that loan default could not solely be attributed to borrowers' unwillingness to repay loans; it was also an in-built problem of the interest rate policy. In other words, interest rate policy was both a cause and an effect of the high loan default rate in Bangladesh (Hoque 1998 and 1999c). As high interest rates increase costs of borrowing, debt burden grows which leads borrowers to default and, as loan default becomes persistent, the banks loses income and becomes undercapitalised. In order to recover its financial position, it resorts to high interest rates and the cycle is complete. The borrowers are to bear the brunt of this inconsistent interest rate policy. All these indicate that high interest policy pursued by the banks in Bangladesh worked as one of the contributing factors for industrial loan default which supports hypothesis .

6. Summary and Conclusions

The banks and DFIs in developing countries such as the Bangladesh Shilpa bank (BSB) have been ravaged by persistence loan default and loan loss since mid-1980s. Despite the application of a number of conventional remedial measures, loan default and loan loss continued to haunt the DFIs. This paper advanced this hypothesis that lenders' failure to pay loans is related to persistent flawed interest rate policy applied by the banks in Bangladesh. . The case of BSB shows that the borrowers were charged with high interest which have considerably contributed toward accumulation of overdue loans since such interest expense was not supported by the cash flows of the firm. These suggest that banks and DFIs should rationalise their interest rate policy so that such policy us supported by the cash flows of the firm or repayment capacity of the borrowers. This would contribute towards reducing loan defaults in developing countries.

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