ASA University Review, Vol. 7 No. 2, July–December, 2013

Interest Rate Spread of Commercial Banks: Empirical Evidence from Bangladesh

Rubina Afroze*

Abstract

This study aims to give an overall idea on the Interest Rate Spread (IRS) of the Commercial Banks in Bangladesh perspective. Based on the empirical data for the period 1974-2011 drawn from various publications of Bangladesh Bank and other sources, the empirical findings of this study found statistically significant correlation between IRS and deposit rate but no correlation with the lending rate. The data series for IRS, deposit rate, and lending rate contained a unit root and were integrated of order one. However, the Granger causality test failed to indicate any bilateral causal relationship between IRS and deposit rate, IRS and lending rate, and also to deposit rate and lending rate. The study also found that IRS prevailing in the Bangladeshi banking sector was high compared to that in its neighboring countries.

Keywords: Interest Rate Spread, Commercial Bank, Correlation, Granger Causality, Bangladesh

Introduction

Persistence of high Interest Rate Spread (IRS) in the banking sector of Bangladesh and rationalization of the same are the major concerns for private sector, policy makers, and also the regulators. This concern emerges from the apprehension that high IRS, subsequently translated to the high lending rate, hold back private sector investment and hence the overall economic growth of the country. Despite various reforms measures taken and removal of restrictions, market responsive interest rates are yet to be achieved and thus indirect regulatory intervention is often witnessed now-a-days. This paper provides an overall idea on the movement and trends of IRS in Bangladesh perspective along with movement and trends of associated deposit and lending rates.

Interest Rate Spread (IRS)

Interest Rate Spread, or imperfect channeling of financial resources from savers to investors, does not exist in a purely theoretical world characterized by the absence of transaction costs and asymmetric information. In such a world, financial institutions would not be needed to mobilize savings and allocate loans, as savers would assign their savings directly to borrowers based on perfect knowledge of investment possibilities. Access to external finance would be frictionless, limited only by the inter-temporal wealth constraint of the borrower, which would be known equally well and with certainty by both the lender (saver) and the borrower (investor). Investment decisions would thus be independent of financing and consumption decisions and based purely on the expected return of the investment project. Financial intermediaries and organized financial markets help to alleviate market frictions, such as transaction costs, uncertainty about project

*Senior Lecturer, Faculty of Business, ASA University Bangladesh

outcomes, and information asymmetries. These market frictions make it difficult to de-couple investment from financing decisions. The same market frictions not only lead to a wedge between the interest rates that borrowers have to pay on their loans and the interest rate that savers receive on their deposits (Beck, 2006).

Economists and policy makers are not just interested in the amount of society's savings that is channeled by intermediaries to the most deserving borrowers, but also in the efficiency with which this happens. The interest spread – the difference between lending rate and deposit rate – has been one of the most prominent measures of efficiency (Beck, 2006). Interest rate spreads indicate how efficiently banks perform their intermediation role of savings mobilization and allocation. Large interest rate spreads are deemed to be inimical to economic growth, as they act as a disincentive to private investment and otherwise constrain it to suboptimal levels. Inefficiencies in intermediation may emerge from structural problems: lack of adequate competition, scale diseconomies due to small market size or high fixed operating costs, the existence of regulatory controls, perceived market risks and the unsoundness of banks (Grenade, 2007). A review of the literature provides an extensive list of variables that affect the spreads and categorizes these determinants into five main groups: bank-specific variables, system-wide measures of market structure, regulatory environment, legal and institutional environment and macro-economic variables (Perez, 2011).

The interest rate spread can be defined in many ways. In a narrow definition, the spread is calculated by taking difference between the weighted average loan rate and weighted average deposit rate for each bank and each year, where the weights are the relative amounts of loans or deposits contracted at specific interest rates in the respective year and by the respective bank. Under a wide definition, the net interest margin is defined as the difference between total interest and commission received over total earning assets and total interest paid minus fees over total interest bearing liabilities (Hossain, 2010). The researcher followed the narrow definition for this study.

Review of Relevant Research Studies in Bangladesh and Beyond

There are limited understandings on IRS in Bangladesh perspective due to the absence of comprehensive study with a rigorous statistical analysis of bank panel data. However, relevant findings from the available studies, mostly undertaken to indentify the determinants of IRS, are as follows:

- Ndung'u and Ngugi (2000) found that high interest rate spread that exists in Bangladesh's banking sector is largely the outcome of inefficiencies and lack of competition in the banking system and, hence, ensuring a rational lending-deposit rate spread requires effective measures to address these weaknesses. They also opined that the scope of lowering lending-deposit rate spread through reducing the deposit rate is likely to be counterproductive as the deposit rate is low in real terms.
- Ahmed and Islam (2006) found that spread in the banking sector has been persistently high over the years, which basically indicates the high cost of intermediation in the banking industry of Bangladesh.

- Mujeri and Islam (2008) showed high IRS exists in Bangladeshi banking sector, the deposit rate is low in real terms, and hence scope of lowering IRS by reducing the deposit rate is likely to be counterproductive.
- Mujeri and Yunus (2009) found that IRS showed declining trend in recent years, differs across various banking groups, and the average value of IRS was 6.13, 6.95, and 6.06 respectively in the 1980s, 1990s, and 2000-2007. They also found that foreign commercial banks in Bangladesh enjoy higher IRS compared to other commercial banks due to their low deposit rates, high lending rates, and better quality of loan portfolio.
- Suzuki and Adhikary (2009) found high lending rates and high nominal spreads on a persistent basis, but too low or negative real spreads both in the pre-liberalized and liberalized regime using data during 1976 – 2007.
- Hossain (2010) showed change in spread is associated with a change in deposit rate, not with a change in lending rate by using Granger-causality test over a period of 1990 – 2008. He found that the average IRS was estimated to be 6.13 percent in the 1980s, 6.37 percent in the 1990s and 5.35 percent in the 2000s. Also, he found that foreign commercial banks in Bangladesh enjoy higher margin compared to their other counterparts and the IRS in Bangladesh are comparable to those in other South Asian countries as it maintains moderate but persistent level of spreads.
- Nguyen, Islam and Ali (2010) found IRS in Bangladesh is high compared to international standard as well as compared to that in Sri Lanka, India and Pakistan. They also showed existence of bi-directional Granger Causality between the lending rate and the deposit rate using data during 1999 – 2008 in Bangladesh context.

Relevant findings relating to overall IRS in other country perspectives are as follows:

- Beck (2006) showed that less developed financial systems are typically characterized by high overhead costs and interest spreads, reflecting inefficient financial service provision, interest rate spreads may vary typically between two to four percent in developed financial systems and often reach as high as10% or more in developing countries.
- Ndung'u and Ngugi (2000) showed that large spreads occur in developing countries due to high operating costs, financial taxation or repression, lack of a competitive financial/banking sector and macroeconomic instability.
- Barajas, Steiner, Salazar (1999) showed that financial systems in developing countries have been shown to exhibit significantly and persistently larger intermediation spreads on average than those in developed countries.

Objective of the Study

The purpose of this paper is to provide an idea on the movement and trends for the Interest Rate Spread (IRS) of the commercial banks in Bangladesh perspective. Besides, idea on the corresponding deposit and lending rate movement was given as well as their causality relationship with the IRS was investigated in this study.

Research Methodology

Research Framework:

The approach undertaken by the researcher for this study is exploratory in nature. The researcher used descriptive statistics to explain the trends of the variables, correlation analysis to identify the linear relationship amongst the variables, unit root test to find the stationarity of the variables, and finally applied Granger Causality Test to identify the causality relationship amongst the variables.

Variables Used:

Basically, two types of variables (e.g., weighted average lending rate and deposit rate of the commercial banks in Bangladesh) are used in this study to derive the Interest Rate Spread (difference between lending and deposit rate). The data series used for the study are for the period 1974- 2011 and sourced from different publications of the Bangladesh Bank. However, the researcher used the variables in their logarithm for empirical analysis.

The nominal deposit rate, nominal lending rate, and IRS was denoted as DRATE (LOGDRATE for log conversion), LRATE (LOGLRATE for log conversion), and IRS (LOGIRS for log conversion) respectively for the convenience of analysis.

Data Collection and Data Analysis:

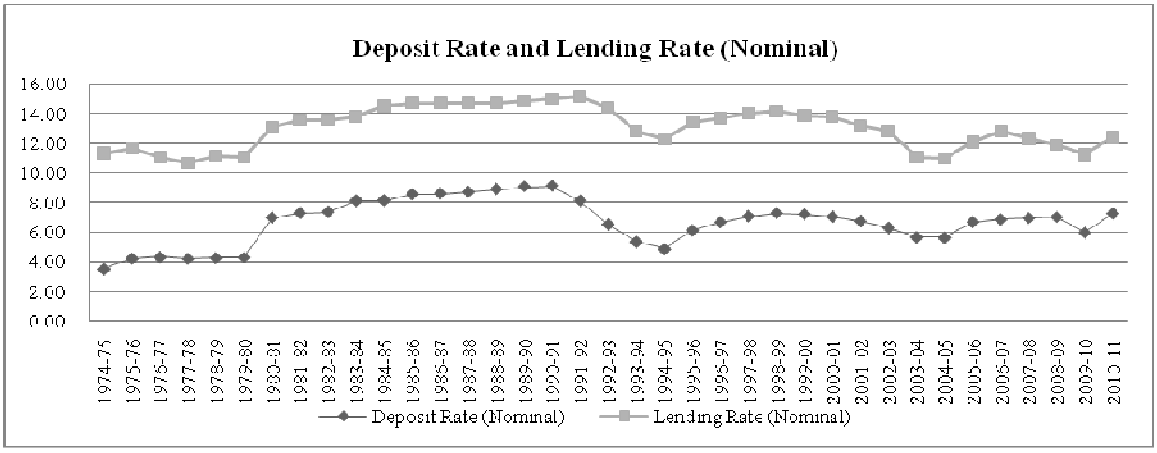
All data used in the research were extracted by the researcher from different publications of the Bangladesh Bank, Data Warehouse of the Asian Development Bank and the World Bank, and other public sources. The researcher did necessary calculation, presented findings through tables and graphs, and also performed different statistical / econometric tests and analysis using MS Excel 2007, SPSS 17, and EViews 5. In case of research findings, the researcher presented the same for both overall and disaggregate (i.e., bank type-wise) level.

Findings of the Research

Trend Analysis:

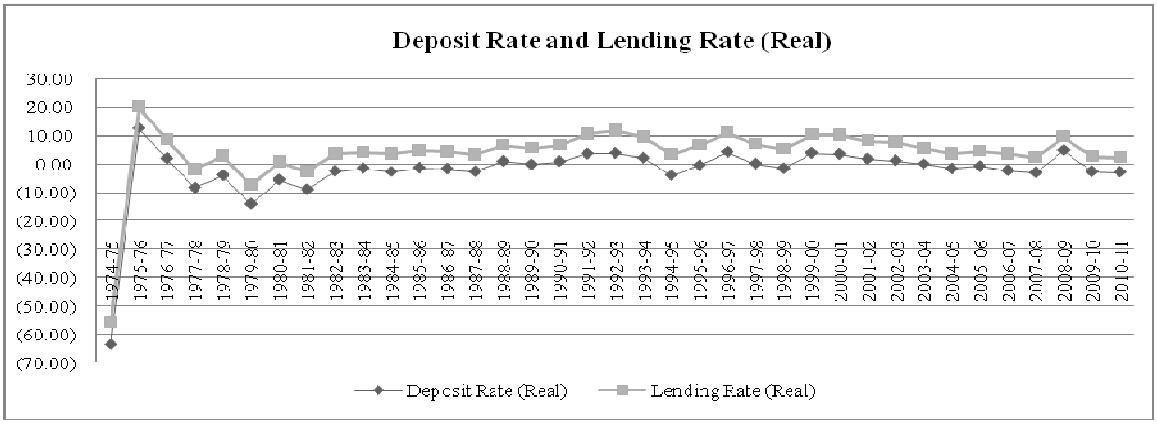
During the period 1974-2011, average nominal deposit rate was 6.67% and the respective time series showed an upward trend. However, the average rates were 4.14%, 8.16%, 6.83%, and 6.55% respectively during seventies, eighties, nineties, and the new millennium. On the other hand, average nominal lending rate was 13.01% during the period 1974-2011 and the respective time series showed a horizontal trend. However, the average rates were 11.13%, 14.19%, 13.86%, and 12.20% respectively during seventies, eighties, nineties, and the new millennium. The following graph shows the trend of the nominal deposit and lending rates:

Graph-1: Historical Trends of Nominal Deposit & Lending Rates in Bangladeshi Banking Sector



During the period 1974-2011, average real deposit rate was -2.51% and the respective time series showed an upward trend. However, the average rates were -12.62%[1], -2.68%, 1.20%, and -0.24% respectively during seventies, eighties, nineties, and the new millennium. On the other hand, average real lending rate was 3.83% during the period 1974-2011 and the respective time series showed an upward trend. However, the average rates were -5.63%, 3.35%, 8.24%, and 5.42% respectively during seventies, eighties, nineties, and the new millennium. The following graph shows the trend of the real deposit and lending rates:

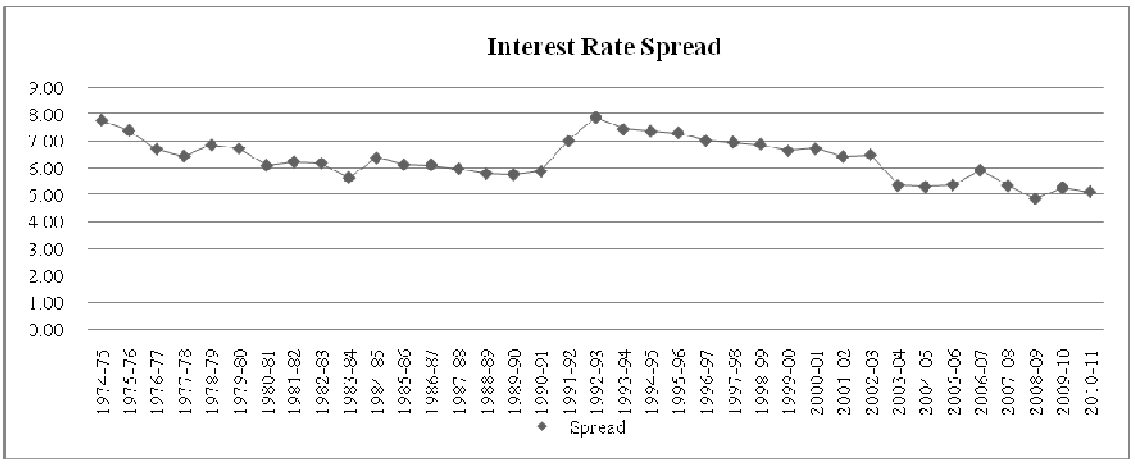
Graph-2: Historical Trends of Real Deposit & Lending Rates in Bangladeshi Banking Sector



During the period 1974-2011, average IRS was 6.34% and the respective time series showed an upward trend. However, the average rates were 6.98%, 6.03%, 7.04%, and 5.65% respectively during seventies, eighties, nineties, and the new millennium. The following graph shows the trend of the IRS:

[1] The average real deposit rate was -2.41% without considering inflation rate of 67.17% during 1974-75.

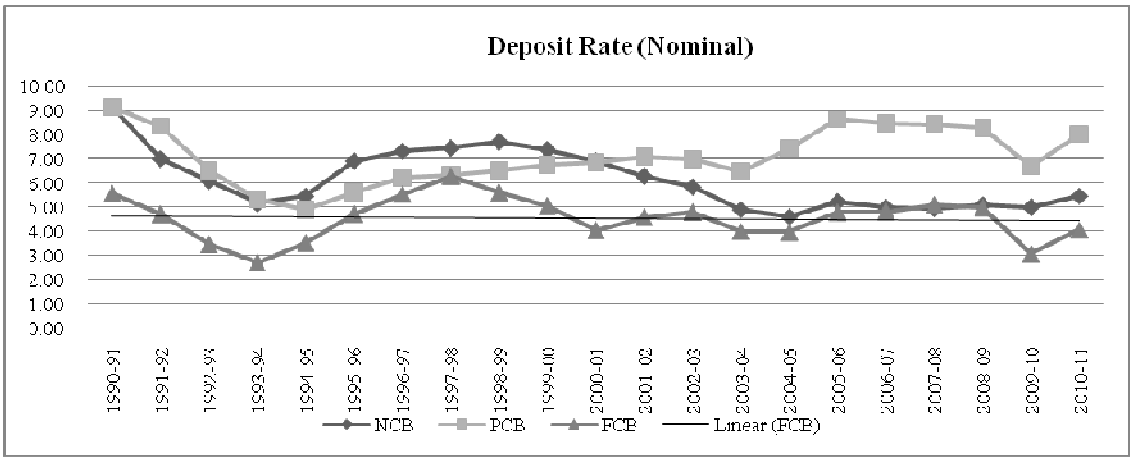
Graph-3: Historical Trends of Interest Rate Spread in Bangladeshi Banking Sector



The descriptive statistics summary (overall) for deposit rate, lending rate, and IRS are shown in the Appendix-A.

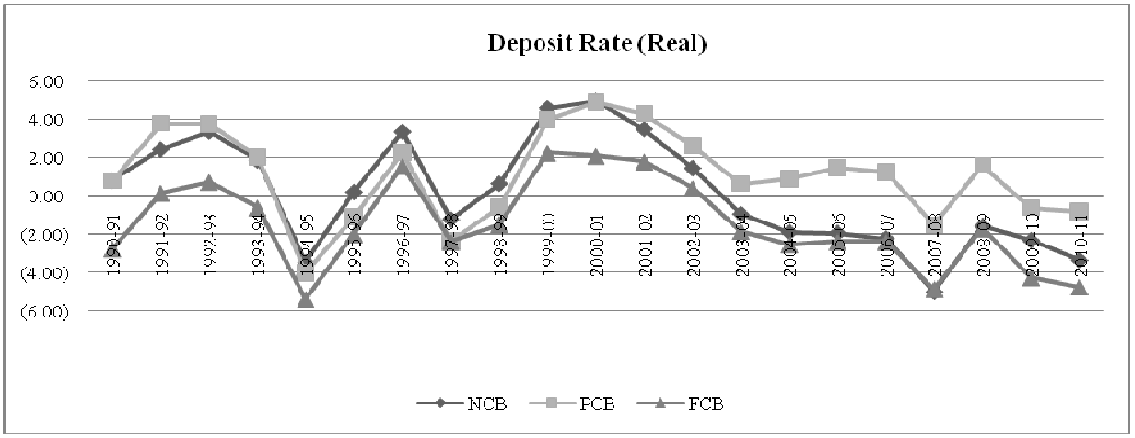
The average nominal deposit rates during the period 1990-2011 were 6.12%, 7.08%, and 4.53% respectively for Nationalized Commercial Banks (NCBs), Private Commercial Banks (PCBs), and Foreign Commercial Banks (FCBs). During this period, the time series data for NCBs, PCBs, and FCBs showed downward trend, upward trend, and horizontal trend respectively. The following graph shows the comparative trends of nominal deposit rates for NCBs, PCBs, and FCBs:

Graph-4: Historical Trends of Nominal Deposit Rates of NCBs, PCBs, and FCBs



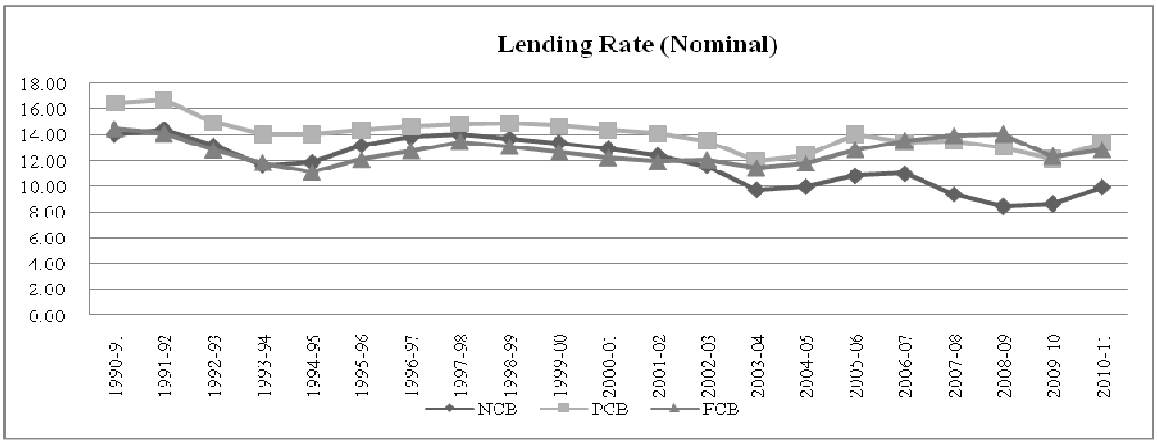
However, the average real deposit rates were 0.14%, 1.11%, and -1.44% respectively for NCBs, PCBs, and FCBs for the period 1990-2011. During this period, the time series data for NCBs, PCBs, and FCBs showed downward trend. The following graph shows the comparative trends of real deposit rates for NCBs, PCBs, and FCBs:

Graph-5: Historical Trends of Real Deposit Rates of NCBs, PCBs, and FCBs



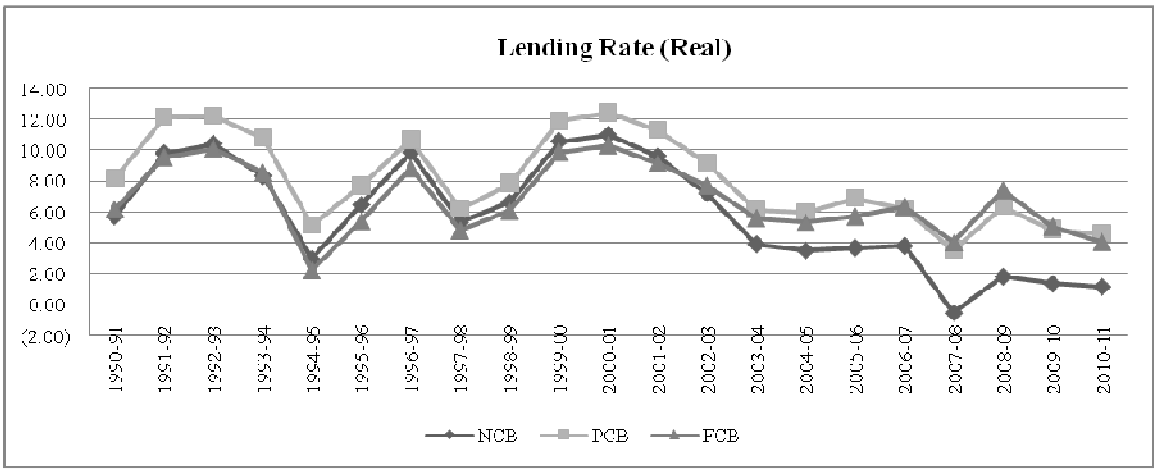
The average nominal lending rates were 11.81%, 14.10%, and 12.77% respectively for NCBs, PCBs, and FCBs for the period 1990-2011. During this period, the time series data for NCBs and PCBs showed downward trend and for FCBs showed horizontal trend. The following graph shows the comparative trends of nominal lending rates for NCBs, PCBs, and FCBs:

Graph-6: Historical Trends of Nominal Lending Rates of NCBs, PCBs, and FCBs



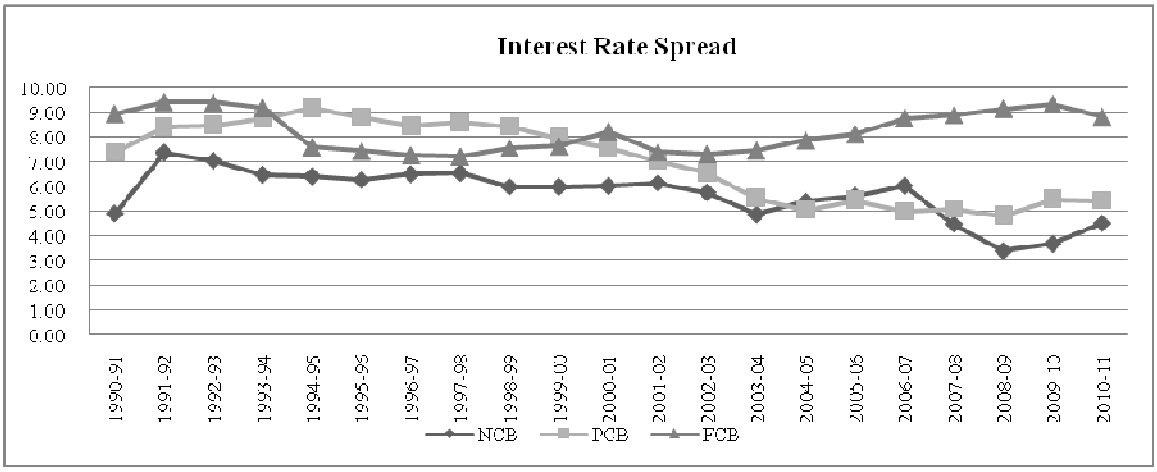
However, the average real lending rates were 5.84%, 8.12%, and 6.80% respectively for NCBS, PCBS, and FCBS during the period 1990-2011. During this period, the time series data for NCBS, PCBS, and FCBS showed a downward trend. The following graph shows the comparative trends in real lending rates for NCBs, PCBs, and FCBs:

Graph-7: Historical Trends of Real Lending Rates of NCBs, PCBs, and FCBs



The average IRS was 5.69%, 7.02%, and 8.24% respectively for NCBs, PCBs, and FCBs during the period 1990-2011. During this period, the time series data for NCBs and PCBs showed downward trend, and for FCBs showed horizontal trend. The following graph shows the comparative trends of IRS for NCBs, PCBs, and FCBs:

Graph-8: Historical Trends of IRS of NCBs, PCBs, and FCBs



The summary of descriptive statistics (bank-wise) for deposit rate, lending rate, and IRS are shown in the Appendix-B.

Cross-Country Comparison

Based on the World Development Indicators of World Bank, the average IRS of Bangladesh for the period 2001-2010 is 6.89% (σ = 0.82%). This rate is higher than that of the same for India (μ = 3.37%, σ = 0.34%), Pakistan (μ = 6.16%, σ = 0.42%) for 2004 – 2010, Sri Lanka (μ = 5.66%, σ = 1.85%), Nepal (μ = 5.20%, σ = 1.04%), and Maldives (μ = 6.39%, σ = 0.19%). However, Bhutan has higher IRS of 9.36% (σ = 0.84%) for 2001-2007 than that in Bangladesh amongst the SAARC countries.

Besides, Bangladesh has higher IRS than in OECD members (μ = 3.42%, σ = 0.52%), Euro Area (μ = 3.73%, σ = 0.44%), High Income Countries (μ = 4.29%, σ = 0.20%), East Asia & Pacific Countries (μ = 5.01%, σ = 0.29%), and Middle East & North Africa Countries (μ = 4.17%, σ = 0.62%), but lower than that in the Heavily Indebted Poor countries (HIPC), Least Developed countries, Latin America & Caribbean countries, Sub-Saharan Africa countries, Russian Federation, Middle Income countries, and other Low Income countries.

The comparative scenario of the IRS for selected countries / areas are shown in the Appendix-C.

Correlation Analysis

There exists strong correlation between deposit rate and lending rate, but moderate correlation between deposit rate and spread. On the contrary, lending rate has no significant correlation with spread. The correlation matrix plotted amongst the variables using SPSS software is shown below:

Table-1: Correlations Matrix

Variables		DRATE	LRATE	IRS	Variables		LOGDRATE	LOGLRATE	LOGIRS
DRATE	Pearson Correlation	1.00	.862**	-.420**	LOGDRATE	Pearson Correlation	1.00	.844**	-.417*
	Sig. (2-tailed)		0.00	0.01		Sig. (2-tailed)		0.00	0.01
	N	37.00	37.00	37.00		N	37.00	37.00	37.00
LRATE	Pearson Correlation	.862**	1.00	0.10	LOGLRATE	Pearson Correlation	.844**	1.00	0.12
	Sig. (2-tailed)	0.00		0.56		Sig. (2-tailed)	0.00		0.47
	N	37.00	37.00	37.00		N	37.00	37.00	37.00
IRS	Pearson Correlation	-.420**	0.10	1.00	LOGIRS	Pearson Correlation	-.417*	0.12	1.00
	Sig. (2-tailed)	0.01	0.56			Sig. (2-tailed)	0.01	0.47	
	N	37.00	37.00	37.00		N	37.00	37.00	37.00
**. Correlation is significant at the 0.01 level (2-tailed).					**. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed).				

Unit Root Test

Augmented Dickey Fuller (ADF) Test has been applied to test the stationary status, a pre-condition of going for Granger Causality Test, of the variables (e.g., deposit rate, lending rate, and spread) using E-views software on both the levels and the first differences of the data series. The test result shows that all three variables are non-stationary at levels having a unit root problem, but all variables become stationary when performed on the first difference of the same. The test results (both levels and the first differences) are tabulated below:

Table-2: ADF Unit Root Test Result at Level

Types of ADF Unit Root Test	Level, Intercept with no Trends			Level, Intercept with Trends		
Variables / Test Results	LOGDRATE	LOGLRATE	LOGIRS	LOGDRATE	LOGLRATE	LOGIRS
ADF Test Statistics	-2.377011	-2.226391	-1.818280	-2.265739	-2.192895	-2.013320
Probabilities	0.1553	0.2010	0.3660	0.4406	0.4786	0.5746
Test Critical Value @ 1% Level	-3.632900	-3.632900	-3.626784	-4.243644	-4.243644	-4.234972
Test Critical Value @ 5% Level	-2.948404	-2.948404	-2.945842	-3.544284	-3.544284	-3.540328
Test Critical Value @ 10% Level	-2.612874	-2.612874	-2.611531	-3.204699	-3.204699	-3.202445

Table-3: ADF Unit Root Test Result at First Differences

Types of ADF Unit Root Test	First Differences, Intercept with no Trends			First Differences, Intercept with Trends		
Variables / Test Results	LOGDRATE	LOGLRATE	LOGIRS	LOGDRATE	LOGLRATE	LOGIRS
ADF Test Statistics	-7.857865	-5.308908	-6.010751	-7.758929	-5.149377	-5.875717
Probabilities	0.0000	0.0001	0.0000	0.0000	0.0011	0.0002
Test Critical Value @ 1% Level	-3.639407	-3.653730	-3.653730	-4.252879	-4.273277	-4.273277
Test Critical Value @ 5% Level	-2.951125	-2.957110	-2.957110	-3.548490	-3.557759	-3.557759
Test Critical Value @ 10% Level	-2.614300	-2.617434	-2.617434	-3.207094	-3.212361	-3.212361

Granger Causality Test

Finally, Engle-Granger (1969) causality model is used to test the causality amongst the variables - IRS, Deposit Rate, and Lending Rate. The result shows that there is no bilateral directional relationship between IRS and Deposit Rate, IRS and Lending Rate, and even Deposit Rate and Lending Rate. The test results are tabulated below:

Table-4: Pair-wise Granger Causality Tests

Null Hypothesis:	Obs	F-Statistic	Probability
IRS does not Granger Cause DRATE	35	0.71514	0.49727
DRATE does not Granger Cause IRS		1.11878	0.33993
LRATE does not Granger Cause DRATE	35	0.71514	0.49727
DRATE does not Granger Cause LRATE		0.87151	0.42864
LRATE does not Granger Cause IRS	35	1.11878	0.33993
IRS does not Granger Cause LRATE		0.87151	0.42864
LOGIRS does not Granger Cause LOGDRATE	35	0.76743	0.47310
LOGDRATE does not Granger Cause LOGIRS		0.84519	0.43945
LOGLRATE does not Granger Cause LOGDRATE	35	0.88999	0.42122
LOGDRATE does not Granger Cause LOGLRATE		0.47775	0.62482
LOGLRATE does not Granger Cause LOGIRS	35	1.02320	0.37165
LOGIRS does not Granger Cause LOGLRATE		0.60929	0.55033

Note: Sample: 1 37, Lags 2

Conclusion

Prevalence of the high interest rate in the banking sector in Bangladesh was found like the earlier findings of Ndung'u and Ngugi (2000), Ahmed and Islam (2006), Mujeri and Islam (2008), Suzuki and Adhikary (2009). The findings of high IRS compared to those in the developing countries as well as neighbors are also in line with the findings of Beck (2006), Ndung'u and Ngugi (2000), Barajas, Steiner, Salazar (1999), and Nguyen, Islam and Ali (2010). In the context of banking sector of Bangladesh, higher IRS charged by the FCBs was also found similar to the findings of Mujeri and Yunus (2009) and Hossain (2010). However, findings of this study regarding the presence of uni-directional Granger Causality between the deposit rate and IRS (i.e., IRS is associated with a change in deposit rate) cannot be confirmed.

The findings of this research are not only being an academic contribution but also useful to the policymakers in taking further measures to ensure efficient and competitive banking sector of Bangladesh. It may be suggested that the policy makers / regulators should look into the key determinants influencing the IRS and guide the commercial banks to reduce the same through appropriate measures.

Reference

Afzal, A. (2011). 'Interest Rate Spreads, Loan Diversification and Market Discipline in Pakistan's Commercial Banking Sector', Thesis submitted to the Faculty of the Graduate School of the Lahore School of Economics as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

Ahmed, S. and Islam, M. E. (2004). 'Interest Rate Responsiveness of Investment Spending in Bangladesh', *The Bangladesh Development Studies*, Vol. XXX, March–June 2004, Nos.1 & 2, pp. 65 – 109.

Ahmed, S. and Islam, M. E. (2006). 'Interest Rate Responsiveness of Investment Spending in Bangladesh: A VAR Approach', *Working Paper Series*, No. WP 0608, May 2006, Policy Analysis Unit (PAU), Bangladesh Bank.

Ahmed, S. and Islam, M. E. (2006). 'Interest Rate Spread in Bangladesh: An Analytical Review', *Working Paper Series*, No. WP 0701, July 2006, Policy Analysis Unit (PAU), Bangladesh Bank.

Al-Jarrah, I. M. (2010). 'The Cost of Financial Intermediation in the Banking Sector of Jordan', *International Research Journal of Finance and Economics*, Euro Journals Publishing Inc., Issue 56 (2010), pp. 7-21.

Bangladesh Bank (various issues). *Annual Report*, Bangladesh Bank, Dhaka.

Bangladesh Bank (various issues). *Bangladesh Bank Data Archive*, Bangladesh Bank, Dhaka.

Bangladesh Bank (various issues). *Bangladesh Bank Quarterly*, Bangladesh Bank, Dhaka.

Bangladesh Bank (various issues). *Financial Sector Review*, Bangladesh Bank, Dhaka.

Bangladesh Bank (various issues). *Monetary Policy Review*, Bangladesh Bank, Dhaka.

Bangladesh Bank (various issues). *Monthly Economic Trends*, Bangladesh Bank, Dhaka.

Bangladesh Bank (various issues). *Scheduled Banks Statistics*, Bangladesh Bank, Dhaka.

Barajas, A., Steiner, R., and Salazar, N. (1998). 'Interest Spreads in Banking: Costs, Financial Taxation, Market Power, and Loan Quality in the Colombian Case1974–96', *IMF Working Paper*, August 1998, WP/98/110, pp. 1 – 41.

Barajas, A., Steiner, R., and Salazar, N. (1999). 'Interest Spreads in Banking in Colombia, 1974–96', *IMF Staff Paper*, Vol. 46, No. 2, June 1999.

Beck, T. (2006). 'Efficiency in Financial Intermediation: Theory and Empirical Measurement', Retrieved from: //www.tilburguniversity.edu/webwijs/files/center/beck/ publications/new/financialintermediation.pdf

Beck, T. and Hesse, H. (2006). 'Bank Efficiency, Ownership and Market Structure: Why Are Interest Spreads So High in Uganda?', *World Bank Policy Research Working Paper*, Paper No. 4027, October 2006.

Grenade, K. H. I. (2007). 'Determinants of Commercial Banks Interest Rate Spreads: Some Empirical Evidence from the Eastern Caribbean Currency Union', *ECCB Staff Research Paper*, Eastern Caribbean Central Bank, Working Papers No: WP/07/01, March 2007.

Hossain, M. (2010). '*Financial Reforms and Persistently High Bank Interest Spreads in Bangladesh: Pitfalls in Institutional Development?*', Retrieved from http://mpra.ub.uni-muenchen.de/24755/1/Hossain_IRS.pdf

Islam, M. E., and Begum, M. N. (2005). 'Is Investment Demand Sensitive to Interest Rate in Bangladesh? - An Empirical Analysis', *Bank Parikrama*, Volume XXX, No.1, March 2005, pp. 69-86.

Ministry of Finance, Government of Bangladesh (various issues). *Bangladesh Economic Review*.

Mujeri, M. K. (2008). 'Rationalizing Interest Rate Spread in the Banking Sector: Some Policy Suggestions', *Working Paper Series*, No. WP 0804, May 2008, Policy Analysis Unit (PAU), Bangladesh Bank.

Mujeri, M. K. and Islam, M. E. (2008). 'Rationalizing Interest Rate Spread in the banking Sector: Some Policy Suggestions', *PAU Policy Paper*, Policy Paper No. PP 0804, Policy Analysis Unit, Bangladesh Bank, Dhaka.

Mujeri, M. K. and Younus, S. (2009). 'An Analysis of Interest Rate Spread in the Banking Sector in Bangladesh', *The Bangladesh Development Studies*, Volume XXXII, December 2009, No. 4, pp. 1-33.

Ndung'u, N. S. and Ngugi, R. W. (2000). 'Banking Sector Interest Rate Spread in Kenya', *KIPPRA Discussion Paper*, Macroeconomic and Economic Modelling Division of Kenya Institute for Public Policy Research and Analysis, Paper No 5, March 2000.

Nguyen, C. V., Islam, A. M., and Ali, M. M. (2010). 'Bangladeshi Lending-Deposit Rate Spread: An Econometric Analysis', *Global Economy and Finance Journal*, Volume 3, Number 2, September 2010, pp. 238 - 246.

Perez, P. (2011). 'Determinants of Interest Rate Spreads in Belize', *CBB Research Paper*, Central Bank of Belize, July 2011.

Poghosyan, T. (2012). 'Financial Intermediation Costs in Low-Income Countries: The Role of Regulatory, Institutional, and Macroeconomic Factors', *IMF Working Paper*, No. WP/12/140, May 2012, pp. 2-34.

Reserve Bank of India (various issues). *Annual Report*, Mumbai, India.

Suzuki, Y. and Adhikary, B. K. (2009). 'A "Bank Rent" Approach to Understanding the Development of the Banking System in Bangladesh', *RCAPS Working Paper*, Ritsumeikan Center for Asia Pacific Studies (RCAPS), Ritsumeikan Asia Pacific University, Working Paper No. 09-1, April 2009.

Tennant, D. and Folawewo, A. (2009). 'Macroeconomic and Market Determinants of Banking Sector Interest Rate Spreads: Empirical Evidence from Low and Middle Income Countries', Retrieved from http://sta.uwi.edu/conferences/salises/documents/Tennant %20%20D.pdf

World Bank (2012). *World Development Indicators*, World Bank, Washington.

Appendix-A: Descriptive Statistics for Nominal Deposit Rate, Nominal Lending Rate, and Interest Rate Spread (Overall)

Year	1974-11	1974-80	1980-90	1990-00	2000-11
Nominal Deposit Rate (in %)					
Mean	6.67	4.14	8.16	6.83	6.55
Median	6.94	4.25	8.34	6.87	6.74
Standard Deviation	1.52	0.31	0.73	1.25	0.58
Kurtosis	-0.64	5.65	-1.18	0.18	-1.02
Skewness	-0.34	-2.36	-0.54	0.21	-0.69
Minimum	3.51	3.51	6.98	4.86	5.62
Maximum	9.11	4.32	9.06	9.11	7.25
Nominal Lending Rate (in %)					
Mean	13.01	11.13	14.19	13.86	12.20
Median	13.16	11.08	14.58	13.94	12.29
Standard Deviation	1.39	0.32	0.64	0.90	0.90
Kurtosis	-1.29	1.23	-1.33	-0.11	-0.74
Skewness	-0.20	0.22	-0.69	-0.42	0.04
Minimum	10.66	10.66	13.07	12.22	10.93
Maximum	15.12	11.62	14.83	15.12	13.75
Real Deposit Rate (in %)					
Mean	-2.51	-12.62*	-2.68	1.20	-0.24
Median	-1.41	-6.19	-2.17	1.43	-0.86
Standard Deviation	11.26	26.63	2.80	2.75	2.70
Kurtosis	25.43	3.83	2.29	-0.47	-0.70
Skewness	-4.63	-1.80	-1.35	-0.65	0.70
Minimum	-63.66	-63.66	-9.00	-4.01	-3.10
Maximum	12.59	12.59	0.88	4.15	4.76
Real Lending Rate (in %)					
Mean	3.83	-5.63	3.35	8.24	5.42
Median	4.71	0.46	3.85	8.27	4.52
Standard Deviation	11.13	26.36	2.68	2.81	2.98
Kurtosis	24.15	3.69	2.47	-1.08	-1.38
Skewness	-4.43	-1.75	-1.44	-0.39	0.51
Minimum	-55.89	-55.89	-2.76	3.35	2.20
Maximum	19.98	19.98	6.68	11.66	10.17
Interest Rate Spread (in %)					
Mean	6.34	6.98	6.03	7.04	5.65
Median	6.37	6.79	6.10	7.02	5.36
Standard Deviation	0.78	0.50	0.23	0.53	0.63
Kurtosis	-0.74	-0.41	-0.76	1.99	-1.00
Skewness	0.06	0.88	-0.40	-0.82	0.71
Minimum	4.86	6.44	5.64	5.88	4.86
Maximum	7.88	7.77	6.37	7.88	6.72

* *The average real deposit rate was -2.41% without considering inflation rate of 67.17% during 1974-75*

Appendix-B: Descriptive Statistics for Nominal Deposit Rate, Nominal Lending Rate, and Interest Rate Spread (Bank Type Wise)

Year	1990-11	1990-00	2000-11	1990-11	1990-00	2000-11	1990-11	1990-00	2000-11
Nominal Deposit Rate (in %)	**NCB**			**PCB**			**FCB**		
Mean	6.12	6.94	5.37	7.08	6.55	7.56	4.53	4.71	4.37
Median	5.82	7.14	5.07	6.84	6.40	7.40	4.71	4.88	4.57
Standard Deviation	1.22	1.16	0.70	1.16	1.30	0.80	0.89	1.14	0.61
Kurtosis	-0.12	0.38	1.11	-0.77	0.61	-1.86	-0.17	-0.69	0.70
Skewness	0.75	0.09	1.31	0.01	0.97	0.05	-0.26	-0.57	-0.93
Minimum	4.59	5.14	4.59	4.88	4.88	6.46	2.69	2.69	3.05
Maximum	9.12	9.12	6.90	9.12	9.12	8.62	6.27	6.27	5.09
Nominal Lending Rate (in %)	**NCB**			**PCB**			**FCB**		
Mean	11.81	13.30	10.46	14.10	14.99	13.29	12.77	12.87	12.68
Median	11.85	13.53	10.00	14.09	14.80	13.43	12.80	12.83	12.38
Standard Deviation	1.88	0.91	1.44	1.20	0.92	0.79	0.93	1.02	0.89
Kurtosis	-1.20	0.12	-0.75	0.50	0.60	-0.87	-0.77	-0.21	-1.00
Skewness	-0.35	-1.04	0.37	0.36	1.24	-0.41	0.22	-0.03	0.49
Minimum	8.48	11.63	8.48	12.00	14.05	12.00	11.13	11.13	11.45
Maximum	14.36	14.36	12.93	16.73	16.73	14.39	14.50	14.50	14.10
Real Deposit Rate (in %)	**NCB**			**PCB**			**FCB**		
Mean	0.14	1.25	-0.86	1.11	0.85	1.34	-1.44	-0.99	-1.86
Median	0.19	1.33	-1.90	1.24	1.42	1.24	-1.83	-1.05	-2.39
Standard Deviation	2.86	2.40	2.97	2.36	2.79	2.01	2.33	2.29	2.41
Kurtosis	-1.03	0.28	0.24	-0.42	-0.96	-0.31	-0.92	0.05	-0.75
Skewness	0.09	-0.65	0.91	-0.29	-0.48	0.48	0.05	-0.42	0.49
Minimum	-5.01	-3.47	-5.01	-4.02	-4.02	-1.52	-5.38	-5.38	-4.85
Maximum	4.96	4.57	4.96	4.90	3.96	4.90	2.25	2.25	2.10
Real Lending Rate (in %)	**NCB**			**PCB**			**FCB**		
Mean	5.84	7.60	4.23	8.12	9.29	7.06	6.80	7.18	6.45
Median	5.72	7.48	3.68	7.71	9.45	6.23	6.19	7.38	5.73
Standard Deviation	3.54	2.58	3.62	2.87	2.59	2.79	2.29	2.62	2.02
Kurtosis	-1.21	-0.87	-0.19	-1.35	-1.46	0.09	-0.89	-0.54	-0.24
Skewness	-0.05	-0.42	0.82	0.25	-0.28	0.97	0.01	-0.58	0.74
Minimum	-0.53	2.95	-0.53	3.57	5.15	3.57	2.23	2.23	4.06
Maximum	10.99	10.57	10.99	12.45	12.24	12.45	10.33	10.13	10.33
Interest Rate Spread (in %)	**NCB**			**PCB**			**FCB**		
Mean	5.69	6.36	5.09	7.02	8.44	5.73	8.24	8.17	8.31
Median	6.00	6.46	5.41	7.38	8.47	5.44	8.12	7.63	8.23
Standard Deviation	1.04	0.66	0.96	1.57	0.49	0.91	0.82	0.94	0.73
Kurtosis	0.03	2.10	-0.93	-1.75	1.91	0.14	-1.73	-2.01	-1.58
Skewness	-0.72	-0.81	-0.62	-0.17	-0.99	1.17	0.19	0.47	-0.09
Minimum	3.41	4.91	3.41	4.81	7.38	4.81	7.22	7.22	7.32
Maximum	7.38	7.38	6.15	9.17	9.17	7.55	9.42	9.42	9.33

Appendix-C: Interest Rate Spread – International Comparison (Selected Countries / Areas)

Country Name\Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Bangladesh	7.34	7.83	8.18	7.64	5.91	6.22	6.82	6.72	6.40	5.86
India*	4.10	3.40	3.40	3.30	3.30	3.30	2.90	3.00	3.29	3.69
Pakistan	N/A	N/A	N/A	5.62	6.48	6.81	6.46	6.02	5.86	5.90
Sri Lanka	8.38	3.95	4.34	4.40	5.13	6.05	8.00	8.00	5.06	3.32
Nepal	2.92	N/A	N/A	5.85	5.88	5.75	5.75	5.60	5.50	4.38
Maldives	6.03	6.04	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.33
Bhutan	8.25	8.25	10.00	10.50	9.50	9.50	9.50	N/A	N/A	N/A
Myanmar	5.50	5.50	5.50	5.50	5.50	4.71	5.00	5.00	5.00	5.00
Malaysia	3.75	3.32	3.23	3.05	2.95	3.34	3.24	2.95	3.00	2.52
Thailand	4.71	4.90	4.60	4.50	3.92	2.92	4.18	4.56	4.92	4.92
Vietnam	4.12	2.61	2.86	3.55	3.88	3.55	3.69	3.05	2.16	1.94
Philippines	3.66	4.53	4.25	3.90	4.63	4.48	5.00	4.26	5.83	4.45
Indonesia	3.07	3.44	6.35	7.68	5.97	4.57	5.89	5.11	5.22	6.23
Singapore	4.13	4.48	4.80	4.90	4.86	4.74	4.80	4.96	5.09	5.17
China	3.60	3.33	3.33	3.33	3.33	3.60	3.33	3.06	3.06	3.06
Japan	1.91	1.83	1.78	1.69	1.41	0.98	1.08	1.32	1.29	1.10
France	3.98	3.60	3.91	4.35	N/A	N/A	N/A	N/A	N/A	N/A
Germany	6.45	7.04	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Russian Federation	13.06	10.75	8.50	7.65	6.69	6.35	4.89	6.47	6.73	4.81
Heavily indebted poor countries (HIPC)	14.50	13.00	12.54	12.86	12.75	11.00	10.75	11.31	N/A	N/A
Least developed countries: UN classification	13.42	13.00	12.16	12.17	11.67	10.31	10.30	9.78	10.21	9.79
East Asia & Pacific (all income levels)	4.76	4.90	5.22	5.45	5.47	4.74	4.96	4.62	5.00	5.01
Latin America & Caribbean (all income levels)	8.47	8.75	8.46	7.30	7.57	6.98	6.91	6.89	7.42	7.29
Middle East & North Africa (all income levels)	4.50	4.85	4.87	4.90	4.22	3.56	3.23	3.57	3.66	4.37
Sub-Saharan Africa (all income levels)	13.25	13.00	11.77	12.17	11.67	9.61	9.84	8.27	8.39	9.68
OECD members	4.15	3.80	3.52	3.36	2.80	2.89	N/A	N/A	N/A	N/A
Euro area	4.36	3.67	3.38	3.49	N/A	N/A	N/A	N/A	N/A	N/A
European Union	4.78	4.66	3.60	3.82	3.33	N/A	N/A	N/A	N/A	N/A
High income	4.45	4.47	4.16	4.09	N/A	N/A	N/A	N/A	N/A	N/A
Middle income	8.27	8.32	7.96	6.66	7.08	6.81	6.65	6.42	6.50	6.33
Low income	14.34	13.00	12.44	12.06	12.21	9.27	10.75	10.10	11.35	11.06

*Source: World Development Indicators, World Bank (2012), *Annual Reports of Reserve Bank of India*