

MARKET MICROSTRUCTURE OF CORPORATE BOND MARKET IN INDIA: AN EMPIRICAL ANALYSIS

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Abstract *A smooth and robust corporate debt market is considered crucial for the development and stability of an economy. A well-developed corporate debt market enables efficient allocation of funds, facilitates infrastructure financing, improves the health of corporate balance sheets and safeguards financial stability by sharing the burden of banking sector in financial system of an economy.*

In the present paper, we have adopted historical approach of market efficiency to study the corporate bond market in India. The study investigates the difference between BSE and NSE platforms of trading in corporate bond market in India. Also, to study market efficiency of these market, historical approach of market efficiency has been used. This approach is based on the notion that as market matures, it became more efficient. The descriptive analysis and semi-log regression equations have been used on the datasets. The period of study is 9 years from April, 2007 to March, 2016.

The descriptive analysis supported the hypothesis that there is a difference between the two trading platforms of corporate bond market in India. During the period 2007-2016, it has been found that the number of trades at BSE was growing at lower rate but with higher average amount raised per trade than NSE. It shows that BSE has effectively filtered out better quality trades from trades from overall market. However, total amount raised at NSE was higher than BSE, it could be the reckless behaviour of investors or informational inefficiency and needs further investigation. The findings may help policymakers, regulators and participants to take judicious decisions to make trading in corporate bond market more beneficial for all stakeholders.

Keyword: *Corporate Bond Market, Market Efficiency, Historical Approach, Indian Financial System*

INTRODUCTION

A smooth and robust corporate debt market is considered crucial for the development and stability of an economy. An economic development is a function of financial development as it complements the economic development through effectively meeting the financial needs of government and non-government projects. The twelfth five-year plan approach paper stated Indian economy needs a massive expansion in real sector such as education, health, water and sanitation, roads, ports and airports to achieve the 9.5% average growth per year in twelfth plan 2012-17.

A well-developed corporate debt market enables efficient allocation of funds, facilitates infrastructure financing, improves the health of corporate balance sheets, and safeguards financial stability by sharing the burden of banking sector in financial system of an economy. Unlike

developed economies and even some developing economies, Indian financial system is a banking dominated system. The dominance of banking system in total credit can be seen in Fig. 1.

Excess dominance of banking credit in financial system leads to misallocation of capital and makes a system vulnerable to internal and external shocks which may jeopardised the stability of financial system. In current global slowdown where trade and finance are under stress across the countries, the soundness and resilience of banking system in India is under threat. After the assets quality review (AQR), the gross non-performing advances (GNPA) of scheduled commercial banks sharply increased to 7.6% of gross advances from 5.1% between September 2015 and March 2016.

Goswami and Sharma (2011) found that dependence on the banking system and lack of minimum critical mass of corporate bond market are facing obstacles to generate

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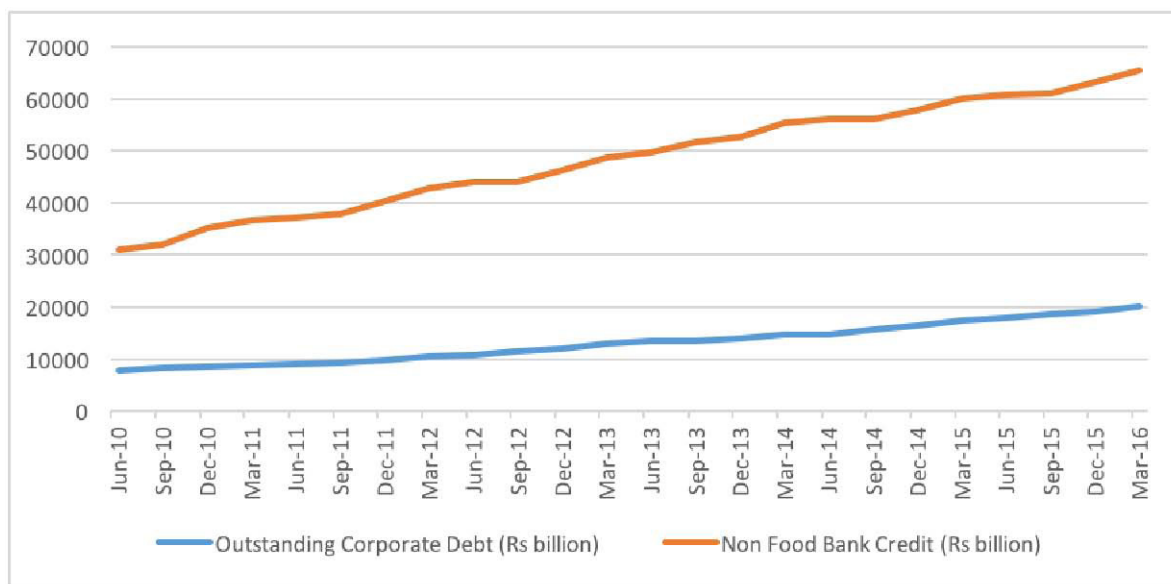


Fig. 1: Outstanding Corporate Debt and Non Food Bank Credit

interest in bond issuance in Asian economies. The presence of developed equity markets, comfortable liquidity with the banks and corporations generate inertia and constrain the

development of local debt market. The markets for sovereign bond and corporate bond of Asian countries can compare in Fig. 2.

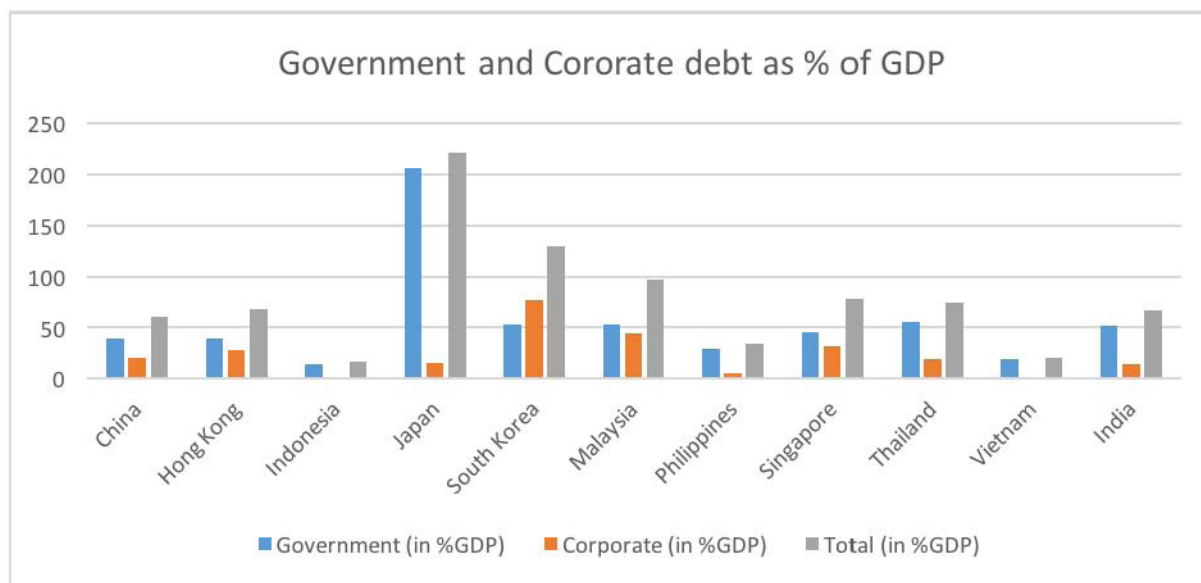


Fig. 2: Government and Corporate Bonds as Percentage of GDP¹ (March, 2016)

The debt market in India consists of g-sec markets (government securities) and corporate debt market. In g-sec market central and state governments, floats fixed income securities through various types of instruments with objective to finance fiscal deficit. These securities are being issued by Reserve Bank of India on behalf of the Government of India. The corporate bond market (also known as the non- g-sec market) consists of financial institutions (FI) bonds, public

sector units (PSU) bonds, and corporate bonds/debentures.

In this study, we have tried to contribute in existing literature of corporate bond market in India. The theme of this work is to understand the market microstructure of corporate bond market, specially the market architecture and design of corporate bond market in India. Also, the study has tried to fill the gap in areas other than pricing and performance of corporate bond market in India.

¹Percentage of GDP is equal to

$$\% \text{ of GDP} = \frac{\text{Outstanding amount}}{\text{Nominal GDP of country}}$$

The paper proceeds as follows. Second section explains the market microstructure of corporate bond market in India. Third section summarises the literature on the issues of corporate bond market in India and abroad. Fourth section outlines the research objectives and hypotheses. Fifth and sixth sections discuss the data and research methodology and empirical analysis respectively to test the hypotheses, followed by seventh section which concludes the study.

MARKET MICROSTRUCTURE OF CORPORATE BOND MARKET IN INDIA

Market micro-structure is the area of finance which is concerned with the process through which investor's latent demands are ultimately translated into transaction. The central idea of the theory is that assets prices need not equal full information expectations of value because of variety of frictions (Madhavan, 2000). The market microstructure of the Indian corporate bond market can be discussed with features such as pricing methods, market architecture and design, institutions, participants and trends.

In this work, we are trying to judge the market efficiency of corporate bond market in India. Market efficiency can be judged through the pure theory of finance, traditional approach and historical approach. First, the pure theory of is basically efficient market hypothesis. The theory is based on pricing efficiency or informational efficiency. Secondly, the traditional approach examines the markets and divided into developed and underdeveloped markets on the basis of width of the market, depth of the market and market resilience. Thirdly, the historical approach which is being used to judge the market efficiency is concerned to the trends of variables. It is broad approach to only to judge market efficiency. However the possibility of informational efficiency can be ruled out.

REVIEW OF LITERATURE

World Bank (2000) stated that corporate debt market in a country can substitute part of the bank loan market and is potentially able to relieve the stressed banking system in a developing country of unbearable burden. Harkansson (1999) stated that less developed corporate debt market leads to an oversized banking system in any economy. Oversized banking system promotes excessively regulated market which undermines the principle of free market forces. Such imbalance cannot be desirable in any economy as it provides perfect breeding ground for crony capitalism, sloppy lending by banks and careless investment by banks and corporates. On the other side, it has been argued that balance between bank lending and corporate debt in an economy provides an opportunity to have more effective hedge against systematic risk through various mechanism. This mechanism includes dissemination of information, presence of pool of

professional financial analyst, more effective management of a default or bankruptcy case and prevent uncompetitive lending by banks.

However, some studies are supporting the fact that dominance of banking sector in financial system creates hindrances in development of corporate debt market. Eichengreen (2004) has listed the factors associated with the bond market capitalisation. These were large country size, stronger institution, less volatile exchange rates and more competitive banking sectors. It has been found that strong fiscal balances have not been conducive to the growth of government bond markets in Asian economies. Also, structural characteristics, macroeconomic and financial policies account were different in bond market development in Asia and rest of the world.

The Indian corporate debt market is under researched area as debt market is dominated by sovereign bonds. The problem is further accentuated by limited availability of data source. However, some studies on Indian corporate debt market highlighting the features of market. Sharma and Sinha (2006) studied the corporate debt market and highlighted the limitations of banking system in India which is reasonably regulated, supervised, capitalised, and managed. In addition, some preconditions which are necessary have been suggested to develop Indian corporate debt market. They see immense potential for securitisation in India.

Wells and Schou-Zibell (2008) shed some light on the question how regulation hampers participation in Indian corporate bond market. Though India began securitisation quite early as compared to other Asian economies, the market has not taken off. Bond market in India are regulated by SEBI, along with participants like mutual funds and brokers.

Mitra (2009) studied the demand and supply side issues which are hampering the development of corporate debt market in India. It has been found that lack of diversity in instruments is a major factor responsible for less developed bond market in India. Few demand sides factors are also identified. These were high SLR ratio, regulatory asymmetry in treatment of loans and bonds, and other restriction on investments hamper their ability to freely invest in corporate bond market.

Khanna and Varottil (2012) compared the equity and debt market liberalisation process and put some lights on legislative reforms which are needed. It has been suggested that changes are necessary in bankruptcy laws. Labour laws and judicial enforcement for development of corporate debt market.

RESEARCH OBJECTIVES AND HYPOTHESES

In this research work, an attempt has been made to compare the two trading platforms on the parameter of market efficiency and following are the objectives:

- To investigate if there is any difference between BSE and NSE trading platforms of corporate bond market in India.
- To measure the trends of corporate bond market in India.

Research Hypotheses

Based on the above mentioned research objectives, the following null hypotheses have been tested:

H₀₁: There are no difference between BSE and NSE trading platforms of corporate bond market in India.

H₀₂: There is no trend in corporate bond market in India.

DATA AND RESEARCH METHODOLOGY

We used secondary data to study the corporate bond market in India. We focused the trading platforms to study the market micro-structure of corporate bond market in India. The number of trades and amount raised each from the BSE and NSE platforms of debt market are chosen as variables. Monthly data has been collected from Securities Exchange Board of India (SEBI) database for the period started from April, 2007 to March, 2016. Further, the grand total of all variables in platforms is also taken to study the market as whole¹.

All data covering the period of 9 years from 2007 to 2016 were used to test our hypothesis through descriptive analysis and trend analysis. Descriptive analysis was used for comparison between two platforms of trading and to compare them with whole market through mean, median, and standard deviation. Further skewness and kurtosis were deployed to analyze the characteristics of the distribution. Skewness is a measure of asymmetry of the distribution of the series around its mean. The skewness of a normal distribution is zero. Kurtosis values show that whether the data is not normally distributed or not. The kurtosis value of 3 indicates that distribution is normal. The value deviating from 3 or in other words, more or less than 3 indicates that the distribution is leptokurtic or platykurtic.

The specific trends in corporate bond market are studied include the number of trades, the amount raised through trades and the average size of trade. The average size of trades is calculated by dividing total amount with number of issues. The growth of number of trades, total amount

of trades and average size of trades of both the trading platforms in across the corporate bond market is calculated by applying the following semi-log equation:

$$\text{Log } Y = a + bt + ut$$

where,

Y = Number of trades/Amount of trades/Average size of trades

a = Intercept term

b = Growth rate

t = Time (months)

u = Error term

EMPIRICAL RESULTS

Descriptive Analysis

The central hypothesis of this paper is that there could be differences in terms of number of trades, amount raised, and amount per trade between the BSE and NSE trading platforms of corporate bond in India. The literature has tried out to discuss various issues of micro-market structure. Some issues are information asymmetry, liquidity, management, and cost associated with bond trading at trading platforms. The results support the hypothesis that there is a difference between BSE and NSE as trading platforms of corporate bond. The results are presented in Table 1. The mean and median values of number of trades, total amount raised, and average amount per trade on NSE platform are higher than its counterpart BSE platform.

The skewness and kurtosis show the asymmetry of the distribution and shape of a random variable probability distribution respectively. The series are not symmetrical and all variables of BSE and NSE are positively skewed. It means that distribution of each variable is concentrated on the left side of the distribution or majority of observations are less than the mean of the respective variable. However, average amount per trade of overall market is negatively skewed which represents that majority of average amount per trade is above mean. Kurtosis values are for study the shape of distribution or to identify the heaviness of tail of the distribution. NSE's average amount per trade is near the normality (expected kurtosis value of normal distribution is 3). However, number of trade and total amount raised are showing the positive values which signifies that distribution has less peaked than normal curve.

¹ Earlier secondary market transactions were being recorded at NSE, BSE and FIMMDA (Fixed Income Money Market and Derivatives Association of India). as per RBI circular dated February 24, 2014, reporting of secondary market transaction in Corporate Bond has been discontinued at FIMMDA with effect from April 1, 2014.

Trend Analysis

Table 2 gives the result of semi log regressions which have been used to estimate the monthly compounded growth rates

of number of trades, total amount raised and average amount per trade for BSE, NSE and overall market for period of 9 years from April, 2007 to march, 2016.

Table 2: Regression Analysis

The table presents the results of semi-log regression analysis ($\text{Log } Y = a + bt + et$)

Dependent Variables	Independent Variables								
	Intercept					B			
		Coefficient	Standard Error	t Stat	P-value	Coefficient	Standard Error	t Stat	P-value
No of Trades	BSE	6.188	0.092	67.312	0.000	0.008	0.002	5.278	0.000
	NSE	5.411	0.098	55.171	0.000	0.030	0.002	18.931	0.000
	Grand Total	7.428	0.054	138.008	0.000	0.015	0.001	17.162	0.000
Total Amount raised (cr)	BSE	7.557	0.097	78.056	0.000	0.019	0.002	12.340	0.000
	NSE	7.761	0.097	80.385	0.000	0.034	0.002	22.023	0.000
	Grand Total	9.194	0.090	101.874	0.000	0.025	0.001	17.532	0.000
Average per trade (cr)	BSE	1.369	0.063	21.593	0.000	0.011	0.001	11.191	0.000
	NSE	2.350	0.058	40.657	0.000	0.004	0.001	4.664	0.000
	Grand Total	1.766	0.051	34.943	0.000	0.011	0.001	13.030	0.000

The growth rates of number of trades at NSE and BSE are 2.96% and 0.77% respectively, compounded monthly. However, during this period, overall market grew at 1.47% compounded monthly. The total amount raised through corporate bond at NSE and BSE were growing at the rate of 3.39% and 1.9% respectively. Also, total amount raised from overall market grew at 2.52% compounded monthly. The growth rates are highly significant.

Although NSE was growing faster than BSE in number of trades and total amount raised, average amount per trade grew more at BSE than NSE platform. The growth rates were 1.13% and 0.43% compounded monthly for BSE and NSE respectively. However, in overall market, it grew at 1.05% compounded monthly. Again all results are highly significant.

With relatively less growth of number of trades and higher average per trade at BSE than NSE, it seems that BSE trading platform have been successfully carried out quality trade in corporate debt market. However, higher growth of total amount raised from NSE reflects the need to have more market efficiency at NSE.

CONCLUSION

The study investigates the difference between BSE and NSE platforms of trading in corporate bond market in India. Also to study market efficiency of these market, historical

approach of market efficiency has been used. This approach is based on the notion that as market matures, it became more efficient. The descriptive analysis and semi-log regression equations have been used on the datasets. The period of study is 9 years from April, 2007 to March, 2016.

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