Impact of Liberalization on Interest rate Term Debt Structure and its impact on firms

CHAPTER I: INTRODUCTION

1.1 Financial Liberalization- Benefits and Costs

Short-term debt has played an important role in the crises of Mexico (1994-95), the South East Asia (1997-98), Russia (1998), and Brazil (1998-99). The higher exposure to risks that globalization may bring about has led many economists to argue that countries should liberalize their financial systems gradually, and that those that have already liberalized might consider imposing some type of capital controls.

India \(^1\) has been gradually liberalizing its economy –through completely and partly opening up its current (trade) and capital account, respectively. Learning from experiences of Latin American and the South East Asian economies, the Indian policy makers approach towards international capital flows has been cautious and gradual -first allowing equity flow in the initial stages and moving on to debt flows. India’s policy towards capital controls has moved full circle i.e. allowing outward FDI from the mid 2000s that has given rise to the phenomenon of the “Indian multinationals”.

This study begins with a review of stylized facts \(^2\), goes on to review an analysis of aggregate financials of 2237 \(^3\) non finance non government listed corporates over a

---

\(^1\) Ranked 3\(^{rd}\) in terms of GDP (about US1 trillion)

\(^2\) First coined by the economist Nicholas Kaldor, a stylized fact is a simplified presentation of an empirical finding in social sciences, especially economics.
period of 11 years (FY 2000 to 2011) from the CMIE Prowess Database. The analysis shows that though there was a secular uptrend in corporate sales and profits\(^4\), this trend was marked with higher volatility, from year to year. Though corporates deleveraged themselves, the proportion of short term debt which was as low as 20\% in the early period (FY 2000 to FY 2003) rose to 40\% i.e. doubled towards the end of the decade. Further analysis reveals that financial expenses were one of the most volatile expenses. This volatility in turn was caused by volatility in treasury operations (that too by forex transactions). The study’s analysis supports the evidence of Patnaik and Shah (2010) who examine the effect of global financial crisis (“GFC”) on firms. They argue that how “Indian Multinationals” \(^5\) circumvented “de jure”\(^6\) capital controls and indulged in treasury operations taking capital out of the country (thereby making capital account convertibility de facto). Patnaik and Shah (2010) “When the global money market became illiquid on 13/14 September (2009), these firms were faced with dollar shortages associated with liabilities which could not be rolled over.”

Since the last one year, Indian corporates are seized with the challenge of redeeming Foreign Currency Convertible Bonds (“FCCBs”) that they had issued in the mid 2000s when their high share price valuations enabled them to issues these convertible bonds with high conversion price. Since then their share prices have come down. As the redemption period draws closer, these companies are wondering

---

\(^3\) This set is from where a sample set of 257 companies is drawn for the empirical study

\(^4\) Compounded annual growth rate of 15.2\% and 23.3 \%, respectively over 10 year period

\(^5\) Indian multinational are those who have invested abroad either through green-field operations or acquisitions or both and include TATA Motors Ltd. Infosys Ltd. Ranbaxy et al.

\(^6\) “de jure” means official while “de facto” means unofficial
how to roll over these bonds\textsuperscript{7}. Thus though they were able to lower their total interest expenses (which grew at CAGR of about 8\% compared to sales growth at CGAR of 15\% over the 10 year –FY 2001 to FY 2010), they are now faced redemption, an event they had not anticipated (as they thought that investors of FCCBs will convert their FCCBs rather than redeem).

1.2 Research Questions

Corporates

Since the 1980s, more and more Indian firms are becoming globally integrated, first through trade (imports and exports). However, since 1990s and onwards, the Indian corporate sector has transformed itself by becoming more financially integrated globally due to lifting of restrictions on investment and financing abroad. In the late 1990s and the early 2000, many firms listed themselves overseas and then borrowed from overseas debt and loan markets\textsuperscript{8}. Also the analysis by the study of

\textsuperscript{7} CRISIL Opinion (May 2011), “Foreign currency convertible bonds (FCCBs) worth Rs 315 billion ($7 billion) are due for redemption over the next 2 years for S&P CNX 500 companies. More than 80 per cent of these outstanding FCCBs are trailing below their conversion price (as on May 3, 2011). This would result into investors opting for redemption of their bonds rather than converting them into equity shares. Also, the redemption amount is quite high in many cases, and companies do not have adequate funds to repay them. This will force companies with outstanding FCCBs worth a total of Rs 220-240 billion to either refinance the bonds or revise their conversion price downwards, which will dilute the stake of existing shareholders. Both these options will adversely affect their financials. Moreover, companies with close to Rs 15-20 billion worth of outstanding FCCBs having high debt levels and already low promoters’ stake will face a significant challenge in meeting their repayment obligations.”

\textsuperscript{8} CRISIL Opinion (May 2011), “Foreign currency convertible bonds (FCCBs) worth Rs 315 billion ($7 billion) are due for redemption over the next 2 years for S&P CNX 500 companies. More than 80 per cent of these outstanding FCCBs are trailing below their conversion price (as on May 3, 2011). This would result into investors opting for redemption of their bonds rather than converting them into equity shares. Also, the redemption amount is quite high in many cases, and companies do not have adequate funds to repay them. This will force
2237 non finance non government listed companies show greater volatility of short term borrowings. These companies have been able to lower both their leverages and financial, more particularly interest expenses. This has been achieved by taking advantage of borrowing at lower interest rates overseas.

All these lead to a question; how global financial integration (resulting from financial liberalization) affects the balance sheets of the Indian corporates in the long run? Also, though short term effect based on stylized facts appear to be negative did financial liberalization made any significant changes to corporate balance sheets?

**Interest Rates**

The study's analysis of 2237 non finance non banking companies shows that though interest expenses grew at lower rate (CAGR of 8.7% vs. 15.2% of sales), there was greater volatility in interest expenses on year on year ("yoy") basis. For instance, while it declined in the FY 2003 (6%), FY 2004 (12%) and FY 2005 (4%) it rose in FY 2007 (34%), FY 2008 (39%) and FY 2009 (46%). On account of financial liberalization and economic reforms (freed administrated interest rates except for savings and few others) while the level of interest rates have come down significantly, volatility of interest rates\(^9\) has increased significantly. Recognizing that companies with outstanding FCCBs worth a total of Rs 220-240 billion to either refinance the bonds or revise their conversion price downwards, which will dilute the stake of existing shareholders. Both these options will adversely affect their financials. Moreover, companies with close to Rs 15-20 billion worth of outstanding FCCBs having high debt levels and already low promoters' stake will face a significant challenge in meeting their repayment obligations."

\(^9\) As per MCX it was 10.62% (2000), 14.17% (2001), 12.05% (2002), 15.74% (2003), 14.31% (2004), 8.15% (2005), 8.22% (2006), and 8.44% (2007) and went up to 19.75% in 2009-the year GFC occurred.
under financial liberalization interest rate volatility is inevitable, SEBI has given approval for exchanged traded Interest Rate Futures.

**Research questions**

In view of the above, did liberalization raise or reduce interest levels? How did the call money market rate (short-end) and term structure of interest rates got impacted during financial liberalization and during global financial crisis of FY 2008-9 (“GFC”)?

**1.3 Research Objectives**

The study investigates long term effect of financial liberalization and also inevitable i.e. contagion effect of global financial crisis (FY 2008-9) at macro as well as micro i.e. firm level. Considering its pervasiveness, the study focuses on interest rates.

**Macro Level**

The study proposes

1. To investigate the change if any in the level of few key interest rates
2. To investigate the existence, if any, of volatility of the above interest rates;
   and

---

10 NSE launched trading in Interest Rate Futures from 30th August 2009

11 According to MCX-“IRFs account for (US$17.8 trillion) the largest volume and notional value among all exchange traded financial derivatives (US$18.5 trillion)”

12 Alan Blinder (1998), “Central banks generally control only the overnight interest rate, an interest rate that is relevant to virtually no economically interesting transactions. Monetary policy has important macroeconomic effects only to the extent that it moves financial market prices that really matter—like long-term interest rates, stock market values, and exchange rates.”
(3) To investigate the financial integration among these interest rates

Micro Level-Firm Level

The study addresses the following objectives

(1) To investigate the long term effect of financial liberalization on firms’ balance sheets; (More particularly on debt maturity structure of firms)

(2) To investigate the effect of global financial crisis on firms’ balance sheets
(More particularly on debt maturity structure of firms)

1.4 Difference between this study and the previous empirical research

This study differs from the earlier empirical studies due to the following reasons.

- It covers longer period of 10 years over 2000-2010 and therefore covers at least two growth cycles\textsuperscript{13} viz. 2002 and 2008-9 (global financial crisis caused by subprime crisis in the USA).

- In view of the globalization and liberalization (such as outward FDI), the study has additional viz. contemporary firm characteristics (such as globalization index measuring the extent of a firm’s integration with the global economy) that reflect realities of dynamic world and globalized firms.

- Apart from the firm characteristics, the study examines the effect of macroeconomic variables –this is the first such study in the area of debt maturity structure of firms in India.

- The study examines the effect of global financial crisis that occurred during the period under review-again the first in the context of debt maturity structure.

\textsuperscript{13} Growth Cycles are different from business cycles
1.5 Methodology

So far as its macro level study is concerned, the study follows a methodology that is a mix of qualitative to test its hypotheses. The study adduces evidences that already exists elsewhere- previous empirical research and publications of Reserve Bank of India. To complement these, the study uses simple methods of averages, standard deviation and coefficient of variation.

For its micro level, the study has both hypotheses and model testing for long term effect of financial liberalization and contagion effect of global financial crisis of FY 2008-9. The study uses OLS for cross section data for three years (before, during and after) to test the effects of global financial crisis. To examine the long term effect of financial liberalization, the study uses panel data for a period of 10 years for a sample of firms. The study uses two sets of models. First is traditional model so called as it examines the relationship between traditional firm attributes and the debt maturity structure (measured by ratio of long term borrowings to total borrowings). The second one is called contemporary as it includes more contemporary firm characteristics such as market power, uniqueness, extent of a firm’s integration with the global economy i.e. globalization index. In addition, it also includes macro finance variables such as interest rate volatility, term structure of interest rates and equity risk premium. For panel data, the study uses fixed effect model.

1.6 Sample and Data

Sample period for both the studies is a period of ten (10) years from FY 2001 to FY 2010. This period covers at least two growth cycles –first one of FY 2003 and FY 2009 (global financial crisis).
For its micro level, the study has collected a sample of 257 listed non finance non government companies. These companies are part of S&P CNX 500 index of National Stock Exchange of India. There are about 5600 listed companies in India. Out of which about 2237 are non finance non government companies. So the sample accounts for more than 10% of the relevant universe of companies. Only non finance and non government companies have been selected. Finance companies balance sheets are subject to regulatory requirements and are not comparable. Government companies more particularly oil companies have different financials and different corporate governance standards. For instance, Indian Oil Ltd. has huge grants and subsidies from the government. The study uses Center for Monitoring of Indian Economy (“CMIE”)’s Prowess Database.

1.7 Results and Findings

With regard to hypotheses on interest rate-level, volatility and financial integration, the results are positive. The findings suggest that levels of interest rates have gone down though volatility has increased. Financial integration is taking place in some segments but is still weak. The reasons for weak integration could be some structural rigidities (interest rates on some segments such as priority sector and savings account are still controlled). The results of hypotheses testing for the corporate sector show that debt maturity structure (long term borrowing to total borrowing) ratio has changed. The sample companies have lowered their debt

\[ ^{14} \text{The S&P CNX 500 represents about 94.92% of the Free Float Market Capitalization and about 91.68% of the total turnover on the NSE as on June 30, 2011. The S&P CNX 500 companies are disaggregated into 71 industry indices viz. S&P CNX Industry Indices. Industry weightages in the index reflect the industry weightages in the market. For e.g. if the banking sector has a 5% weightage in the universe of stocks traded on NSE, banking stocks in the index would also have an approx. representation of 5% in the index.} \]

http://www.nseindia.com/products/content/equities/indices/s_n_p_cnx_500.htm
maturity structure i.e. ratio of long term borrowing to total borrowings. With regard to model testing, though both models are statistically significant (adjusted R^2 >56%), the models are not very strong (R^2 are not in excess of 60%). Further, only few firm attributes emerge significant with majority of the attributes (that include contemporary and macro variables such as term structure of interest rates) not significant. The models do find that the relationship between the attributes (determinants) of firms and debt maturity structure changes in all the cases.

1.8 Some Challenges to the Research

Corporate Data

During the era of the all India development financial institutions, the erstwhile ICICI (an all India financial institution at that time) used to publish finances of its assisted companies. However, since then there is no publicly available data base available. Reserve Bank of India ("RBI") sporadically publishes corporate data under the title "finances of non financial non government companies". Also historical data on corporate bonds and spreads available with FIMMDA, CRISIL and Debtonnet (http://www.debtonnet.com/) are not publicly available. The same is the case with data available with information vendors such as Reuters, Bloomberg, et al. Hence proxy is used.

Expanded Scope-Macro and Micro

Organization of the Thesis

The study has two parts namely, macro and micro making this study lengthy and more time consuming. The organization of the thesis is also a challenge due to format restricting the report to seven chapters. Apart from the format, the scope has gone beyond the normal for this type of study.

Simple Techniques for Macro level study
To contain the scope within reasonable limit, simple techniques are used as most of the hypotheses are proved by other empirical studies, RBI studies and stylized facts.

*Not able to integrate Findings of Macro and Micro level studies*

The study is not able to integrate the findings from macro and micro level studies for various reasons. First, the term structure of interest rates is also one of the transmission mechanisms of the monetary policy. The short term interest rates are expected to across the entire spectrum of the term structure of interest rates in perfect markets. Since the G sec markets in India are not perfect (few G sec bonds accounting for disproportionate share of trading with other bonds not being traded regularly). Second, the mathematical models of the study are not sophisticated enough to capture the variations in macro variables such as the term structure of interest rates. The study could build very tenuous link between macro and micro studies. This could be due to various reasons: selection of macro variables; design of the models; or variable proxies.

**Panel Data-Multicollinearity and Autocorrelation**

The final challenge is that the data format viz., panel format that has cross-sectional observations over time.

In the panel data, the multicollinearity problem can be exacerbated by not only a possible correlation among variables but also by a possible autocorrelation between years (Arellano, 2003; Baltagi, 2005). Although most research uses the conventional ordinary least square regression (OLS) method in this field, this research uses a relatively new method: linear mixed model (LMM) (Verbeke, 2000). By doing so, the multicollinearity problem can be addressed, and, in addition, the results of OLS and LMM can be compared.
1.9 Contribution to Knowledge

Despite of its many limitations, this is the *perhaps the first or first of its kind to investigate* the balance sheet effects of financial liberalization and contagion of global financial crisis. Also at the micro level, the study introduces contemporary firm attributes (such as globalization index measuring extent of global financial integration of a firm) in the context of debt maturity structure research which has hitherto used only the traditional firm attributes. Since the Indian firms have become more globally integrated, their response to external (exogenous) events such as global financial crisis is expected to differ from those which are less integrated. This opens up scope for further research in debt composition of firms taking into such new realities.

This study is a beginning to a more comprehensive work on debt especially debt maturity and debt composition. However, the study

(1) Links macro variables to firms in the context of debt maturity structure

(2) Tests the contemporary attributes (globalization, uniqueness and market power indices) of firms operating in dynamic and globalised world

(3) Investigates the effect of financial liberalization on firms (through the determinants of debt maturity structure)

(4) Investigates the contagion effect of global financial crisis of FY 2008-9 on the firms

1.10 Thesis Structure

The thesis has seven chapters as follows:

The chapters Two, Four, Five and Six have two sections namely, macro and micro-level. The first section deals with macro level and the second section with micro level.
Chapter two has what is known as stylized facts—both macro and micro (Indian corporates). At macro level, it starts at India’s increasing global integration exposing it to vulnerability of contagion of global financial crisis of FY 2008-9 (subprime crisis) leading to For instance, the study analyzes the (financial) aggregates of the entire set of 2237 listed non finance non government companies in CMIE’s Prowess Database to arrive at research questions concerning leverage and debt maturity structure of these companies.

This chapter three is the longest as it has to cover not only theories of debt maturity (which has as many as four arguments viz., tax, risk management, signaling & asymmetrical information and agency cost) but also concept of financial liberalization.

Taking debt maturity structure (“DMS”) as a balance sheet variable to be investigated, chapter four sets up the hypotheses (between financial liberalization /financial crisis and DMS) explains the research approach to test them. The hypotheses at macro level concern with level of interest rates, volatility of interest rates and domestic integration of financial markets via interest rates. Micro level hypotheses address to the long term effect level of financial liberalization as well as contagion effect of global financial crisis on the key ratio i.e. debt maturity structure (long term borrowing to total borrowing). The models investigate the effect of the same phenomenon (financial liberalization and global financial crisis) on the relationship between the determinants (which are traditional firm attributes, contemporary attributes of firms and macro financial variables) of debt maturity structure and debt maturity structure. This chapter also takes inventory of proxies
that different researchers have used for firm attributes before presenting its own definitions for testing.

Chapter five discusses the methodology and data, and explains how the data is processed. In addition, the variables are defined and statistical model to be estimated are identified. The chapter discusses how linear regression models (OLS) are estimated by the least square methods and how fixed one way model are estimated. This chapter describes how the statistical fit of models is examined.

Chapter six documents and reports on the empirical findings. It also compares the results of this study with previous empirical research and also with the sample itself. Chapter seven summarizes and concludes. It also recognizes the limitations of the study. Despite the limitations the study does make contribution to corporate finance.

1.10. Concluding Remarks

In a rapidly changing economic environment, firms i.e. corporates are acquiring newer and more contemporary characteristics. While theories remain static focusing still on traditional firm characteristics (which continue to matter but to a lesser and lesser extent), empirical research need to focus on these newer characteristics of firms. These characteristics need to be properly identified, defined and measured and finally recognized by academic researchers as well as financial intermediaries (such as banks) and finally corporate finance professionals.

The study has made a modest beginning by identifying some-notably globalization. The study also makes an important contribution to the repertoire of studies pertaining
to investigation of the relationship between financial liberalization and financial crisis and corporate balance sheets.

---------0---------