CHAPTER VII: SUMMARY AND CONCLUSIONS

7.1 Limitations

As in case of any empirical research, this thesis also has several areas of limitations of the presented empirical analysis. The study recognizes the following limitations.

7.1.1 Liberalization-Financial Liberalization

Though the title of the thesis is “liberalization” thesis refers to only financial liberalization and does not include trade liberalization, etc.

7.1.2 Sample Size

The sample is 257 listed non finance non government companies. CMIE has a data base of about 2200-2300 listed non finance non government companies. The sample therefore represents about 10% of the universe available. The study could have larger sample but for the panel data structure which requires observations for ten consecutive years. Since there is a trade -off between the size and number of years, the study takes the present size.

7.1.3 Data Limitations

There are three major limitations, namely (a) the limited explanatory power of the data; (b) the limited explanatory power of variables; and (c) the limited explanatory power of the determinants of debt maturity structure.

7.1.3 Panel Data Limitations

Panel Data are prone to all the viz. multicollinearity, autocorrelation and heteroskedasticity. Hence more robust estimation methods capable of unbiased and efficient estimates under various conditions are required. More particularly,
Generalized Methods of Momentum ("GMM") instead of OLS used in this study could have provided more robust estimation.

Since panel data requires observations over consecutive years, data on longer period than the 10 years is difficult to obtain. Should the data be available for larger set of companies for longer periods say, 15 years, could have been used.

7.1.4 Accounting Data

The data used for the empirical analysis (mainly financial ratios) have same limitations as those of accounting data. Although the accounting data are called hard data, it is widely known (accounting fraud of Satyam Computers Ltd in India)\textsuperscript{101} that they need to be interpreted with caution if not skepticism. Despite their limitations, these data are the best available and therefore bring some added value.

7.1.5 Exclusion of Some Information-Credit Rating

Some studies on the debt maturity structure also employ credit ratings (Stohs and Mauer, 1996) or some default measures (Scherr, Hulburt, 2001), (Heyman et al., 2003) as proxies for the corporate quality as one of the determinants of the corporate debt maturity structure. Since it is difficult to obtain data on credit ratings on an individual company the study does not include credit rating as a measure of firm quality.

7.1.6 No Explicit Definition of Variables

Since the firm attributes such as leverage, growth and quality are not exactly defined, these are open to various interpretations Accordingly various researchers

\textsuperscript{101} New York Times (January 2009), “Mr. Raju said Wednesday that 50.4 billion rupees, or $1.04 billion, of the 53.6 billion rupees in cash and bank loans the company listed as assets for its second quarter, which ended in September, were nonexistent”. 
across countries and regions and time have chosen the definitions and formulas as per their local accounting convention and /or availability. Like-wise the study also uses the local conventions.

7.1.7 Difference in Formulae

Even if there is a general consensus with the determinant name interpretation such as collateralizable assets, there are different formulas for the variables depending on what should or should not be included in the formula.

7.1.8 Balance Sheet- Off Balance Sheet Financing

The study excludes off-balance sheet items such as leasing, an important item for the corporate debt maturity structure assessments. Data on off balance sheet financing are not captured by the data base that has been used. And since leasing as a sort of long-term debt is not included in computations, long-term debt computations might be undervalued. Sometime these amounts can be so large to jeopardize the very existence of a firm. It may be pertinent to recall here that Enron\textsuperscript{102} which had huge amount of off balance sheet debt went bankrupt.

7.1.9 Corporate Bond Spreads

This study uses volatility of yields on commercial papers (which have maximum maturity of 90 days) as data are easily available on website of RBI. The results could have been different had the study used different measure i.e. volatility of yields dated (longer than one year) corporate bonds.

Though reported daily in newspapers (such as Business Standard) and also information vendors (such as Bloomberg and Reuters), historical data on corporate bonds

\textsuperscript{102} Financial Times January 29 2002 “By the end of 1999, according to company estimates now in question, it had moved $27bn of its total $60bn in assets off balance sheet.”
bond yield and spread (difference between government bond yields of similar maturities and corporate bond yields of various ratings such as AAA, AA) are not publicly available. Moreover, in India corporate bond trading has started late. The data bases maintained by FIMMDA, Debt online and CRISIL are not accessible to researchers.

7.1.11 CMIE Data Base

All those limitations that the CMIE’s Prowess Database have are obviously limitations for this study as well. For instance, the study relied on CMIE’s classification of debt maturity i.e. short term borrowing and long term borrowing. Since the dependent variable in this study is ratio of long term to total borrowings, any misclassification of maturity by CMIE Prowess, if any, will render the conclusions of the study invalid.

Despite all the limitations, the results do improve knowledge of the firm’s characteristics in debt maturity decision-making.

7.3 Conclusions

Using panel data for a sample of 257 non finance non government companies for 10 years (2001-2010), the thesis set out to investigate the effect of financial liberalization on debt maturity structure. The thesis also investigates the contagion effect of global financial crisis during 2008-9 on the Indian companies using this data.

The Long Term Effect of Financial Liberalization

(1) Indian firms have transformed themselves by becoming more financially integrated globally.
(2) Indian firms have reduced their leverage over the last 10 years and rely more on long term funds

(3) Indian firms have reduced their long term borrowing as proportion of total borrowing over the years

Financial Crisis

The results of the hypotheses testing show that financial crisis affected the entire economy including the level and volatility of interest rates as well as the debt maturity structure of companies.

7.4 Implications for Corporate Finance

Since the explanatory power of variables is limited, the following implications for corporate finance in India.

- Newer facet of Indian firms such as globalization are emerging which might have implications for their capital structure

- Market power and firm’s uniqueness have important role to play both in the capital structure and debt maturity structure

7.5 Further Research

7.5.1 Sample Size-Larger

Since this study has a data set of 257 companies for 10 years, further research can be conducted for larger set of non finance and non government companies for longer period (say 15 years).
7.5.2 Classification of Debt Maturity

Since other than classifying total debt/borrowing as either short or long term (repayable after one year), the data base does not give more precise data on maturity, a more robust definition of debt maturity can be used to carry out future research.

Debt maturity, being a stock (balance sheet) variable, it is an effect of cumulative debt issues and repayment. Hence lagged debt maturity structure\(^{103}\) instead of the current year, could provide more insights. For this purpose, partial adjustment model (“PAM”) and distributed lagged variables models could be used for future research.

Guedes and Opler (1996) use an incremental (“cash flow”) approach instead of the “balance sheet” approach (used by this and other Indian and most of the overseas empirical studies). According to Guedes and Opler (1996:1810) “the incremental approach is well-suited to test theories that rely on state variables that fluctuate substantially over time. For example, it is difficult to test signaling models of maturity choice using the average maturity of outstanding debt issues because these models rely on transient informational asymmetry between managers and investors. Similar arguments can be made about theories that rely on a firm’s tax position and its liquidity risk.” They do admit that cash flow approach may not work in certain situations\(^ {104}\).

---

\(^{103}\) Mitchell (1993) uses lagged long-term debt ratio to control for the maturity structure of a firm’s outstanding debt.

\(^{104}\) Guedes and Opler (1996:1810), “the incremental approach is not well-suited to test theories that relate the properties of a firm’s asset mix to the maturity of its liabilities because new debt issues may have a maturity that is far from the average maturity of a firm’s assets.”
As mentioned above, since debt maturity is a stock variable i.e. balance sheet and not a cash flow variable, it might be a good idea to consider debt issues i.e. cash flow variables while investigating the effect of macroeconomic variables.

Since both autocorrelation and heteroskedasticity are present in the data set, more sophisticated techniques such as Generalized Methods of Moments (“GMM”) can be used. Also more dynamic methodology that is available today could be used.

7.5.3 Explanatory Variables-More Contemporary and Relevant

**More rigorous attributes of financially integrated companies and also Unique Firms**

The study has constructed, for the first time, various indices that measure the extent of globalization, uniqueness and market power. However, there is a need to build a sophisticated measure.

**Globalization-Variables**

Since Indian MNCs have different that is, global growth opportunities, more relevant measure will be global P/E ratio instead of the P/B and other measure that has been used in this study. Bekaert et al.(2007) have proposed using price earnings ratios of global industry portfolios for globally integrated companies.

7.5.4 Debt Composition-Terms and Currencies

Apart from the above, debt composition in the Indian context is not researched adequately. As Indian corporates are faced with the challenge of redeeming Foreign

---

105 Bekaert et al.(2007), "Under integration, the difference between a country's local PE ratio and its global counterpart should not predict relative growth, but the difference between its "exogenous" global PE ratio and the world market PE ratio should predict relative growth".
Currency Convertible Bonds ("FCCBs") in the next one to two year, currency composition and maturity structure of foreign currency debt need to be investigated. Also the subject of debt lends itself to wide variety of studies such as: secured vs. unsecured debt, securitized vs. unsecuritized debt (bank loans), debt privately placed vs. public issue, and so on.