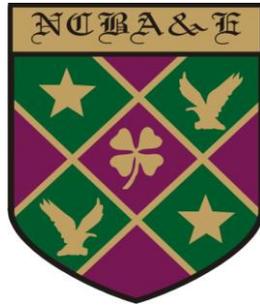# *National College of Business Administration and Economics Lahore*

THEORETICAL AND EMPIRICAL FOUNDATIONS FOR THE ANTECEDENTS OF DEBT SPECIALIZATION: A NEW INSIGHT TOWARDS OPTIMAL DEBT STRUCTURE

BY

KANWAL IQBAL KHAN

DOCTOR OF PHILOSOPHY
IN
BUSINESS ADMINISTRATION

AUGUST, 2015

NATIONAL COLLEGE OF BUSINESS ADMINISTRATION AND ECONOMICS

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**A dissertation submitted to
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In the name of ALLAH,
The Most Beneficial,
The Most Merciful,

NATIONAL COLLEGE OF BUSINESS ADMINISTRATION AND ECONOMICS LAHORE

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Dissertation Committee:

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Chairman

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Member

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Member

_____
Rector
National College of Business
Administration and Economics

DECLARATION

It is to declare that this research work has not been submitted for obtaining similar degree from any other university/college.

KANWAL IQBAL KHAN
August, 2015

Dedicated To

My Parents

ACKNOWLEDGEMENT

First and foremost, I would like to thank Allah Almighty for His grace and sustenance during the course of the project; I could not have completed this work without the strength He gave me. I am also indebted to many people; without whose help I could not have completed my research.

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RESEARCH COMPLETION CERTIFICATE

Certified that the research work contained in this thesis entitled **"Theoretical and Empirical Foundations for the Antecedents of Debt Specialization: A New Insight Towards Optimal Debt Structure"** has been carried out and completed by **Kanwal Iqbal Khan** under my supervision during her **Ph.D. Business Administration** Programme.

(Dr. Faisal Qadeer)
Supervisor

SUMMARY

Recently, scholars have made extensive efforts to understand the debt structure composition of the organizations. Specifically, to know about the causes of debt specialization, concealed in identifying the antecedents of it. This question is essential not only for establishing the field of debt structure, but also for the financial managers to design corporate financial strategy in a way that lead to attain optimal debt structure. In order to advance our understanding of this extremely important conversation in corporate finance, this study is intended to investigate the theoretical and empirical foundations for the antecedents of debt specialization and the extent to which capital structure theories adequately explains the reasons of it.

The empirical investigation on this emerging phenomenon is also limited because very few studies i.e., Colla et al., (2013), Li et al., (2015) and Tengulov, (2015) are conducted in this context. Therefore, research scholars are still in infancy to generalize the predictors of debt specialization. This justifies the need for further empirical investigation for more antecedents of debt specialization which are theoretically relevant. The present study is subsequently one of the prime studies that attempts to contribute to the recent evolving debate of debt structure by including a wide range of theoretically supported organizational and non-organizational antecedents of debt specialization. In this way, it provides further empirical and theoretical, cross country evidences to support the existence and prevalence of the strategy.

In order to address these issues, a panel data approach is used for 410 non-financial publically traded companies listed at Karachi Stock Exchange during the period of 2009 to 2013. The secondary data for the study variables is collected from multiple sources. We also perform certain data selection rules and end up with 2,010 company-year observations. This research also discusses and clarifies several measurement caveats related to the study variables and then justified them on the basis of nature of the study, capital structure theories and prior empirical work.

The data is subsequently analyzed through various statistical techniques such as cluster analysis, threshold analysis, conditional debt structure, group comparisons, correlation and linear regression modeling to answer the research questions. It has utilized Tobit regression models because the dependent variable; debt specialization is fractional in nature and its values are bounded between zero and one. In this case, the traditional linear probability models (i.e. Ordinary least squares regression model) are problematic as it does not yield persistent parameter estimates because censored sample is not representative to

the population (Cameron and Trivedi, 2010). Instead, Tobit regression models are appropriate to provide better statistical inference on the estimated parameters and help to significantly advance the standard theories.

The results authenticate the existence and relevance of debt specialization phenomenon across organizations by specifying that 67% Pakistani companies rely on only one type of debt. In order to better explain the prevalence of this strategy in publically traded companies, new antecedents are introduced, based on the insights from capital structure theories and the existing literature. These factors provide the mounting proof in the favor of theoretically suggested and empirically recognized nine organizational and eight non-organizational factors. It also confirms the applicability of previously identified antecedents in the context of developing countries like Pakistan even in the presence of distinct institutional, economic and cultural differences.

Furthermore, it has found fifteen most important predictors of debt specialization which are related to all most all the categories of organizational and non-organizational factors. Such factors are shown to be influential in determining the debt specialization strategy adopted by the organizations and are taken into account by the existing theories in the finance paradigm. The outcomes of the current study also suggest several explanations for practicing this strategy, and show that companies employing few types of debt are more opaque, have higher bankruptcy and agency costs. Besides these causes, small, new, less profitable and growing companies follow this strategy to remove constraints to the debt market. Whereas, large, mature and profitable companies adopt this strategy to reduce flotation cost, operational risk and also due to good market reputation. The study discusses the results and draws several insights along with suggestions for theory and practice; limitations and prospect directions.

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CHAPTER 1

INTRODUCTION

1.1. STATEMENT OF TOPIC AND AIMS

There has been rising scholarly interest in, why *debt specialization* takes place? In other words, to understand why organizations include 'few debt types in their debt structure'? This question is important in designing the financial strategies to achieve optimal debt structure. To address this question we need to identify the antecedents of debt specialization. In order to advance our understanding of this extremely important conversation in corporate finance, this study attempts to investigate the theoretical and empirical foundations for the antecedents of debt specialization. With the exception of Colla et al. (2013), who recently confirm *thirteen factors* as antecedents of debt specialization, we are still in infancy to generalize the predictors of debt specialization. We need to go beyond the traditional organizational factors and explore some new organizational and unexplored non-organizational factors in this regard. This motivates the current study to contribute to the recent and emerging debate.

Apart from the thirteen factors identified so far, the capital structure theories and debt structure literature provide other organizational factors categorized as: *liquidity, profitability, leverage, nature of asset, risk & growth factors, controlling authority, nature of expense* and *image factors* that may be the possible antecedents of debt specialization. Thus their role needs to be scrutinized in explaining debt specialization decision of the organizations. Many other non-organizational factors pertaining to the *debt market, industry, macroeconomic* and *stock market* are also considered to be important in explaining the debt structure heterogeneity on the basis of prior empirical and theoretical evidences and the connected logic. They might also affect and influence debt specialization but are never explored to the best of our knowledge.

In sum, this study through a wider net takes an ambitious approach to empirically investigate thirty-eight possible factors by utilizing a large data set as antecedents of debt specialization. Specifically, this study aims to a) check the relevance of debt specialization across organizations; b) identify and empirically test the antecedents of debt specialization; c) re-testify the recently identified antecedents of debt specialization with a unique data set.

1.2. STUDY BACKGROUND

Capital structure is an area of finance that gains the attention of many scholars since the seminal work of Modigliani and Miller (1958) who postulate the *irrelevance theory* that claims capital structure is independent of firm's value and there is no concept of optimal capital structure. Since now optimal capital structure is become an area of immense research. Organizations are still facing difficulties in deciding how to achieve it. Many distinct ways of financing and countless combinations of debt equity are available, that lead to achieve optimal capital structure. But this debate is incomplete without discussing the debt structure (Lemmon et al., 2008) that remains the less explored part of the capital structure.

Previously, researchers devote their attention to understand the capital structure of the organizations (Graham and Leary, 2011; Lemmon and Zender, 2010) and consider all types of debt as uniform (Albring et al., 2011; Dang, 2011; Denis and McKeon, 2012). Rauh and Sufi (2010) are amongst the first who explain the heterogeneous nature of debts and till now debt structure choices are become hotly contested topic in the field of corporate finance. This also creates interest among the financial managers on how to select a particular type of debt among different options.

Now, scholars and managers are becoming more curious to know the reasons for including fewer debt types in their debt structure, i.e. knowing about the reasons of debt specialization. This conversation is essential not only for establishing the field of debt structure, but also for the financial managers to design corporate financial strategy in a way that may lead to attain optimal debt structure. Debt specialization is an emerging concept that needs to be theoretically developed. However, the advancement of this concept is concealed in the findings of its antecedents. Previously, Colla et al. (2013) find twelve organizational and one non-organizational factors as antecedents of debt specialization.

Traditionally, the preponderance of debt structure studies focuses on organizational factors (Povoa and Nakamura, 2014; Tengulov, 2015). However, Lemmon et al. (2008) claim that the features of leverage are largely unexplained by the previously identified determinants. Recently, Graham et al. (2015) confirm this notion by identifying the organizations' inability to explain variations in debt structure over time is either due to some omitted organizational factors that need to be identified in the literature or because of macroeconomic factors. Thus, this highlights the need for further empirical investigation based on the theoretical understanding about the concept.

The existing theories (trade-off, pecking order, agency cost and market timing) acknowledge the multitude of factors that may contribute to the debt specialization decision of the organizations. The role of many organizational factors; current ratio, return on assets and return on equity, financial leverage, asset growth, depreciation ratio, earnings volatility, return on asset volatility, asset maturity, quality and business group affiliation is yet to be fully explored in the literature. Similarly, non-organizational factors pertaining to debt maturity, tax ratio, financial ratio, regulation, median industry leverage ratios, median industry growth ratios, government borrowing, expected inflation rates, GDP growth, dividend payers, dividend payout ratio and dividend yield ratio demand further investigation regarding debt structure choices.

The present study is one of the prime studies that systematically and thoroughly investigates the most important predictors of debt specialization apart from the fact that there is a serious lack of academic literature on the topic. It attempts to contribute to the recent emerging debate in the debt structure by including a wide range of theoretically supported organizational and non-organizational antecedents of debt specialization. In this way, it provides further empirical and theoretical, cross country evidences to support the existence and prevalence of the strategy. Previously, researchers confirm the existence of debt specialization phenomenon among the public limited companies only but till now no study is examined the applicability of debt specialization strategy across organizations.

This study is aimed to proffer new evidences for the relevance of debt specialization strategy through a comparative analysis of traditional organizational and non-organizational characteristics; profitability, age, size, leverage, growth opportunities, dividend payments, credit rating, regulations and business group affiliation. In this manner, it broadens the scope of the study and provides some new understandings for the existence and prevalence of this strategy across organizations. Therefore, the first and foremost endeavor of this study is:

Research Question 1: Is debt specialization strategy applicable to all types of organization irrespective of their characteristics?

As stated earlier, the academic debate on the antecedents of debt specialization is still emerging and requires further empirical investigation. This study is intended to extend the work of Colla et al. (2013) through the inclusion of additional variables categorized as organizational and non-organizational factors into the model. The research is carried out by including theoretically suggested factors comprising of fourteen organizational and fifteen non-

organizational factors which provides the mounting proof for the additional antecedents of debt specialization and thus contribute to the recent evolving debate. Accordingly, the second endeavor of this study is:

Research Question 2: Which of the theoretically suggested organizational and non-organizational factors are antecedents of debt specialization?

This study is also intended to find out the most important predictors of debt specializations among the thirty-eight theoretically suggested and empirically identified factors; containing twenty two organizational and sixteen non-organizational factors. Previously, Chang et al. (2014) and Frank and Goyal (2009) also examine a rich set of firm level, country specific economic and institutional determinants of capital structure and recognize ten most reliable factors explaining the leverage decisions of the organizations. Therefore, this study is conducted to ascertain the most significant predictors of debt specialization. It expands the empirical research on antecedents and provides a brief description about the most prevalent antecedents of debt specialization to the organizations. Thus, the third endeavor of this study is:

Research Question 3: What are the most important predictors of debt specialization?

The earlier studies state that the main reasons for practicing debt specialization is to minimize bankruptcy cost, monitoring costs and limited ingress to the debt market (Povoa and Nakamura, 2014). Li et al. (2015) and Tengulov (2015) further argue that organizations having poor accounting quality, face more deterioration in stock market prices; have lower investment opportunities, employ debt specialization strategy. On the same grounds, Colla et al. (2013) posit that new and unrated companies, relatively smaller in size, with low level of leverage, profitability and tangibility adopt this strategy. This study intends to substantiate the findings of previous studies and provides a new direction to the researchers by claiming that this strategy is equally important for all types of organizations irrespective of their size, age, profitability, leverage, growth opportunities and dividend payments.

In this way, it contributes to the large and growing literature on the cause of debt specialization by its theoretical explanation. This study postulates if small, new and less profitable companies are using debt specialization strategy as a cost minimization mechanism, then large and mature companies may also employ it for the same reasons; to reduce their operational risk, economize flotation costs etc. Sometimes, mature, large and profitable companies may also implement this strategy due to good market reputation that brings them in a

better bargaining position to select the debt instruments according to their requirements. Based on the above considerations, the fourth endeavor of this study is:

Research Question 4: What are the possible causes for debt specialization?

Recently, a growing body of research (Fan et al., 2012; Huang and Shen, 2015; Joeveer, 2013) start focusing on cross country analysis of capital structure and report a significant difference in institutional settings; tax policies, legal system and economic environment. These studies divulge the existence of borrowing diversity across countries that affect the capital structure decisions especially the debt structure composition of the organizations. However, this is also a well-established reality that all the organizations existed in either part of the world; try to economize their borrowing costs. For this purpose, they always believe in cost minimizing strategies.

Debt specialization, in this prospect, can be used as a cost minimizing strategy by the organizations to curtail the cost of financial distress, flotation, agency conflicts, information collection and monitoring cost. Previously, this strategy is only tested in the context of developed countries like the United States which has the different financial, economic and legal environments than other developing countries as the Pakistan. However, there is a dire need to investigate this strategy in other countries, especially in the context of developing countries.

The context of the present study is Pakistan, which is a developing country with weak legal systems, inconsistent economic policy, and developing financial markets like many developing countries. Moreover, the concentrated ownership structure, limited investor protection, cross holdings and family dominance are the additional features of Pakistani financial markets. This study aims to re-testify the recently identified antecedents of debt specialization in the context of developing country like Pakistan, which reaffirms the findings of the prior studies and provides new evidences for the presence of debt specialization. On the basis of above deliberations, the fifth endeavor of this study is:

Research Question 5: Whether previously identified antecedents of debt specialization developed in western settings apply equally to the context of emerging economies like Pakistan?

In a nutshell, the purpose of this study is to add to the growing literature of debt specialization by scrutinizing the wide spectrum of antecedents. To the

best of our knowledge, this study is one of the first to provide the larger data evidence on debt structure of the organizations, especially in the context of Pakistan.

1.2.1. Justification of the Study

Debt specialization is important to study due to incongruences in financing behavior of the organizations around the world. Even though, capital structure theories are unable to justify the financing behavior of different countries because of cultural, economic and institutional disparities. Therefore, there may be the chances of unavailability of the same debt instrument, market situations, economic policies and institutional regulations across countries. This highlights the dire need to examine the debt specialization strategy, especially in the context of developing countries to identify more antecedents of debt specialization.

It is an emerging concept in the field of corporate finance that needs to be theoretically advanced by investigating more empirically identified and theoretically related antecedents of it. Previously, very few studies i.e., Li et al. (2015), Povoa and Nakamura (2014) and Tengulov (2015) are conducted in this context. Therefore, research scholars are still in infancy to generalize the predictors of debt specialization. This justifies a need for further empirical investigations of more antecedents of debt specialization which are theoretically relevant.

It is necessary to focus on the concept of debt specialization due to the borrowing diversity between developing and developed countries (Fan et al., 2012). Previously, most of the capital structure studies are conducted in the context of developed countries (Beattie et al., 2006; Ozkan, 2001) especially their main focus is the United States (Aggarwal and Kyaw, 2010; Denis and McKeon, 2012; Graham and Leary, 2011; Morellec et al., 2015). Recent cross country studies of capital structure decisions by Chang et al. (2014) divulge that previously identified capital structure antecedents concerning the United States are unable to explain capital structure decisions outside the United States, both in developed countries (Rajan and Zingales, 1995) and in developing countries (Booth et al., 2001).

The debt specialization concept is also developed in the context of United States but in order to advance our knowledge about the concept, it is essential to re-testify the identified factors and find out some new antecedents of debt specialization. In this regard, it is needed to use an ambitious approach by taking a variety of factors with a larger data set. Pakistan is suitable context for the

current study because the present study includes thirty-eight factors comprising of organizational and non-organizational. It also uses the panel data of 410 publically traded companies from 2009 to 2013.

Overall, the value of this study moves around its contribution in the capital structure theories, debt structure, financial strategy and optimal contracting literature. It also has practical implications for the managers, organizations as well as for the policy makers; and findings that are significantly plausible.

1.3. SIGNIFICANCE OF THE STUDY

The significance of the present study is threefold— for the academia, managers as well as for the policy makers. To begin with, it is a first attempt to proffer evidence for the relevance and application of debt specialization strategy across organizations. This study reveals that there are no significant differences in age, profitability, growth opportunities, credit rating and dividend policy of the organizations employ debt specialization strategy. In this way, it amplifies the scope of the strategy as well as assists managers to follow it as a cost minimization mechanism for their organizations to economize their borrowing cost.

The scholars are directing to extend the empirical research on the antecedents of debt specialization. Therefore, present study empirically substantiates the significance of traditionally employed antecedents and provides novel evidences in favor of newly identified antecedents of debt specialization. It will enrich the debt structure literature by adding new insight into the theory and practice. Similarly, organizations are inquisitive to know which of the factors are reliably important in the journey to obtain optimal debt structure. This study will be able to guide them to consider non-organizational factors as debt market, industry, macroeconomic and stock market factors along with organizational factors in designing their debt structure.

The researchers are concerned to integrate debt structure choices with financial strategy by defining the mechanism through which financing decisions are related to the strategy. This study significantly vindicates that debt structure composition has an important implication in designing the financial strategies. Likewise, management is also interested in the inputs from the functional areas of finance such as debt structure in order to design their strategies. In this regard, this study aims at facilitating the financial managers to include only those types of debt which cope with the crisis and add value to the organizations.

It also provides assistance to the policy makers to put stress upon the regulatory authorities and credit rating agencies to improve their rating methodology and regulatory criteria. They must ensure that the working of these authorities and agencies is transparent because financial institutions and management rely on their assessment reports. In case of wrong judgment, their decision making will be at stake. Therefore, policy making spheres guarantee that the evaluation criteria is appropriate so that financial managers can design their strategies correctly. This will also help the organizations to follow debt specialization strategy in order to appropriately incorporate with the expected risks.

Moreover, there is no prior study conducted before that substantially relates a wide variety of organizational and non-organizational factors (i.e., thirty-eight factors) divided in twelve categories, with debt specialization. This interaction is a unique feature of the current study. It also provides empirical and theoretical cross organizations evidences to support the existence and prevalence of the strategy.

1.4. STUDY VARIABLES

1.4.1. Debt Specialization

Debt specialization is the tendency to rely predominantly on fewer types of debt or even on the single debt type and the level of debt specialization varies across different organizations.

1.4.2. Organizational Factors

Organizational factors are directly linked with the organizational contextual characteristics and also directly influence the financing choices of the organizations.

1.4.2.1. Liquidity

Liquidity explains the extent to which an organization has readily available funds out of total assets to meet its short term debt obligations and sudden cash needs.

a) *Cash holding* is the proportion of an organization's cash and cash equivalent assets including short term investment to its total assets.

b) *Current ratio* is the proportion of current assets of the business in relation to its current liability.

1.4.2.2. Profitability

Profitability explains the ability of the organization to generate cash flows as compared to its expanses and other relevant cost during the business cycle.

a) *Net profit ratio* is a percentage of the amount of total sale (local or export) in rupees left over after paying all expenses.

b) *Return on assets* is the percentage of profit that an organization earns by using its assets efficiently and effectively.

c) *Return on equity* is the amount of net income returned as a percentage of shareholders equity.

1.4.2.3. Leverage

Leverage measures the degree to which an organization is financed with borrowed money.

a) *Financial leverage* is the degree to which an organization is using long term debt to finance its assets that eventually increases the sale volume and earnings of the organization.

b) *Book leverage* is the degree to which organization is utilizing its total debts to finance its assets and leads towards higher gains.

c) *Market leverage* is the ratio of total debts to total equity including external claims of debt holders and market value of shareholder's equity.

1.4.2.4. Nature of Asset

Nature of asset is a measure of management effectiveness in utilizing organizational assets.

a) *Asset tangibility* is a measure of collateral level that organizations offer to their debt holders.

b) *Asset maturity* is the ability of organization to meet its financial obligations.

c) *Asset growth* is the annual percentage changes in the total assets of the organization.

1.4.2.5. Risk & Growth

Risk implies uncertainty in profit and danger of loss in the business operations. Whereas *growth* refers to the possible future investment opportunities expected by the organizations by using their financing mix.

a) *Earnings volatility* is the standard deviation of the five year's annual profit before tax and depreciation, scaled by the average assets.

b) *Default risk* is based on the weighted composite of five financial ratios, used to assess the likelihood of bankruptcy for the organization.

c) *Return on asset volatility* is the ratio of annual net income after taxes and depreciation to the five year's average total assets.

d) *Sales growth* is the percentage changes in the volume of current year sale on the basis of previous year sale.

e) *Market to book ratio* is the proportion of market value of equity over book value of equity.

1.4.2.6. Controlling Authority

Controlling authority is the authority having administrative power and control over the independent business entities. They are responsible for directing and managing the operations of the related business entities.

a) *Business groups* are the set of legally autonomous business organizations, share common ownership and administrative control and are acclimated to take coordinated actions.

1.4.2.7. Image

Image expresses the perception of stakeholders about the organization.

a) *Size* refers to total amount of assets that an organization owns.

b) *Age* is the time in years since the public limited company announces its first IPOs.

c) *Quality* is the year to year percentage changes in the total earnings of the organization.

1.4.2.8. Nature of Expense

Nature of expense explains the ability of organization to generate positive cash flows after pay off all expenses.

a) *Depreciation ratio* is the proportion of depreciation to fixed assets and explains how quickly organization is replacing its fixed assets.

b) *Operating expenses ratio* is the ratio of operating expenses to net sale that indicate the proportion of net sale consumed by operating costs available to meet financial and other expenses.

1.4.3. Non-organizational Factors

Non-organizational factors consist of those factors that indirectly influence the capital structure choices and financing decisions of the organizations.

1.4.3.1. Debt Market

Debt market factors act as a tool for assessing the organizational ability to meet its financial obligations.

a) *Credit rating* is an evaluation process by Pakistan credit rating agency (PCRA) and Japan credit rating-vital information services (JCR-VIS) agency for assessing the credibility of the organizations that issue either debt or equity.

b) *Debt maturity* is the ratio of total debts maturing in more than one accounting period.

c) *Tax rate* is the percentage of organization's earnings that is owned to the state.

d) *Financial ratio* is the percentage of the amount of net sale in rupees available to the organization for paying its financial expenses.

1.4.3.2. Industry

Industry factors are the tools use to understand the organizational position with respect to its rivals in the same industry.

a) *Regulations* are the rules and regulations imposed by regulatory authority related to a specific industry.

b) *Median industry leverage* is the median value of leverage for all organizations existed in a particular industry during the specific year under study.

c) *Median industry growth* is the median value of growth for all organizations existed in a particular industry during the specific year under study.

1.4.3.3. Macroeconomic

Macroeconomic factors explain the trends of the economy rather than a certain population that affect the financing decisions of the organizations.

a) *Government borrowing* is the proportion of federal debt held by the public to gross domestic product of the country.

b) *Expected inflation rate* is the annual rate of change in the consumer price index of the country.

c) *GDP growth rate* is the year to year percentage changes in gross domestic product of the country.

1.4.3.4. Stock Market

Stock market factors act as an evaluating tool to measure the perceptions of investors about future prospects of the organizations on the basis of current performance.

a) *Dividend payer* is an indicator for the organizations that either pay cash dividends or have positive common stock dividends.

b)   *Dividend payout ratio* is the ratio of total amount of cash dividends divided by the profit after tax.

c)   *Dividend yield ratio* is the annual dividends paid to equity holders divided by current stock market prices.

1.5. METHODOLOGY

This study uses a panel data approach to achieve analytical objectives in ascertaining the most important organizational and non-organizational antecedents of debt specialization. This research is passive in nature, based on ex post facto non-experimental design as it neither involves in manipulation of dependent and independent variables, nor it is concerned with the random selection of the unit of analysis (companies, industries, etc.). It employs the data of all non-financial public limited companies i.e., 410, remains listed at Karachi Stock Exchange during the period of 2009-2013. We also perform certain data selection rules and end up with 2,010 company-year observations.

The secondary data for the study variables is collected from multiple sources: the annual reports, analysis reports of Karachi Stock Exchange, balance sheet analysis report by State Bank of Pakistan, credit rating reports of the Pakistan credit rating agency (PCRA) and Japan credit rating-vital information services (JCR-VIS), economic survey of Pakistan, world development indicator report and from the business recorders. This research also addresses and clarifies several measurement caveats related to the study variables and then choice of variables is justified on the basis of nature of the study, capital structure theories and prior empirical work. The detailed methodology has been discussed in Chapter 3.

1.6. DATA ANALYSIS

The secondary data related to 410 non-financial companies, is entered in Excel 2013 with due care and diligence. Later, data is transferred to Stata version 13th and SPSS version 19th for statistical analysis. This study uses various statistical techniques to examine the data through Descriptive Statistics, Industry and Time Based Analysis. The existence of debt specialization is confirmed by means of Cluster Analysis, Threshold Analysis and Conditional Debt Structure. The cross organization applicability and relevance of the strategy is checked on the basis of Group Comparisons.

This study measures Bi-variate Pearson Correlation for all study variables and Regression Models (Tobit and Probit) for all categories of organizational and non-organizational factors to explain which organizations are involved in debt specialization. Stepwise Linear Regression Modeling (Tobit and Probit) is used to answer the research questions by providing the most important predictors of debt specialization. Hierarchical Linear Modeling is employed to explain the reasons of debt specialization. The detailed analysis and interpretations of the results are discussed in Chapter 4.

1.7. FINDINGS

This study adopts various econometrics approaches to answer the research questions. The findings are consistent with the capital structure theories and prior literature. This indicates that the methodology undertaken and statistical techniques employed are appropriate enough to meet the research objectives. It purposes five major findings: *Firstly,* it provides the evidence for the existence and prevalence of debt specialization across organizations. The results of the statistical methods manifest that 67% Pakistani companies rely on only one type of debt and short term debts are the most dominant type of debt, followed by the secured and other long term debts.

These outcomes also reveal that this phenomenon is equally important for all the public limited companies irrespective of their age, profitability, growth opportunities, credit rating and dividend payments. *Secondly,* it provides evidence in the favor of theoretically suggested and empirically recognized ten organizational and eight non-organizational factors. *Thirdly,* it has found fifteen core predictors of debt specialization including eleven organizational and four non-organizational factors. The important predictors found in this study is related to all most all the categories of organizational and non-organizational factors.

Fourthly, this study discovers the reasons behind practicing debt specialization strategy are: to economize expected bankruptcy cost, agency cost, information collection and monitoring cost. Moreover, small, new, less profitable and growing companies follow this strategy to remove constraint to the debt market. Whereas, large, mature and profitable companies adopt this strategy to reduce flotation cost, operational risk and also due to good market reputation. *Finally,* it has confirmed the existence of previously identified antecedents of debt specialization in the context of developing country like Pakistan. The detailed discussion on findings, implications, limitations with future directions and contributions are stated in Chapter 5.

CHAPTER 2

LITERATURE REVIEW

2.1   CAPITAL STRUCTURE

Corporate finance is concerned with maximizing shareholder's wealth through the acquisition and allocation of funds (Ross et al., 2013). Financing decisions go side by side with investment decisions because financing mix appropriately fulfills the investment needs of the organizations in terms of cash flows and timing. Capital structure deals with fund acquisition side of corporate finance with the mix of debt and equity (Ehrhardt and Brigham, 2016). These sources of finance have important consequences for the organizations and can affect organizational value as well as shareholder's wealth. Debt is least costly for the organizations but after sometimes, increasing the debt level also increases the financial risk and earnings volatility. That is why most of the financing decisions are based on risk-return trade off.

The literature on capital structure has significantly been advanced after the voluminous work of Modigliani and Miller (1958) who postulate the irrelevance theory that claims the value of the firm is independent of its capital structure and there is no concept of optimal capital structure. The propositions of Modigliani and Miller provide the basis for the development of modern capital structure theories. A number of theories have been developed during the past several decades by relaxing some of the key assumptions of these prepositions; perfect market, no taxes, information asymmetry, transaction cost and bankruptcy cost.

To date, consequently various capital structure theories have been advanced that further highlight the significance of capital structure decisions for the organizations. These theories are either based on trade off decisions of risk and return or asymmetric information or market timing. These theories include trade-off (Kraus and Litzenberger, 1973), pecking order (Myers, 1984; Myers and Majluf, 1984), market timing (Baker and Wurgler, 2002), agency cost (Jensen and Meckling, 1976) and signaling (Ross, 1977). The detailed information about them is provided in the next section.

2.1.1 Theories of Capital Structure

Trade-off theory is developed on the basis of Modigliani and Miller propositions. The central idea of the theory is that the company wants to achieve optimal capital structure by balancing the cost of financial distress and benefits of the tax shield (Kraus and Litzenberger, 1973). This theory is discussed under static and dynamic setting. *Static trade-off theory* concentrates on a single period leverage decision and follows the notion of optimal debt ratio (Baker and Martin, 2011) in making capital structure decisions to minimize the costs of prevailing market imperfections. These market imperfections include tax shield benefits of debt financing against the agency and financial distress costs of maintaining high debt levels (Harris and Raviv, 1990).

This theory is mainly based on the traditional trade-off theory where management is interested to take the advantages of tax shield of debt against the likelihood of bankruptcy (Myers, 1984). In traditional models, the main advantage of debt is the tax saving due to interest deductibility (Modigliani and Miller, 1963). Although tax advantages may encourage the organizations to utilize increasing amount of debt in their capital structure, but this may also cause to increase the costs of financial distress, putting opposing pressure on the organizations to avoid debt. The cost of financial distress increases as the company uses huge amount of debt and its repayment is greater than zero.

On the other hand, *dynamic trade-off theory* discusses the dynamic element of time that is usually ignored by the single period model of capital structure (Baker and Wurgler, 2002). This theory is presented by Fischer et al. (1989) who state that companies have optimal ranges of debt and equity ratios instead of a single point due to the transaction cost they face. Dynamic trade-off model can be considered as an improved version of the static trade-off model since market imperfections play a striking role and allow similar companies to show different capital structures.

In a changing environment, companies are continuously busy in restructuring their capital structure choices either to obtain optimal capital ratio (Elsas et al., 2014), or to achieve financial flexibility (Graham and Harvey, 2001) or control fluctuations in asset value over time. Ozkan (2001) argues that companies rapidly adjust their capital structure towards target leverage ratios. Nevertheless, their speed of adjustment fluctuates across organizations. In contrast, Basu (2015) has claimed the adjustment speed for long term debts in India is similar to other developed countries; the United States and United Kingdom. Kisgen (2006) further explains this notion by adding that firms adjust their capital structure toward the optimal level only when ratings are downgraded.

Recently, Drobetz et al. (2015) find out the speed of adjustment across large organization is 25% per year during the business cycle and support the economic relevance of trade of theory. They further believe organizations slowly adjust during recession and adjustment speed is most pronounced for financially constrained companies. The recent development in dynamic trade off theory regarding the speed of adjustment is more remarkable. It has magnificently described the heterogeneous nature of debts causes the rapid adjustment in debt structure.

As opposed to trade-off theory, the *pecking order theory* has no belief on the notion of optimal leverage ratio; obtain by weighing the cost and benefit of debt. It rather suggests that an organization's capital structure is an outcome of its financing prerequisites over time and its endeavor to minimize the adverse selection costs. Fama and French (2002) state that the variation in leverage is largely influenced by the net cash flows of the organizations under pecking order theory. It further posits the hierarchy of financing in the presence of asymmetric information.

This theory argues that organizations first utilize their internal funds (retained earnings) for financing, if their internal funds are depleted, then they go for debt financing and in the end they use the equity as a last resort of financing (Myers and Majluf 1984). Debt prefers on equity because of collateral provision (Arena, 2011) and monitoring benefit (Kale and Meneghetti, 2011) that reduces financing cost and information asymmetry (Myers, 1984). However, Elsas et al. (2014) have changed the pattern of borrowing by replacing retained earnings with equity instead of debt that keeps the leverage level unchanged.

The empirical studies have also successfully unrevealed that most of the capital structure evidences are synthesized either into the trade-off theory or into the pecking order theory. Beattie et al. (2006) analyze the financing patterns among European publically traded companies, and discover sixty percent of the selected companies support hierarchy of financing framework, which is consistent to the pecking order theory while half of the companies maintain their debt levels persistent to the trade-off theory. But, the survey results of Graham and Harvey (2001) support the relevance of static trade-off theory among the American companies. Their outcomes yield that 44% of the CEOs handle their financial policies in accordance to the static trade-off models by keeping in mind their target debt ratios.

Market timing theory advocates that financial managers consider market timing before issuing equity (Baker and Wurgler, 2002) and debt (Butler et al.,

2005). This theory does not believe on the notion of optimal capital structure. It considers the companies will issue shares only in case of favorable stock market condition when the shares are overvalued (Elsas et al., 2014) and purchase them back when they are undervalued. Managers, therefore, do not have an optimal capital structure in their mind when they decide their debt and equity ratios. They simply take the advantage of stock market conditions (Fama and French, 2002). This view is supported by Graham and Harvey (2001) who have conducted a survey study and found that 76% of the respondents consider overvaluation and undervaluation as important determinants of equity issuance. Huang and Ritter (2009) have also provided strong support in favor of the theory.

Initially this theory discusses the long run impact of equity market timing but later on it has started analyzing the effects of debt market timing on capital structure (Baker et al., 2003). Kaya (2012) has postulated that both debt and equity market timing significantly affect the capital structure choices of the organization. However, equity market timing is substantially more relevant to the firm's financing choices than debt market timing. Butler et al. (2006) criticize this theory by arguing that market timing related results often become spurious when market peaks are unknown ex ante.

Agency cost theory predicts that an optimal capital structure can be achieved by minimizing the conflict of interest between shareholders and management as well as between shareholders and debt holders (Jensen and Meckling, 1976). Managers who own the shares of the company often exploit the rights of other claim holders. Shareholders of leveraged firms have an incentive to invest in riskier projects with a high rate of return because in case of adverse selection, they will face only limited downturn in their share value whilst the debt holders tend to prefer less risky investments with guaranteed returns.

Therefore, Alderson et al. (2014) and Barclay and Smith (1995) have claimed that agency costs spawned by risk shifting activities, can be controlled by using either short-term or secured debts. Agency problem is also one of the reasons why the pecking order theory predicts that outside capital is more expensive. The *signaling theory* documents that organizations often use capital structure information to propagate their quality in the market (Ross, 1977) and only issue debt or equity in the presence of positive information. This theory is based on asymmetric information theory to show how high debt levels act as a signaling device for the outside investors to publicize the firm's ability to fulfill its debt obligations.

All these theories play the considerable role in understating the financial policy decisions of the organizations. However, various aspects of these theories are supported and, sometimes disproved empirically by scholars over time. Therefore, we can posit that neither of the view is succeeded in explaining much of the heterogeneity in capital structures (Graham and Leary, 2011) nor a single theory is sufficiently able to clarify the time series and cross sectional variations in the capital structure choices (Harris and Raviv, 1991; Huang and Ritter, 2009). Constantinides et al. (2012) have argued that this disparity may be because of the conditional nature of theories that is empirically difficult to distinguish.

Booth et al. (2001) argue that all the capital structure theories are equally valid across countries even though the solution of the capital structure problems may differ. This disagreement and controversy in the literature motivates the current study to include multiple capital structure theories (trade-off, pecking order, market timing, signaling and agency cost) as a basis for antecedents of debt specialization. This is helpful in establishing sound theoretical foundations for the reasons of debt specialization. But before going to the main concepts, it is necessary to understand the concept of optimal capital structure because all the capital structure theories move around this concept. The scholars are still making efforts to decide whether or not organizations have targeted optimal capital structure?

2.1.2 Optimal Capital Structure

Ever since the ground breaking work of Modigliani and Miller (1958) optimal capital structure has become a subject of intense research. Optimal capital structure is one that reduces the likelihood of bankruptcy and increases the organizational value (Vernimmen et al., 2014). An optimal contract entails the issue of debt, equity, or a mix of the two (Bose and Neumann, 2015). Distinct ways of financing and countless combinations of debt and equity are available to achieve it. But there is still no consensus in the literature whether an optimal capital structure actually exists or not? Traditional approach of capital structure believes on the presence of optimal capital structure and explain firm value can be increased through the judicious use of debt while net income approach and net operating income approach does not bolster this thought (Ahmadinia et al., 2012).

Capital structure theories have illustrated numerous financing methods and include multitude of factors to understand the optimal capital structure. It is already well established that optimal capital structure trades off the benefits of debt and cost of bankruptcy in a way that it maximizes the organizational value

(Modigliani and Miller, 1963). Zwiebel (1996) has highlighted the role of free cash flow considerations that helps to pursue the opportunities, enhances shareholder value (Ahmadinia et al., 2012). Faulkender and Petersen (2006) relate accessibility of funds with capital structure choices. Cross country studies show that capital structure decisions hinge not only on firm specific characteristics but also on the country's legal and market environment and macroeconomic conditions (Rajan and Zingales, 1995).

Several corporate finance studies have been led to figure out the determinants of optimal capital structure (Rajan and Zingales, 1995). Empirical evidences have suggested that credit rating (Kisgen, 2006), median industry leverage, tangibility, expected inflation (Frank and Goyal, 2009) are the vital determinants of capital structure choices. The corporate strategy (Barton and Gordon, 1987) financial flexibility (Graham and Harvey, 2001) and control issues (Harris and Raviv, 1991) also affect the capital structure choices of the organizations. Size, liquidity, profitability, non-tax debt shield, regulation, labor intensity and growth opportunities (Basu, 2015), investment ratio and fixed asset ratio (Elsas et al., 2014) also significantly explains the variations in the capital structure of the organizations.

In addition to these, many other determinants existed as volatility, uniqueness, expected stock return (Titman and Wessels, 1988) that elucidate the patterns of corporate financing towards the attainment of optimal capital structure. But, these theories and empirical results are still inconsistent and controversial. The researchers are trying to create the congruence on underlying assumptions of the optimal capital structure. The debate is not yet over. It is in fact incomplete without discussing the debt structure and optimal capital structure cannot be achieved without achieving the optimal debt structure.

2.2 DEBT STRUCTURE

Debt structure comprises of different debt instruments that organizations use for external financing. It is a substantial part of capital structure which remains less explored in the literature. Since the seminal work of Modigliani and Miller (1958), scholars like Basu (2015), Fischer et al. (1989), Myers (1984) and Morellec et al. (2015) have focused their attention to understand the capital structure of the organizations by relaxing some of the assumptions of irrelevance theorem. They have tried to find out the practical implications of capital structure. In this regard, Modigliani and Miller (1963) again presented the theory of capital structure by highlighting the importance of debt.

They explain the benefits of debt in the form of the tax shield. Even though, debt may also induce some costs, in the form of bankruptcy (Pessarossi and Weill, 2013), information and monitoring (Meneghetti, 2012), agency conflicts (Povoa and Nakamura, 2014) or flotation cost (Baker and Martin, 2011; Blackwell and Kidwell, 1988). It is the challenging decision for financial managers to achieve optimal debt structure by balancing the costs and benefits of each type of debt instrument. An optimal debt structure minimizes the cost of financial distress at the time of liquidation and prevents organizations from default (Bolton and Scharfstein, 1996).

Trade-off theory implies each organization has to adjust their capital structure gradually toward an optimal debt ratio in order to maximize its value (Kraus and Litzenberger, 1973). But, previous studies do not provide any definite criteria for the selection of optimal debt ratio because they treat all types of debt as identical (Dang, 2011; Denis and McKeon, 2012; Lemmon and Zender, 2010). They ignore the discriminating features attached with different types of debt instrument as amounts, covenants, maturity, accessibility and priority etc. (Johnson, 1997). However, with the development of financial market, a considerable and vital assortment of empirical work has presented a clearer picture for the patterns of corporate financing (Rauh and Sufi, 2010) and provide classical distinguish between different types of debt.

2.2.1 Types of Debts

Empirical studies manifest organizations have considerably increased their propensity to use debt financing over the century (Graham et al., 2015) and that increase remain stable over the years (Hanssens et al., 2016). This increase is due to the development of financial market that opens new avenue for borrowing. Previously, most of the studies are based on the classic distinction between bank loans and corporate bonds (Kale and Meneghetti, 2011; Lin et al., 2013; Meneghetti, 2012; Morellec et al., 2015; Pessarossi and Weill, 2013; Rajan, 1992). While many scholars analyze the difference between three major sources of financing; bank debts, non-bank private debts, and public bonds (Arena, 2011; Denis and Mihov, 2003; Johnson, 1997; Kaya, 2011; Liu, 2006).

Recently researchers and practitioners have devoted their attention in surpassing the traditional sources of financing and provide new evidences for various alternatives of debt financing. They have diverted the focus of debt structure studies in understanding the discriminating features of different debt instrument (Erel et al., 2012; Li et al., 2015; Tengulov, 2015) and explain the reasons for preferring a specific type of debt.

Povoa and Nakamura (2014) have claimed that bank loans and government subsidized debts are the most popular sources of financing among all types of organization. Bank loans are popular because they are less information sensitive (Rauh and Sufi, 2010), having greater monitoring benefits and keep proprietary information confidential (Kale and Meneghetti, 2011). Lin et al. (2013) argue that undervalued companies prefer bank loans due to monitoring benefits. Monitoring benefits also act as an additional characteristic of bank loan that help to resolve agency conflicts among various stakeholders (Chemmanur and Fulghieri 1994) and make efficient decisions at the time of liquidation (Lin, 2015).

If compensation of the manager is linked with the organizational performance, then they prefer bank loans on public debts (Meneghetti, 2012). New companies rely on bank loans for building their credit reputation. Once their reputation is established, they turn towards other types of financing (Denis and Mihov, 2003). They further explain the reasons for preferring bank loan are the collateral provision that reduces the risk of default and limit the asset substitution activities. Government owned companies tend to issue bond more preferably because they consider it less information sensitive for the regulators and their probability for approval is high (Pessarossi and Weill, 2013).

Krishnaswami et al. (1999) argue that larger and profitable companies prefer bonds while growing companies preferred private debts. Managers with high ownership stake prefer private debts on public debts because their superior ownership stake gives them authority to prefer those securities that maximizes organizational value and insulate them from external pressures of debt holders (Arena, 2011; Kaya, 2012). This also increases their efficiency of liquidation and renegotiation power during the distress period (Chemmanur and Fulghieri, 1994). Smaller, riskier, growing and young companies with smaller amount of capital are more likely to utilize the private debt market (Elliott, 2007; Kaya, 2012).

Private debt holders face lower flotation costs with traditionally designed covenants than public bonds (Denis and Mihov, 2003). Larger companies with credit rating and high asset tangibility ratio prefer corporate bonds on syndicated bank loans and on private placement debts (Kaya, 2011). Organizations prefer short term and secured debts as the primary tool to control agency cost (Alderson et al., 2014). Short term debts are effective in eliciting information asymmetry (Diamond, 1991; Flannery, 1986), monitoring management (Harris and Raviv, 1991) and agency conflicts related to underinvestment issues (Barclay and Smith, 1995). Small companies prefer short term debts because their accesses to long term debts are restricted due to larger fixed cost (Beattie et al., 2006).

All these empirical justifications explain the significance of choosing a specific type of debt. But, there is still need to clarify the importance of each type of debt with more theoretical and empirical explanation. So that financial managers can design their strategy effectively. This encourages current study to include different sources of financing and explain why organization chooses a specific type of debt in their debt structure? This study includes short term secured debts, short term other debts, long term secured debts, long term unsecured debts, debenture and other long term debts as a sources of debt financing. The detail explanation of each type of debt is provided in Appendix-A.

2.2.2 Debt Structure and Financial Strategy

From the corporate strategy perspective, the financing decisions are fundamental functional decisions that support and remain consistent with the long term strategies. Corporate strategies always try to complement the traditional finance paradigms and broaden our vision towards capital structure choices (Barton and Gordon, 1987). The managers are more interested in the inputs from the functional areas of finance such as capital structure in order to design their strategies. Previously, scholars like Modigliani and Miller (1958) considered financing decisions are irrelevant in an efficient market for the firm's strategy. However, in the real world such decisions may differentially influence the firm value due to several market imperfections (Myers and Majluf, 1984).

This increases the attention of financial managers towards financial strategy because it is a part of financial strategy to forecast funding requirements of the organization, and devise strategies to acquire those funds (Bender, 2014). So, it is the responsibility of financial managers to design an appropriate strategy by including accurate types of debt. An accurate financial strategy can help the management to cope with the crisis and add value to the organizations (Ehrhardt and Brigham, 2016) while a wrong strategy can increase the cost of financial distress and eventually push the organization towards bankruptcy (Priester and Wang, 2010). Therefore, managers adopt those financial strategies which can support and be consistent to the long term corporate strategy of the companies.

The debt structure literature explicates possible causes for choosing a specific type of debt but there is still no definite criterion available in the literature that helps them to choose among the different types of debt. Optimal debt structure suggests the cost minimizing strategies for the selection of debts (Bolton and Scharfstein, 1996) but it is difficult to decide which type of debt minimizes the cost of financial distress in the presence of multiple debt

instruments with distinctive characteristics i.e., risk levels, covenants, maturity, pricing, control and amount.

These differences also create information asymmetries and conflicts of interest between debt holders that cause inefficient managerial decisions. Therefore, financial managers include only those types of debt that have fewer restrictions and causes least cost to the business and must match with the tenor of the assets. Thus, this increases the concentration of financial managers towards cost minimizing strategies, i.e., debt specialization strategy because the major reason for pursuing the debt specialization strategy is to curtail borrowing cost.

2.3   DEBT SPECIALIZATION

Debt structure composition has become an important phenomenon for the organizations. Companies often have different composition of debts with similar leverage ratios. The choices of debt instruments largely depend on the accessibility to the debt market (Faulkender and Petersen, 2006), accounting quality (Li et al., 2015), degree of information asymmetry, agency costs and effective legal enforcement of loan contracts (Demirguc-Kunt and Maksimovic, 1996). It also depends on the covenant attached with different debt instruments (Lou and Otto, 2015), flotation cost (Blackwell and Kidwell, 1988) and bankruptcy cost (Rajan and Zingales, 1995).

That is why, one company borrow from a single source of financing while others use the diversified types of debt in their debt structure. When companies predominantly borrow from a single type of debt, it is regarded as debt specialization. Previous studies are the evident of the use of debt specialization among the organizations. Results of Colla et al. (2013) confirm that 85% of the organizations utilize only one type of debt in the presence of multiple sources of financing.

Rauh and Sufi (2010) are amongst the first who point out the heterogeneity in the capital structure of the organizations. Their results empirically substantiate that 70% of organizational level observations rely on at least two types of financing, whereas 25% of the sample data do not even change their level of leverage, but they only change their composition of debt. Johnson (1997) has explained 73% organizations lend from at least two types of long term debts, including bank debt, non-bank, private debt and public debt.

A study by Barclay and Smith (1995) has focused on the use of the priority structure for financing. They support the presence of debt specialization

in the capital structure by admitting that 26% organizations rely on single priority debt class while 3% utilize all available classes of loans. However, Gleason et al. (2000) suggest the use of different types of debt specifies an organizational strategy for improving performance. Povoa and Nakamura (2014) have emphasized on the existence of both strands in debt structure in Brazilian companies. But, their results strongly favor the usage of extended classes of debt.

The organizations employ multiple types of debt in their debt structure have stable stock prices, get easy access to the debt market with better financing and investment opportunities even during the adverse liquidity shocks (Tengulov, 2015). These theoretical and empirical justifications provide possible explanation for the presence of debt specialization. Nevertheless, the contradictory results depict that academic and practical understanding of the concept is still emerging and require further empirical investigation to explain why organizations adopt debt specialization strategy? This can only possible if we are able to know about the circumstances in which companies adopt debt specialization strategy.

2.3.1 Debt Specialization as Financial Strategy

A financial strategy empowers the organizations to evaluate their financing needs in the presence of multiple debt instruments. Debt structure becomes more complex when it comprises of multiple securities. It increases the conflicts of interest and free-rider problems between different claim holders specially, to agree them on the division of assets in case of bankruptcy (Gertner and Scharfstein, 1991). This increases the concentration of financial managers towards debt specialization strategy. Debt specialization is the dependence of one type of debt by the organizations in the presence of multiple debt instruments.

The main reason for practicing debt specialization is to minimize bankruptcy cost, monitoring costs and limited ingress to the debt market. Organization having poor accounting quality employs debt specialization strategy (Li et al., 2015). These companies also face more deterioration in stock market prices; have lower investment and debt financing opportunities than companies that utilize dispersed types of debt (Tengulov, 2015). Therefore, Colla et al. (2013) posit that new and unrated companies, relatively smaller in size, with low level of leverage, profitability and tangibility adopt debt specialization strategy.

On the contrary, large and mature companies may also adopt this strategy. These companies face lower operational risk and have built up market reputation

that reduces the insecurity of investors and increases the trust of loan giving agencies. This results in increased access of the organizations for different debt instruments (Lemmon and Zender, 2010). These companies also face less information asymmetry, agency conflicts and have lower chances of bankruptcy. Therefore, they are in a better position to bargain with lenders and select the debt instruments according to their requirements. In this case, they often prefer to follow the cost minimizing policy by adopting debt specialization strategy.

Pecking order theory also support this notion as large and profitable companies first relies on retained earnings and then go for debt financing (Myers and Majluf 1984) and when they are going for debt financing then they choose the debt of their own choice i.e., follow debt specialization strategy. Moreover, prior studies have stated that once an organization has established access to one source of financing typically it will be easy for them to obtain the similar type of debt again (Denis and Mihov 2003).

Another possible reason for following debt specialization strategy is the covenant provision attached with the loan contracts. In case of the diversified debt structure, the creditor of a new loan added more covenants in the debt contract due to protection purpose that created conflicts between different debt holders. This situation becomes more severe particularly at the time of financial distress because the use of covenants is strongest for the organizations having high probability of default, high leverage, and opaque accounting (Lou and Otto, 2015). Large companies are more diversified therefore often have more likelihood of bankruptcy (Beattie et al., 2006).

Therefore, organizations with more credit risk and diversified debt structure, add more covenant in the loan agreement that increases their probability of default so these companies have shifted towards debt specialization strategy. These theoretical, empirical and logical justifications provide a new insight to the debt specialization strategy. It claims debt specialization strategy is equally important for all types of organizations irrespective of size and age. It also suggests a need for further research to provide a comprehensive view about the concept. But, this can only be possible if we can identify theoretically and empirically related more antecedents of debt specialization.

2.4   ANTECEDENTS OF DEBT SPECIALIZATION

Managers and researchers focus their attention in exploring the antecedents of debt specialization. Previously, Colla et al. (2013) hypothesize firm level factors and some of the stock market and debt market factors as a

cross sectional determinants of debt specialization. Though, existing theories (trade-off, pecking order, market timing, signaling and agency cost) and empirical studies acknowledge the multitude of factors that may be contributing to the organization's decision of debt specialization. This motivates the current study to explore the reasons of debt specialization by including some more theoretically and empirically related antecedents of it. This is one of the prime studies that categorize wide range of factors in two broader categories i.e., organizational and non-organizational factors. The details of these factors are given below:

2.4.1 Organizational Factors

Organizational factors are those factors that are directly linked with the organizational contextual characteristics and also directly influence the financing choices of the organizations. These factors can be the main determinants of debt specialization because the optimal debt structure depends on the variation of it. Colla et al. (2013) are among the first to recognize cash flow volatility, growth opportunities, cash holdings, research and development expenses, advertising expenses, strong board, unique product, size, maturity, credit rating, profitability, tangibility and leverage are the main antecedents of debt specialization.

Besides these antecedents, the existing theories (trade off, pecking order, asymmetric information, agency cost and market timing theories) acknowledge the multitude of factors (current ratio, return on assets, return on equity, financial leverage, asset growth, depreciation ratio, earnings volatility, return on asset volatility, asset maturity, quality and business group affiliation) that can be hypothesized as antecedents of debt specialization but their role is not yet explored with reference to debt specialization. Empirical studies manifest that the role of firm level factors in shaping debt structure is still vague in the corporate finance literature. Researchers like Alderson et al. (2014), Kaya (2011) and Majumdar (2012) believe on the remarkable potential of these factors in explaining the debt structure variations. Though, Rauh and Sufi (2010) report the correlation between traditional determinants of capital structure and different types of debt vary a lot. These factors are still unable to produce consistent results.

Currently, Graham et al. (2015) have claimed traditional organizational factors are unable to explain debt structure variation over time because the role of some important factors are either less explored or yet not to be identified in the literature. That is why, this study uses a wide variety of organizational factors (i.e., twenty-two) identified from prior literature and divide them in eight

categories as profitability, liquidity, leverage, nature of asset, risk & growth, controlling authority, image factors and nature of expense on the theoretical basis. These factors are previously hypothesized as an important determinant of the debt structure, but their role with respect to debt specialization is yet to be explored. This study is aimed at investigating the role of previously identified organizational factors in a new context and with a new data set. Along with known factors, it also empirically tests the theoretically supported new organizational factors as antecedents of debt specialization. The detail of each category is explained below:

2.4.1.1 Liquidity

Assets' liquidity means the ease with which the assets can be traded at a price close to their value. These factors include cash holding and current ratio; indicate the ability of the organizations to meet their short term obligations (Priester and Wang, 2010). Though, liquidity factors are not widely used in the capital structure literature, but the level of liquidity may have implications for the financing decisions of the organizations. Theoretical literature provides the mixed support for this relationship. On the one side, liquid assets serve as collateral provision which enhances the debt capacity of the organizations. Companies with higher liquidity ratios may have better ability to pay their obligations when they are due. This suggests a positive relationship between liquidity factors and leverage choices of the companies.

While, on the other hand, this view contradicts with the collateral argument put forward in favor of the fixed assets role for debt capacity, where it is suggested that fixed assets can be utilized as collateral for acquiring the external finance. Another argument in favor of this negative relationship is that high liquidity ratios often cause agency conflicts between shareholders and debt holders (Ozkan, 2001) and management uses these cash ratios for the benefit of the shareholders. They manipulate the liquid assets and replace safe and stable assets with the risky ones and thus, act against the interests of creditors. These arguments are also in accordance to the pecking order theory which has regarded the liquid assets as an internal source of financing that reduces the dependence on external financing.

However, from the debt specialization perspective, liquidity factors are positively associated with the degree of debt specialization. Companies with more cash balances have more tendencies towards debt specialization especially during the period of crisis (Tengulov, 2015) both smaller and larger companies maintain high cash balances. Small companies often have restricted access to the debt market so they keep more cash balances with them. This notion is again

supported by the pecking order theory where companies maintaining larger amount of cash, utilize their internal funds first and then go for debt financing. Liquidity factors are helpful in managing short run fluctuations of external financing deficit (Basu, 2015; Pessarossi & Weill, 2013). Locorotondo et al. (2014) also claim that companies can avoid market imperfections such as cost of financial distress, agency cost; asymmetric information and transaction cost by maintain high cash ratios.

2.4.1.2 Profitability

Profitability factors remain important in the capital structure studies. Booth et al. (2001) stated that profitability factors are the most consistent and essential factors from a large number of variables tested in many emerging economies. Therefore, these factors are also considered to be the most substantial antecedents for debt specialization. Profitable organizations employ diversified debt structures. They generally prefer multiple types of debt in their debt structure and have negative relation with debt specialization. Trade-off theory, agency cost, taxes and bankruptcy cost all push the profitable organizations towards the high level of debts (Locorotondo et al., 2014). These companies have higher income to shelter higher marginal tax rates and have less probability of bankruptcy.

This shows that capital structure of the profitable companies comprises of more debt instruments to gain the added advantages of tax shields, apart from the other benefits of higher debt. Expected cost of bankruptcy declines when profitability increases. The deductibility of interest payments for tax purpose forces profitable companies to prefer debt financing. High fraction of pre interest earnings is an indication of a positive relation between debt and profitability. Profitability helps to solve agency conflict by forcing managers to pay more out of the excess cash available to the organizations (Jensen and Meckling, 1976). This notion also works as a positive signaling mechanism for the investors and lenders (Baker and Martin, 2011).

In contrast, the pecking order theory carries different implications about this relationship. Debt ratios are expected to have a negative association with the profitability (Myers and Majluf, 1984). It predicts profitable organizations use less debt, regardless of how the debt ratio is defined (Booth et al., 2001). Conversely, the studies conducted by (Kaya, 2011) explain no association between profitability and debt structure choices. These conflicting results show that there is no clear pattern for this relationship. It stimulates the current study to find out the relation between profitability and debt specialization by using net profit ratio, return on assets, and return on equity as a measure of profitability.

2.4.1.3 Leverage

Leverage is the degree to which an organization is financed with borrowed money (Priester and Wang, 2010). Leverage is measured by using financial leverage, market leverage and book leverage. Debt specialization is positively related to the lower leverage ratios (Tengulov, 2015). In contrast to this, Povoa and Nakamura (2014) state that leverage ratio is unable to explain variation in the debt structure. Companies with more leverage prefer public debts on bank loans (Denis and Mihov, 2003). Similar relation is reported in case of public and private debt (Krishnaswami et al., 1999). In this study financial leverage, book leverage and market leverage ratios are used to see their impact on debt specialization decision of the organization.

Leverage factors are traditionally used to explain debt structure variations. Previously, researchers consider that organizations with same leverage ratios use similar type of debt, but later on it is proved that organizations employ different composition of debt with the similar debt ratios (Johnson, 1997; Rauh and Sufi, 2010). Some organizations borrow few debt types, while others use diversified types of debt with the same debt ratio. This approach motivates the current study to include leverage factors as the determinants of debt specialization and expects debt specialization is positively related to the lower leverage ratios.

2.4.1.4 Nature of Asset

Nature of asset is explained on the basis of asset tangibility, asset maturities and asset growth. Asset tangibility has been integrated in the models to signify the influence of collateralized assets on the leverage related decisions of the organizations. It is used as a measure of collateral that the company offers to its debt holders. The collateralized debts increase the company's value and thus the optimal strategy for the companies is to issue secured debts, as far as possible. High level of asset tangibility is the indication of high level of security to the claim holders. It makes debt less risky as if a company gets bankrupt, then enough assets are available to fulfill the claims of the creditors (Baker and Martin, 2011). If companies do not have collateral, then they either face high borrowing costs or have to issue equity instead of debt.

Several empirical studies have documented the importance of collateralized assets in leverage decisions of the organizations (Rajan and Zingales, 1995; Titman and Wessels, 1988). These studies generally report a positive relationship. However, few studies, specifically from the emerging economies, document a negative (Booth et al., 2001) relationships between

assets tangibility and leverage. This shows that the role of asset tangibility on leverage decisions is still obscure. As on the one side, Rauh and Sufi (2010) have explained that companies having more tangible assets use more types of debt but few scholars like Povoa and Nakamura (2014) have reported no difference in the selection of debts due to asset tangibility.

Theoretical explanation for this relationship is also available in the literature. Agency cost theory predicts the behavior of debt holders that they carefully observed the investment patterns of the leveraged companies. Overinvestment creates agency conflicts between the debt holders and shareholders. But if a company has more tangible assets then these conflicts can be solved easily (Jensen and Meckling, 1976). This also results in decreasing the cost of financial distress and bankruptcy which supports the trade-off theory (Baker and Martin, 2011). Therefore, both the theories predict the positive association between asset tangibility and leverage decisions.

Information and monitoring cost is also associated with the tangibility of assets. Companies having lot of tangible assets face less information asymmetry and make equity issuance less costly (Harris and Raviv, 1991). Monitoring cost is also high for the companies that have less collateralized assets so these companies are inevitable to choose higher debt level to limit their consumption. This notion implies a negative relation which is persistent with the pecking order theory. Another explanation for this relationship can be that companies with higher amount of tangible assets are more likely to have a stable and constant source of earnings. Such internally generated funds are more likely to be reinvested according to the pecking order theory; therefore, the reliance on external sources is minimized.

Asset maturity is the ability of organization to meet its financial obligations. Firms have an interest in matching their debt maturities to their asset maturities. If the maturity of debt is shorter than that of assets, the firms may not have sufficient cash available to pay off its financial obligations. Conversely, if debt has a longer maturity, debt payments remain due when cash flows from assets cease. Matching the maturity of assets with debt reduces these risks and hence we expect a positive relationship between the maturity of assets and firm debt maturity (Guedes and Opler, 1996).

Agency cost theory predicts that larger asset maturities reduce agency conflicts, information asymmetry and minimizes the likelihood of financial distress. Therefore, it is posited larger asset maturities are inversely related with debt specialization decision of the organizations. Asset growth is the percentage transmutation in total assets over time. High asset growth reduces the agency conflicts; information and monitoring cost and minimize the chances of

bankruptcy. All these evidences are also in accordance to the trade-off, pecking order, and agency cost theories. Therefore, it is suggested that these factors are inversely related with debt specialization decision of the organizations.

2.4.1.5 Risk & Growth

Risk factors are the important measure of financial distress or debt default costs that is why considered to be the essential antecedent of debt specialization. These factors include earnings volatility, return on asset volatility, default risk; are expected to be positively related with debt specialization. Organizations with volatile earnings may experience agency related issues and often face high costs of financial distress. So, in order to minimize their chances of bankruptcy, they have to adjust their debt structure (Danis et al., 2014; Lopez-Gracia and Mestre-Barbera, 2011) and may use the debt specialization strategy that can help them to reduce the probability of default. Empirical results unanimously represent that earnings volatility is inversely related to the types of debt (Graham and Leary, 2011).

Another aspect of this relationship is that sometimes investors and lenders are unable to predict their future earnings that are based on publicly available information. Therefore, lenders demand a higher premium for their debts. These results are consistent with the trade-off and pecking order theories that predicts a negative relation between volatility and selection of debts because high volatility increases the chances of bankruptcy (Baker and Martin, 2011). So in this situation, companies use the debt specialization strategy. Altman's Z-score is also used as a measure default risk and its value lies between 1.8 and 3.0 (Alderson et al., 2014; Albring et al., 2011). Here, 1.81 score is used as a benchmark and the organizations having scored less than 1.81 have higher probability of default (Meneghetti, 2012; Graham and Leary, 2011).

Growth is the indicator of expected investment opportunities with a great explanatory power to explicate the variations in the debt structure (Myers, 1977). Growth opportunities are intangible in nature that often causes information asymmetry between insider and outsider. It is the capital asset for the company that added value in the future but does not generate income (Ozkan, 2001). Agency cost is higher for the high growth firms because managers of the leveraged firms are engaged in asset substitution, over and under investment activities that creates agency related issues between shareholders and debt holders (Jensen and Meckling, 1976; Titman and Wessels, 1988).

The growing companies have more chances of bankruptcy as their value precipitously fall when the cost of financial distress increases (Harris and Raviv,

1990; Myers, 1984). Agency cost theory predicts that organizations with more growth opportunities face higher information asymmetries and, therefore, face more borrowing constraints (Locorotondo et al., 2014). This prohibits them to include more types of debts in their debt structure. Additionally, Fama and French (2002) claim that pecking order theory is consistent with the behavior of small growth firms which are more inclined to use internal funding than external funding. Therefore, it is posited that companies with high growth opportunities incline more towards debt specialization (Barclay and Smith, 1995).

2.4.1.6 Controlling Authority

Controlling authority is the authoritative power and ascendance over the autonomous business enterprises. It is responsible for directing and managing the operations of the related business entities. Business group is one of the type of controlling authority. Business groups are autonomous legal entities that share common ownership and administrative control (Bamiatzi et al., 2014). Substantial research has been made to understand the role of business groups. Empirical evidences indicate that they play a striking role in sharing risk among their member organizations (Buchuk et al., 2014), act as an alternative to external capital market (Locorotondo et al., 2014; Wang and Lin, 2013).

Financial institutions consider them more trustworthy for issuing debts due to their cross debt guarantees (Gopalan et al., 2007; Masulis et al., 2011). Chakraborty (2013) state that group affiliated companies maintain low leverage ratios than standalone companies due to their greater accessibility to the debt market. They help to remove market inefficiencies in developing countries and improve their performance. Performance of affiliated companies is better than non-affiliated companies in the presence of imperfect market, high government interference, weak supporting institutions and legal system (He et al., 2013).

Business groups have the greater access to the limited resources, so by utilizing these resources efficiently, they can lower down their cost and increase their profits (Xavier et al., 2014). Pecking order theory is a true representative of business groups. As pecking order theory predicts that companies first utilize its internal funds for financing and then seek for external funds in the form of either debt or equity (Myers and Majluf, 1984). Similarly, a business groups first utilize its internal capital and if these funds are not sufficient then they go for equity financing as high leverage increases bankruptcy risk for the group. It also forces the companies to cut capital requirements and research and development investments, in order to service debt payments which will damage their long run efficiency and competitive position (Chakraborty, 2013). Therefore, they give least importance to debt and consider it as a last resort for raising funds.

A group affiliated organization with credit rating are considered the most eligible candidate for external financing (Han et al., 2012). These are the causes business groups consider influential around the world. They have attracted the attention of many researchers to look insight in this peculiar organizational form and find out how business groups contribute to the debt financing decisions of their affiliated organizations. Although, pecking order theory supports business groups, but very few studies (Han et al., 2012; Dewaelheyns and Hulle, 2010) are available that explains the importance of business groups in selection of debt types, while none of the study still explore their role regarding debt specialization decision.

2.4.1.7 Image

Age, size and quality can be the image factors for the organizations. Debt specialization depends on size of the organizations but the role of size is still vague in the literature. On the one side, trade-off theory describes the positive role of size due to its greater access to the debt market (Barclay and Smith, 1995) and less chances of bankruptcy. Smaller companies have more likelihood of liquidation as compared to the larger companies and thus they are likely to have less leverage. In addition, large companies tend to be more diversified (Titman and Wessels, 1988) have superior debt capacity and are more likely to get loans at favorable terms. Such companies face lower agency costs associated with assets substitution and underinvestment problems (Ozkan, 2001) and therefore expected to maintain high leverage ratios.

While on the other side, pecking order theory predicts the role of size as a proxy of information asymmetry between insiders and outsiders and suggests a negative relationship between size and leverage. Large companies on average raise greater amounts of capital as compared to the smaller companies, due to economies of scale, e.g., the lower percentage fixed flotation cost. Therefore, they are capable of issuing more information sensitive instruments like public debts than smaller companies that tend to borrow from banks (Kale and Meneghetti, 2011; Kaya, 2011).

Sometimes they even prefer to issue equity on debt and in that case size is negatively associated with debt (Baker and Martin, 2011). Larger organizations can achieve economies of scale while smaller face financial constraints that force them to choose a concentrated debt structure (Locorotondo et al., 2014). Empirical results illustrate that large number of companies borrows from bank but public borrowers are big in size than private borrowers and banks

(Denis and Mihov, 2003) while Krishnaswami et al. (1999) report similar relation in case of public and private debts.

Age is the time in years since the company announces its first IPO. Age is an important factor for building image of the organization. It reduces agency problems, information asymmetries and cost of financial distress. Older companies are considered to be more reputable, credible and mature than younger companies. This increases their accessibility to the external debt markets and they are in a better position to borrow from diversified types of debts. Previous studies also represent antithetical results regarding age. Some scholars (Chang et al., 2014) believe that companies use more types of debt are mature. Therefore, they expect a negative relation with debt specialization while others consider that age is unable to explain variation in the debt structure (Povoa and Nakamura, 2014).

Quality is inversely related to debt specialization. High quality organizations face lower financing costs due to better earning management and may access to more segment of the debt market (Shah and Khan, 2009) and hence can use diversified types of debt. While low quality organizations may specialize in few debt types. This shows a negative relation between organizational quality and debt specialization. This is more persistent to signaling theory (Ross, 1977) and agency cost theory (Jensen and Meckling, 1976). The positive signal about company's quality can reduce agency conflicts and information asymmetries between shareholders and debt holders (Flannery, 1986).

2.4.1.8 Nature of Expense

Nature of expense explains the financial efficiency and asset management of the organization. It is measured by using operating expense ratio and depreciation ratio (Elsas et al., 2014). Depreciation ratio explains how company manages his fixed assets while operating expense ratio explains how efficiently company is utilizing his assets to generate income. High expense ratios reduces earnings, increases the likelihood of bankruptcy, agency cost, information collection and monitoring cost. High expense ratios often provide wrong signals about the performance of the organization to the stakeholders.

All these theoretical justifications support trade-off, pecking order, agency cost and signaling theories. On the basis of these theoretical predictions, it is expected that both measures of nature of expense will be positively related to debt specialization decision of the organization. In short, summary of all the organizational factors is presented in Table 2.1.

Table 2.1
Summary for Organizational Factors as
Antecedents of Debt Specialization

Explanatory Variables		Expected Relations	Relation Found in Prior Studies		Theories & Predicted Signs
			Positive	**Negative**	
Liquidity	Cash Holding	Positive	Colla et al., (2013); Florackis et al., (2015); Tengulov, (2015)		TO (+) PO (+) AC (-)
	Current Ratio	Positive	Basu, (2015); Pessarossi & Weill, (2013)		
Profitability	Net Profit Ratio	Negative	Danis et al., (2014); Elsas et al., (2014); Li et al., (2015)	Basu, (2015); Colla et al., (2013); Graham et al., (2015)	TO (-) PO (+) AC (-) S (-)
	Return on Assets	Positive	Alderson et al., (2014); Chang et al., (2014)	Povoa & Nakamura, (2014)	
	Return on Equity	Negative		Ahmadinia et al., (2012)	
Leverage	Financial Leverage	Negative		Albring et al., (2011); Colla et al., (2013)	TO (-) AC (-)
	Book Leverage	Negative	Povoa & Nakamura, (2014)	Colla et al., (2013); Florackis et al., (2015); Li et al., (2015); Lou & Otto, (2015); Tengulov, (2015)	
	Market Leverage	Negative		Alderson et al., (2014); Tengulov, (2015)	
Nature of Asset	Asset Tangibility	Negative	Povoa & Nakamura, (2014)	Colla et al., (2013); Li et al., (2015); Lou & Otto, (2015)	TO (-) PO (-) AC (-)
	Asset Maturity	Negative		Shah & Khan, (2009)	
	Asset Growth	Negative	Basu, (2015)	Chang et al., (2014)	

Explanatory Variables	Expected Relations	Relation Found in Prior Studies		Theories & Predicted Signs
		Positive	Negative	
Risk & Growth Earnings Volatility	Positive	Danis et al., (2014); Povoa & Nakamura, (2014)		TO (+) PO (+) AC (+) S (-)
Default Risk	Positive	Alderson et al., (2014); Wang & Lin (2013)		
Return on Asset Volatility	Positive	Meneghetti, (2012)		
Market to Book Ratio	Negative	Colla et al., (2013); Danis et al., (2014); Lou & Otto, (2015); Tengulov, (2015)	Povoa & Nakamura, (2014); Li et al., (2015)	TO (+) PO (-) AC (+) S (-)
Sale Growth	Positive	Erel et al., (2012)		
Controlling Authority Business Group Affiliation	Negative		Bamiatzi et al., (2014); He et al., (2013); Locorotondo et al., (2014); Wang & Lin, (2013)	TO (-) PO (-) AC (-) S (-)
Image Size	Negative		Colla et al., (2013); Danis et al., (2014); Elsas et al., (2014); Florackis et al., (2015); Li et al., (2015); Lou & Otto, (2015)	TO (-) PO (+) AC (-) S (+)
Age	Positive		Chang et al., (2014); Colla et al., (2013); Povoa & Nakamura, (2014); Li et al., (2015)	
Quality	Negative		Shah & Khan, (2009)	
Nature of Expense Depreciation Ratio	Positive	Chang et al., (2014); Elsas et al., (2014)		TO (+) PO (+) AC (+)
Operating Expense Ratio	Positive	Colla et al., (2013); Frank & Goyal, (2009)		

AC = Agency Cost, **MT** = Market Timing, **PO** = Pecking Order, **S** = Signaling, **TO** = Trade-off.

2.4.2 Non-organizational Factors

Non-organizational factors are those factors that indirectly influence the capital structure decisions and financing choices of the organizations. The present study has divided sixteen non-organizational factors in four categories, comprise of debt market, industry, macroeconomic and stock market. These factors can be the important antecedents of debt specialization, but their role is not yet explored. Previously, organizations consider them essential in designing their debt structure. Financial managers can only design their strategies properly if they are informed about the effect of these factors.

However, very few studies (Aggarwal & Kyaw, 2010; Bose and Neumann, 2015; Joeveer, 2013; Shah and Khan, 2009) describe the role of these factors with reference to debt structure while no study has yet explored their position regarding debt specialization. Therefore, current study includes all these non-organizational factors as antecedents of debt specialization to give a comprehensive view about the concept.

2.4.2.1 Debt Market

Debt market factors include credit rating, debt maturity, tax rate and financial ratio. Credit rating is the main determinant of debt market, explaining the nature of the debt patterns and sources for the organizations (Chemmanur and Fulghieri 1994). Debt structure varies on the basis of the change in credit quality. Graham and Harvey (2001) have found that credit ratings are the second highest concern for financial managers when determining their capital structure, with 57.1% of the managers saying that credit ratings are important or very important in how they choose the appropriate amount of debt for their firms. Recently, Huang and Shen (2015) have supported these empirical findings by adding that companies quickly adjust their capital structure when ratings are downgraded. However, their speed of adjustment is slow when ratings are upgraded.

Organizations with high credit rating have easy access to the debt market (Lemmon and Zender, 2010; Faulkender and Petersen, 2006) and therefore, utilize diversified types of debt. The notion is supported by trade-off, agency cost and asymmetric information theories (Baker and Martin, 2011). Rating reduces the probability of default, agency conflicts and information asymmetries among stakeholders. However, results of Rauh and Sufi (2010) claim that low rated companies use multiple tiers of debt while high rated companies mostly rely either on senior unsecured debt or equity. This supports to the pecking order theory. A rated firm is generally profitable, mature and larger in size. Therefore,

they are in a better position to decide their debt structure by keeping in view the cost associate with each type of debt. They first utilize their retained earnings and then go for external borrowing. In case of debt financing, they prefer those types of loan that may be cost effective for them in a long run. These sustainable effects of credit rating explain its better bargaining position

Empirical studies reveal that companies with different credit ratings employ different types of debt. Denis and Mihov (2003) has divided unrated companies into two categories, medium credit rated and lowest credit rated. Medium credit rated companies prefer private debts while lowest rated companies tend to borrow from banks. Middle rated companies borrow from bank while high and low rated companies tend to prefer public debts. Sometimes high rated companies use private placements debts rather than public debts and bank loans.

Low rated companies prefer public debt when the cost of monitoring offsets the benefits of bank loan (Rajan, 1992; Diamond, 1991). Unrated companies tend to issue either private debts or syndicated bank loans and sometimes incline towards public debts (Kaya, 2011). Carey et al. (1998) speculate that low credit quality firms are the weakest candidate for bank loans because of the regulating policies of bank. They can be a candidate for non-bank private debts and for public loans with limited access (Arena, 2011).

Debt maturity is the time required to mature the debt when the par value is repaid to the debt holders. It may be the proportion of debt, maturing in more than one year (Shah and Khan, 2009) or sometimes maturing in more than three or five years (Denis and Mihov, 2003). It can be an important antecedent of debt specialization because selection of debt depends on it. But there is still no empirical study that directly addresses the impact of debt maturity on debt specialization decision of the organizations. The financial managers still have to decide which of the debt maturity (shorter or longer) they should consider in order to successfully position their debt structure. Dang (2011) has found a positive relation between debt maturity and leverage.

Asymmetric information theory may support this relationship, especially when it depends on organizations inside information about default probabilities. In case of positive information, organizations prefer short term loans otherwise they prefer long term debts (Goyal and Wang, 2013). Short term maturity structure sometimes conveys positive information about credit rating (Diamond, 1991) that can help the organizations to borrow from diversified sources. Agency cost theory props the negative relationship between debt types and their maturity structure. These agency conflicts can be sorted out by effectively structuring debt maturities (Myers, 1977).

However, Scherr and Hulbur (2001) find mixed support for information asymmetry and taxability hypothesis in small organizations as contrast to large organizations. They also empirically substantiate that in case of debt financing, small companies prefer long maturing debts like large companies. These opposing arguments and mixed empirical and theoretical evidences show that there is still no consensus in the literature about the relation of leverage and debt maturity that is why it has become an empirical question.

Corporate financial strategy largely depends on the tax rate and interest payment. High corporate tax rates favor debt while high personal tax rates favor equity. An optimal debt structure is also determined by the trade-off between the benefits of taxes and the cost of financial distress (Kraus and Litzenberger, 1973). Organizations with high tax rates, issue more debts as the deductibility of interest payment from the profit imply greater interest tax shields benefits and therefore induce higher leverage (Joeveer, 2013).

Financial ratio also affects the debt specialization decision of the organizations. They determine the organization's ability to pay their debt obligation (Meneghetti, 2012). Trade-off theory explicates that a companies will trade-off their tax benefits with the cost of debt when they decide their capital structure. If their cost of debt is higher than they try to avoid debts or sometimes approaches to the equity (Baker and Martin, 2011). Normally, cost of debt is higher for those organizations that employ few debt types while organizations with diversified debt structure face least cost (Tengulov, 2015). Therefore, it is expected that lower financial ratio and tax rates are positively related to the debt specialization.

2.4.2.2 Industry

Corporate finance theories suggest that market imperfections play a central role (i.e. taxes, information asymmetry) in influencing the capital structure decisions (Booth et al., 2001). Other strands of the literature posit that industry effects are detrimental to capital structure decisions (Rajan and Zingales, 1995). Joeveer (2013) also supports this notion that variation in leverage is largely explained by the industry factors especially in a long run. Therefore, this study considers industry factors; regulation, median industry leverage ratios, median industry growth ratios as important to significantly explain the effects of debt specialization decision for the organizations.

Regulations are the rules and regulations imposed by the regulatory authorities related to a specific industry. Trade-off theory supports regulation factor. The organizations maintain stable cash flows and thus have less chances

of bankruptcy (Barclay and Smith, 1995). Regulation also reduces the information asymmetries and agency conflicts between shareholders and debt holders (Albring et al., 2011) and can obtain loans from multiple sources. That is why it is posited that regulated organizations incline less towards debt specialization. Empirical studies include financial institutions, railroads, trucking, airlines, telecommunications, gas and electric utilities in regulated industries (Graham et al., 2015).

Previous studies often exclude regulatory companies from the analysis of capital structure but after the seminal work of Frank and Goyal (2009), it is clear that there is no difference in the capital structure determinants of the regulatory and non-regulatory companies. Graham et al. (2015) also support this notion by arguing that the aggregate corporate leverage and the leverage of the regulated sector have remained stable over time. In contrast to this leverage of the unregulated firms has increased significantly, approaching to the level of indebtedness of regulated firms. The regulation of financial institutions encourages the firms to have more long term debts while deregulation increases the share of short term debts (Demirguc-Kunt and Maksimovic, 1996).

Financial mangers use median industry growth and median industry leverage ratios as a benchmark ratio for their organizations (Baker and Martin, 2011). Median industry leverage is the median value of leverage and median industry growth is the median value of the growth for all the organizations existed in the specific industry during the specific year under study (Denis and McKeon, 2012; Lemmon et al., 2008). Trade-off theory suggests that organizations with higher median industry leverage use less debt, while with higher median industry growth ratios use more debt (Frank and Goyal, 2009). Therefore, it is posited that median industry leverage has negative relation while median industry growth ratio has positive relation with debt specialization.

2.4.2.3 Macroeconomic

The fluctuations in the economic environment can play a prominent role in explaining the variations of corporate financial policy. Sometimes, it adversely affects the organizational accessibility to the debt market (Erel et al., 2012) especially at the time of economic downturn (Joeveer, 2013). During the depression period, stock prices go down and expected cost of financial distress increases that raises the chances of bankruptcy. Agency relationships become more severe in this situation, information and monitoring cost also increases that induce organizations to use debt specialization strategy. Trade-off, pecking order and market timing theories also support this relationship.

Bose and Neumann (2015) state the equilibrium choice of optimal contract between debt and equity and the financial structure depend on the economy of the country. This substantiates the need of including macroeconomic factors in the current study. The macroeconomic factors included comprising of government borrowing, expected inflation rate and GDP growth. Graham et al. (2015) found a negative relation between government borrowing and leverage while a positive relation between GDP growth and leverage (Pessarossi and Weill, 2013) and also between leverage and the expected inflation rate (Joeveer, 2013).

2.4.2.4 Stock Market

Stock market conditions affect the financing decisions of the organizations. Financial managers consider market timing before issuing debt or equity (Baker and Wurgler, 2002). Stock market factors are inversely related to leverage (Faulkender and Petersen, 2006) only when this decision is taken under unfavorable market conditions. Dividend decisions often remain side by side to financing decisions. When organizations take debts, it may have a negative effect on the stock prices because debt related interest payments reduce the dividend payments (Florackis et al., 2015). It also provides negative waves to the investors about the organizational performance and ultimately cause reduction in stock market prices.

However, when the financing decision to issue equity or debt is taken under favorable stock market conditions, it increases the benefit of obtaining optimal debt structure. It also reduces bankruptcy cost, information monitoring cost and agency conflicts (Valta, 2016). Jensen (1986) state that dividends and debts are used as alternative mechanisms for controlling agency conflicts related to cash flows. On the basis of above deliberation, it is expected that both the stock market factors; dividend payout ratio and dividend yield ratio are negatively related with the debt specialization decision of the organizations. Lemmon et al. (2008) also found negative relation between dividend payer and debt specialization.

The summary of all the non-organizational factors are shown in Table 2.2 in a brief form along with the expected relation based on prior studies and theoretical predictions.

Table 2.2
Summary for Non-Organizational Factors
as Antecedents of Debt Specialization

| Explanatory Variables | Expected Relations | Relation Found in Prior Studies | | Theories & Predicted Signs |
		Positive	Negative	
Debt Market Credit Rating	Negative		Colla et al., (2013); Danis et al., (2014); Elsas et al., (2014); Li et al., (2015); Povoa & Nakamura, (2014)	TO(-) PO (+) AC (-) S (+)
Debt Maturity	Negative	Tengulov, (2015)	Lou & Otto, (2015); Shah & Khan, (2009)	
Tax Ratio	Negative		Shah & Khan, (2009)	TO (+) PO (+) AC (+)
Financial Ratio	Negative	Meneghetti, (2012); Tengulov, (2015)]		
Industry Regulation	Positive	Albring et al., (2011); Basu, (2015); Elsas et al., 2014; Frank and Goyal, (2009); Graham et al., 2015		TO (+) PO (+) AC (+) S (+)
Median Industry Financial Leverage	Negative		Denis & McKeon, (2012)	
Median Industry Book Leverage	Negative		Chang et al., (2014); Joeveer, (2013)	TO (-) AC (-)
Median Industry Market Leverage	Negative			
Median Industry Market to Book Ratio	Negative		Chang et al., (2014); Frank & Goyal, (2009)	TO (+) PO (-) AC (+) S (-)
Median Industry Sale Growth	Positive			

Explanatory Variables		Expected Relations	Relation Found in Prior Studies		Theories & Predicted Signs
			Positive	Negative	
Macroeconomic	Government Borrowing	Positive	Graham et al., (2015)		
	Expected Inflation Rates	Positive	Graham et al., (2015)	Chang et al., (2014); Joeveer, (2013)	TO (+) PO (-) AC (+)
	GDP Growth	Negative		Chang et al., (2014); Graham et al., (2015); Joeveer, (2013)	
Stock Market	Dividend Payers	Positive	Lemmon et al., (2008)	Li et al., (2015); Lou & Otto, (2015)	
	Dividend Payout Ratio	Positive	Aggarwal & Kyaw, (2010); Florackis et al., (2015)		PO (+) MT (+) S (+)
	Dividend Yield Ratio	Positive	Tengulov, (2015)		

AC = Agency Cost, **MT** = Market Timing, **PO** = Pecking Order, **S** = Signaling, **TO** = Trade-off.

To sum up, all these theoretical, empirical and logical justification provide the basis for the current study and explain the significance of including all the organizational and non-organizational factors as the antecedents of debt specialization. On the basis of these foundations we are able to answer the proposed research questions. However, the possible explanation for the reasons of debt specialization is still important to be known.

2.5   POSSIBLE CAUSES FOR DEBT SPECIALIZATION

The preceding studies are evident for the existence of debt specialization phenomenon among the small, new, less profitable, growing and risky companies only. These companies use debt specialization strategy as a cost minimization mechanism. This study postulates if small, new, less profitable companies were using this strategy as a cost minimization mechanism then large and mature companies may also employ it for the same reasons; to reduce their operational risk, economize flotation costs etc.

The mature, profitable and reputable companies have extended access to the debt market but when they add a new debt then the new creditors demand for extra covenant for their loan contracts due to protection purpose. This

increases the cost of debt, eventually cost of financial distress, monitoring cost and agency conflict and push them to follow debt specialization strategy. Sometimes, mature, large and profitability companies may also implement this strategy due to good market reputation that bring them in a better bargaining position to select the debt instruments according to their requirements.

Thusly, in this way the current study provides five possible explanations for the existence and relevance of debt specialization strategy across organizations: limited ingress to the debt market, lower expected bankruptcy cost, economizing information asymmetry cost, reducing agency conflicts and lowering flotation cost.

2.5.1 Limited Ingress to the Debt Market

The availability to various sources of capital influence the debt structure decisions of the organizations. The market imperfections such as bankruptcy cost, information asymmetry and agency cost may limit the accessibility of creditors to the desired type of debt. Povoa and Nakamura (2014) consider restricted access of companies to the debt market as the major cause of debt specialization. The primary contrast in the financing decisions of the companies originates from their capacity to get to debt financing. Small companies have restricted access to the long term debt because of information asymmetries and agency problems therefore, cannot approach to the public debt markets (Arena, 2011).

Companies borrow from those sources that are easily accessible. A company with greater access to the debt market borrows from multiple sources while companies with limited access depend on few debt types (Tengulov, 2015). Previous studies exhibit that company likely to issue either equity or few types of debt when their access is restricted to the debt market (Lemmon and Zender, 2010). Sometimes high borrowing cost associated with a particular type of debt may restrict company's accessibility and pull them to specialize in the few debt types that are not expensive.

Credibility, size and age can be used as an important measure of accessibility to the debt market. Credit rating can increase firm's bargaining power and help them to decide debt structure according to their financial need. A mature company that is larger in size with high credit rating has greater access to debt market. But in this study business group affiliation is used to measure debt market accessibility for the organizations. A group affiliated company has greater access to the debt market that is why it is expected business group

affiliation is negatively related to the debt specialization in case of small, unrated, less profitable companies.

In the meanwhile, regulation factor may also extend the accessibility of the organizations towards the debt markets and provides unrestricted access to various sources of financing. But in the presence of multiple debt types, these companies still adopt the debt specialization strategy to minimize their borrowing costs and also get the advantage of good reputation, Thusly, it is claimed that regulation is positively related with debt specialization in case of mature, large, rated and profitable companies.

2.5.2 Lower Expected Bankruptcy Cost

Managers take into account the expected bankruptcy costs associated with each type of debt instrument when they decide their debt structure. The probability of bankruptcy is higher for those companies that have higher cost of financial distress. In this situation, these companies borrow from few lenders to minimize their chances of bankruptcy. They also encounter the difficulty to renegotiate their debt with numerous lenders (Pessarossi and Weill, 2013), so very few choices are available for them at the time of financial distress.

Trade-off theory states that companies have to face bankruptcy cost in the form of direct costs (legal fees, credit cost, restructuring cost) and indirect costs (loss of creditors, customers, employees) at the time of bankruptcy (Baker and Martin, 2011). Barclay and Smith (1995) have argued that these costs can have different implications for the large and small companies. Larger companies have significant economies of scales and therefore are likely to have higher leverage than their counterpart smaller sized companies.

Empirical studies show that when a company is in financial distress, they prefer bank loans because they need those lenders that are able to correctly evaluate their liquidation and renegotiation decisions (Kale and Meneghetti, 2011). Previous studies use asset tangibility as a measure of bankruptcy cost (Rajan and Zingales, 1995). Bankruptcy cost decrease if asset tangibility increases. But, this study use default risk as a proxy of bankruptcy cost and it is expected high value of default risk for small, less profitable and new companies indicate the high probability of bankruptcy. Earnings volatility is also used as a measure of operational risk for large and mature companies that increase the likelihood of bankruptcy for them as they enter in a new loan contract with more restricted covenants. Therefore, it is expected that both the measures will be positively related to the debt specialization.

2.5.3 Economizing Information Asymmetry Cost

Information asymmetry plays a striking role in determining the debt structure of the organization. Information based explanation includes information confidentiality, moral hazards or monitoring benefits and information collection cost that affect the organization's choices of financing. Proprietary information is the strategic information that is likely to be valuable for the competitors or rivals (Kale and Meneghetti, 2011). A company can get better financing facilities by disclosing its research and development or marketing strategy but at the same time such company may loss its edge on the competitors.

Companies consider this aspect of information essential in selecting the various debt instruments. They specialize in few debt types when they do not want to disclose their important information publically. That is why companies with unique product, more research and development expenses and advertisement expenses engage in debt specialization. Sometimes companies prefer to present themselves for monitoring in order to eliminate information asymmetry among different stakeholders (Chemmanur and Fulghieri 1994). Shareholders of the company sometimes need to be monitored by the externals because they are engaged in the activities like asset substitution (Meneghetti, 2012) that make their position incredulous for the debt holders.

New or small companies may present themselves for voluntary monitoring when they fall in the middle credit rating grades or need to build their reputation (Denis and Mihov, 2003). Banks are considered active monitoring lenders in these cases. Bank debts are preferred on public debts when monitoring complements to the firm value (Kale and Meneghetti, 2011) while private debts are preferred on public debts when chances of default and information asymmetry is high among the firms (Arena, 2011). Short term debts force the lenders to monitor corporate performance more frequently and enable them to change their terms of contract or not to renew the loan (Diamond, 1991; Rajan, 1992) in case of likelihood of financial distress.

When information asymmetries decline among different stakeholders then companies prefer to issue public debts to avoid the monitoring costs (Diamond, 1991). However, Carey et al. (1998) suggest that private lenders do not differ in terms of asymmetric information problems; they differ only in terms of observable risk. These theoretical foundations explicate that companies prefer debt specialization to avoid monitoring and information collection cost because if they switch over to other types of financing they may face extra cost of monitoring and information collection, that is why small companies chooses use few debt types in order to avoid these costs.

We use Quality as a measure of information asymmetry because it serves as a visible signal of company's ability to repay its debts and it is expected that information asymmetry decreases with quality. Sale growth is also used as a measure of reputation for large, mature and profitable companies. It is expected that high sale growth reduces the information asymmetry for mature, rated and reputed companies; and eventually push them to follow debt specialization strategy.

2.5.4 Reducing Agency Conflicts

Agency conflict plays a central role in reshaping the choices of debt structure framework. Companies can lower down their financing costs by removing agency conflicts between different stakeholders (Povoa and Nakamura, 2014). Initially, companies have focused their attention to resolve the agency conflicts between debt holders and shareholders (Jensen and Meckling, 1976) but Colla et al. (2013) has provided the new direction to agency cost theory by highlighting the agency conflicts between different types of debt holders. A company can face financial constraints to the debt market due to agency conflicts (Locorotondo et al., 2014) that forces them to borrow from few debt sources.

This indicates a positive relation between agency conflicts and debt specialization. Higher conflicts between different debt holders lead towards the usage of few debt types. This argument is in line with the notion of Lou and Otto (2015) who argue that more dispersed debt structure generates conflict of interest between different debt holders as the interest of different debt holders may not always be fully aligned. The owners of short term debts are only interested in the short term borrowing prospect of the organization while the long term creditors may have financial and commercial stake in the company. Similarly, the interest of senior, secured debt holders may not always be synchronized with the creditors of junior, subordinate or unsecured debts. These conflicts of interest cause disagreement with organization's policies and increases the agency cost for the organizations.

Empirical evidences suggest that small companies face more agency conflicts because they are more adaptable, having more growth opportunities and retain less tangible assets. Therefore, loan giving agencies are interested to grant them loans (Beattie et al., 2006). However, the improvement in growth opportunities often reduces the agency cost of managerial discretion and increases the agency costs of debt (Booth et al., 2001). Our measure of agency conflicts is growth opportunities and market to book ratio that serves as a proxy of growth opportunities. Lower market to book ratio is the indication of the

existence of agency conflicts. Asset maturity is also used as a proxy of agency conflicts. Companies with larger asset maturities conveniently reduce the agency conflicts by providing collateral provision to the debt holders

2.5.5 Lowering Flotation Cost

Flotation cost is the fixed cost associated with the issuance of public debts; bonds or debentures (Blackwell and Kidwell, 1988). The issuance of public debts benefits the large companies in the form of economies of scale but its cost is relatively high for small companies. That is why small companies are constrained from issuing long term debts specially bonds or debentures (Beattie et al., 2006). Large public limited companies prefer bonds in the situation when they do not face agency conflicts, monitoring requirements and need huge amount of funds to finance their investment projects.

Government owned companies also favor bond because they are less information sensitive for the regulators and have high probability of approval (Pessarossi and Weill, 2013). These empirical evidences suggest that public limited companies incline more towards bonds or debentures when they are able to minimize their flotation cost otherwise they approach to other types of debt. This premise can be tested with the help of variable size (Pessarossi and Weill, 2013). Smaller companies face more flotation cost. Therefore, this study expects a negative relationship between flotation cost and debt specialization.

These theoretical, empirical and logical reasoning proffers five possible explanations for the presence of debt specialization strategy across organizations and provides a greater insight of the strategy. Now there is the need to check the prevalence of this strategy in the context of developing countries like Pakistan. This can only be possible if we can validate the antecedents of debt specialization established in the western settings, also in the context of developing countries like Pakistan.

2.6 DEBT SPECIALIZATION IN DEVELOPING COUNTRIES

There exists the borrowing diversity between developing and developed countries (Fan et al., 2012). Previously, most of the capital structure studies are conducted in the context of developed countries (Beattie et al., 2006; Ozkan, 2001) especially in the context of the United States (Aggarwal and Kyaw, 2010; Denis and McKeon, 2012; Elsas et al., 2014; Morellec et al., 2015). Recent cross country studies of capital structure decisions by Booth et al. (2001) and Chang et al. (2014) have revealed that previously identified capital structure

antecedents in the context of the United States are unable to explain the capital structure decisions outside the United States, both in developed countries and in the developing countries.

Even though, capital structure theories are unable to justify the financing behavior of different countries due to cultural, economic and institutional disparities. Therefore, there may be the chances of unavailability of the same debt instrument, market situations, economic policies and institutional regulations across countries. Demirguc-Kunt and Maksimovic (1996) have also confirmed that the level of financial market development and regulations of financial institutions have significant impact on financing policies of the organizations. Whereas, Joeveer (2013) believe that cross country variation in leverage is largely affected by the institutional differences.

Beattie et al. (2006) have argued that cross-country institutional differences; tax policies, legal system and economic environment substantially affect the financial decisions. Their findings further suggest that long term survival of the company is the key determinant of the debt levels. Companies existed in the corrupt countries with week legal system use more debts especially short term debts (Fan et al., 2012). By contrast to this Graham and Harvey (2001) consider financial flexibility as an important factor. These conflicting results depict the discrepancies in institutional arrangements of the organizations. These differences may be due to the bankruptcy laws that are relatively stricter in some countries like the United Kingdom; protecting creditor's right and restricts management to follow conservative debt policy (Rajan and Zingales, 1995).

Based on the above elaborations, it is well established that there exists a borrowing diversity across countries that affect the debt levels of the organizations. However, this is also the fact that all organizations existed in either part of the world, try to economize their borrowing costs. For that purpose, they always believe on cost minimization strategies. In this regard, debt specialization strategy can also be used by the organizations to minimize their financial distress cost, flotation cost, agency cost, information collection and monitoring cost. Previously, this strategy is only tested in the context of developed countries like the United States. However, there is a dire need to examine this strategy across countries, especially in the context of developing countries to reconfirm the findings of the prior studies and provide the new evidences for the existence of debt specialization.

2.7   SUMMARY

To conclude, this literature review includes the comprehensive theoretical and empirical evidences from the prior studies that explicitly highlight the importance of debt specialization for the organizations. It starts by explaining the concept of capital structure. Capital structure is the combination of debt and equity, concerned with the fund acquisition side of the corporate finance. The literature on capital structure is significantly been advanced after the voluminous work of Modigliani and Miller (1958) who believe capital structure is independent of firm's value and there is no concept of optimal capital structure. Capital structure theories illustrate numerous financing methods to achieve optimal capital structure but still there is no consensus in the literature whether it actually exists or not?

This debate is incomplete without discussing the debt structure that remains the less explored part of the capital structure. Scholars like Lemmon et al. (2008) have suggested that optimal capital structure cannot be achieved without achieving the optimal debt structure. The previous studies do not provide any definite criteria for the selection of optimal debt ratio because they treat all types of debt similar (Denis and McKeon, 2012; Lemmon and Zender, 2010). Although, researchers (Johnson, 1997; Povoa and Nakamura, 2014) explain the causes for preferring a specific type of debt but there is still no definite criterion available in the literature that can help the financial managers to choose among the different types of debt.

Debt structure becomes more complex when it comprises of multiple securities. It increases the conflicts of interest and free-rider problems between different claim holders, especially to agree them on the division of assets in case of bankruptcy (Gertner and Scharfstein, 1991). This increases the attention of financial managers towards financial strategy (Bender, 2014) i.e., debt specialization strategy. Debt specialization is the dependence on one type of debt by the organizations. This literature review specifies that debt specialization is a widespread phenomenon. The main reasons for practicing debt specialization in small, new and less profitable companies is to minimize bankruptcy cost, monitoring costs, limited ingress to the debt market and poor accounting quality (Li et al., 2015).

While, Large, profitable and mature companies adopt this strategy to lower down their operational risk and credit risk, having good market reputation and also due to strict covenant provisions attached with new loan contracts. These theoretical and empirical logics provide a new insight to the debt specialization strategy but there is still the need to provide the comprehensive view about the concept. This can only be possible if we can identify theoretically

and empirically related more antecedents of debt specialization. This chapter includes an extensive and thorough review of twenty-two organizational factors (Table 2.1) and sixteen non-organizational factors (Table 2.2). By this, we are able to identify the most relevant predictors of debt specialization.

This literature also purposes five possible explanations for the reasons of debt specialization: restricted access to the debt market, lower expected bankruptcy cost, economizing information asymmetry cost, reducing agency conflicts and lowering flotation cost. Finally, it explains the potential borrowing diversity existed between developing and developed countries due to differences in financial, cultural, economic and institutional differences (Chang et al., 2014; Demirguc-Kunt and Maksimovic, 1996) and highlights the need to re-testify the existence of debt specialization in developing countries.

To sum up, we can say that this comprehensive literature review provides us the reason for conducting the present research and explore our research questions on the basis of sound theoretical, empirical and logical foundations. By this, it will contribute to the existing literature and provides the subsequent evidence for the existence and prevalence of debt specialization strategy across organizations. The next chapter discusses the methodology, used in this study for data collection and analysis.

CHAPTER 3

METHODOLOGY

3.1 RESEARCH DESIGN

The current study uses *quantitative research approach* which is most suitable for the finance studies where researchers are mostly interested in objective data to ground theories or testing hypotheses. The research is based on *ex post facto non-experimental design*, as it neither involves manipulation of variables, nor concerned with random selection of the unit of analysis.

The main object of this study is *explanatory* for at least two reasons. *First,* the theoretical framework of finance has attained a high degree of sophistication that often, it becomes difficult to link theory with empirical outcomes. Albeit, the linkage between theory and empirical results are generally well established (Ryan et al., 2002). Therefore, the research questions are investigated under a well-developed framework that results advancing theories (Lemma, 2012). As being this is the indication that an explanatory or analytical design suits the subject.

Second, the concept of debt specialization has attracted the enormous attention of various scholars since the groundbreaking work of Colla et al. (2013). This study aims to find out the important organizational and non-organizational antecedents of debt specialization that are either known or identified by the literature and theories. Thusly, an explanatory design is suitable for this type of research. Moreover, the *listed companies* of Karachi Stock Exchange are the unit of analysis in this study (Population to be studied). *Panel data approach* is used for all listed companies during the period of 2009-2013.

3.2 DATA SOURCES

Data is collected by using secondary data sources in this study. There are two-fold reasons for preferring secondary data sources: Firstly, it is suitable for the context of the study because in most of the finance studies, researchers (Alderson et al., 2014; Ahmadinia et al., 2012; Constantinides et al., 2012; Daniels and Ramirez, 2008; Zwiebel, 1996) prefer to use secondary data. Further, it fulfills the research design requirement for the study which is based on panel data for all listed companies during the period of 2009-2013. Secondly,

it is cost effective and easily accessible than collecting information individually (Creswell, 2013; Ryan et al., 2002).

The secondary data for the targeted companies is collected by using multiple sources: *First,* the major source of data collection used in this study is annual reports which is considered to be the most reliable source of information because these reports are prepared in accordance to the International Accounting Standard and Companies Ordinance 1984, and duly audited by the qualified and professional auditors. *Second,* the data for debt specialization, firm level factors, industry, debt market and stock market conditions is extracted from the analysis reports of Karachi Stock Exchange and balance sheet analysis report of joint stock companies by State Bank of Pakistan. More specifically, these data sets are based on the balance sheet and income statement items of the joint stock companies on annual basis.

Third, information about credit rating comes from credit rating reports published by the Pakistan Credit Rating Agency (PCRA) and Japan Credit Rating-Vital Information Services (JCR-VIS). *Fourth,* data for business group affiliation is plucked from the annual reports and websites of the joint stock companies. *Fifth,* information about stock market prices is taken from the online data base of business recorders, a leading newspaper. *Finally,* data related to macroeconomic conditions is taken from the economic survey of Pakistan and world development indicator report.

3.3   SAMPLE DESCRIPTION

This study examines all publicly traded companies listed at Karachi Stock Exchange during the period of 2009-2013 because these companies are bound to publish their annual reports publically according to the regulations of Companies Ordinance 1984 and Securities Exchange Commission of Pakistan. From the debt point of view, there are two types of listed companies, loan giving and loan taking companies. Keeping in view that we are focusing on debt specialization, loan giving companies are excluded. These companies mostly rely on deposits to finance their primary operations and are bound to government regulatory restrictions, particularly regarding their capital structure. Therefore, 181 financial companies including banks, insurance, investment and other financial institutions are excluded from this population.

The target population of the study is then consisted of the non-financial public limited companies that remain listed at Karachi Stock Exchange during the period of study. The number of companies differs each year because several companies wind up due to heavy losses and delisted or suspended from trading

by Karachi Stock Exchange for not fulfilling the requirements of Securities Exchange Commission of Pakistan and breaching the clauses of Companies Ordinance 1984. The number of companies also varies due to the listing of new companies, merger and demerger. Given these limitations, the total number of companies differs from the original number of companies and results in unbalance panel data set. Table 3.1 provides the detail about the non-financial companies of Karachi Stock Exchange.

Table 3.1
Non-Financial Companies of Karachi Stock Exchange

Year	Financial Information Available	Defaulter Companies	Listing of New Companies	Others	Total Non-Financial Companies
2009	410	144	8	89	651
2010	410	147	8	87	652
2011	399	133	1	106	639
2012	397	92	4	97	590
2013	396	64	4	105	569

This information is obtained from the analysis reports of Karachi Stock Exchange and balance sheet analysis report of joint stock companies by State Bank of Pakistan. Table 3.1 presents that in the year 2013, the total listed non-financial companies of Karachi Stock Exchange are 569, out of that 396 companies' financial information is available, 64 companies are defaulted, 4 new companies are listed while others included 105 companies that are either merged, demerged, renamed or do not provide financial information. The particulars regarding other years can be explained in the same way.

We also perform other sets of sample selection rules. We first identify the companies with available financial information, which results in 410 non-financial public limited companies, with 2,050 company-year observations. We then exclude (1) companies with missing or zero year values for total debts and total assets; (2) Book, market and financial Leverage outside the unit interval (Lemmon et al., 2008; Li et al., 2015); (3) Organizations with zero cash holding; (4) Further, we employ stem and leave method to identify the outliers in the data. Sixty-seven percent variables do not have any outliers in their data; fifteen percent variables have only 1% outliers while just four percent variables from the total variables have 4% outliers in the data. These extreme values are excluded to minimize the impact of outliers. Finally, 2001 company-year observations are available for the analysis.

3.4 MEASUREMENT

3.4.1 Debt Specialization

Debt specialization is the tendency to rely predominantly on fewer debt types or even on single type of debt. It is measured by two ways, numeric and categorical. *Firstly,* to quantify the numerical variable, the degree of debt specialization across various organizations is computed with the help of the Herfindahl-Hirschman Index (HHI) for all types of debt available in the debt structure of the organizations (Hanssens et al. 2016; Povoa and Nakamura 2014). It is calculated as follows:

$$SS_{i,t} = \left(\frac{SSD_{i,t}}{TD_{i,t}}\right)^2 + \left(\frac{OSD_{i,t}}{TD_{i,t}}\right)^2 + \left(\frac{LSD_{i,t}}{TD_{i,t}}\right)^2 + \left(\frac{LUND_{i,t}}{TD_{i,t}}\right)^2 + \left(\frac{DEB_{i,t}}{TD_{i,t}}\right)^2 +$$
$$\left(\frac{OLD_{i,t}}{TD_{i,t}}\right)^2$$

where $SS_{i,t}$ is the sum of squared debt type ratios for organization 'i' in year 't'; while SSD, OSD, LSD, LUND, DEB and OLD refer to short term secured debts, short term other debts, long term secured debts, long term unsecured debts, debenture, and other long term debts, respectively; and TD indicates total debt. Next, we obtain

$$HHI_{i,t} = \frac{SS_{i,t} - \frac{1}{6}}{1 - \frac{1}{6}}$$

Debt specialization ranges from zero to one. If an organization uses only one type of debt, then the value of HHI is "1" while "0" is the indication that company employs all debt types in an equal proportion (Li et al., 2015). Higher value of HHI is the indication of greater degree of debt specialization among the organizations. This provides us a numeric variable for each of the target organization.

Secondly, for the categorical form, debt specialization is measured by using dummy variable; "1" for the organizations having high debt specialization and "0" otherwise. In this study we use high (i.e. 1) category for those organizations which obtain 75% or more debts from one type of debt due to limited company-year observations (i.e., 17%). While, in the study of Cola et al., (2013) and Li et al., (2015) high (i.e. 1) category was for the organizations taking more than 90% of their total debt from one debt type.

3.4.2 Organizational Factors

3.4.2.1 Liquidity

Liquidity measures the extent to which an organization has readily available funds out of total assets to meet with the sudden cash demands and short term liabilities (Priester and Wang, 2010). The most common variables fall in the category of liquidity factors are cash holding and current ratio. Cash holding is the ratio of a company's cash and cash equivalent assets including short term investment to total assets (Tengulov, 2015). It is measured by using the following formula:

$$\text{Cash Holding} = \frac{(\text{Cash} + \text{Short Term Investments})}{\text{Total Assets}}$$

Current ratio explains the company's ability to meet short term debt obligations (Sheikh and Wang, 2011). It is measured by following the standard formula:

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liability}}$$

3.4.2.2 Profitability

Profitability measures the financial performance of the organization and its capacity to make profit (Ahmadinia et al., 2012). Net profit ratio, return on assets and return on equity are the most recognized variables in the category of profitability. Net profit ratio is measured either on the basis of sale or asset in the literature but the most consistent measure used in the prior studies (Li et al., 2015) is also adopted in the present study as:

$$\text{Net Profit Ratio} = \frac{\text{Profit Before Interest and Depreciation}}{\text{Net Sale}}$$

Return on assets is a percentage of profit that a company earns by using its assets efficiently and effectively. In this study, return on asset is measured by following the way of Dewaelheyns and Hulle (2010) and Meneghetti (2012) as:

$$\text{Return on Assets} = \frac{\text{Annual Net Profit}}{\text{Total Assets}}$$

Return on equity is the earning capacity of the organization against the invested money of equity shareholders. This study uses the standard formula available in the literature for measuring the return on equity, i.e.

$$\text{Return on Equity} = \frac{\text{Net Profit Before Tax}}{\text{Average Shareholder Equity}}$$

3.4.2.3 Leverage

Leverage is the degree to which an organization is financed with borrowed money (Priester and Wang, 2010). The selection of the leverage measure depends on the objective of analysis (Rajan and Zingales, 1995). Financial leverage, book leverage and market leverage are considered to be the most persistent leverage measures in the literature (Dang, 2011; Denis and McKeon, 2012) that is why this study has used all of these variables as the measure of leverage.

Financial leverage is mostly preferred by loan giving agencies who are specifically interested to know how much cash flows are generated by utilizing long term debt (Erel et al., 2012).

$$\text{Financial Leverage} = \frac{\text{Long Term Debt}}{\text{Book Value of Assets}}$$

Book leverage is the most realistic measure, suggested by the capital structure theories. It is used by management in decision making process especially at the time of bankruptcy and measured by following the way of Dewaelheyns and Hulle (2010) and Graham and Leary (2011).

$$\text{Book Leverage} = \frac{\text{Total Debt}}{\text{Book Value of Assets}}$$

Market leverage is important for the investors because when the market value of debt changes at the time of issuance, investors are more curious to know how this change in value is going to affect their equity value. It is calculated on the basis of the following formula:

$$\text{Market Leverage} = \frac{\text{Total Debt}}{(\text{Total Debts} + \text{Market Value of Equity})}$$

3.4.2.4 Nature of Asset

Asset tangibility, maturity and growth are the most appropriate factors that depict nature of the assets in the previous literature. Asset tangibility measures the collateral level that organizations have when they pursue for debt financing. It is concerned with fixed and tangible assets so there is a consensus in the literature (Booth et al., 2001; Rajan and Zingales, 1995) for its measurement.

$$\text{Asset Tangibility} = \frac{(\text{Tangible Fixed Assets} + \text{Inventory})}{\text{Total Assets}}$$

Asset maturity is the ability of organizations to meet their financial obligations. It is measured by following the way of Shah and Khan (2009) as:

$$\text{Asset Maturity} = \frac{\text{Sales}}{\text{Fixed Assets}}$$

Asset growth is the year to year changes in the total assets (Titman and Wessels, 1988) and measured as:

$$\text{Asset Growth} = \frac{(\text{Book Value of Assets}_t - \text{Book Value of Assets}_{t-1})}{\text{Book Value of Assets}_t}$$

3.4.2.5 Risk & Growth

Volatility measures the risk implies uncertainty in profit and danger of loss in the business operations. Researchers like Morellec et al. (2015) often use cash flow volatility which is the standard deviation of quarterly operating income over previous twelve quarters scaled by the total assets but due to unavailability of quarterly data this measure is not appropriate for us. In spite of this, we measure the risk by using three variables: earnings volatility, return on asset volatility and default risk. The multiple methods are used to measure earnings volatility. There is no reason to suspect that one measure is better than the other. Thus, any measure suggested by prior studies can be used according to the suitability of the research. We employ the following measure for earnings volatility:

$$\text{Earnings Volatility} = \frac{(\text{SD of Profit Before Tax and Depreciation})}{\text{Average Assets}}$$

Default risk is measured on the basis of Altman Z-Score. Altman Z-Score indicates the credit strength of the organization. It is a metric which combines

five quantifiable financial indicators to predict the financial position of the organization (Albring et al., 2011).

$$\text{Altman Z-Score} = \left[1.2 \ * \ \left(\frac{\text{Working Capital}}{\text{Total Assets}}\right)\right] +$$
$$\left[1.4 \ * \ \left(\frac{\text{Retained Earnings}}{\text{Total Assets}}\right)\right] +$$
$$\left[3.3 \ * \ \left(\frac{\text{EBIT}}{\text{Total Assets}}\right)\right] +$$
$$\left[0.6 \ * \ \left(\frac{\text{Market Value of Equity}}{\text{Total Liabilities}}\right)\right] +$$
$$\left[999 \ * \ \left(\frac{\text{Sales}}{\text{Total Assets}}\right)\right]$$

Return on asset volatility is the ratio of annual net income to five year's average total assets (Alderson et al., 2014; Dewaelheyns and Hulle, 2010).

$$\text{Return on Asset Volatility} = \frac{\text{Annual Net Income}}{\text{Average Total Assets}}$$

Growth is the ability of an organization to generate significant positive cash flows or earnings than the overall industry and economy. It is measured by using the sales growth (Dewaelheyns and Hulle, 2010) and market to book ratio. Sales growth is measured by taking the logarithm of sale (Morellec et al., 2015) or to see the year to year changes in sale (Albring et al., 2011). Logarithm of sale is often used as a proxy of size (Carey et al., 1998; Titman and Wessels, 1988). That is why this study adopts year to year changes in sale as a measure of sale growth.

$$\text{Sales Growth} = \frac{(\text{Sales}_t - \text{Sales}_{t-1})}{\text{Sales}_{t-1}}$$

Barclay and Smith (1995) suggest that stock market prices are considered to be the most appropriate reflection for the growth opportunities of any organization. Therefore, this study selects market to book ratio (Kaya, 2011) as a measure of growth.

$$\text{Market to Book Ratio} = \frac{\text{Market Value of Equity}}{\text{Book Value of Equity}}$$

3.4.2.6 Controlling Authority

Controlling Authority is measured with the help of business group affiliation. Business groups are independent business entities, share common ownership and administrative control (Bamiatzi et al., 2014). They may include listed companies, unlisted companies and private companies. But in this study, by business group we mean only those affiliated companies remain listed on Karachi Stock Exchange during the period of study. Business group affiliation is a dummy variable. It is measured as "1" if a company is group affiliated, or "0" if it is not (Dewaelheyns and Hulle, 2010).

3.4.2.7 Image

Image factors provide information about the company as a corporate citizen. They are expressed by size, age and quality variables. Size can be measured on the basis of asset or sale (Li et al., 2015). Titman and Wessels (1988) argue that use of either of the measures does not affect the parameter estimate of their structural model. But, this study adopts the logarithm of total assets (Leary, 2009) as measure of size to test for robustness and to control possible heteroscedasticity and ensure linearity in the data because there may be the rapid changes in the volume of sale but the value of assets remains stable over years.

Age is the time in years since the company announces its first IPO (Povoa and Nakamura, 2014). Quality is the year to year changes in the total earnings of the organization (Shah and Khan, 2009). It is measured as

$$\text{Quality} = \frac{(\text{Earnings}_t - \text{Earnings}_{t-1})}{\text{Earnings}_t}$$

3.4.2.8 Nature of Expense

Nature of expense explains the financial efficiency of the organization. It describes the ability of organization to generate positive cash flows after paying off all the expenses. It is explained through depreciation ratio and operating expense ratio. Depreciation ratio is the ratio of depreciation to total fixed assets and explains how quickly company is replacing its fixed assets (Elsas et al., 2014).

$$\text{Depreciation Ratio} = \frac{\text{Depreciation Expenses}}{\text{Total Fixed Assets}}$$

Operating expenses ratio is the ratio of operating expenses to net sale that indicates the proportion of net sale consumed as operating costs available to meet financial and other expenses (Colla et al., 2013). It can be measured as:

$$\text{Operating Expenses Ratio} = \frac{\text{Operating Expenses}}{\text{Net Sales}}$$

More precisely, the measurement of all the organizational factors including liquidity, profitability, leverage, Nature of Expense, risk & growth, controlling authority, image and nature of expense are presented in Table 3.2:

Table 3.2
Measurement of Organizational Factor

	Variables	Measures	References
Liquidity	Cash Holding	Cash and Short - Term Investments/ Total assets	Danis et al., (2014)
	Current Ratio	Current Assets/Current Debts	Pessarossi & Weill, (2013)
Profitability	Net Profit Ratio	Profit Before Depreciation and Interest/Net Sale	Povoa & Nakamura, (2014)
	Return on Assets	Annual Net Profit/Total Assets	Alderson et al., (2014)
	Return on Equity	Net Profit Before Tax/Average Shareholder Equity	Ahmadinia et al., (2012)
Leverage	Financial Leverage	Long Term Debt/Book Value of Assets	Albring et al., (2011)
	Book Leverage	Total Debts/ Book Value of Assets	Morellec et al., (2015)
	Market Leverage	Total Debt/(Total Debts + Market Value of Equity)	Alderson et al., (2014)
Nature of Asset	Asset Tangibility	(Tangible Fixed Assets + Inventory)/ Total Assets	Kaya, (2011)
	Asset Maturity	Sales/Fixed Assets	Shah & Khan, (2009)
	Asset Growth	[Book Value of Assets$_{(t)}$ - Book Value of Assets$_{(t-1)}$]/ Book Value of Assets$_{(t)}$	Graham et al., (2015)

Variables		Measures	References
Risk & Growth	Earnings Volatility	Standard Deviation of Profit Before Tax and Depreciation/ Average Assets	Li et al., (2015)
	Default Risk	Altman Z-Score = [1.2*((Working Capital)/(Total Assets))] + [1.4* ((Retained Earnings)/ (Total Assets))] + [3.3*(EBIT/ (Total Assets))] + [0.6* ((Market Value of Equity)/ (Total Liabilities))] + [999 * (Sales/(Total Assets))]	Alderson et al., (2014); Wang & Lin (2013)
	Return on Asset Volatility	Annual Net Income/Average Total Assets	Meneghetti, (2012)
	Market to Book Ratio	Market Value of Equity/Book Value of Equity	Povoa & Nakamura, (2014)
	Sale Growth	$(Sales_t - Sales_{(t-1)}) / Sales_{(t-1)}$	Erel et al., (2012)
Controlling Authority	Business Group Affiliation	"1" if a company is group affiliated, "0" if it is unaffiliated.	Bamiatzi et al., (2014); Wang & Lin, (2013)
Image	Size	Logarithm of Total Assets	Dewaelheyns & Hulle, (2010)
	Age	Time in years since the company announces its first IPO	Colla et al., (2013)
	Quality	$(Earnings_t - Earnings_{t-1})/ Earnings_t$	Shah & Khan, (2009)
Nature of Expense	Depreciation Ratio	Depreciation Expenses/Total Fixed Assets	Elsas et al., (2014)
	Operating Expenses Ratio	Operating Expenses /Net Sales	Frank & Goyal, (2009)

EBIT = Earnings Before Interest and Tax, **IPO** = Initial Public Offering

3.4.3 Non-organizational Factors

3.4.3.1 Debt Market

Debt market factors include credit rating, debt maturity, tax ratio and financial ratio. Credit Rating is the rating imputed by plausible rating agencies as Standard and Poor's (Denis and Mihov, 2003) and Moody's, Fitch (Daniels and Ramirez, 2008), Pakistan credit rating agency (PCRA) and Japan credit rating-vital information services (JCR-VIS) (Samreen et al., 2013). It is a dummy variable that is measured as "1" if a company is rated by the PCRA or by JCR-VIS credit rating companies in any year under study, otherwise "0".

Debt Maturity is measured as the proportion of debt maturing in more than five years or in more than three years (Barclay and Smith, 1995; Graham and Leary, 2011) but due to unavailability of the data this study has adopted the following measure:

$$\text{Debt Maturity} = \frac{\text{Debt Maturing in More Than One Year}}{\text{Total Debts}}$$

Tax rate is the percentage of organization's earnings that is owned to the state (Shah and Khan, 2009) and calculated as:

$$\text{Tax Rate} = \frac{\text{Tax Expenses During the Year}}{\text{Profit Before Tax}}$$

Financial ratio is a percentage of the amount of net sale in rupees available to the organizations for paying their financial expenses (Meneghetti, 2012).

$$\text{Financial Ratio} = \frac{\text{Financial Expenses}}{\text{Net Sales}}$$

3.4.2.2 Industry

Industry factors describe the trends of the industry. These factors include regulation, median industry leverage ratios and median industry growth ratios. Regulation is the rules and regulations imposed by the regulatory authorities related for the specific industry. Empirical studies include financial institutions, railroads, trucking, airlines, telecommunications, gas and electric utilities in regulated industries (Graham et al., 2015).

In this study we include mineral products, fuel and energy, information, communication and transport, petroleum products, electrical machinery and

products industries as regulatory industries. These industries are governed by regulatory authorities like Pakistan Telecommunication Authority (PTA), Pakistan Electronic Media Regulatory Authority (PEMRA), National Electric Power Regulatory Authority (NEPRA), Oil and Gas Regulatory Authority (OGRA) in Pakistan. Furthermore, regulation is a dummy variable that is measured as "1" if the company belongs to the regulated industry and "0" otherwise.

Median industry leverage is measured by using the median values of leverage (financial leverage, book leverage and market leverage) for all organizations of the industry during the year (Li et al., 2015). Median industry growth is calculated by employing the median values of growth (sale growth and market to book ratio) for all organizations of the industry during the year (Lemmon et al., 2008).

3.4.2.3 Macroeconomic

Macroeconomic factors are the factors, trends or conditions pertinent to the broader aspect of the economy rather than a certain population that affect the financing decision of the organizations. Government borrowing, expected inflation rate and GDP growth rate are the most popular indicators of macroeconomic conditions. Government borrowing is the ratio of federal debt held by the public to gross domestic product (GDP). We do not include local debts as these debts are somehow misleading according to the results of Graham et al. (2015). This ratio indicates the ability of the country to pay back its future debts.

$$\text{Government Borrowing} = \frac{\text{Federal Debt}}{\text{GDP}}$$

Expected inflation rate is the year to year percentage changes in the consumer price index (CPI). It is calculated by using the following formula:

$$\text{Expected Inflation Rate} = \frac{(\text{CPI}_t - \text{CPI}_{t-1})}{\text{CPI}_t}$$

Where CPI_t is the consumer price index in year 't' computed as the average monthly CPI for the year.

GDP growth is the year to year percentage changes in gross domestic product (GDP). It is measured as:

$$\text{GDP Growth} = \frac{(\text{GDP}_t - \text{GDP}_{t-1})}{\text{GDP}_{t-1}}$$

Where GDP_t is the gross domestic product in the year 't'.

3.4.3.4 Stock Market

Stock market factors include dividend payers, dividend payout ratio and dividend yield ratio. Dividend Payer is an indicator for the organizations that either pays cash dividends (Lou and Otto, 2015) or stock dividend (Li et al., 2015). It is a dummy variable which is measured as "1" for the companies that pay dividend to their shareholders either in the form of cash or stock, "0" otherwise (Morellec et al., 2015).

Dividend payout ratio explains the organization's ability to pay cash dividends out of its profit. It is measured either as the ratio of cash dividends total net income (Aggarwal and Kyaw, 2010) or by dividing dividend per share to earnings per share. Both the measures provide approximately similar results. Therefore, we can adopt any measure for dividend payout ratio but we employ the following formula for its calculation:

$$\text{Dividend Payout Ratio} = \frac{\text{Total Amount of Cash Dividend}}{\text{Total Net Income}}$$

Dividend yield ratio is the annual dividends paid to equity holders divided by the current stock market prices (Graham and Leary, 2011). This ratio is helpful for the investors to explain that how much return they are receiving on their investment. It is computed in the following way:

$$\text{Dividend Yield Ratio} = \frac{\text{Annual Dividend}}{\text{Current Stock Price}}$$

To sum up, the measurement of all the non-organizational factors: debt market, industry, macroeconomic and stock market factors are explained in Table 3.3 in a summarized form.

Table 3.3
Measurement of Non-Organizational Factor

Variables		Measures	References
Debt Market	Credit Rating	"1" if company is rated by Pakistan credit rating or JCR-VIS rating agencies in any year under study, "0"otherwise	Samreen et al., (2013)
	Debt Maturity	Debt maturing in more than one year/Total Debts	Shah & Khan, (2009)
	Tax Rate	Tax Expenses During the Year /Profit Before Tax	Shah & Khan, (2009)
	Financial Ratio	Financial Expenses/Net Sales	Meneghetti, (2012)
Industry	Regulation	"1" if the company is in a regulated industry and "0" otherwise	Albring et al., (2011)
	Median Industry Leverage	Median of leverage values (financial, book and market) for all organizations of the industry during the year	Denis & McKeon, (2012)
	Median Industry Growth	Median values of growth (sale and market to book) for all organizations of the industry during the year.	Frank & Goyal, (2009)
Macroeconomic	Government Borrowing	Federal Debt/GDP	Graham et al., (2015)
	Expected Inflation Rates	$[CPI_{(t)} - CPI_{(t-1)}] / CPI_{(t)}$	Joeveer, (2013)
	GDP Growth	$[GDP_{(t)} - GDP_{(t-1)}] / GDP_{(t-1)}$	Joeveer, (2013)
Stock Market	Dividend Payers	"1" if company pays either cash or stock dividends, "0" otherwise.	Lemmon et al., (2008)
	Dividend Payout Ratio	Cash Dividend/Net Income	Aggarwal & Kyaw, 2010)
	Dividend Yield Ratio	Annual Dividend/Current Stock Price	Tengulov, (2015)

JCR-VIS = Japan Credit Rating-Vital Information Service, **GDP** = Gross Domestic Product, **CPI** = Consumer Price Index

3.5   DATA ANALYSIS

The secondary data is collected from various sources related to 410 non-financial listed companies, is carefully entered in Excel 2013. In order to check the accuracy, a cross check is performed. All relevant calculations are performed twice to ensure more accurateness. Later, the data is transferred to Stata version 13th and SPSS version 19th for statistical analysis. This study employs several statistical techniques to scrutinize the data through Descriptive Statistics, Industry and Time Based Analysis. The existence of debt specialization is confirmed through Cluster Analysis, Threshold Analysis and Conditional Debt Structure.

The applicability and relevance of the concept is checked on the basis of Group Comparisons across organizations. This study measures Bi-variate Pearson Correlation for all study variables and Regression Models (Tobit and Probit) for all the categories of organizational and non-organizational factors to explain which organizations specialize? Stepwise Linear Regression Modeling (Tobit and Probit) is used to answer the research questions by providing the most important organizational and non-organizational antecedents of debt specialization. Hierarchical Linear Modeling is employed for finding out the causes of debt specialization. The detailed analysis and interpretations of the results are discussed in Chapter 4.

CHAPTER 4

DATA ANALYSIS AND RESULTS

4.1 DATA OVERVIEW

4.1.1 Distribution of the Companies by Industry

Table 4.1 explains the industry distribution of the companies, which consists of 410 non-financial publically traded companies listed at Karachi Stock Exchange during the sample of period 2009-2013. We basically follow the pattern of industry distribution by State Bank of Pakistan which consists of twelve industries. We further made two modifications in the list of industries provided in the balance sheet analysis report of joint stock companies by State Bank of Pakistan. First, we treat sugar and food product industries separately that previously fall in the category of food industry. Similarly, we treat cement and mineral products industries separately that is the part of other non-metallic mineral products.

Table 4.1
Distribution of the Companies by Industry

S#	Industry	Freq.	%
1	Textile	161	39.3
2	Sugar	35	8.5
3	Food Product	18	4.4
4	Chemicals, Chemical Products & Pharmaceuticals	44	10.7
5	Other Manufacturing Companies	34	8.3
6	Cement	22	5.4
7	Mineral Products	8	2.0
8	Motor Vehicles, Trailers & Auto parts	22	5.4
9	Fuel & Energy	21	5.1
10	Information, Communication & Transport	12	2.9
11	Coke & Refined Petroleum Products	8	2.0
12	Paper, Paperboard & Products	9	2.2
13	Electrical Machinery & Apparatus	7	1.7
14	Others	9	2.2
	Total	**410**	**100.0**

The basic reason for separating these industries is to analyze their effect independently. By following this division, the total number of industries increased to fourteen industries. Table 4.1 illustrates that majority of the companies, almost 40% (161) of the sample companies belong to textile industry. While approximately, 11% (44) companies are related to chemicals, chemical products and pharmaceuticals industry, which is the second highest category. Whereas, very few companies are existed in other types of industries i.e., less than 10% of selected companies belong to other 12 industries. This table also explains textile sector dominates in the Pakistani economy and among the listed companies of Karachi Stock Exchange.

4.1.2 Summary Statistics

Summary statistics presents the descriptive statistics for debt specialization, organizational and non-organizational factors after the outlier treatment. Table 4.2 provides summary statistics for debt specialization during the period of 2009 to 2013. Table 4.3 proffers the results for means, standard deviations, 10th, 25th, 50th, 75th, 90th percentiles and number of observations that describe the characteristics of the organizational factors. Skewness and kurtosis are evaluated to check the normality in the data. Similarly, Table 4.4 states the summary statistics for non-organizational factors. The definitions and measurements of all the study variables are provided in Chapter 3.

4.1.2.1 Summary Statistics for Debt Specialization

Table 4.2 explains the summary statistics for the measures of debt specialization including HHI and Excl75 where HHI is a numeric measure while Excl75 is a categorical measure of debt specialization with value "1" for the organizations having high debt specialization and "0" for the organizations using diversified types of debt. Results express that the mean (median) value of HHI is 0.400 (0.331) while the mean (median) value of Excl75 is 0.236 (0.000).

The percentiles distribution shows that the value of HHI in 25th percentile is 0.213, in 75th percentile is 0.501 and in 90th percentile is 0.855 while Excl75 is only existed in 90th percentile. In this study the higher value of HHI and Excl75 is the indication of greater degree of debt specialization among the organizations. So the companies that are in the highest percentile of HHI or Excl75 are more involved in the process of debt specialization.

Table 4.2
Summary Statistics for Debt Specialization

Variables	Mean	SD	Percentiles					Skewness	Kurtosis
			10th	25th	50th	75th	90th		
HHI	0.400	0.253	0.148	0.213	0.331	0.501	0.855	-0.032	-0.509
Excl75	0.236	0.425	0.000	0.000	0.000	0.000	1.000	1.242	-0.458

HHI = Herfindahl-Hirschman Index

4.1.2.2 Summary Statistics for Organizational Factors

Table 4.3 has reported the descriptive statistics for all the categories of organizational factors. The results indicate that companies included in this study, maintain cash holding on average 0.054 million with current ratio 1.319 times. Profitability factors show that their net profit ratio is 5.8%, return on assets is 4.6% and return on equity 20.1%. The leverage ratios of sample companies explain that their financial leverage is 0.197, book leverage is 0.555 and market leverage is 0.674. These results present large differences in the value of leverage ratios while previous researchers like Frank and Goyal (2009) show very minor differences between them. This difference in leverage ratios provide the justification for including them in the present study and analyze their effect on debt specialization.

The selected sample companies have approximately 70% tangible asset in the total assets, about 3-year asset maturity and 25% asset growth rate. Their earnings volatility is 9.2%, return on asset volatility is 3.9% and default risk value is 1.716. The value of default risk, calculated on the basis of Altman Z-Score lies between 1.8 and 3.0. The lower value of default risk indicates the greater chances of bankruptcy. Therefore, current results indicate that the probability of default among listed companies of Karachi Stock Exchange is high. These results also support the previous studies that the phenomenon of debt specialization is more common among the companies having more default probability.

The results for growth factors present that the average growth rate (market to book ratio) is 9% and sale growth rate is 22%. The growth rate for sale is better than market to book rate in Pakistan. These results also specify that about 54% of the sample companies are group affiliated. The average age of companies is about 26 years, having book value of assets 3.344 million. These results also indicate that the depreciation ratio is 7.4% and operating expense ratio is 20%.

Table 4.3
Summary Statistics for Organizational Factors

Variables	Mean	SD	Percentiles					Skewness	Kurtosis
			10th	25th	50th	75th	90th		
Liquidity									
Cash Holding	0.054	0.097	0.002	0.004	0.013	0.054	0.155	0.041	-0.831
Current Ratio	1.319	1.223	0.313	0.707	1.023	1.482	2.520	-0.376	-0.001
Profitability									
Net Profit Ratio	0.058	2.394	-0.279	-0.059	0.012	0.070	0.176	0.444	2.238
Return on Assets	0.046	0.189	-0.078	-0.009	0.030	0.087	0.168	-0.679	0.737
Return on Equity	0.201	1.036	-0.266	-0.001	0.148	0.325	0.609	-0.568	0.840
Leverage									
Financial Leverage	0.197	0.201	0.002	0.038	0.139	0.299	0.462	0.897	0.840
Book Leverage	0.555	0.222	0.242	0.402	0.581	0.722	0.826	-0.395	-0.150
Market Leverage	0.674	0.277	0.220	0.480	0.755	0.910	0.968	-0.777	-0.558
Nature of Asset									
Asset Tangibility	0.697	0.212	0.376	0.602	0.748	0.851	0.919	-1.108	0.837
Asset Maturity	3.034	4.732	0.235	0.738	1.728	3.466	6.206	-0.676	-0.666
Asset Growth	0.250	0.415	-0.094	-0.011	0.089	0.329	1.000	0.936	-0.349
Risk & Growth									
Earnings Volatility	0.092	0.138	0.017	0.031	0.059	0.095	0.169	-0.445	2.226
Default Risk	1.716	2.071	-0.210	0.509	1.383	2.623	4.329	0.769	2.652
Return on Asset Volatility	0.039	0.172	-0.077	-0.009	0.028	0.087	0.166	-0.688	0.594
Market to Book Ratio	0.983	2.217	-0.119	0.159	0.581	1.247	2.517	-0.317	0.667
Sale Growth	2.200	67.368	-0.216	0.000	0.207	0.777	1.000	0.100	-0.362
Controlling Authority									
Business Group Affiliation	0.544	0.498	0.000	0.000	1.000	1.000	1.000	-0.176	-1.971
Image									
Size	3.344	0.831	2.352	2.853	3.365	3.897	4.390	-0.347	0.813
Age	26.417	14.101	9.000	17.000	22.000	39.000	47.000	0.513	-0.510
Quality	0.358	2.419	-1.042	-0.050	0.499	1.000	1.413	-0.879	0.188
Nature of Expense									
Depreciation Ratio	0.074	0.117	0.014	0.035	0.058	0.088	0.114	-1.238	4.860
Operating Expense Ratio	0.201	0.594	0.022	0.036	0.063	0.153	0.312	0.562	1.648

These expenses ratios are greater than the profitability ratios which indicate that not all the selected companies are profit earning, loss bearing companies are also the part of the current study. The median value of book leverage, market leverage, asset tangibility, business group affiliation, size and quality express that most of the values in the data set are higher than the average value. All the value of standard deviation is less than one except for sale growth and age, indicate the higher dispersion in the data of age and sales whereas overall results for standard deviation show reliable results.

The percentile results illustrate that the values of return on earnings volatility, net profit ratio, asset growth, return on assets, quality and return on equity are negative in 25th percentile because all these variable except asset growth are calculated on the basis of earnings of the organizations and we include loss bearing organizations in the sample as well. That is why these variables show negative values. The overall results of descriptive statistics are reliable and can be generalized to the whole sample. The skewness and kurtosis are calculated to check the normality in the data. All the values of skewness are less than 2 while in case of kurtosis very few variables remain unsupportive.

4.1.2.3 Summary Statistics for Non-Organizational Factors

Table 4.4 states the descriptive statistics for all the categories of non-organizational factors. The results specify that approximately 83% companies do not have credit rating; their debt maturity period is approximately 3 years. These companies pay 17.8% taxes to the government and their interest expenses are 9.4% of the total profit. 85% of the selected companies are non-regulatory, their median industry financial leverage is approximately 15%, median industry book leverage is 60% and median industry market leverage is 72%.

Median industry market to book ratio is 72.7% while median industry sale growth rate is 3.11%. These benchmark growth rates are higher than the average growth rates presented in Table 4.3. This is because of the inclusion of all types of organizations in the industry i.e., large and small, new and mature, profit earning and loss bearing etc. The results for macroeconomic factors show that the average value of government borrowing is 0.010, expected inflation rates is 28.2% and GDP growth rate is 34.3%.

Table 4.4
Summary Statistics for Non-Organizational Factors

Variables	Mean	SD	Percentiles					Skewness	Kurtosis
			10th	25th	50th	75th	90th		
Debt Market									
Credit Rating	0.166	0.373	0.000	0.000	0.000	0.000	1.000	1.793	1.215
Debt Maturity	0.310	0.252	0.005	0.084	0.272	0.483	0.674	0.632	-0.466
Tax Ratio	0.178	0.604	-0.060	0.000	0.150	0.340	0.490	-1.430	3.150
Financial Ratio	0.094	0.395	0.001	0.008	0.031	0.066	0.141	-0.120	0.527
Industry									
Regulation	0.149	0.356	0.000	0.000	0.000	0.000	1.000	1.974	1.897
Median Industry Financial Leverage	0.151	0.075	0.047	0.077	0.164	0.217	0.245	0.010	-0.695
Median Industry Book Leverage	0.607	0.081	0.497	0.547	0.621	0.656	0.715	-0.945	1.703
Median Industry Market Leverage	0.716	0.165	0.524	0.612	0.720	0.878	0.899	-0.868	0.586
Median Industry Market to Book Ratio	0.727	0.506	0.263	0.283	0.606	1.004	1.342	0.001	-0.938
Median Industry Sale Growth	0.311	0.370	-0.049	0.090	0.141	0.353	1.000	-0.406	0.573
Macroeconomic									
Government Borrowing	0.010	0.001	0.007	0.009	0.010	0.011	0.011	-0.732	-0.860
Expected Inflation Rates	0.282	0.365	0.071	0.088	0.106	0.122	1.000	1.333	-0.017
GDP Growth	0.343	0.338	0.099	0.126	0.230	0.241	1.000	0.833	-0.581
Stock Market									
Dividend Payers	0.601	0.490	0.000	0.000	1.000	1.000	1.000	-0.414	-1.831
Dividend Payout Ratio	0.175	1.151	0.000	0.000	0.000	0.093	0.350	-0.291	0.790
Dividend Yield Ratio	0.411	0.929	0.000	0.000	0.000	0.491	1.163	0.917	-0.734

These results also explain that more than 60% companies included in the study are dividends paying, with dividend payout ratio 17.5% and dividend yield ratio 41.1%. The percentile results show that with the exception of dummy variables regulatory, credit rating and dividend payment, only stock market factors have zero value up to 50th percentile. The median industry sale growth rate has negative value while other variables are evenly distributed among all percentiles. All the values of standard deviation are less than one expects the

value of dividend payout ratio that means there is little dispersion from the average. All and all, the results are reliable and can be generalized to the whole sample. The absolute values of skewness and kurtosis (i.e., between |2|) is the indication of normal distribution of the data (George and Mallery, 2010). All the study variables completely fulfill the normality assumption in case of skewness except tax ratio that remains unsupportive in case of kurtosis only.

4.2 DEBT STRUCTURE OVERVIEW

In this section, debt structure of the public limited companies is viewed by analyzing their summary of descriptive statistics that helps to explain the characteristics and popularity of each debt instrument. This section also explains the heterogeneity in debt structure over time and industry.

4.2.1 Summary Statistics for Debt Types

Table 4.5 demonstrates the descriptive statistics for all types of debt included in the present study. The debt structure of Pakistani companies comprises of six types of debt: short term secured, short term other, long term secured, long term unsecured, debenture and other long term debts. The summary statistics includes means, standard deviations, percentiles and percentage of observations with positive usage for each debt instrument. The definitions of debt types are provided in Appendix-A.

Table 4.5 provides detailed summary statistics for the usage of different debt instruments in the Pakistani organizations. First, the results indicate that almost all the organizations rely on other short term debts for financing. The sample mean (median) ratio for other short term debts to total debts is 0.424 (0.336). The percentile results also validate this view as in 95th percentile the value of other short term debt is 1.000. Second, more than three fourth of the companies use short term debts for financing. This demonstrates that short term debts are the most popular source of financing among the Pakistani companies.

Third, in case of long term debts, about 75% of the organizations use other long term debts. This debt is considered to be less the important than short term debts but remains the most popular type of loan among long term debts. Fourth, more than 60% of the companies employ long term secured loans with mean and (median) value is 0.130 (0.044), while about 36% uses unsecured long term debts. Finally, very few organizations less than 5% of the sample tend to prefer debentures for financing. Further, the values of standard deviation prove the

authenticity of the results; therefore, results can be generalized to the whole sample.

Table 4.5
Descriptive Statistics for Debt Types

Types of Debts	Mean	Percentile							SD	Obs. with positive usage (%)
		10th	25th	50th	75th	90th	95th	99th		
Short Term Secured Debts	0.267	0.000	0.021	0.236	0.450	0.601	0.683	0.805	0.235	79.21
Short Term Other Debts	0.424	0.125	0.196	0.336	0.622	0.924	1.000	1.000	0.282	99.95
Long Term Secured Debts	0.130	0.000	0.000	0.044	0.200	0.413	0.525	0.753	0.181	60.97
Long Term Unsecured Debts	0.081	0.000	0.000	0.000	0.067	0.316	0.470	0.918	0.180	36.18
Debenture	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.292	0.043	4.70
Other Long Term Debts	0.092	0.000	0.000	0.043	0.130	0.251	0.354	0.616	0.129	74.91

4.2.2 Debt Types and Debt Specialization

This section presents mean ratios for all debt types and for debt specialization measure of HHI over time and industry. It includes all six types of debt: SSD, OSD, LSD, LUND, DEB and OLD which refers to short term secured, short term other, long term secured, long term unsecured, debenture, and other long term debts, respectively. Table 4.6 explains the tendency of debt specialization during the sample period while Table 4.7 presents the trends of specialization over industry.

4.2.2.1 Debt Types and Debt Specialization Over Time

Table 4.6 explains the time series trends for the distinct use of debt instruments over the sample period. Results show that the companies rely more on long term secured debts than on other long term debts. We also find the dependence of organizations on long term unsecured and other long term debts remain almost similar during the sample period. Similarly, the use of short term

debts and debentures remains stable over time. The value of HHI is also consistent over the years i.e., approximately 40% during 2009-2013.

Table 4.6
Debt Types and Debt Specialization over Time

Year	SSD	OSD	LSD	LUND	DEB	OLD	HHI
2009	0.262	0.394	0.149	0.079	0.010	0.099	0.393
2010	0.266	0.401	0.139	0.083	0.007	0.095	0.396
2011	0.281	0.420	0.119	0.082	0.007	0.082	0.412
2012	0.265	0.424	0.123	0.082	0.005	0.087	0.396
2013	0.258	0.429	0.122	0.077	0.004	0.096	0.404

SSD = Short Term Secured, **OSD** = Short Term Other, **LSD** = Long Term Secured, **LUND** = Long Term Unsecured, **DEB** = Debenture, **OLD** = Other Long Term Debts

4.2.2.2 Debt Types and Debt Specialization Over Industry

Table 4.7 describes the tendency of specialization over industry. It proffers evidence for the usage of different debt types during the period of 2009 to 2013. Results indicate that 86% industries (except Fuel & Energy and Electrical Machinery & Apparatus), depend more on long term secured loans than on other long term debts. But other long term debts are still important in the industries than long term unsecured debts and debentures while, the practice of other types of loan remains consistent in the industries during the sample period. Short term debts still dominate in all types of industries and other short term debts remain the most prevalent type of debt.

The value of HHI explains the trends of debt specialization across industries. The high value of HHI is the indication of greater degree of debt specialization across organizations. The value of HHI is highest in coke and refined petroleum products industry i.e., almost 74%. The food product, other manufacturing companies, motor vehicles, trailers and auto parts, fuel and energy industries have HHI value more than 50% while other nine industries have HHI value less than 50%. These results specify that management of coke and refined petroleum products industry commonly employ debt specialization strategy for their companies.

Table 4.7
Debt Types and Debt Specialization over Industry

Industry	SSD	OSD	LSD	LUND	DEB	OLD	HHI
Textile	0.250	0.426	0.127	0.076	0.009	0.113	0.352
Sugar	0.290	0.452	0.118	0.033	0.001	0.105	0.280
Food Product	0.309	0.329	0.169	0.095	0.001	0.094	0.526
Chemicals, Chemical Products & Pharmaceuticals	0.293	0.386	0.159	0.074	0.003	0.085	0.424
Other Manufacturing Companies	0.348	0.368	0.147	0.073	0.001	0.065	0.515
Cement	0.174	0.584	0.111	0.045	0.000	0.085	0.267
Mineral Products	0.255	0.499	0.119	0.090	0.000	0.040	0.321
Fuel & Energy	0.292	0.437	0.098	0.070	0.002	0.101	0.525
Motor Vehicles, Trailers & Auto parts	0.399	0.342	0.129	0.081	0.010	0.038	0.529
Information, Communication & Transport	0.188	0.333	0.209	0.184	0.019	0.068	0.367
Coke & Refined Petroleum Products	0.218	0.335	0.148	0.236	0.001	0.064	0.735
Paper, Paperboard & Products	0.308	0.419	0.136	0.087	0.000	0.051	0.464
Electrical Machinery & Apparatus	0.261	0.390	0.081	0.150	0.000	0.116	0.442
Others	0.189	0.462	0.099	0.162	0.038	0.052	0.486

SSD = Short Term Secured, **OSD** = Short Term Other, **LSD** = Long Term Secured, **LUND** = Long Term Unsecured, **DEB** = Debenture, **OLD** = Other Long Term Debts

In short, we can say that although six types of debt are existed in the debt structure of Pakistani public limited companies but short term debts are the most dominant type of debt. In long term debts most common type of debt is secured long term debts, followed by the other long term debts. The cross sectional and time series analysis also confirms our notion.

4.3   EVIDENCE OF DEBT SPECIALIZATION

The present study provides the evidence for the existence of debt specialization on the basis of cluster analysis, thresholds analysis and conditional debt structure.

4.3.1 Cluster Analysis

The first evidence for the presence of debt specialization comes from the cluster analysis, uses to explain the patterns of debt structure across organizations. Cluster analysis is a grouping technique which identifies the groups having similar characteristics within the group but different from other groups. It is a multivariate method, use to determine the unknown structure within the data and depends on the minimization of the variance within clusters (in terms of the Euclidian distance of the company-year observations from the center of its own cluster) and the maximization of the variance between the clusters (in terms of the Euclidian distance of the company-year observations from the center of other clusters).

For cluster analysis, we use Stata command of cluster k means to define the clusters for all six types of debt concurrently and then run k means command for up to 15 clusters. We finally get six clusters by using the stopping rule based on the Calinski/Harabasz index. The results of cluster analysis are demonstrated in graphical form as well as in tabulation form.

First, we discuss the graphical presentation of cluster analysis. Figure 1 plots company-year observations, grouped according to the preferences of the companies for each debt instrument. The mean debt ratios are used for each of the cluster whereas total debt ratio is included in this analysis for comparison purpose only. The cluster results present that debt specialization take place in three clusters, (Cluster 2, Cluster 3 and Cluster 6). It identifies that in Cluster 2, companies specialize in short term secured debts, other short term debts are preferred in Cluster 3, while in Cluster 6, long term unsecured debts are favored by the organizations. In contrast, Cluster 1, Cluster 4 and Cluster 5 provide evidences for the company's reliance on at least two types of debt.

Table 4.8 shows cluster mean and median ratios (in square brackets) for various debt types in the six identified clusters. It also illustrates the results of traditional organizational determinants (size, age, financial leverage, growth (market to book), asset tangibility and earnings volatility), again we include total debts in this analysis for comparison purpose only. The outcomes of cluster

analysis show that companies in Cluster 2 predominantly rely on short term secured debts with cluster mean (median) ratio, 0.577 (0.561).

Cluster 3 includes the companies having almost similar size, age and earnings volatility, rely on other short term debts. These companies maintain low leverage ratio, growth opportunities and asset tangibility and their mean (median) values are 0.869 (0.895). The mean value of size and age for companies existed in either of the clusters, is almost same. Companies in Cluster 6, mostly rely on long term unsecured debts having mean (median) values 0.573 (0.511). These companies are different from the companies present in Cluster 2 and Cluster 3 in terms of earnings volatility.
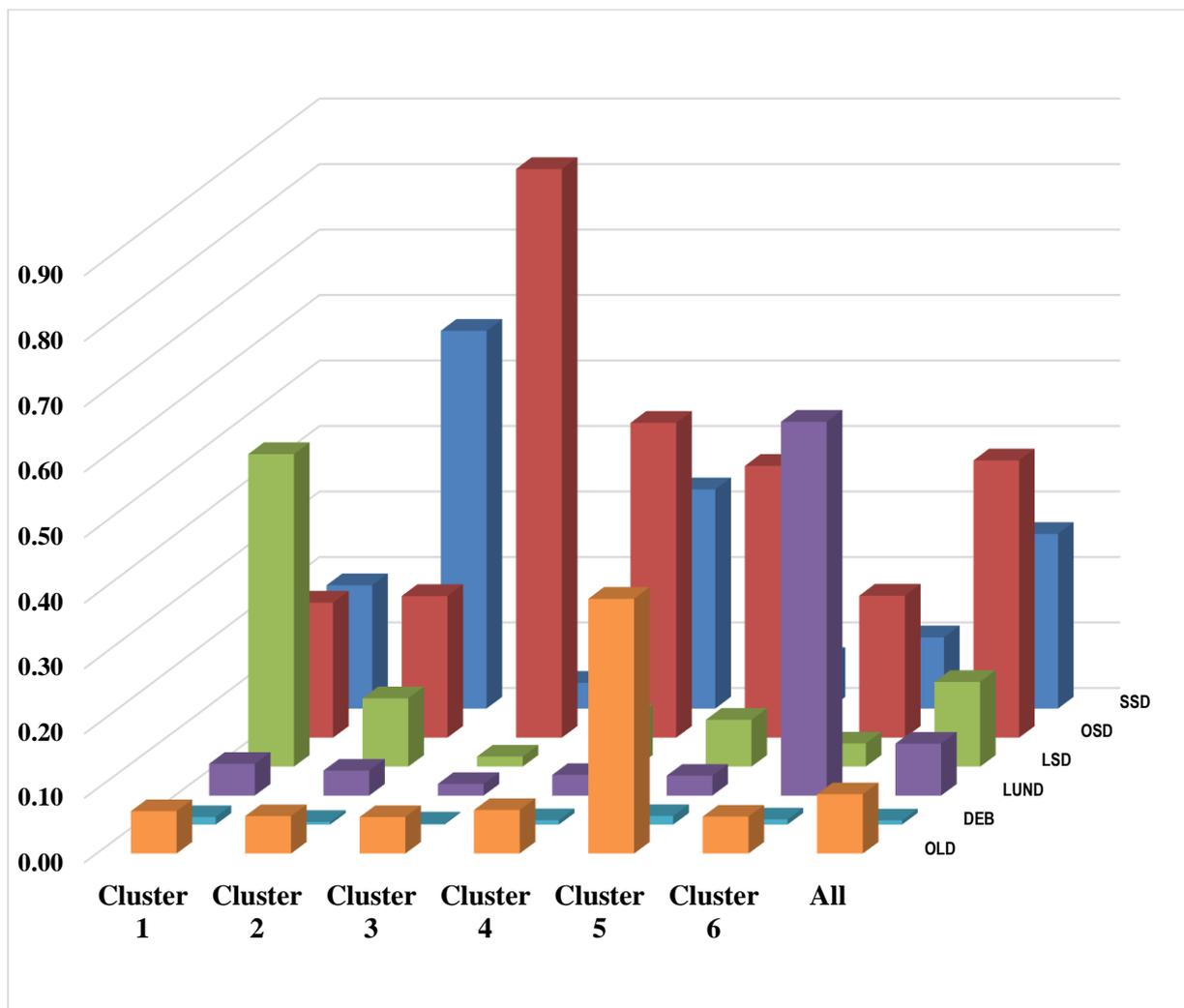
Figure 1: The Distribution of Debt Types within a Cluster

Cluster 4 and Cluster 5 mainly rely on two types of debts. Cluster 4 rely on other short term debts 0.481 (0.488) and on short term secured debts 0.335 (0.336). Cluster 5 representing just 9% of the total company-year observations prefer either other short term debts 0.415 (0.418) or other long term debts 0.392 (0.3615).

Table 4.8
Cluster Analysis for Debt Specialization

Cluster	Debt Types						HHI	Organizational Characteristics						Obs.
	SSD	OSD	LSD	LUND	DEB	OLD		Size	Age	FL	Growth	AT	EV	
1	0.188	0.207	0.478	0.049	0.012	0.066	0.426	3.305	26.168	0.194	0.857	0.708	0.097	315
	[0.175]	[0.193]	[0.448]	[0.000]	[0.000]	[0.038]	[0.363]	[3.350]	[22]	[0.135]	[0.485]	[0.758]	[0.062]	
2	0.577	0.217	0.106	0.039	0.004	0.058	0.385	3.397	26.753	0.210	0.970	0.703	0.089	526
	[0.561]	[0.209]	[0.087]	[0.000]	[0.000]	[0.035]	[0.312]	[3.426]	[23]	[0.152]	[0.614]	[0.756]	[0.054]	
3	0.039	0.869	0.016	0.018	0.002	0.057	0.414	3.284	25.696	0.185	0.894	0.684	0.088	437
	[0.000]	[0.895]	[0.000]	[0.000]	[0.000]	[0.009]	[0.346]	[3.244]	[22]	[0.132]	[0.532]	[0.738]	[0.059]	
4	0.335	0.481	0.078	0.032	0.007	0.068	0.407	3.370	26.853	0.186	1.214	0.683	0.095	360
	[0.336]	[0.488]	[0.038]	[0.000]	[0.000]	[0.049]	[0.338]	[3.381]	[22]	[0.120]	[0.669]	[0.736]	[0.062]	
5	0.076	0.415	0.073	0.031	0.013	0.392	0.394	3.309	26.239	0.208	1.067	0.713	0.083	188
	[0.032]	[0.418]	[0.020]	[0.000]	[0.000]	[0.3615]	[0.323]	[3.382]	[22]	[0.161]	[0.575]	[0.752]	[0.059]	
6	0.109	0.217	0.036	0.573	0.008	0.057	0.360	3.385	26.949	0.205	0.908	0.709	0.106	175
	[0.048]	[0.198]	[0.000]	[0.511]	[0.000]	[0.016]	[0.298]	[3.403]	[21]	[0.171]	[0.642]	[0.767]	[0.059]	
All	0.267	0.424	0.130	0.081	0.006	0.092	0.400	3.344	26.417	0.197	0.983	0.697	0.092	2001
	[0.236]	[0.336]	[0.044]	[0.000]	[0.000]	[0.043]	[0.331]	[3.365]	[22]	[0.139]	[0.581]	[0.748]	[0.059]	

SSD = Short Term Secured, **OSD** = Short Term Other, **LSD** = Long Term Secured, **LUND** = Long Term Unsecured, **DEB** = Debenture,
OLD = Other Long Term Debts, **FL** = Financial Leverage, **AT** = Asset Tangibility, **EV** = Earnings Volatility

The differences between Cluster 4 and Cluster 5 are that in Cluster 4 the financial leverage and asset tangibility ratios are low whereas the growth opportunities and earnings volatility are high. Finally, companies in Cluster 1, employ mix of long term secured debts 0.478 (0.448), other short term debts 0.207 (0.193) and short term secured debts 0.188 (0.175). These companies have lowest growth ratio in our sample.

To sum up, the findings of the cluster analysis suggests that 67% of the Pakistani companies predominantly borrow from one source of financing against the results of Colla et al. (2013) who found 85% of the Unites States companies rely on one type of debt. This evidence further suggests that debt specialization is a widespread phenomenon among listed companies of Pakistan.

4.3.2 Thresholds Analysis

Thresholds analysis provides us second proof for the presence of debt specialization. It is computed as the fraction of company-year observations in the sample that acquires a substantial amount of debt from a particular source of financing. We use the wide range of thresholds from 10% to 90% to highlight the preference of the companies for a specific type of debt. The results of thresholds analysis are reported in Table 4.9 that indicate a company becomes a significant user for a particular type of debt only when its share of company-year observations for that type of debt is at or above the specific level of threshold.

Table 4.9
Thresholds Analysis

Types of Debt	Thresholds								
	10%	20%	30%	40%	50%	60%	70%	80%	90%
SSD	0.289	0.234	0.185	0.136	0.088	0.044	0.018	0.005	0.002
OSD	0.251	0.201	0.150	0.115	0.090	0.071	0.054	0.038	0.029
LSD	0.390	0.246	0.154	0.102	0.059	0.027	0.014	0.006	0.002
LUND	0.317	0.206	0.166	0.102	0.073	0.053	0.039	0.027	0.019
DEB	0.442	0.284	0.200	0.042	0.021	0.011	0.000	0.000	0.000
OLD	0.512	0.251	0.116	0.056	0.034	0.019	0.007	0.003	0.002
Total	**2.200**	**1.423**	**0.970**	**0.553**	**0.365**	**0.225**	**0.131**	**0.079**	**0.053**

SSD = Short Term Secured, **OSD** = Short Term Other, **LSD** = Long Term Secured, **LUND** = Long Term Unsecured, **DEB** = Debenture, **OLD** = Other Long Term Debts

For example, "10%" level of threshold means company borrows 10% or more debt from a particular type of debt. Other threshold levels are also defined similarly. "Total" column represents the share of company-year observations that rely on at least one type of loan more than a specific threshold level. If the companies obtain loan from all six sources of financing in an equal proportion, then the total in 10% column will be "6" while in 20% or any other column it will be "0". However, if the companies use concentrated debt structure (based on a single debt type), then the total will be "1". The row "Total" provides us the complete information about the significant users for all the loan types

The evidence provided in Table 4.9 confirms a general tendency toward specialization. These outcomes indicate that almost 13% of our company-year observations predominantly rely on single type of loan, and 23% (97%) attain more than 60% (30%) loan from one type of debt while, 5% (13%) obtain more than 90% (70%) of their loans from single source of financing.

4.3.3 Conditional Debt Structure

Another way to validate the existence of debt specialization is the use of conditional debt structure. Under this method, we execute the condition that the usage of a specific type of loan must exceed to 30% or 50% of the total loan. Here, significant users for a particular type of loan mean those companies that satisfy these conditions (obtain more than 30% or 50% debt from one debt type).

Table 4.10
Conditional Debt Structure for > 30%

Condition	SSD	OSD	LSD	LUND	DEB	OLD
SSD>30%	**0.505** [0.485]	0.278 [0.245]	0.111 [0.076]	0.044 [0.000]	0.003 [0.000]	0.060 [0.037]
OSD>30%	0.182 [0.127]	**0.615** [0.565]	0.065 [0.000]	0.041 [0.000]	0.002 [0.000]	0.095 [0.044]
LSD>30%	0.195 [0.174]	0.210 [0.190]	**0.478** [0.447]	0.047 [0.000]	0.008 [0.000]	0.062 [0.032]
LUND>30%	0.113 [0.050]	0.235 [0.204]	0.063 [0.000]	**0.529** [0.449]	0.003 [0.000]	0.057 [0.011]
DEB>30%	0.153 [0.107]	0.190 [0.196]	0.177 [0.142]	0.023 [0.001]	**0.353** [0.319]	0.103 [0.085]
OLD>30%	0.081 [0.008]	0.393 [0.373]	0.045 [0.001]	0.027 [0.001]	0.005 [0.001]	**0.449** [0.407]

SSD = Short Term Secured, **OSD** = Short Term Other, **LSD** = Long Term Secured, **LUND** = Long Term Unsecured, **DEB** = Debenture, **OLD** = Other Long Term Debts

We then compute mean and median (in square brackets) debt ratios for all debt types for the subset of observations that follow these condition. Table 4.10 and Table 4.11 explain the results of these analyses.

In Table 4.10, we execute the condition that the usage of a specific type of loan must be greater than 30%. The main diagonal indicates that conditional mean usage for a specific type of loan upon which we impose the condition is between 35% and 62%. The results further explain that the substantial users of a short term secured debts are also the borrower of other short term debts (27.8%); alternatively, the borrowers of other short term debts also include short term secured debts (18.2%) in their debt structure.

This also reaffirms our results that short term debts are the most popular source of financing among the Pakistani companies. The companies obtain long term unsecured debts also prefer other short term debts (21.0%). The substantial users of debentures are not high so they obtain loan from multiple sources. The use of debenture is very low in Pakistan; approximately 5% companies prefer to issue debentures.

Table 4.11
Conditional Debt Structure for > 50%

Condition	SSD	OSD	LSD	LUND	DEB	OLD
SSD> 50%	**0.620** [0.598]	0.224 [0.210]	0.087 [0.060]	0.025 [0.000]	0.004 [0.000]	0.040 [0.024]
OSD> 50%	0.107 [0.011]	**0.767** [0.745]	0.027 [0.000]	0.019 [0.000]	0.002 [0.000]	0.078 [0.024]
LSD> 50%	0.122 [0.113]	0.174 [0.152]	**0.625** [0.584]	0.026 [0.000]	0.000 [0.000]	0.052 [0.029]
LUND> 50%	0.245 [0.221]	0.272 [0.227]	0.117 [0.05]	**0.289** [0.192]	0.004 [0.000]	0.073 [0.034]
DEB> 50%	0.091 [0.070]	0.090 [0.085]	0.125 [0.063]	0.111 [0.118]	**0.537** [0.504]	0.046 [0.018]
OLD> 50%	0.236 [0.208]	0.391 [0.327]	0.124 [0.055]	0.060 [0.000]	0.007 [0.000]	**0.182** [0.139]

SSD = Short Term Secured, **OSD** = Short Term Other, **LSD** = Long Term Secured, **LUND** = Long Term Unsecured, **DEB** = Debenture, **OLD** = Other Long Term Debts

In Table 4.11, we impose the condition that the usage of a specific type of loan must be greater than 50%. The results of conditional debt structure explain that the main diagonal for mean (median) values for each debt type ranges between 18% and 77%. This range is large as compared to the range describe in Table 4.10. This table further explains that significant users of short

term secured debts also obtain loan from other short term debts (22.4%); alternatively, the significant users of other short term debts are also the users of short term secured debts (10.7%). Companies that are the substantial user of long term secured debts are also the user of other short term debts (17.4%); however, significant users of long term unsecured debts are also use other short term debts (27.2%) and short term secured debts (24.5%).

In short, the outcomes presented in Table 4.10 and Table 4.11 emphasize that not many companies use other types of debt beyond the one upon which we condition, and furthermore, it confirms that short term debts are equally popular among Pakistani listed companies.

To conclude, the results of cluster analysis, threshold analysis and conditional debt structure reaffirms the existence of debt specialization phenomenon among the Pakistani listed companies i.e., 67% of the companies predominantly rely on one type of debt. The short term debts dominate in the debt structure of public limited companies, followed by secured long term and other long term debts.

4.4 APPLICABILITY OF DEBT SPECIALIZATION STRATEGY ACROSS ORGANIZATIONS

Research Question 1 is intended to check the prevalence of debt specialization strategy across organization. For this purpose, we conduct a comparative analysis of traditional organizational and non-organizational characteristics: age, size, profitability, growth opportunities (market to book), leverage, regulations, business group affiliation, dividend payments and credit rating to examine the relevance of debt specialization strategy across organizations.

Here we define new, small, non-profitable, low growth, low leveraged companies as the companies which fall in the 1st Quartile while old, profitable, high growth, large, high leveraged companies are related to the 4th Quartile. The regulations, business group affiliation, credit rating and dividend payments are the dummy variables with value "1" for regulatory, group affiliated, rated and dividend paying companies or "0" otherwise. The comparison results reveal that there is no significant difference in the age, profitability, growth opportunities, credit rating and dividend payments of the organizations which involve in debt specialization.

All types of organizations: new or old, non-profitable or profitable, rated or unrated, having high growth opportunities or low, and either pay dividends

or not, follow this strategy. These results specify that debt specialization is a universal phenomenon among all publicly traded companies of Pakistan irrespective of age, profitability, growth opportunities, dividend payments and credit rating.

Table 4.12
Applicability of Debt Specializations Strategy across Organizations

Variables	Category	N	Mean	SD	t-test	Wilcoxon test
Profitability	Non-Profitable	776	0.399	0.238	-0.253	-0.358
	Profitable	321	0.406	0.235		
Age	New	419	0.403	0.235	-2.212*	-1.813
	Old	476	0.440	0.262		
Credit Rating	Unrated	1668	0.410	0.238	0.196	0.162
	Rated	333	0.370	0.222		
Size	Small	499	0.520	0.297	7.546**	-6.989**
	Large	512	0.392	0.239		
Leverage	Low	447	0.536	0.278	12.344**	-11.864**
	High	446	0.333	0.208		
Growth Opportunities	Low	486	0.407	0.259	-1.808	-1.662
	High	489	0.438	0.272		
Dividend Payments	Not Paying	703	0.389	0.260	-1.674	-2.711**
	Paying	1178	0.408	0.247		
Regulation	Non-Regulated	1703	0.390	0.248	-3.966**	-4.275**
	Regulated	298	0.458	0.273		
Business Group Affiliation	Affiliated	913	0.431	0.264	4.934**	-4.979**
	Unaffiliated	1088	0.375	0.240		

*$p < 0.05$, **$p < 0.01$

Table 4.12 further provides significant evidences in the favor of leverage, size, regulations and business group affiliation. It illustrates that there is a significant difference in the characteristics of the regulatory or non-regulatory, small or large, high leveraged or low leveraged and group affiliated or

unaffiliated companies. This phenomenon is more prevalent to the small, low leverage, regulated and group affiliated companies. The significance of all of these variables is tested at 1% and 5% level of significance.

4.5 ESTIMATION METHODS FOR UNBALANCED PANEL DATA

The current study has employed the panel data approach for 410 non-financial listed companies during the period of 2009-2013. Panel data contains the characteristics of cross sectional and time series data. It includes the multiple cross sectional units for various time periods. Ozkan (2001) has argued that panel data increases competency of the econometrics models by including large number of data points, merging with the characteristics of cross-sectional and time series data.

Furthermore, this study provides the theoretical and empirical justification for selecting the certain econometrics methods and techniques. These estimation methods are based on both major characteristics of the data, prior literature and of capital structure theories. Appendix-B summarizes the selection of econometrics techniques along with theoretical and empirical references for analyzing the data and making inferences.

4.5.1 Models for Fractional Dependent Variable

Tobit estimator models are used to evaluate the linear relationship between variables when dependent variable is fractional in nature and is either left or right censored. In this case, the linear probability models (i.e. Ordinary least squares regression model) are problematic as it does not yield persistent parameter estimates because censored sample is not representative to the population (Cameron and Trivedi, 2010). The Gauss-Markov assumption of no correlation between the explanatory variables and the error term is also violated in this situation (Maddala, 1986). Instead, Tobit regression models are appropriate to handle these types of problems.

Tobit regression models are recently used by the corporate finance scholars such as (Alderson et al., 2014; Buchuk et al., 2014; Custodio et al., 2013) to estimate the fractional dependent variables. These models provide better statistical inference on the estimated parameters and help to significantly advance the standard theories. Therefore, this study uses Tobit regression model because the dependent variable; debt specialization calculated on the basis of HHI which is fractional in nature and its values are bounded between zero and one both inclusive. Tobit regression models vigorously depend on the

assumptions of linearity, normality and homoscedasticity. The absolute value of skewness and kurtosis (i.e., between |2|) is the indication of normal distribution of the data (George and Mallery, 2010).

Tables 4.2, 4.3 and 4.4 present the results of skewness and kurtosis which indicate that all the study variables completely fulfill the normality assumption in case of skewness except few variables that remain unsupportive in case of kurtosis only. If normality assumption is met then the relationship between variables is also homoscedastic (Tabachnick and Fidell, 2013) as homoscedasticity is associated with the assumption of normality (Maddala, 1986).

4.5.1.1 Pooled Tobit vs. Random-Effect Tobit Models

The finance literature provides us the evidence for the use of either Pooled Tobit model or Random-Effect Tobit model. The Pooled Tobit model can be shown as follows:

$$y^* = X'\beta + e$$

$$y = \begin{cases} y^* \; if \; 0 < y^* < 1 \\ \quad 0 \; if \; y^* \le 0 \\ \quad 1 \; if \; y^* \ge 1 \end{cases}$$

Where y* is a latent variable and normally distributed. The observed dependent variable (y) is left-censored at zero and right-censored at one. However, if there is no censored observation then Tobit model is equivalent to ordinary least-squares regression models.

Random-Effect Tobit model is also considered to be apposite for panel data studies like the Pooled Tobit model. It can be explained by the below equation where, V_i is random effects and is not correlated with the error term, e_{it}.

$$y_{it} = X_{it}\beta + V_i + e_{it}$$

The results of Pooled Tobit model or Random-Effect Tobit model are explained in Table 4.13. The significant values of LR Chi-Square show that both the models are the best fit. Cash holding, current ratio, financial leverage, asset maturity and regulation have the significant positive effect on debt specialization while book leverage, size and debt maturity have the negative

significant effect on debt specialization. The major difference in these models is because of return on asset volatility that is significant at 10% level of significance in both the models but in the Pooled Tobit model it has negative relation while in the Random-Effect Tobit model, it has positive relation with debt specialization.

Earnings volatility, age and financial ratio are significant at 1% level of significance in Pooled Tobit model while these variables are significant at 10% level of significance in the Random-Effect Tobit model. Whereas the value of dividend payers is significant at 10% level of significance and in Pooled Tobit model but is insignificant in Random-Effect Tobit model. Similar case with the net profit ratio that is significant in Random-Effect Tobit model and insignificant in Pooled Tobit model.

All other variables including depreciation ratio, median industry financial leverage, asset tangibility, business group affiliation, operating expense ratio have significant relation with debt specialization but their level of significance differs. Table 4.13 further indicates that about 70% of the results are same.

Table 4.13
Pooled Tobit vs. Random-Effect Tobit Models

Variables	HHI			
	Pooled Tobit		Random-Effect Tobit	
	B	S.E	B	S.E
Cash Holding	0.249***	0.062	0.185***	0.065
Current Ratio	0.024***	0.006	0.028***	0.006
Net Profit Ratio	-0.006	0.007	-0.009*	0.005
Return on Assets	-0.079	0.176	-0.085	0.123
Return on Equity	-0.001	0.005	-0.002	0.004
Financial Leverage	0.726***	0.093	0.749***	0.090
Book Leverage	-0.245***	0.048	-0.293***	0.047
Market Leverage	-0.032	0.040	0.008	0.037
Asset Tangibility	-0.157***	0.029	-0.083**	0.035
Asset Maturity	0.009***	0.001	0.005***	0.002
Asset Growth	0.004	0.031	0.027	0.021
Earnings Volatility	0.196***	0.050	0.134*	0.080
Default Risk	-0.005	0.006	-0.001	0.006
Return on Asset Volatility	-0.005*	0.003	0.003*	0.002
Market to Book Ratio	0.000	0.001	0.000	0.000
Sale Growth	0.005	0.166	0.088	0.113
Business Group Affiliation	-0.032***	0.010	-0.036**	0.018
Size	-0.021**	0.008	-0.030**	0.014
Age	0.001***	0.000	0.001*	0.001

Variables	HHI			
	Pooled Tobit		Random-Effect Tobit	
	B	S.E	B	S.E
Quality	-0.004**	0.002	-0.003**	0.001
Depreciation Ratio	-0.079*	0.042	-0.080**	0.033
Operating Expense Ratio	0.133***	0.017	0.035**	0.015
Credit Rating	0.003	0.013	0.019	0.025
Debt Maturity	-0.691***	0.057	-0.764***	0.058
Tax Ratio	0.004	0.007	0.006	0.005
Financial Ratio	-0.162***	0.040	-0.052*	0.031
Regulation	0.061***	0.014	0.075***	0.026
Median Industry Financial Leverage	-0.329***	0.083	-0.265**	0.103
Median Industry Book Leverage	-0.073	0.098	0.011	0.100
Median Industry Market Leverage	0.066	0.074	0.082	0.056
Median Industry Market to Book Ratio	0.019	0.018	0.019	0.012
Median Industry Sale Growth	-0.018	0.036	-0.022	0.023
Government Borrowing	4.143	3.376	3.323	2.074
Expected Inflation Rates	-0.004	0.112	-0.010	0.069
GDP Growth	0.057	0.102	0.037	0.063
Dividend Payers	0.021*	0.012	0.026	0.020
Dividend Payout Ratio	0.001	0.010	-0.009	0.007
Dividend Yield Ratio	0.003	0.005	0.005	0.004
Constant	0.660***	0.080	0.602***	0.084
LR Chi-Square	980.75***		547.09***	

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

However, still there exist the significant differences in both the models. That is why it is necessary to decide which model is best suited to the current data type. For this purpose, Likelihood ratio test is used to decide whether Pooled Tobit model or Random-Effect Tobit model is suitable for current study.

4.5.1.2 Likelihood Ratio Test

Likelihood ratio test is used to check which model is appropriate for our data type: Pooled Tobit model or Random-Effect Tobit model. This test compares an unconstrained model to a constrained model with the assumption that constrained model must be nested within the unconstrained model. It is calculated as follows:

Likelihood Ratio $= 2(LL_{unconstrained} - LL_{constrained})$

Where, $LL_{unconstrained}$ and $LL_{constrained}$ are the log-likelihood of unconstrained and constrained models respectively. The $LL_{unconstrained}$ is often greater than $LL_{constrained}$, meaning that the Likelihood ratio is usually positive. Here, in Table 4.14, the value of likelihood ratio is positive and significant that explains the Pooled Tobit Model is suitable for our data type. Furthermore, the Akaike information criterion and Bayesian information criterion also support this notion as the model with smallest value of Akaike information criterion and Bayesian information criterion is best suited for the study.

Table 4.14
Likelihood Ratio Test:
Pooled Tobit vs. Random-Effect Tobit Models

Models for HHI	AIC	BIC
Random-Effect Tobit Model	-911.407	-699.442
Pooled Tobit Model	-1708.925	-1491.661
Observations	1479	
Likelihood Ratio Test	799.52***	

AIC = Akaike Information Criterion, **BIC** = Bayesian Information Criterion

4.5.2 Models for Discrete Dependent Variable

This study also uses discrete dependent variable; Excl75 to measure debt specialization that is binary in nature. It assumes the "1" value for high debt specialization and "0" otherwise. More specifically, "1" is the indication that companies are taking 75% or more debts from one type of debt.

The ordinary least square model often used in finance and economic studies for the binary dependent variables (Wooldridge, 2012) because it is relatively easy for scholars to infer the results. But the problem with ordinary least square model is: First, its predicted probabilities (i.e. fitted values) can be outside the range of zero and one; second, the relationship between variables may not be linear and; third, its residuals plot quickly reveal heteroscedasticity. These problems can better be dealt with more advanced non-linear binary response models (i.e. Logit and Probit) estimated by using Maximum Likelihood Estimation.

The binary response models including Logit and Probit models can be expressed as:

$$P(y = 1/X) = f(\beta_{0+} \ X\beta)$$

Where f is a function bounded between zero and one. $X\beta$ refers to $\sum_{k=1}^{n} \beta_k x_k$.

4.5.2.1 Logit and Probit models

Logit and Probit models are frequently used in the corporate finance studies (Buchuk et al., 2014; Goyal and Wang, 2013; He et al., 2013) to estimate the discrete decision i.e., whether an organization adopt debt specialization strategy or not. Both Logit and Probit regression models are nonlinear regression models that ensure the predicted probability is either zero or one. The only difference between both the models is cumulative density function. Logit regression model follows cumulative density function of the logistic distribution whereas Probit regression model uses it for standard normal distribution.

The logistic function can be written as:

$$P(y = 1/X) = \frac{exp(\beta_0 - X\beta)}{1 + exp(\beta_0 - X\beta)}$$

The Probit function is

$$P(y = 1/X) = \int_{-\infty}^{\beta_0 - X\beta} \emptyset(t) \, dt$$

However, in practice both the models often produce similar results but some researchers prefer Probit regression model because of its major feature of normal distribution (Wooldridge, 2012). Table 4.15 presents that results of Shapiro-Francia test for normality which validates that the dependent variable Excl75 is normally distributed. This justifies the use of Probit regression model for the current study.

Table 4.15
Normality Test for Excl75

Z-Value	-60.100
P-Value	1.000
No. of Observations	2001

Hence, this study uses Probit regression models for dependent variable Excl75 which assumes the value "1" or "0". The results of Probit regression model are reported in Appendix-C.

4.6 TOBIT REGRESSION MODELS FOR DEBT SPECIALIZATION

This section presents the results of Tobit regression models for twelve categories of organizational (eight) and non-organizational (four) groups and its relation with HHI, measure of debt specialization. Ozkan (2001) argue that regression analysis based on panel data exhibit similar results in the United States and elsewhere. Therefore, these results can be generalized in other countries as well.

4.6.1 Categorical Analysis

In categorical analysis, all the categories of organizational and non-organizational factors are analyzed separately. The reason for using separate model for each category is to analyze the significance of each of the factors individually at 1%, 5% and 10% level of significance and find out the characteristics of the organizations which involve in debt specialization. This analysis is also helpful in finding out the core predictors of debt specialization.

4.6.1.1 Liquidity and Profitability Factors

The Model 1 presents the results of Tobit regression for liquidity factors. These results depict that both the liquidity factors are positively and significantly related with debt specialization at 1% level of significance. It shows that companies involve in debt specialization, maintain high cash holding and current ratio to meet their debt obligations within a business cycle. These results are also persistent to the pecking order theory explaining the companies maintaining internal funds incline less towards external borrowing and prefer to follow debt specialization strategy.

These results are also in line with the findings of Custodio et al. (2013) and (Locorotondo et al., 2014) who suggest companies with high liquidity ratios can easily manage their short run fluctuations of external financing deficit and avoid market imperfections. The LR Chi-Square has 274.690 value which is significant to the extent of 99%. Finally, the overall Model 1 is a good fitted model than an empty model (i.e., a model with no predictors).

Profitability factors (net profit ratio, return on asset and return on equity) are presented in Model 2 of Table 4.16. These results show that only one probability factor i.e. return on asset is significantly and positively related with the debt specialization decision of the organization. These finding are supported by Rajan and Zingales (1995) and Titman and Wessels (1988) who confirm profitable companies with high cash flows prefer to use more debt due to tax benefits and less likelihood of bankruptcy. The pecking order theory supports this notion by adding that profitable companies use less debt. The results for net profit ratio and return on equity are insignificant and unable to explain relationship with debt specialization. These findings are consistent with the results of Povoa and Nakamura (2014).

Table 4.16
Tobit Regression Models for Liquidity and
Profitability Factors

Variables	HHI			
	Model 1		Model 2	
	B	S.E	B	S.E
Liquidity				
Cash Holding	0.654***	0.057		
Current Ratio	0.037***	0.004		
Profitability				
Net Profit Ratio			0.001	0.002
Return on Assets			0.168***	0.031
Return on Equity			-0.001	0.006
Constant	0.298***	0.008	0.391***	0.006
LR Chi-Square	274.690***		31.090***	
Pseudo R^2	-3.906		0.199	

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

These outcomes also indicate that not all the selected sample companies are profit earning, loss bearing companies are also the part of the study. The value of LR Chi-Square is 31.090 in Model 2 for profitability factors which is not much high but is significant and explains as a whole model is a good fit. The liquidity and profitability factors are also evaluated on the basis of Excl75 a dummy variable by using the Probit regression model presented in Table C-1 in Appendix-C. Their findings are also consistent with the ordinary least square Tobit regression models.

4.6.1.2 Leverage and Nature of Asset Factors

Model 3 explains the relation between leverage factors and debt specialization. The results specify that financial leverage and market leverage has negative and significant relation with debt specialization. These results are consistent to previous studies that high leverage companies employ multiple sources of debt. However, book leverage shows insignificant results which are inconsistent to the results of Lou and Otto (2015). The LR Chi-Square has highly significant value (454.890, p< 0.01).

Model 4 shows that debt specialization has a negative relation with asset tangibility and positive relation with asset maturity. The negative relation between asset tangibility and debt specialization is supported by the empirical studies which state companies with lot of tangible assets borrow from multiple sources. Trade-off theory also supports this notion as the default cost is minimized if a company owns tangible assets. It also reduces information asymmetry, agency conflicts among stakeholder and signal about the sound financial position of the company.

Table 4.17
Tobit Regression Models for Leverage and
Nature of Asset Factors

| Variables | HHI | | | |
| | Model 3 | | Model 4 | |
	B	S.E	B	S.E
Leverage				
Financial Leverage	-0.512***	0.036		
Book Leverage	0.027	0.035		
Market Leverage	-0.216***	0.026		
Nature of Asset				
Asset Tangibility			-0.338***	0.026
Asset Maturity			0.012***	0.001
Asset Growth			-0.008	0.012
Constant	0.611***	0.015	0.600***	0.020
LR Chi-Square	454.890***		375.570***	
Pseudo R^2	3.452		4.083	

$* \ p < 0.1, \ ** \ p < 0.05, \ *** \ p < 0.01$

On the other hand, the positive relation with asset maturity shows that companies involve in debt specialization has longer asset maturities. These outcomes are supported by trade-off theory, pecking order theory, signaling theory and agency cost theory. It helps to reduce the information and monitoring

cost, chances of default and agency conflicts. These findings also provide the justification for the application of debt specialization strategy across organizations.

In contrast, the asset growth rate has the insignificant relation with debt specialization which is inconsistent with the capital structure theories. However, the LR Chi-Square value 375.570 is significant to the extent of 99% which states that model is a good fit. The Probit regression models for leverage and nature of asset factors validate these results, presented in Table C-2.

4.6.1.3 Risk & Growth and Controlling Authority Factors

Model 5 presents the results for risk & growth category that explains the risk factors; return on asset volatility is inversely related to debt specialization while earnings volatility and default risk is positively associated with debt specialization. These findings specify that the riskier companies with more default probabilities have high cost of monitoring and face more agency related issues, incline more towards debt specialization. These results are also theoretically and empirically supported by the scholars (Alderson et al., 2014; Graham and Leary, 2011).

Table 4.18
Tobit Regression Models for Risk & Growth
and Controlling Authority

Variables	HHI			
	Model 5		Model 6	
	B	S.E	B	S.E
Risk & Growth				
Earnings Volatility	0.265***	0.045		
Default Risk	0.036***	0.003		
Return on Asset Volatility	-0.141***	0.046		
Market to Book Ratio	-0.009***	0.003		
Sale Growth	0.0001**	0.000		
Controlling Authority				
Business Group Affiliation			-0.056***	0.011
Constant	0.320***	0.008	0.431***	0.008
LR Chi-Square	166.360***		24.700***	
Pseudo R^2	3.277		0.139	

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

The results pertain to growth factors show the conflicting results for sale growth and market to book ratio. The sales growth has positive and significant relation with debt specialization because growing companies are often engaged in the asset substitution activities which create agency conflicts among shareholders and debt holders. This is supported by agency cost theory because often companies having more growth opportunities face high information asymmetries that restrict their borrowings and push them towards debt specialization strategy.

On the contrary, the high growth rate is often the indication of high profitability of the company. Therefore, large, mature, group affiliated, companies with credit rating are in a better position to acquire multiple types of debts. That is why market to book ratio has negative and significant relation with debt specialization. The high value of LR Chi-Square suggests as a whole the model for risk & growth factors is a good fit.

The Model 6 represents a negative and significant relation between business group affiliation and debt specialization. This shows that group affiliated companies incline less towards debt specializations. These companies have greater access to the external debt markets due to their cross securities (Masulis et al., 2011). Financial institutions also consider them trustworthy for granting loans (Wang and Lin, 2013) that is why it is fairly said that group affiliation increases the accessibility of the organizations and due to these benefits these companies are in a better position to utilize diversified types of debts. The pecking order theory also support this relationship as the group affiliated companies maintain more internal funds therefore incline less towards debt financing.

The value of LR Chi-Square is 24.700 although small but significant at 99% level of significance in Tobit regression model controlling authority. The results for Probit regression models for risk & growth and controlling authority are pertinent to the Tobit regression models except for sale growth that is significant to the extent of 95% in Tobit regression model while is insignificant in Probit regression model. Table C-3 presents the result for Probit regression models for risk & growth and controlling authority.

4.6.1.4 Image and Nature of Expense Factors

Table 4.19 presents the results related to the image and nature of expense factors. The results in Model 7 show the negative and significant relation between debt specialization and size and quality to the extent of 99%. This shows that larger companies with better earning quality use diversified types of debt. Size and quality reduces the information asymmetry, chances of

bankruptcy, agency conflicts and provide positive signals about the performance of the companies. That is why financial institutions consider them more reliable candidate for granting loan. All these results are pertinent to trade-off theory, pecking order theory, signaling theory and agency cost theory.

On the contrary, the age factor shows a positive and significant relation with debt specialization. This explains mature companies are in a better position to decide their debt structure by keeping in view the cost associated with each type of debt. Therefore, these companies prefer only those types of loan that are cost effective for them in a long run. That is why they often follow debt specialization strategy. These results make one of the valuable contributions to the present study by adding that debt specialization is equally common phenomenon for all types of companies irrespective of their age while previous studies consider debt specialization is a characteristic of small companies only.

Table 4.19
Tobit Regression Models for Image and
Nature of Expense Factors

Variables	HHI			
	Model 7		Model 8	
	B	S.E	B	S.E
Image				
Size	-0.069***	0.007		
Age	0.002***	0.000		
Quality	-0.006***	0.002		
Nature of Expense				
Depreciation Ratio			0.214***	0.048
Operating Expense Ratio			0.058***	0.010
Constant	0.592***	0.025	0.371***	0.007
LR Chi-Square	126.000***		56.770***	
Pseudo R^2	0.725		0.339	

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Model 8 presents the results for nature of expense factors including depreciation ratio and operating expense ratio. The results explicate that both the expense ratios have positive significant relation with debt specialization. These results are consistent to previous studies that explain companies with high expense ratios incline more towards debt specialization. The high expense ratio reduces the probability of the company and increases the chances of bankruptcy, agency cost and information and monitoring cost. These findings support the trade-off theory, pecking order theory, signaling theory and agency cost theory.

The values of LR Chi-Square are small but significant to the extent of 99% in both the models. Table C-4 presents the result Probit regression models which validates the findings of Tobit regression models for image and nature of expense factors. Both the models demonstrate similar results except for quality factor which is significant at 1% level of significance in Tobit regression model while insignificant in case of Probit regression model.

4.6.1.5 Debt Market and Industry Factors

Table 4.20 states the results of debt market and industry factors and analyzes their effect of debt specialization decision of the organizations. Model 9 shows debt market factors; credit rating, debt maturity and financial ratio are negatively and significantly related with debt specialization. It explains rated companies with longer debt maturities and high expense ratio use diversified types of debt.

Table 4.20
Tobit Regression Models for Debt Market and Industry Factors

Variables	HHI			
	Model 9		Model 10	
	B	S.E	B	S.E
Debt Market				
Credit Rating	-0.030**	0.014		
Debt Maturity	-0.412***	0.021		
Tax Ratio	0.002	0.009		
Financial Ratio	-0.033**	0.013		
Industry				
Regulation			0.050***	0.016
Median Industry Financial Leverage			-1.133***	0.091
Median Industry Book Leverage			0.189*	0.107
Median Industry Market Leverage			-0.105	0.080
Median Industry Market to Book Ratio			-0.020	0.021
Median Industry Sale Growth			0.036**	0.015
Textile Dummy			-0.0286*	0.015
Constant	0.536***	0.009	0.539***	0.062
LR Chi-Square	385.360***		260.210***	
Pseudo R2	2.217		1.465	

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

These results are pertinent to empirical studies of Diamond (1991) and Goyal and Wang (2013). An unrated company with shorter debt maturities and

low financial ratios causes information asymmetry, high cost of monitoring, bankruptcy and agency cost. Therefore, these companies incline more towards debt specialization strategy. It also provides unfavorable signals about the financial position of the organization. These results support trade-off theory, signaling theory, agency cost and pecking order theories. However, tax ratio demonstrates statistically insignificant relation with debt specialization. The LR Chi-Square has highly significant value (385.360, p< 0.01) which indicates that as a whole this model is a good fit.

Model 10 shows the results for industry related factors including regulation, median industry leverage ratios and median industry growth ratios. Results indicate that companies involve in debt specialization, are belong to regulated industry, with low median industry leverage ratio, having high median industry sale growth rates and median industry book leverage ratios. This model also includes textile dummy which is the largest industry of Pakistan. The purpose of including textile dummy is to analyze the impact of the largest industry of Pakistan on debt specialization strategy of the organizations.

Results show that textile dummy has negative relation with debt specialization which is significant at 10% level of significance. The present study also includes median industry market leverage and median industry growth factors but unable to find any statistical support for their relationship. Finally, the high value of LR Chi-Square 260.210 speculates that overall model is a good fit.

The results of Tobit and Probit regression models are different for debt market and industry factors. The major difference between the regulatory factor that show significant relation with debt specialization to the extent of 99% while in Probit model it is insignificant. The other factors; financial ratio, median industry financial leverage and textile dummy are also statistically insignificant in Probit models but significant at 5% and 10% level of significance in Tobit models. However, the values of LR Chi-Square for both Probit models indicate that these models are the good fit.

4.6.1.6 Macroeconomic and Stock Market Factors

Model 11 of Table 4.21 shows the regression model for macroeconomic factors including government borrowing, expected inflation rate and GDP growth rate. Results show that none of the macroeconomic factor is significantly related to the debt specialization as opposed to the findings of Joeveer (2013). These results may be due to the short panel data as this study uses panel data for all listed companies for the period of 2009 to 2013. The longitudinal period for

panel data is small. In a long run the results may show some significant relation between these factors. These results also specify that overall model is not a good fit as the value of LR Chi-Square is also insignificant.

Model 12 is explaining the results for stock market factors and shows that only dividend payout ratio is positively and significantly linked with debt specialization decision of the organization. Generally large, profitable, credit rating and mature companies are considered to be the dividend paying companies and according to the empirical studies these companies utilize multiple sources of financing. But, these findings confirm that debt specialization is also the norm of mature, growing, profitable, rated and dividend paying companies.

Table 4.21
Tobit Regression Models for Macroeconomic and
Stock Market Factors

Variables	HHI			
	Model 11		Model 12	
	B	S.E	B	S.E
Macroeconomic				
Government Borrowing	-1.358	4.151		
Expected Inflation Rates	0.102	0.118		
GDP Growth	-0.118	0.127		
Stock Market				
Dividend Payers			0.013	0.012
Dividend Payout Ratio			0.018***	0.005
Dividend Yield Ratio			0.007	0.006
Constant	0.425***	0.045	0.387***	0.009
LR Chi-Square	1.030		16.350***	
Pseudo R^2	0.006		0.093	

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

However, the current study does not find any significant evidence in the favor of dividend payers and dividend yield ratio. The value of LR Chi-Square is 16.350 in Model 12 for stock market factors which is not much high but is significant and explains as a whole model is a good fit. The results for Tobit regression models for macroeconomic and stock market factors are also aligned with the results of Probit regression models shown in Table C-6.

In conclusion, this study has found twenty-seven significant factors related to debt specialization after analyzing the effect of each of the categories of organizational and non-organizational factors. These factors include eighteen organizational and nine non-organizational factors. The findings specify that

cash holding, current ratio, return on assets, asset maturity, earnings volatility, default risk, sale growth, age, depreciation ratio, operating expense ratio, regulation, median industry book leverage, median industry sale growth and dividend payout ratio are positively related to the debt specialization decision of the organizations.

In contrast, financial leverage, market leverage, asset tangibility, return on asset volatility, market to book ratio, business group affiliation, size, quality, credit rating, debt maturity, financial ratio, median industry financial leverage and textile dummy are inversely associated with debt specialization. After analyzing the effect of all the categorical factors, based on individual Tobit regression models, now there is the need to find out the most relevant factors on the basis of groups analysis i.e., Stepwise regression modeling. This study divides the twelve categories of factors into two major groups; organizational and non-organizational factors to explore the most important predictors of debts specialization.

4.7 ANTECEDENT OF DEBT SPECIALIZATION

The researchers often face difficulty in selecting a small subset of relevant predictors from the large set of variables. The Stepwise regression models are most appropriate to address this type of problems. It is a statistical technique in which decision for the relevant predictive variables is completed by an automatic procedure of adding significant variables (forward selection) or deleting insignificant variables (backward selection) of the study.

This study uses Stepwise regression modeling (Tobit model for HHI) to answer the research questions by finding out the most important empirically identified and theoretically suggested organizational and non-organizational antecedents of debt specialization. Our estimation is based on both the Stepwise regression models: Forward selection, backward deletion, and demonstrates similar results for both the models. Therefore, we can report any of the results here but this study presents the outcomes of backward selection methods without any special reason.

4.7.1 Group Wise Analysis

In Group Wise analysis, both the groups of antecedents; organizational and non-organizational are evaluated under Backward Stepwise Tobit Regression method and selection is made by deleting the insignificant

antecedents from both the groups. This analysis is conducted to assess the core predictors of debt specialization.

4.7.1.1 Organizational Factors

The current study includes twenty-two theoretically supported and empirically recognized organizational factors based on the prior literature (Denis and McKeon, 2012; Graham and Harvey, 2001; Titman and Wessels, 1988). Table 4.22 provides sixteen most important organizational related antecedents of debt specialization. Results of Stepwise Tobit Regression model based on backward deletion specify that cash holding, current ratio, age, operating expense ratio, asset maturity, asset growth, earnings volatility, default risk and sale growth are positively and significantly related with the degree of debt specialization.

Table 4.22
Organizational Factors as Antecedent of Debt Specialization

Variables	HHI	
	B	S.E
Cash Holding	0.306***	0.061
Current Ratio	0.016***	0.005
Quality	-0.005**	0.002
Age	0.001***	0.000
Operating Expense Ratio	0.109***	0.016
Financial Leverage	-0.310***	0.032
Size	-0.016**	0.007
Business Group Affiliation	-0.038***	0.009
Asset Tangibility	-0.193***	0.029
Asset Maturity	0.010***	0.001
Asset Growth	0.023**	0.011
Earnings Volatility	0.189***	0.048
Default Risk	0.013***	0.004
Market to Book Ratio	-0.007***	0.002
Sale Growth	0.0002***	0.000
Return on Asset Volatility	-0.243***	0.051
Constant	0.489***	0.038
No. of Observations	1512	
LR Chi-Square	788.400***	
Pseudo R^2	-4.604	

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Conversely, quality, financial leverage, size, business group affiliation, asset tangibility, market to book ratio and return on asset volatility are negatively and significantly linked to the degree of debt specialization. All these variables are significant at 1% level of significance except quality, size and asset growth which are significant at 5% level of significance. The beta value LR Chi-Square is highly significant (788.400, $p < 0.01$) that indicates the model is good fit. This table also explains that 489 company-year observations (about 25%) are missing from the analysis.

4.7.1.2 Non-organizational Factors

The most important non-organizational antecedents of debt specialization are explained in Table 4.23. We extract sixteen theoretically related and empirically proven non-organizational factors from prior studies (Basu, 2015; Kisgen, 2006; Pessarossi and Weill, 2013) and find nine important non-organizational antecedents of debt specialization by using the Stepwise Tobit regression modeling on backward deletion basis. The results indicate that median industry market to book ratio, regulation and dividend payout ratio are significantly and positively related with debt specialization, while credit rating, debt maturity, financial ratio, median industry financial leverage, dividend payers and median industry market leverage are inversely related with debt specialization.

Table 4.23
Non-organizational Factors as Antecedent of Debt Specialization

Variables	HHI	
	B	S.E
Credit Rating	-0.024*	0.014
Debt Maturity	-0.365***	0.021
Median Industry Sale Growth	0.045***	0.014
Financial Ratio	-0.041***	0.013
Regulation	0.063***	0.014
Median Industry Financial Leverage	-0.684***	0.087
Dividend Payers	-0.043***	0.011
Median Industry Market Leverage	-0.087**	0.038
Dividend Payout Ratio	0.016***	0.005
Constant	0.687***	0.025
No. of Observations	1957	
LR Chi-Square	549.180***	
Pseudo R^2	3.215	

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

All these variables are significant to the extent of 99% except Median Industry Market Leverage and Credit Rating which is significant to the extent of 95% and 90% respectively. This table also explains not all the values are included in the analysis, 44 company-year observations are missing. On the whole the model is a good fit with highly significant beta value of LR Chi-Square (549.180, p< 0.01).

4.7.2 Research Question Wise Analysis

After executing group wise analysis, we need to find out the answers for research questions. For that purpose, it is necessary to conduct the research question wise analysis. It is essential not only for answering the research question 2 and 4 but also necessary in predicting the core factors of debt specialization. We again employ Backward Stepwise Tobit Regression model and significance level for selection is10%. Research Question 2 is to provide the profound proof for the significance of newly introduced antecedents of debt specialization on the basis of capital structure theories.

For that purpose, we enter twenty-nine theoretically suggested antecedent of debt specialization. On the contrary, for Research Question 4 is ought to substantially validate the relevance of prior studies in the context of developing countries; Pakistan. In order to answer this question nine empirically identified antecedents are included. The detailed explanation for these research questions are given below:

4.7.2.1 Theoretically Suggested Organizational and Non-organizational Antecedents

Research Question 2 is to specify the most important theoretically suggested organizational and non-organizational factors as antecedents of debt specialization. This study includes fourteen organizational and fifteen non-organizational factors and find out the evidences in favor of ten organizational and eight non-organizational antecedents by employing backward selection method under Stepwise Tobit regression.

Table 4.24 suggests ten newly introduced, theoretically suggested important organizational antecedents of debt specialization are; current ratio, return on assets, financial leverage, market leverage, asset maturity, asset growth, earnings volatility, default risk, sale growth and quality, whereas debt maturity, financial ratio, regulation, median industry financial leverage and

GDP growth are the important non-organizational antecedents of debt specialization.

Table 4.24
Theoretically Suggested Antecedents of Debt Specialization

Variables	HHI	
	B	S.E
Current Ratio	0.026***	0.005
Return on Assets	0.079***	0.027
Dividend Payout Ratio	0.010**	0.004
Financial Leverage	-0.130***	0.040
Market Leverage	-0.182***	0.026
Asset Maturity	0.009***	0.001
Asset Growth	-0.077***	0.029
Earnings Volatility	0.168***	0.035
Default Risk	-0.014***	0.004
Sale Growth	0.0002**	0.000
Median Industry Book Leverage	0.142**	0.072
Median Industry Financial Leverage	-0.603***	0.078
Quality	-0.005***	0.002
Expected Inflation Ratio	0.120***	0.033
Debt Maturity	-0.233***	0.031
Dividend Payers	-0.077***	0.011
Financial Ratio	-0.033***	0.012
Regulation	0.050***	0.013
Constant	0.598	0.040
No. of Observations	2001	
LR Chi-Square	842.980***	
Pseudo R2	4.747	

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

4.7.2.2 Previously Identified Antecedent of Debt Specialization

Research Question 4 is to reaffirm the existence of previously identified antecedent of debt specialization developed in western settings in the context of developing countries like Pakistan. To answer this question, this study includes eight empirically identified organizational and one non-organizational factor. However, we cannot incorporate cash flow volatility, R&D expenses, firms with

unique products and the strong board variables due to unavailability of data. Table 4.25 provides cash holding, book leverage, asset tangibility, age, size and operating expense ratio as organizational while in case of non-organizational antecedents no predictor is confirmed.

Table 4.25
Empirically Identified Antecedents of Debt Specialization

Variables	HHI	
	B	S.E
Cash Holding	0.409***	0.057
Age	0.002***	0.000
Book Leverage	-0.204***	0.024
Asset Tangibility	-0.336***	0.025
Operating Expense Ratio	0.037***	0.008
Size	-0.071***	0.006
Constant	0.915***	0.032
No. of Observations	2001	
LR Chi-Square	644.950***	
Pseudo R2	3.632	

* p < 0.1, ** p < 0.05, *** p < 0.01

These results indicate that the empirically testified antecedents of debt specialization established in developed countries are equally important for a developing country like Pakistan. These outcomes accompany with the findings of Booth et al. (2001) who empirically substantiates that capital structure decisions are influenced by the same variables in developing countries as of developed countries but their consistency matters due to the cross country diversity in economic, legal and financial systems. These findings are also in line with the outcomes of Beattie et al. (2006), Demirguc-Kunt and Maksimovic (1996) and Huang and Shen (2015) who argue that the main reason for cross country metamorphoses are the differences in market situations, economic policies and institutional regulations.

4.7.3 Overall Analysis for Predictors of Debt Specialization

Overall analysis is administrated to stipulate the important predictors of debt specialization. This study comprises of thirty eight factors including twenty two organizational and sixteen non-organizational factors. Table 4.26 provides evidences in the favor of twenty-two most important predictors of debt

specialization by using Backward Stepwise Tobit regression modeling; including sixteen organizational and six non-organizational factors. Again this analysis leads to answer the research question 3which is relevant to the core predictors of debt specialization.

Table 4.26
Predictors of Debt Specialization

Variables	HHI	
	B	S.E
Cash Holding	0.259***	0.059
Current Ratio	0.021***	0.005
Net Profit Ratio	-0.010*	0.006
Financial Ratio	-0.162***	0.031
Regulation	0.058***	0.013
Financial Leverage	0.688***	0.090
Book Leverage	-0.240***	0.041
Debt Maturity	-0.661***	0.055
Asset Tangibility	-0.158***	0.028
Asset Maturity	0.008***	0.001
Median Industry Financial Leverage	-0.357***	0.066
Earnings Volatility	0.181***	0.047
GDP Growth	0.043***	0.013
Market to Book Ratio	-0.005**	0.002
Sale Growth	0.0001**	0.000
Dividend Payers	0.017*	0.010
Business Group Affiliation	-0.032**	0.009
Size	-0.019**	0.007
Age	0.001***	0.000
Quality	-0.004**	0.002
Depreciation ratio	-0.074*	0.041
Operating Expense Ratio	0.137***	0.016
Constant	0.684***	0.046
No. of Observations	1479	
LR Chi-Square	969.080***	
Pseudo R	-5.510	

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

These results illustrate that cash holding, current ratio, financial leverage, asset maturity, earnings volatility, sale growth, age, operating expense ratio, regulation, dividend payers and GDP growth is positively and significantly related with debt specialization decision of the organizations while net profit ratio, book leverage, asset tangibility, market to book ratio, business group affiliation, size, quality, depreciation ratio, financial ratio, debt maturity and

median industry financial leverage are negatively and significantly related to degree of debt specialization.

The important predictors found in this study are related to all categories of the factors, including liquidity, profitability, leverage, nature of asset, risk & growth, controlling authority, image and nature of expense as organizational factors; and Debt Market, Industry, Macroeconomic and Stock Market as non-organizational factors. The LR Chi-Square has 969.080 value which is significant to the extent of 99%. It explains overall Model 1 is a good fitted model than an empty model (i.e., a model with no predictors). This table also shows that 22 company-year observations are missing.

The group wise, research question wise and overall analysis are also conducted on the basis of Excel75 to evaluate the important organizational and non-organizational factors predictors of debt specialization. These calculations are based on Backward Stepwise Probit regression models and are reported from Table C-7 to Table C-11 in Appendix C. Their results show that approximately 75% predictors for group wise analysis, 100% for research question wise and 70% for overall analysis calculated on the basis of Excl75 are similar to the results of HHI illustrated from Table 4.16 to 4.26.

4.7.4 Core Predictors of Debt Specialization

Research Question 3 is to find out the most important predictors of debt specialization among all the theoretically defined and empirically identified factors, included in this study. This study utilized a wide variety of predictors (thirty-eight); categorized as organizational (twenty two) and non-organization (sixteen) antecedents. Previously, Chang et al. (2014) and Frank and Goyal (2009) are also used a rich set of firm level, industry, macroeconomic and institutional factors and found ten most reliable antecedents of capital structure.

Chang et al. (2014) recognized asset growth, state-control dummy and the largest shareholding whereas Frank and Goyal (2009) ascertained market-to-book ratio, expected inflation and dividend payers; dummy variables. However, profitability, median industry leverage, asset tangibility, size, were the common determinants of capital structure in both the studies. Similarly, we need to execute horse race analysis to provide the core predictors among a wide variety of factors involved in this study.

This study has conducted four types of analysis: categorical, group wise, research question wise and overall to identify the core predictors of debt specialization. Their results are presented from Table 4.16-4.26. First, we

categorically analyze all the predictors of debt specialization. We divide organizational factors in eight and non-organizational in four categories. Then use Tobit Linear Regression method to identify eighteen organizational and nine non-organizational predictors of debt specialization. Second, we apply Backward Stepwise Tobit Regression in three analysis; group wise, research question wise and overall and find out eighteen, sixteen, sixteen organizational and six, nine, six non- organizational predictors respectively. Their results are presented in Appendix -D

Table 4.27
Core Predictors of Debt Specialization

Organizational	Non-organizational
95% Level of significance	
1. *Cash Holding (+)*	1. Debt Maturity (-)
2. *Asset Tangibility (-)*	2. Financial Ratio (-)
3. *Size (-)*	3. Regulation (+)
4. *Operating Expense Ratio (+)*	4. Median Industry Financial Leverage (-)
5. *Age (+)*	
6. Current Ratio (+)	
7. Financial Leverage (-)	
8. Asset Maturity (+)	
9. Sale Growth (+)	
10. Earning Volatility (+)	
11. Quality (-)	

Note: The Italicized predictors are previously identified while others are newly introduced.

The core predictors are those that remain consistent and significant at 5% level of significance in all the analysis. This study has included a wide variety of expected predictors i.e., thirty-eight including twenty two organization and sixteen non-organizational and finally find out eleven organizational and four non-organization as a core predictors of debt specialization. Table 4.27 presents these results. These core predictors belong to most of the categories of predictors expect profitability (organizational), macroeconomics and stock market (non-organizational).

These results presents that small, mature, growing companies holding more cash and low leverage inline more towards debt specialization. These

companies are regulated, having larger asset maturities, current ratios, earning volatility and expense ratio. Whereas the larger and high quality companies with more tangible assets, low debt maturity, financial ratio and median industry financial leverage use diversified types of debt.

To conclude, this section provides important predictors of debt specialization; including ten theoretically suggested and four empirically identified antecedents while the overall fifteen core predictors of debt specialization. It provides significant empirical evidences in favor of ten organizational and eight non-organizational antecedents. It also substantiates mounting proof for the existence of previously identified six antecedents of debt specialization in the context of emerging economies like Pakistan.

4.8   WHICH ORGANIZATIONS SPECIALIZE?

This section provides a comprehensive view of the cross sectional differences in specialization among the listed companies of Pakistan. For this purpose, we combine all the organizational and non-organizational factors to substantially explain which organizations involve in debt specialization. Table 4.28 provides the results of descriptive statistics, correlation analysis for HHI with a set of organizational and non-organizational characteristics to analyze the stipulated hypothetical relationships between them at 1%, 5% and 10% level of significance. We also calculate t test and Wilcoxon test of differences in debt specialization between the first and fourth quartiles of HHI.

These results indicate that mature companies with more growth opportunities, maintaining high cash holding, current ratio and return on asset ratio, having high value of risk for earnings volatility, default risk and return on asset volatility are significantly involved in debt specialization. These companies have larger asset maturity and high ratios for depreciation and operating expenses. These companies are also dividend paying that belong to regulatory industry, having high median industry market to book ratio, high dividend payout ratio and dividend yield ratio.

In contrast, the profitable companies that are larger in size, with more tangible assets, and high quality and leverage including financial leverage, book leverage, and market leverage use diversified types of debt. These companies are also group affiliated, having credit rating and larger debt maturities with high financial ratio and median industry leverage ratios including median industry financial leverage, median industry book leverage and median industry market leverage.

Table 4.28
Which Organizations Specialize?

Variables	Correlation HHI	HHI 1st Quartile		HHI 4th Quartile		Test of Differences between Quartiles	
		Mean	Median	Mean	Median	t-test	Wilcoxon test
Cash Holding	0.332***	0.036	0.009	0.137	0.081	-9.561***	-12.030***
Current Ratio	0.240***	1.037	0.949	1.817	1.450	-6.626***	-6.641***
Net Profit Ratio	0.034	-0.047	0.004	0.251	0.036	-1.976**	-4.694***
Return on Assets	0.126***	0.041	0.029	0.110	0.041	-2.942***	-3.072***
Return on Equity	-0.007	0.217	0.158	0.197	0.075	0.251	1.644
Financial Leverage	-0.406***	0.294	0.260	0.061	0.002	18.404***	20.308***
Book Leverage	-0.322***	0.620	0.634	0.416	0.364	10.981***	10.544***
Market Leverage	-0.312***	0.751	0.828	0.506	0.539	11.743***	11.002***
Asset Tangibility	-0.364***	0.776	0.808	0.540	0.552	13.214***	12.297***
Asset Maturity	0.312***	1.909	1.438	6.407	2.987	-7.735***	-4.221***
Asset Growth	-0.024	0.266	0.084	0.215	0.068	1.666*	2.214**
Earnings Volatility	0.195***	0.074	0.060	0.150	0.076	-5.570***	-3.915***
Default Risk	0.228***	1.383	1.157	2.707	2.464	-6.899***	-7.307***
Return on Asset Volatility	0.088***	0.040	0.028	0.083	0.038	-2.435**	-2.726***
Market to Book Ratio	0.006	0.918	0.526	0.905	0.715	0.046	-2.163**
Sale Growth	0.057**	0.431	0.241	11.070	0.145	-0.986	3.148***
Business Group Affiliation	-0.111***	0.599	1.000	0.415	0.000	5.398***	5.322***
Size	-0.235***	3.463	3.406	2.911	2.818	7.502***	7.573***
Age	0.090***	25.042	21.000	29.974	27.000	-4.755***	-4.589***
Quality	-0.058**	0.458	0.616	0.004	0.302	2.688***	3.670***
Depreciation Ratio	0.099***	0.058	0.051	0.088	0.062	-3.234***	-3.097***
Operating Expense Ratio	0.140***	0.150	0.050	0.398	0.110	-3.850***	-5.654***
Credit Rating	-0.086***	0.208	0.000	0.111	0.000	3.825***	3.413***
Debt Maturity	-0.415***	0.439	0.425	0.130	0.006	16.392***	18.627***
Tax Ratio	0.011	0.174	0.131	0.193	0.161	-0.660	-1.130
Financial Ratio	-0.055**	0.102	0.044	0.020	0.002	4.813***	19.043***
Regulation	0.094***	0.110	0.000	0.215	0.000	-3.883***	-4.349***

Variables	Correlation	1st Quartile		4th Quartile		Test of Differences between Quartiles	
		Mean	Median	Mean	Median	t-test	Wilcoxon test
Median Industry Financial Leverage	-0.328***	0.179	0.174	0.106	0.077	14.520***	12.951***
Median Industry Book Leverage	-0.158***	0.620	0.633	0.581	0.591	6.617***	6.855***
Median Industry Market Leverage	-0.219***	0.752	0.809	0.640	0.655	9.498***	9.373***
Median Industry Market to Book Ratio	0.204***	0.633	0.554	0.944	0.889	-8.391***	-8.910***
Median Industry Sale Growth	-0.023	0.327	0.150	0.284	0.138	1.684*	2.440**
Government Borrowing	0.000	0.010	0.010	0.010	0.010	0.323	0.356
Expected Inflation Rates	-0.009	0.291	0.106	0.264	0.106	1.057	0.886
GDP Growth	-0.011	0.353	0.230	0.325	0.230	1.158	1.204
Dividend Payers	0.037*	0.562	1.000	0.604	1.000	-1.316	-1.307
Dividend Payout Ratio	0.080***	0.098	0.000	0.412	0.000	-2.011**	-3.277***
Dividend Yield Ratio	0.039*	0.391	0.000	0.477	0.000	-1.212	-2.355**

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

These results further confirm by conducting group analysis on the basis of Excl75 as a measure of debt specialization. Table C-10 presents these results that reaffirm except financial ratio, dividend payers and dividend payout ratio, all the variables show similar results for Excl75 as for HHI. Financial ratio is significant at 5% while dividend payers and dividend payout ratio are significant at 10% level of significance.

All these results substantially explain the characteristics of organizations which adopt debt specialization strategy. These cross-sectional variations in the degree of debt specialization highlight the need to find out the reasons of debt specialization.

4.9   WHY DEBT SPECIALIZATION?

This study has used Hierarchical Linear Regression based on Tobit model to enter explanatory variables in a step wise manner and determine their effect on the dependent variable. Table 4.29 explains the findings of hierarchical regression models for HHI that provides multivariate evidences on the existence of debt specialization among the small companies. Here, by small companies we mean those companies that have equity capital less than Rs. 550 million.

First, we include the traditional capital structure characteristics including size, age, asset tangibility, sale growth and dividend payers in Column (1) to (6). These variables are consistently used in the corporate finance literature (Aggarwal and Kyaw, 2010; Huang and Ritter, 2009; Kaya, 2011) and significantly explain the variations in capital structure of the organizations (Basu, 2015; Erel et al., 2012; Titman and Wessels, 1988). Then we add default risk, measure of bankruptcy cost in Column (2).

We include quality as a measure of information asymmetry in Column (3). In Column (4), we enter business group affiliation, a measure of accessibility. Column (5) includes market to book ratio used as a proxy of agency conflicts and finally in Column (6) we further add book leverage. The traditional organizational characteristics show persistent results except age which has a positive significant relation with debt specialization (β =0.002, P < 0.01). Size and asset tangibility shows negative relationship with debt specialization which is significant to the extent of 99% in all six models.

Sale growth and dividend payers demonstrate positive relationship with debt specialization. The relationship of sale growth is significant at 5% level of significance in all six models whereas the association between dividend payers is not consistent. Dividend payers is only significant (p<0.01) in model 1 with beta value 0.041 while in other models, it has insignificant beta values. Default risk, measure of bankruptcy cost has a significant positive relationship with debt specialization (β =0.020, P < 0.01), which provides full support to the trade-off theory and explains the riskier companies incline more towards debt specialization strategy due to their high probability of default.

In model 3 we enter quality, measure of information asymmetry which has a significant negative relationship with debt specialization (β =0.006, P < 0.01) and extends the support to the pecking order perspective. It explains that low quality companies face high information monitoring and collection cost that is why adopts debt specialization strategy.

Model 4 presents the negative and significant association between business group affiliation and debt specialization (β =0.040, P < 0.01). Business group affiliation is used as a measure of company's constrained access to the deb market. A group affiliated company has better access to the debt markets due to their cross securities. Financial institutions also consider them appropriate for granting loans. Therefore, these companies are in a better position to utilize diversified types of debts.

Growth factor significantly impacts the debt specialization decision of the organizations and expresses relationship as (β =0.007, P < 0.05), therefore providing full support to the agency cost theory. Finally, book leverage is included in Model 6 that shows a negative significant relationship with debt specialization (β =0.090, P < 0.01). In short, all these results are substantially justified on the basis of capital structure theories and validate the results of prior studies for the causes of debt specialization. It confirms that the main reasons for employing debt specialization strategy is to minimize bankruptcy cost, information collection and monitoring cost and limited ingress to the debt market.

Table 4.30 unfolds new insight for the existence and relevance of debt specialization strategy among large organizations. Here large companies are those that have equity capital Rs. 550 million or more. This analysis provides some additional causes for the prevalence of this strategy among the mature, profitable and reputed organizations on the basis of capital structure theories (trade-off, pecking order, agency cost and signaling theories). In this way, it contributes to the large and growing literature on the causes of debt specialization by its theoretical explanation.

In Table 4.30, we first include the traditional capital structure characteristics including size, age, asset tangibility, profitability and dividend payers in Column (1) to (6). We then enter earnings volatility in Column (2) as a measure of operational risk that increases the likelihood of bankruptcy. In Column (3), we add regulation, a measure of accessibility. Then, we include sale growth, measure of reputation that reduces information asymmetry in Column (4). Column (5) includes asset maturity used as a proxy of agency conflicts and finally in Column (6) we further add financial leverage.

The conventional organizational characteristics size, age and asset tangibility exhibit similar results as of Table 4.29. These variables are significant to the extent of 99% in all six models. However, the effect and influences of return on asset and dividend payers remain positive in all the models but these variables are unable to produce enduring results.

In model 2 we enter earnings volatility, proxy for bankruptcy cost which show a significant positive association with debt specialization (β =0.190, P < 0.01). The earnings volatility is used as a measure of operational risk for mature and profitable organizations. These companies also face the likelihood of bankruptcy though, their tendency matters. These results cater full support to the trade-off theory by explaining that organizations with high operational risk ascent more towards debt specialization strategy in order to decrease their cost of financial distress.

Regulation, measure of debt market accessibility is introduced in Model 3 which demonstrates a positive and significant relationship with debt specialization (β =0.068, $p < 0.05$). The regulation factor increases the credit worthiness of the organizations and access to the unconstrained debt market. Therefore, these companies are in a better position to approach multiple debt instruments but they prefer to follow cost minimizing strategy due to their better bargaining position. That is why adopt debt specialization strategy.

In model 4 we enter sale growth, proxy for information asymmetry which has a significant positive relationship with debt specialization (β =0.0002, $P < 0.01$) and extends the support to the pecking order perspective. It explains high sale growth opportunities reduce the information asymmetry and increases confidence of investors, loan giving agencies and other stakeholders. It successfully builds up the good reputation of the companies and bring then in a good bargaining position to select the debt instrument of their own choice. In this situation, large, mature and profitable companies adopt debt specialization strategy as a cost minimization mechanism to enjoy the benefits of cost economization. The persistent positive effect of return on asset on debt specialization also provides considerable support to this notion.

Model 5 presents the positive and significant association between asset maturity and debt specialization (β =0.011, $P < 0.01$). Asset maturity is used as a proxy of agency conflicts, companies with larger asset maturities conveniently reduces agency conflicts by providing collateral provision to the debt holders, therefore providing full support to the agency cost theory. This study has used size as a measure of floatation cost and expresses this relationship as (β =0.089, $P < 0.01$). The negative significant relationship between size and debt specialization illustrates that larger companies also use this strategy to minimize their borrowing cost. Finally, financial leverage is included in Model 6 that show a negative significant relationship with debt specialization (β =0.330, $P < 0.01$).

This study specifies that our proxies for bankruptcy costs, information asymmetry, agency cost, flotation cost and access to the debt market remain significantly related with debt specialization after controlling the leverage. In a nutshell, it provides five possible explanations for the causes of debt specialization: limited ingress to the debt market, lower expected bankruptcy cost, economizing information asymmetry cost and reducing agency conflicts. In addition to this small, new, less profitable and growing companies follow this technique to remove constrained to the debt market, whereas large, mature and profitable companies adopt this technique to diminish flotation cost, operational risk furthermore because of good market reputation.

Table 4.29
Causes of Debt Specialization for Small Companies

Variables	HHI					
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**
Size	-0.090***	-0.081***	-0.080***	-0.079***	-0.076***	-0.064***
	(0.006)	(0.007)	(0.007)	(0.007)	(0.007)	(0.008)
Age	0.002***	0.001***	0.001***	0.001***	0.001***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Asset Tangibility	-0.452***	-0.393***	-0.391***	-0.382***	-0.382***	-0.387***
	(0.024)	(0.024)	(0.024)	(0.024)	(0.025)	(0.027)
Sale Growth	0.0002**	0.0002**	0.0002**	0.0002**	0.0002**	0.0001**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Dividend Payers	0.041***	0.011	0.008	0.010	0.009	0.010
	(0.011)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
Default Risk		0.020***	0.0201***	0.020***	0.022***	0.024***
		(0.003)	(0.003)	(0.003)	(0.003)	(0.004)
Quality			-0.006***	-0.006***	-0.006***	-0.005**
			(0.002)	(0.002)	(0.002)	(0.002)
Business Group Affiliation				-0.040***	-0.044***	-0.053***
				(0.010)	(0.010)	(0.011)
Market to Book Ratio					-0.007***	-0.008***
					(0.003)	(0.003)
Book Leverage						-0.090***
						(0.029)
Constant	0.946***	0.864***	0.862***	0.871***	0.866***	0.878***
	(0.029)	(0.029)	(0.030)	(0.030)	(0.030)	(0.038)
LR Chi-Square	500.47***	488.08***	487.32***	502.98***	502.00***	512.13***
Pseudo R2	2.818	11.173	9.094	9.387	8.514	10.087

* p < 0.1, ** p < 0.05, *** p < 0.01

Table 4.30
Causes of Debt Specialization for Large Companies

Variables	HHI					
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**
Size	-0.089***	-0.082***	-0.090***	-0.090***	-0.085***	-0.080***
	(0.006)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Age	0.002***	0.002***	0.002***	0.002***	0.001***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Asset Tangibility	-0.453***	-0.442***	-0.420***	-0.418***	-0.338***	-0.259***
	(0.024)	(0.024)	(0.024)	(0.024)	(0.025)	(0.025)
Return on Assets	0.069**	0.049*	0.047***	0.048*	0.020	0.043*
	(0.027)	(0.027)	(0.027)	(0.027)	(0.026)	(0.025)
Dividend Payers	0.040***	0.040***	0.041*	0.042***	0.023**	-0.010
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Earnings Volatility		0.190***	0.183***	0.183***	0.180***	0.166***
		(0.042)	(0.042)	(0.042)	(0.041)	(0.039)
Regulation			0.068***	0.068***	0.065***	0.073***
			(0.015)	(0.015)	(0.014)	(0.014)
Sale Growth				0.0002**	0.0002**	0.0001**
				(0.000)	(0.000)	(0.000)
Asset Maturity					0.011***	0.010***
					(0.001)	(0.001)
Book Leverage						-0.330***
						(0.026)
Constant	0.945***	0.898***	0.897***	0.893***	0.807***	0.833***
	(0.029)	(0.031)	(0.031)	(0.031)	(0.032)	(0.032)
LR Chi-Square	510.590***	530.510***	551.250***	556.380***	613.200***	803.160***
Pseudo R2	3.063	3.183	3.307	3.338	6.175	9.383

* p < 0.1, ** p < 0.05, *** p < 0.01

4.10 SUMMARY

This study reports the seven major findings, supporting the capital structure theories and prior literature. First, this study provides the evidence for the existence and prevalence of debt specialization strategy across organizations. The results of the statistical methods manifest that 67% Pakistani companies rely on only one type of debt and short term debts are the most popular source of financing. This phenomenon is equally common among all types of publicly traded companies irrespective of their age, profitability, growth opportunities, dividend payments and credit rating. Second, it empirically analyzes the impact of each of the category of organizational and non-organizational factors and finds twenty-seven significant factors relating to debt specialization.

Third, it finds the evidences in the favor of theoretically suggested ten organizational and eight non-organizational factors. Fourth, it confirms the existence of previously identified antecedent of debt specialization in the context of developing country. Fifth, it has found fifteen most important predictors of debt specialization including eleven organizational and four non-organizational factors. The important predictors which have found in this study are related to all most all the categories of organizational and non-organizational factors, exhibited in Table 4.27. This study analyzes the factors of debt specialization categorically, group wise, research question wise and as a whole; to provide a comprehensive view about the related antecedents of debt specialization. The summary of the detailed results is provided in Appendix-D.

Sixth, it explains the characteristics of the organizations that involve in debt specialization. These companies are mature, growing, maintaining high cash holding, current ratio and return on asset ratio, with larger asset maturity and more depreciation and operating expenses. These companies belong to the regulatory industry with high median industry growth rate and having high earnings volatility, default risk value, and return on asset volatility. They are also dividend paying, having high dividend payout ratio and dividend yield ratio. Seventh, the reasons for practicing debt specialization strategy is to minimize expected bankruptcy cost, agency cost, flotation cost, operational risk, information collection and monitoring cost, limited ingress to the debt market and also due to good market reputation. Overall, findings of the study provide substantial empirical evidences which are consistent to the capital structure theories and prior studies.

CHAPTER 5

DISCUSSION AND CONCLUSION

5.1   DISCUSSION ON RESULTS

This study is aimed at investigating the theoretical and empirical foundations for the antecedents of debt specialization which is important in designing the financial strategies to achieve optimal debt structure. Previously, Colla et al. (2013) confirm thirteen factors as antecedents of debt specialization. Traditionally, the preponderance of debt structure studies focuses on organizational factors only (Basu, 2015; Erel et al., 2012). However, Lemmon et al. (2008) claim that the features of leverage is largely unexplained by the previously identified determinants. Recently, Graham et al. (2015) validate this notion by claiming that traditional organizational factors are unable to explain the debt structure heterogeneity over time because the role of some important factors are either less explored or yet to be identified in the literature.

This motivates the current study to include theoretically defined and empirically proven more antecedents of debt specialization. This is one of the prime studies that categorizes the wide range of factors (thirty-eight) in two broader categories i.e., organizational factors (liquidity, profitability, leverage, nature of asset, risk & growth, controlling authority, nature of expense and image) and non-organizational factors (debt market, industry, macroeconomic and stock market). It uses the sample of 410 non-financial publically traded companies listed at Karachi Stock Exchange during the period of 2009-2013. Furthermore, it employs various statistical techniques to identify the most relevant predictors of debt specialization.

The findings of the study support the major capital structure theories and prior literature and extend the insight of the concept. *Firstly,* it provides the evidence for the existence and prevalence of debt specialization across organizations on the basis of cluster analysis, thresholds analysis, conditional debt structure and comparative analysis. The time series and cross sectional analysis reveal that 67% of the sample companies predominantly borrow from one type of debt and short term debts remain the most dominant type of all, followed by the secured and others long term debts. This study ascertains that debt specialization is a widespread phenomenon among all types of public limited companies irrespective of their age, profitability, growth opportunities, credit rating and dividend policy. In this way, it not only validates the findings

of Colla et al. (2013) but also provides new evidences for the applicability of this strategy.

Secondly, this study analyzes all the categories of organizational and non-organizational factors individually, group wise, research question wise and as a whole to provide a comprehensive view about the related antecedents of debt specialization. The outcomes of all the analysis recognize eleven organizational (cash holding, current ratio, financial leverage, asset tangibility, asset maturity, earnings volatility, age, size, quality, operating expense ratio) and four non-organizational (debt maturity, financial ratio, regulation, median industry financial leverage) antecedents that are significant in all the examinations (individually, group wise, research question wise or overall analysis). Thus, we are able to identify fifteen most important predictors of debt specialization. These core predictors belong to most of the categories of predictors expect profitability (organizational), macroeconomics and stock market (non-organizational).

The results depict that both the liquidity factors; cash holding and current ratio, are positively significantly associated with the degree of debt specialization. These empirical results follow the hierarchy of pecking order theory, i.e., companies maintaining internal funds incline less towards external borrowings and prefer debt specialization strategy. These results are also in line with the findings of Basu (2015) and Danis et al. (2014) who believe that companies with high liquidity ratios can successfully manage short run fluctuations and can handle market imperfections such as cost of financial distress, agency cost, asymmetric information and transaction cost.

The negative relations of financial leverage, size, asset tangibility and quality is pertinent to the trade-off, pecking order, signaling and agency cost theory. These factors play striking role in reducing information asymmetry (Kale and Meneghetti, 2011), likelihood of bankruptcy, agency conflicts and increase the accessibility to the external markets (Shah and Khan, 2009). They also provide positive signals about the company's performance in the market (Ross, 1977). That is why Wang and Lin (2013) and Xavier et al. (2014) argue financial institutions consider them more reliable for granting loan due to their cross securities and good reputation (Gopalan et al., 2007; Masulis et al., 2011).

On the contrary, age, earnings volatility, sale growth, asset maturity and operating expense ratio are positively related to the debt specialization. This supports the empirical findings of Albring et al. (2011) and Lopez-Gracia and Mestre-Barbera (2011) who state that companies with high risk of volatile earnings, high growth opportunities and expense ratios experience more agency related issues and face high costs of financial distress. These factors also cause

information asymmetry as investors and lenders are unable to predict the future earnings, based on the publicly available information (Meneghetti, 2012; Titman and Wessels, 1988).

Accordingly, these companies tend to prefer debt specialization strategy to avoid likelihood of financial distress, agency cost, information collection and monitoring cost. However, the results for age is antithetical to the previous studies by Chang et al. (2014) who believe older companies use more types of debt and also against the findings of Povoa and Nakamura (2014) who state age does not impact the financing choices of the organizations. This study provides a new evidence for this kind of relationship by adding that mature companies incline more towards debt specialization strategy because these companies are in a better bargaining position due to their reputation. Consequently, they often follow cost minimizing strategy and select few types of debt in their debt structure.

Furthermore, the relationship of asset maturity is not according to the theoretical expectations. The capital structure theories predict larger asset maturities reduce agency conflicts, information asymmetry and minimize the likelihood of financial distress. Thusly, it is posited that larger asset maturities are inversely related to the debt specialization decision of the organizations but this study has found a positive relationship which is inconsistent to the theories.

This study also examines the relation between profitability factor and debt specialization decision but cannot find consistent proofs for this relationship. On the one side, it explains the positive effect of return on asset that is pertinent to pecking order theory which depicts profitable companies use less debt. While on the other hand, it has found the negative relationship between net profit ratio and debt specialization that complement the findings of Lou and Otto (2015) and also support the agency cost, bankruptcy and signaling theory.

The results for debt market factors indicate companies with longer debt maturities and high financial expense ratio use diversified types of debt. These results are pertinent to the empirical studies of Baker and Martin (2011), Dang (2011), Kisgen (2006) and capital structure theories. The company with shorter debt maturities and low financial ratios causes information asymmetry, high cost of monitoring, bankruptcy and agency cost. Therefore, they incline more towards debt specialization strategy.

The empirical outcomes for industry factors' support the notion of Denis and McKeon (2012) and Rajan and Zingales (1995) that financial managers use median industry financial leverage ratio as a benchmark for their companies. Trade-off theory provides theoretical support to this claim by suggesting

companies with high median industry leverage use less debt (Frank and Goyal, 2009). In contrast to this the empirical findings for regulation factor recommend that it reduces information asymmetries, agency conflicts (Albring et al., 2011) and increases the accessibility to the debt market (Lemmon and Zender, 2010).

The relationship between macroeconomic factors and debt specialization is antithetical to the outcomes of Erel et al. (2012) and Joeveer (2013). These results may be outcome of the short panel data as previously researches like Graham et al. (2015) used longer panel data from 1920 to 2010 and reported significant variations in debt structure over the century. These findings suggest to the perspective researchers to use longer panel data that may provide some significant relation between these factors.

This study reaffirms the effects and influences of stock market factors that is pertinent to market timing theory (Baker and Wurgler, 2002). It advocates that leverage is positively related to these factors only when this decision is taken under the favorable stock market conditions (Faulkender and Petersen, 2006). This positive relation also suggests that companies follow debt specialization strategy in a favorable stock market conditions. However, these results are inconsistent to the findings of Florackis et al. (2015) and Lemmon et al. (2008) who have found negative relation between these factors.

Thirdly, the findings of the current study provide profound proof for the significance of newly introduced antecedents of debt specialization based on the capital structure theories. It includes theoretically suggested fourteen organizational and fifteen non-organizational factors and find substantial support in the favor of ten organizational and eight non-organizational factors. *Fourthly,* it validates the significance of previously identified antecedents of debt specialization in the context of developing countries. In this way, it complements the findings of Booth et al. (2001) who exhibit that capital structure decisions are influenced by the same variables in developing countries as of developed countries. But their consistency matters due to the cross country diversity in economic, legal and financial systems.

These outcomes are also in line with the arguments put forward by Beattie et al. (2006), Huang and Shen (2015) and Joeveer (2013), who argue that the main reasons for cross country metamorphoses are the differences in market situations, economic policies and institutional regulations. This study also provides new evidence in the favor of debt specialization strategy by adding that all the organizations existed in either part of the world can follow this strategy to economize their borrowing costs in the form of bankruptcy, flotation, agency, information collection and monitoring cost. Thusly, it divulges new area for

scholars and practitioners to investigate the antecedents of debt specialization in new settings and ascertain some new causes for its existence.

Fifthly, it describes the cross sectional characteristics of the organizations which involve in debt specialization. These companies are mature, having more growth opportunities, maintaining high cash holding, current ratio and return on asset ratio, having high earnings volatility, default risk, return on asset volatility, with larger asset maturity and more depreciation and operating expenses. They are also dividend paying that belong to regulatory industry, having high median industry market to book ratio, high dividend payout ratio and dividend yield ratio.

Finally, the present study provides the theoretical and empirical explanation for the reasons of debt specialization. It reveals that lower expected bankruptcy cost, economizing information asymmetry cost, and reducing agency conflicts are the major causes of debt specialization. Besides these, small, new, less profitable and growing companies follow this strategy to remove limited ingress to some segments of the debt market. Whereas, large, mature and profitable companies adopt this strategy to reduce flotation cost, operational risk and also due to good market reputation.

Overall, the findings of our study provide the substantial empirical evidences which are consistent with the capital structure theories and prior studies. This study has successfully created a wide web for antecedents of debt specialization that will help the future researchers to explore new dimensions of this strategy.

5.2   IMPLICATIONS OF THE RESEARCH

5.2.1 Theoretical Implications

The findings of the current study make important theoretical implications in the field of corporate finance that help to modify our understanding to the existing theories of capital structure and future empirical studies.

- *First,* the present study will enrich the debt structure literature by substantially extending the empirical research on the antecedents of debt specialization. Through this, it will further contribute to the large and growing literature on the causes of debt specialization by its theoretical explanation. Previously, traditional organizational factors are used as antecedents of debt specialization, but this study includes the wide variety of theoretically suggested and empirically identified

organizational and non-organizational factors as antecedents of debt specialization. This will amplify the scope of the study and help to generalize the predictors of debt specialization across organizations.

- *Second,* this study purposes the strategy perspective as a framework for the debt structure choices. There is a general call to integrate capital structure decisions with financial strategy and examine how financing decisions are related with the strategy (Bender, 2014; Baker and Martin, 2011; Priester and Wang, 2010). Therefore, current study tries to cope with the recent calls and link the financing choices with the debt specialization strategy; and thus contribute in the literature of debt structure and financial strategy.

- *Third,* it will add to the agency cost theory by explaining the conflict of interest between different debt holders and how these contentions may shape the debt structure choices of the organizations. The traditional agency cost theory focuses on the conflict of interest between shareholders and creditors (Jensen and Meckling, 1976) but this study empirically explains how the interest of different debt holders may not always be fully aligned. For instance, the owner of short term debts only has an interest in short term borrowing prospect while the long term debt holders may have financial and commercial stake in the company. Similarly, the interest of senior, secured debt holders may not have synchronized with the creditors of junior, subordinate or unsecured debts. These contradictory circumstances between several debt holders' causes disagreement and raises conflict of interest that reshapes the current agency cost theory.

- *Fourth,* it will enrich our understanding to the capital structure studies and optimal contracting literature by specifying that the composition of debt and heterogeneity in debt structure has an important implication in designing the optimal debt contracts. It also explains the causes; why organizations include a specific type of debt in their debt structure.

5.2.2 Managerial Implications

This study may provide assistance to the practitioners to understand why companies follow debt specialization strategy and also identifies the area where academic recommendations are not fully implemented.

- *First,* this study enables the financial managers to appropriately design their optimal debt structure by analyzing the cost and benefit attached

to each type of debt. Financial managers still face difficulty in selecting a desirable combination of debt and equity to obtain optimal capital structure (Donkor and Duffey, 2013). But, optimal capital structure cannot be achieved without obtaining the optimal debt structure (Kayo and Kimura, 2011). Therefore, this study has explained a new and still unexplored mechanism that will help the organizations to decide their optimal debt structure by selecting an appropriate type of debt.

- *Second,* it will guide to the financial managers to properly design their strategies by including appropriate types of debt which cope with the crisis and add value to the organizations. The management is more interested in the inputs from the functional areas of finance such as capital structure in order to design their financial strategy. The product of this joint review will help to explain the financing choices of the organizations, especially with reference to debt structure. It will assist the financial managers to include only those types of debt which have fewer contractual restrictions, least cost to the business and matches with the tenor of the assets.

- *Third,* the analysis of debt maturity structure indicates that short term debts are the most popular sources of financing among Pakistani companies. More than three fourth of the companies rely on short term debts for financing. This study assists the financial managers to select an optimal debt maturity structure by balancing the cost and benefits of all types of debt because short term debts not only increases the chances of favorable loan repricing but also increases the liquidity risk for the organizations. So the managers should consider these aspects in designing their optimal debt maturity structure.

- *Fourth,* it highlights the importance of stock market factors especially it explains the impact of dividend factors on debt specialization decision of the organizations. It will broaden the management's insight about dividend policy and help them to understand how dividend decisions influence the financing choices of the organization. It will suggest the financial managers to balance their financing decisions and dividend decisions in such a way that the overall satisfaction of investors and market prices of shares are not affected. If companies borrow from few debt types, it will decrease their cost of borrowing and does not affect the dividend payments of shareholders.

- *Fifth,* it specifies the role of industry factors in the decision of debt specialization. Financial managers must consider industrial factors; median industry leverage ratios and median growth ratios before

designing their financial strategy. These factors benefit the financial managers in deciding their leverage ratios as companies with higher median industry leverage use less debt, while with higher median industry growth use more debt. They are also important for getting competitive edge and sustainable market share in the industry.

- *Sixth,* it suggests to the management that credit rating and business group affiliation increases the unconstrained access to the debt markets. Empirical evidences of the study show that these factors ensure financial flexibility increase the access to short term debts and reduce risk of default. The companies with credit rating and group affiliation can easily cope with the financial crisis and are not directly affected by any shock in the supply of funds, thus employ diversified types of debt.

- *Seventh,* it identifies regulation factor as an important determinant of debt specialization and advocates to the managers that companies belong to regulatory industry are more incline towards debt specialization strategy. This is because of the strict policies of regulatory authority that increases their integrity and brings them in a better position to select the debts of their own choices.

5.2.3 Implications for Policy Makers

Moreover, this study provides guidance to the policy makers who may get the benefit from the assessment of regulatory authorities and credit rating agencies and also help them to improve their role in the financial markets of Pakistan.

- *First,* it provides assistance to the policy makers to put stress upon the regulatory authorities and credit rating agencies to improve their rating methodology and regulatory criteria. They must ensure that these agencies must work objectively and depicts the real credibility of the organizations because financial institutions and management rely on their assessment reports. In case of wrong judgment, their decision making will be at stake. Therefore, policy making spheres guarantee that the evaluation criteria is appropriate so that financial managers can design their strategies correctly. This will also help them to follow debt specialization strategy in order to appropriately incorporate with the expected risks.

- *Second,* the verdicts of the study reveal that the policy makers should focus their attention in developing the domestic bond market in

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Pakistan. The substantial user of debentures (bonds) are not high in Pakistan, approximately 5% companies tend to prefer debentures for financing. This highlights the need to develop a well-functioning domestic debt market that provides alternative and cheap sources of financing to the public limited companies of Pakistan.

5.3 LIMITATIONS AND FUTURE DIRECTIONS

Although this study makes several important contributions to the existing literature of debt structure but still it possesses certain limitations, which are necessary to be acknowledged. These limitations open new avenues for future researchers to explore the concept of debt specialization in new settings with a unique data set and find out more implications for the practitioners and scholars.

- *First,* this study uses the data of 410 non-financial publically traded companies for the period of 2009-2013 with 2001 company-year observations. Although, this data is sufficient to provide information about the antecedents of debt specialization but still we feel this panel data is based on relatively shorter time series because of the unavailability of data before the specified period of time. Due to this limitation, our analysis focuses on the cross-sectional heterogeneity in debt specialization, rather than on its dynamic evolution over time just like Colla et al. (2013). This may be one of the reasons for the insignificant results of macroeconomic factors. Going forward, future researchers would take advantage from the longer time series and examine the persistence of specialization over time. This analysis will also help to understand the effect of macroeconomic factors on the decision of debt specialization.

- *Second,* it validates the existence of debt specialization by employing six unique types of debt; short term secured debts, short term other debts, long term secured debts, long term unsecured debts, debenture, and other long term debts. But, these types of debt are more generic as compared to the prior studies of Lou and Otto (2015) and Rauh and Sufi (2010). State Bank of Pakistan started categorizing debts from 2009 before that period debts are divided into two broader categories i.e., short term debts and long term debts. Going forward to the future researches to use more specific types of debt to analyze the impact of identified factors and provide some new insight to the debt specialization strategy.

- *Third,* it tries to discuss and clarify the causes of debt specialization based on the capital structure theories. It uses different measures to explain these causes but still unable to clearly distinguish between some of these measures. Because the purposed measure can be used to test more than one reason for debt specialization. For example, the larger companies often have credit rating that reduces information asymmetry and agency conflicts but size is used as a measure of flotation cost. Similarly, companies with good earning quality may have less likelihood of financial distress. We look forward to the future researchers to clearly discriminate among these measures.

- *Fourth,* it examines the debt specialization strategy among the non-financial public limited companies, listed at Karachi Stock Exchange due to the data limitation. Data related to other forms of business organization as private companies, partnership firm, etc. is not publically available. Therefore, findings of the current study cannot be generalized to the other forms of business organization. Future researchers may extend their analysis and study the role of this strategy in other types of organizations like private companies, small and medium scale organizations etc. This will broaden the scope of the study and help to explore some new reasons of debt specialization.

- *Fifth,* this study is conducted in the context of developing country like Pakistan and provides significant evidences for the existence and prevalence of debt specialization strategy across organizations. While the previous studies by Lin (2015) and Tengulov (2015) are conducted in the context of developed countries. More research is needed from emerging economies to validate the findings of the current research. Furthermore, future researchers may also conduct a comparative study between developed and underdeveloped countries and scrutinize more antecedents of debt specialization.

- *Sixth,* it has used two measures for debt specialization (i.e., HHI and Excl75) in order to make our empirical findings more comparable with previous studies. But Excl75 which is a categorical variable, may not suitable for our study due to very limited company-year observations (i.e., 17%). This may provide biased results. Therefore, its results cannot comparable with HHI. But this does not restrict the future researchers. The scholars may use Excl90 or Excl75, whichever matches to their study context.

- *Seventh,* although, this study provides a significant evidence for the prevalence of debt specialization strategy across organizations but still we are unable to find the empirical evidences in the support of the

differences in profitability, age, credit rating, growth opportunities and dividend payments. This provides new directions to the scholars and practitioners to further explore this phenomenon in the new settings and provide evidences in the support of purposed variables.

- *Eight,* this study has used credit rating as one of the debt market factors to assess the company's ability to meet its financial obligations. A better proxy would be the use of the distance to default (Merton, 1974) as compared to it only 17% of the Pakistani companies have credit rating. So, future researchers may utilize distance to default as a measure of financial credibility in place of credit rating.

- *Ninth,* it has utilized three different stock market factors as an evaluation tool to measure the perceptions of investors about future prospects of the organizations on the basis of current performance. However, all proxies used are pertaining to the cash dividends paid while stock dividends include only for dummy variable "Dividend Payers". Future researchers may include other forms of dividend payouts; stock dividends and share buy backs as well.

5.4   CONTRIBUTIONS

This study offers the comprehensive and in-depth analysis of the relevance and existence of debt specialization phenomenon across organizations by recognizing the significance of the antecedents, and thus makes a number of contributions to the corporate finance literature in general, and debt structure studies in particular.

Firstly, the findings of the current study ascertain a new insight to the applicability of debt specialization strategy across organizations. It claims that this phenomenon is equally important for all types of public limited companies irrespective of their age, profitability, growth opportunities, credit rating and dividend policy. It purposes the possible explanation for large, profitable and mature companies are to minimize operational risk, flotation cost and good market reputation. Whereas, for small, new and less profitable companies is to lower down bankruptcy cost, agency cost, information monitoring and collection costs, restricted access to the debt market and poor accounting quality.

Secondly, it enhances our knowledge of debt structure choices by a joint determination of the amount and maturity, while scholars like Rauh and Sufi (2010) limited their analysis to the amount of debt type only. Colla et al. (2013) claim that the concept of debt specialization can better be understood by the joint

determination of amount and maturity attached with different types of debt. Therefore, this study extends the prior literature and seeks to contribute to and complement the growing debt maturity structure literature by providing a comprehensive analysis in investigating this relationship.

Thirdly, it specifies that empirically tested antecedents of debt specialization in the western settings are equally important in developing countries like Pakistan even in the presence of distinct institutional, economic and cultural differences. Previously, scholars like Huang and Shen (2015) and Fan et al. (2012) believe on the existence of borrowing diversity between developing and developed countries due to differences in the debt instruments, market situations, economic policies and institutional regulations. But, this study confirms the potential effect of cross-sectional determinants of debt specialization that are indistinguishable within the developing countries as of developed countries. This is due to the similar level of confidence by the organizations on the cost minimizing strategies i.e., debt specialization strategy all over the world.

Fourthly, it helps to illustrate the possible effect of business group affiliation on the priority of debt structure of the organizations. This study is one of the first that identifies business group affiliation as an important determinant of debt specialization. Furthermore, it explains the role of business group affiliation on the accessibility to the debt market. The group affiliated companies can easily build social networks with government officials, financial institutions and tax authorities that help them to improve access to the debt market.

Fifthly, it explains the potential role of regulation in the debt specialization decision of the organizations. Generally, researchers (Danis et al., 2014; Florackis et al., 2015; Ozkan, 2001) exclude non-regulatory companies from their analysis due to the differences in their capital structure even though it is proved that there no significant difference in the capital structures of regulated and non-regulated companies. The current study complements the findings of Frank and Goyal (2009) and proves that debt specialization strategy is also equally important for both regulatory and non-regulatory companies.

Sixthly, an important and interesting contribution of the study is that it suggests if the operating and depreciation expenses of the organizations are high then they incline more towards debt specialization strategy because they increase the likelihood of default. Whereas if financial expenses are high then they tend to borrow from multiple debt sources due to high confidence level of financial institutions on the organization.

Seventhly, this study sets to investigate the determinants of debt specialization. In particular, it extends the earlier studies by incorporate more explanatory factors to its estimation and ran a horse-race to identify the most relevant predictors of debt specialization. It includes some distinct factors like business group affiliation, asset maturity, return on equity, return on asset volatility, as the predictors of debt specialization that are rarely used in the capital structure study. This is one of the unique features of the current study.

Finally, the use of an emerging market and the extensive of the data population employed is also a remarkable contribution of the current study. Through this, it depicts the real picture for the existence and prevalence of debt specialization strategy among the Pakistani companies.

5.5   CONCLUSION

This study provides the new empirical evidences on the patterns of debt financing and antecedents of debt specialization. The results show that about 67% of the organizations exclusively rely on one type of debt, and only large, profitable companies with lot of tangible assets, high quality and leverage use diversified types of debt. These companies are group affiliated, having credit rating and larger debt maturities with high financial ratio and median industry leverage ratios. The outcomes of the present study also provide mounting proof for the most important predictors of debt specialization which are related to all most all the categories of organizational and non-organizational factors. It further validates that empirically testified antecedents of debt specialization are equally important in the context of the developing countries like Pakistan even in the presence of distinct institutional, economic and cultural differences.

This study presents a new insight to the existence and relevance of debt specialization strategy across organizations. We explain that debt specialization is a widespread phenomenon which is equally important among all types of publicly traded companies irrespective of their age, profitability, dividend payments and credit rating. We show that the main reasons for adopting debt specialization strategy in small, new and less profitable companies is to minimize bankruptcy cost, agency conflicts, information asymmetry, limited access to some segments of the debt markets. Whereas, large, profitable and mature companies adopt this strategy due to good market reputation, high operational risk and to reduce flotation cost.

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APPENDIX-A

This table illustrates how State Bank of Pakistan calculates each debt type (in millions of rupees) for non-financial companies for the fiscal year ended on December 31, 2013. All information is available under Item 'C' and 'D' in the State Bank of Pakistan report on financial statements analysis of companies (non-financial) listed at Karachi Stock Exchange (2009-2013).

Table A-1
Types of Debt

S#	Types of Debts	Detailed Calculation
1	Short Term Secured Debts	Current maturities of secured long term loan, redeemable capital finance and lease finance + Secured short term running finance + Short term lease finance
2	Short Term Other Debts	Creditors + Outstanding expenses + Loans, deposits and advances
3	Long Term Secured Debts	Bank loans + Non-bank loans + Redeemable capital finance + Foreign loans + Vendors account
4	Long Term Unsecured Debts	Loan by governments, directors, creditors and suppliers
5	Debenture	Debenture are TFCs (Term Finance Certificates) and also include Sukuk bonds
6	Other Long Term Debts	Deferred liabilities, subordinated loans, retention money payable etc.

APPENDIX-B

This table summarizes the criteria for selecting the certain econometric techniques based on the characteristics of panel data and relevant theories. The first column summarizes the major characteristics of the panel data. The second column outlines the relevant capital structure theories. The third column includes main econometric methods and techniques and last column elaborates the references of the empirical studies.

Table B-1
Choices of Methods Based on the Characteristics
of Data and Capital Structure Theories

Characteristics of Data	Theories	Econometric Techniques	Reference
Fractional Dependent Variable [e.g. left/right-censored HHI]	Trade-off, Pecking order, Market Timing, Agency Cost & Signaling Theories	Pooled Tobit Model	Custodio et al. (2013); Buchuk et al. (2014)
Discrete Dependent Variable [e.g. Excl75]		Pooled Probit Model	He et al. (2013); Lin et al. (2013)
Most Important Predictors [e.g. organizational and non-organizational]		Stepwise Tobit Model	
Group Comparisons [e.g. differences in debt specialization between first and fourth quartiles]		t test and Wilcoxon test	Colla et al. (2013)
Multivariate Evidences on Debt Specialization [e.g. why debt specialization]		Hierarchical Regression Models	Locorotondo et al. (2014); Xavier et al. (2014)

APPENDIX-C

Probit Regression Models for Antecedents of Debt Specialization

Appendix-C presents the results for Excl75 an alternative measure of debt specialization on the basis of Probit regression models. Appendix-C represents the outcomes of all the categories of organizational and non-organizational factors individually (Table C-1 to Table C-6), group wise (Table C-7 and Table C-8) and as a whole (Table C-9). Finally, evidence for the existence of debt specialization is provided in Table C-10.

Table C-1
Probit Regression Models for Liquidity and Profitability Factors

Variables	Excl75			
	Model 1		Model 2	
	B	S.E	B	S.E
Liquidity				
Cash Holding	2.878***	0.340		
Current Ratio	0.147***	0.027		
Profitability				
Net Profit Ratio			-0.003	0.014
Return on Assets			0.803***	0.207
Return on Equity			-0.010	0.033
Constant	-1.196***	0.052	-0.762***	0.034
LR Chi-Square	145.170***		19.560***	
Pseudo R^2	0.076		0.009	

* $P < 0.1$, ** $P < 0.05$, *** $P < 0.01$

Table C-2

Probit Regression Models for Leverage and Nature of Asset Factors

Variables	Excl75			
	Model 3		Model 4	
	B	S.E	B	S.E
Leverage				
Financial Leverage	-1.916***	0.235		
Book Leverage	0.453**	0.221		
Market Leverage	-1.270***	0.166		
Nature of Asset				
Asset Tangibility			-1.296***	0.154
Asset Maturity			0.053***	0.007
Asset Growth			0.017	0.078
Constant	0.083	0.090	-0.041	0.118
LR Chi-Square	213.110***		177.440***	
Pseudo R^2	0.111		0.085	

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table C-3

Probit Regression Models for Risk & Growth and Controlling Authority

Variables	Excl75			
	Model 5		Model 6	
	B	S.E	B	S.E
Risk & Growth				
Earnings Volatility	1.434***	0.248		
Default Risk	0.151***	0.019		
Return on Asset Volatility	-0.571**	0.271		
Market to Book Ratio	-0.035**	0.017		
Sale Growth	0.001	0.002		
Controlling Authority				
Business Group Affiliation			-0.177***	0.062
Constant	-1.118***	0.051	-0.624***	0.045
LR Chi-Square	103.870***		8.220***	
Pseudo R^2	0.052		0.004	

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table C-4
Probit Regression Models for Image and Nature of Expense Factors

Variables	Excl75			
	Model 7		Model 8	
	B	S.E	B	S.E
Image				
Size	-0.327***	0.038		
Age	0.008***	0.002		
Quality	-0.020	0.013		
Nature of Expense				
Depreciation Ratio			0.634***	0.236
Operating Expense Ratio			0.233***	0.049
Constant	0.135	0.140	-0.829***	0.038
LR Chi-Square	92.390***		29.930***	
Pseudo R^2	0.043		0.014	

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table C-5
Probit Regression Models for Debt Market and Industry Factors

Variables	Excl75			
	Model 9		Model 10	
	B	S.E	B	S.E
Debt Market				
Credit Rating	-0.257***	0.093		
Debt Maturity	-1.452***	0.124		
Tax Ratio	0.034	0.054		
Financial Ratio	-0.155	0.113		
Industry				
Regulation			0.144	0.093
Median Industry Financial Leverage			-4.904***	0.564
Median Industry Book Leverage			0.385	0.608
Median Industry Market Leverage			-0.459	0.444
Median Industry Market to Book Ratio			-0.053	0.113
Median Industry Sale Growth			0.228**	0.091
Textile Dummy			-0.057	0.096
Constant	-0.266***	0.050	0.036	0.350
LR Chi-Square	157.800***		153.010***	
Pseudo R^2	0.073		0.070	

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table C-6
Probit Regression Models for Macroeconomic and Stock Market Factors

Variables	Excl75			
	Model 11		Model 12	
	B	S.E	B	S.E
Macroeconomic				
Government Borrowing	-22.378	22.822		
Expected Inflation Rates	0.985	0.646		
GDP Growth	-1.036	0.692		
Stock Market				
Dividend Payers			0.044	0.068
Dividend Payout Ratio			0.080**	0.035
Dividend Yield Ratio			0.028	0.034
Constant	-0.426*	0.247	-0.773***	0.050
LR Chi-Square	2.490		9.680**	
Pseudo R^2	0.001		0.005	

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table C-7
Probit Regression Model for Organizational Factors

Variables	Excl75	
	B	S.E
Cash Holding	1.901***	0.507
Earnings Volatility	1.116***	0.357
Size	-0.223***	0.062
Return on Asset Volatility	-0.931**	0.397
Operating Expense Ratio	0.507***	0.124
Financial Leverage	-0.984***	0.290
Age	0.010***	0.003
Market Leverage	-0.682***	0.190
Asset Tangibility	-1.105***	0.228
Asset Maturity	0.057***	0.011
Constant	0.521	0.320
No. of Observations	1512	
LR Chi-Square	328.34***	
Pseudo R^2	0.221	

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table C-8
Probit Regression Model for Non-Organizational Factors

Variables	Excl75	
	B	S.E
Credit Rating	-0.292***	0.101
Debt Maturity	-1.183***	0.133
Median Industry Sale Growth	0.259***	0.093
Dividend Payout Ratio	0.077**	0.035
Regulation	0.214**	0.094
Median Industry Financial Leverage	-3.662***	0.594
Dividend Payers	-0.181**	0.071
Median Industry Market Leverage	-0.415*	0.246
Constant	0.448***	0.156
No. of Observations	1957	
LR Chi-Square	245.720***	
Pseudo R^2	0.115	

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table C-9
Probit Regression Model for Theoretically Suggested Antecedents of Debt Specialization

Variables	Excl75	
	B	S.E
Current Ratio	0.073**	0.030
Financial Leverage	-1.132***	0.311
Market Leverage	-0.607***	0.150
Asset Maturity	0.036***	0.008
Earnings Volatility	1.059***	0.219
Quality	-0.029**	0.014
Debt Maturity	-0.400*	0.218
Median Industry Financial Leverage	-3.150***	0.505
Median Industry Sale Growth	0.288***	0.095
Dividend Payers	-0.389***	0.076
Constant	0.248	0.155
No. of Observations	2001	
LR Chi-Square	-905.722***	
Pseudo R2	0.1723	

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table C-10
Probit Regression Model for Empirically Identified
Antecedents of Debt Specialization

Variables	Excl75	
	B	**S.E**
Cash Holding	1.974***	0.357
Age	0.008***	0.002
Book Leverage	-0.671***	0.159
Asset Tangibility	-1.349***	0.164
Operating Expense Ratio	0.171***	0.051
Size	-0.351***	0.039
Constant	1.316***	0.206
No. of Observations	2001	
LR Chi-Square	-927.812***	
Pseudo R2	0.1521	

* p < 0.1, ** p < 0.05, *** p < 0.01

Table C-11
Probit Regression Model for Predictors of Debt Specialization

Variables	Excl75	
	B	**S.E**
Cash Holding	1.714***	0.541
Current Ratio	0.117**	0.051
Debt Maturity	-2.930***	0.486
Regulation	0.292**	0.129
Dividend Payers	0.381***	0.122
Financial Leverage	3.488***	0.807
Book Leverage	-0.699*	0.384
Operating Expense Ratio	0.862***	0.151
Asset Tangibility	-1.056***	0.251
Asset Maturity	0.030***	0.011
Asset Growth	0.216*	0.111
Earnings Volatility	0.913**	0.387
Median Industry Financial Leverage	-3.175***	0.671
Financial Ratio	-1.106**	0.496
Size	-0.331***	0.073
Age	0.009***	0.003
Constant	0.861**	0.417
No. of Observations	1479	
LR Chi-Square	404.520***	
Pseudo R^2	0.280	

* p < 0.1, ** p < 0.05, *** p < 0.01

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Table C-12
Characteristics of Organizations Specialize

Variables	Correlation	Excl75 = 0		Excl75 = 1		Test of Differences Excl75=0 and Excl75=1	
		Mean	SD	Mean	SD	t-test	Wilcoxon test
Cash Holding	0.277***	0.040	0.077	0.104	0.135	-9.342***	-10.965***
Current Ratio	0.182***	1.199	1.034	1.732	1.657	-6.402***	-6.404***
Net Profit Ratio	0.025	0.025	2.403	0.164	2.364	-1.105	-5.072***
Return on Assets	0.106***	0.034	0.139	0.082	0.297	-3.338***	-3.438***
Return on Equity	-0.004	0.204	1.098	0.193	0.804	0.189	0.726
Financial Leverage	-0.293***	0.229	0.191	0.090	0.193	13.487***	20.537***
Book Leverage	-0.220***	0.581	0.201	0.465	0.263	8.265***	8.212***
Market Leverage	-0.246***	0.712	0.253	0.551	0.315	10.129***	9.701***
Asset Tangibility	-0.274***	0.730	0.181	0.593	0.266	10.442***	10.187***
Asset Maturity	0.248***	2.395	3.069	5.180	7.752	-7.466***	-4.043***
Asset Growth	-0.003	0.250	0.411	0.248	0.430	0.118	0.849
Earnings Volatility	0.180***	0.078	0.113	0.137	0.192	-6.303***	-4.966***
Default Risk	0.187**	1.510	1.810	2.442	2.685	-6.748***	-6.502***
Return on Asset Volatility	0.074***	0.032	0.145	0.062	0.239	-2.599**	-3.071***
Market to Book Ratio	0.023	0.955	1.978	1.075	2.858	-0.844	-2.248**
Sale Growth	0.049**	0.379	0.860	8.083	138.502	-1.210	2.292**
Business Group Affiliation	-0.064***	0.562	0.496	0.486	0.500	2.864***	2.871***
Size	-0.210***	3.441	0.739	3.030	1.015	8.157***	7.973***
Age	.083***	25.763	13.585	28.529	15.479	-3.492***	-3.254***
Quality	-0.038*	0.409	2.446	0.195	2.324	1.666*	2.153**
Depreciation Ratio	0.062***	0.070	0.107	0.087	0.145	-2.368**	-2.070**
Operating Expense Ratio	0.122***	0.161	0.498	0.332	0.821	-4.246***	-5.621***

Variables	Correlation	Excl75 = 0		Excl75 = 1		Test of Differences Excl75=0 and Excl75=1	
		Mean	SD	Mean	SD	t-test	Wilcoxon test
Credit Rating	-0.081***	0.183	0.387	0.112	0.316	4.051***	3.632***
Debt Maturity	-0.283***	0.349	0.217	0.182	0.308	11.033***	18.103***
Tax Ratio	0.018	0.172	0.656	0.198	0.389	-1.059	-0.406
Financial Ratio	-0.030	0.101	0.421	0.073	0.294	1.338	16.929***
Regulation	0.051**	0.139	0.346	0.182	0.386	-2.172**	-2.299**
Median Industry Financial Leverage	-0.261***	0.162	0.073	0.116	0.072	12.155***	11.366***
Median Industry Book Leverage	-0.140***	0.613	0.078	0.586	0.089	5.882***	5.849***
Median Industry Market Leverage	-0.186***	0.733	0.156	0.661	0.178	7.909***	7.795***
Median Industry Market to Book Ratio	0.173***	0.679	0.473	0.885	0.574	-7.092***	-7.273***
Median Industry Sale Growth	-0.001	0.311	0.372	0.310	0.364	0.058	0.622
Government Borrowing	-0.009	0.010	0.002	0.010	0.001	0.383	0.651
Expected Inflation Rates	0.006	0.281	0.364	0.286	0.368	-0.257	0.038
GDP Growth	0.002	0.343	0.337	0.345	0.342	-0.082	0.509
Dividend Payers	0.026	0.594	0.491	0.624	0.485	-1.150	-1.142
Dividend Payout Ratio	0.060***	0.136	0.746	0.298	1.948	-1.760*	-3.125***
Dividend Yield Ratio	0.030	0.395	0.883	0.461	1.066	-1.348	-1.934*

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

APPENDIX-D

Appendix-D summarizes the results for HHI on the basis of Tobit regression models. It provides a comprehensive view about the antecedents of debt specialization through the outcomes of all the categories of organizational and non-organizational factors individually, group wise and as a whole.

Table D-1
Summary of Results

Analysis	Organizational	Non-organizational
Categorical	Cash Holding, Current Ratio, Return on Assets, Financial Leverage, Market Leverage, Asset Tangibility, Asset Maturity, Earnings Volatility, Default Risk, Return on Asset Volatility, Market to Book Ratio, Sale Growth, Business Group Affiliation, Age, Size, Quality, Depreciation Ratio, Operating Expense Ratio	Credit Rating, Debt Maturity, Financial Ratio, Regulation, Median Industry Financial Leverage, Median Industry Book Leverage, Median Industry Sale Growth, Dividend Payout Ratio
Group Wise	Cash Holding, Current Ratio, Financial Leverage, Asset Tangibility, Asset Maturity, Asset Growth, Earning Volatility, Default Risk, Return on Asset Volatility, Market to Book Ratio, Sale Growth, Business Group Affiliation, Age, Size, Quality, Operating Expense Ratio	Credit Rating, Debt Maturity, Financial Ratio, Regulation, Median Industry Financial Leverage, Median Industry Market Leverage, Median Industry Market to Book Ratio, Dividend Payers, Dividend Payout Ratio

Analysis	Organizational	Non-organizational
Research Question Wise	Cash Holding, Current Ratio, Return on Assets, Financial Leverage, Book Leverage, Market Leverage, Asset Tangibility, Asset Maturity, Asset Growth, Earnings Volatility, Default Risk, Sale Growth, Age, Size, Quality, Operating Expense Ratio	Debt Maturity, Financial Ratio, Regulation, Median Industry Book Leverage, Median Industry Financial Leverage, Expected Inflation Ratio, Dividend Payout Ratio, Dividend Payers
Overall	Cash Holding, Current Ratio, Net Profit Ratio, Financial Leverage, Book Leverage, Asset Tangibility, Asset Maturity, Earning Volatility, Market to Book Ratio, Sale Growth, Business Group Affiliation, Age, Size, Quality, Depreciation Ratio, Operating Expense Ratio	Debt Maturity, Financial Ratio, Regulation, Median Industry Financial Leverage, GDP Growth
Similar	Cash Holding, Current Ratio, Financial Leverage, Asset Tangibility, Asset Maturity, Earning Volatility, Sale Growth, Age, Size, Quality, Operating Expense Ratio	Debt Maturity, Financial Ratio, Regulation, Median Industry Financial Leverage
Dissimilar	Net Profit Ratio, Return on Assets, Book Leverage, Market Leverage, Asset Growth, Default Risk, Return on Asset Volatility, Market to Book Ratio, Business Group Affiliation, Depreciation Ratio	Credit Rating, Median Industry Book Leverage, Median Industry Market Leverage, Median Industry Market to Book Ratio, Median Industry Sale Growth, GDP Expected Inflation Ratio, Growth, Dividend Payers, Dividend Payout Ratio