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Credit Fluctuations and Lodging Firms: An Investigation of the Differing Capital Structures in the US Lodging Industry

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CREDIT FLUCTUATIONS AND LODGING FIRMS: AN INVESTIGATION OF THE DIFFERING CAPITAL STRUCTURES IN THE US LODGING INDUSTRY

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ABSTRACT

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This study empirically investigates the effect of credit availability and firm size on the leverage of lodging industry in United States using a 3 X 2 factorial Multivariate Analysis of Variance (MANOVA). Three time points of differing credit availability (Low, High, and Average) were identified using Case-Shiller home price index. Leverage, Net Leverage, and Short-to-Long-Term debt ratios of large and small US lodging firms were analyzed at these differing credit availability time points to assess any significant differences. Specifically, this study attempts to find whether there is an interaction effect of credit availability and firm size on the leverage of lodging firms. Significant effects of firm size and credit availability were found on the leverage and net leverage of lodging firms. Furthermore, significant interaction effects of credit availability and firm size on leverage and net leverage were found in lodging firms. No significant effects of credit availability and firm size were found on the short-to-long-term-debt ratio in US lodging firms. Also, no significant interaction effect was found on the short-to-long-term-debt ratio of US lodging firms. Implications of this study's findings for both the large and small lodging firms are discussed at the end.

DEDICATION

To my dear father

Colonel PAL SINGH

April 12, 1944-December 21, 2010

Everything I achieve in this life is owed to you, my guide, and my mentor

And to my dear mother

PRAKASH KAUR

Thanks for all the unconditional love

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INTRODUCTION

Service industry has been recognized as the fastest growing industries in the recent years (Weiss, 2008). It has been evident that among the services providing industries the hospitality industry is one of the largest and fastest growing industries in the world for past few years (Walker, 2009). The United States (US) has the world's biggest travel and tourism economy. It welcomes in excess of 50 million international tourists every year, who generate revenues in excess of US$120 billion. As such, inbound travel is vitally important to the US economy. An even greater contribution, however, comes from domestic tourism, which generates US$620 billion plus per annum (Mintel Reports, 2010).

The hospitality industry consists of businesses that offer food and beverage, and accommodation to the guests (Walker, 2009). It is classified as a service industry because the main product of this industry is services offered to the guests. Food and beverage operations add the element of service to the final product whereas lodging operations are purely service based. This uniqueness of the hospitality industry product distinguishes the industry from other tangible product based industries. Production and consumption of hospitality products are often simultaneous and thus inseparable unlike other goods. Lodging companies cater to the needs of travelers who are away from their local residences. The product offered is room nights which is perishable in nature, another significant difference from the usual consumer durable goods.

This research study is focused on the lodging or hotel firms only. The hotel industry in the US generated a $127.20 billion in revenues that employed 1.7 million

workers with 50,800 properties and over 4.76 million guestrooms in year 2009 (AHLA, 2010). All publicly traded firms were analyzed for this study.

Financing is considered as one the most important and crucial decision in the area of corporate finance (Keister, 2004). Decisions regarding the constituents of overall capital structure are the most critical issues among financing decisions. Capital structure of a firm is defined by the mix or proportion of a firm's financing through debt and equity (Van Horne & Wachowicz, 2008). These financing decision are even more critical to lodging firms because of the unique nature of the lodging industry. The lodging industry is highly capital intensive in nature and requires major investment in land, buildings, fixtures and equipments as compared to other industries.

The main goal of any firm is to earn profits and maximize firm value. Hospitality firms are constantly posed with the challenge of ascertaining optimal capital structure so as to maximize firm value and decrease the cost of capital. Numerous empirical research studies have been done in the past evaluating the different capital structure theories. Majority of those studies were focused on identifying the determinants of capital structure, putting different theories to test which suggest that firms select capital structure based on attributes that determine and weigh potential benefits and costs associated with debt and equity financing (Titman & Wessel, 1988).

This dissertation analyzes the impact of business cycles on availability of credit to the hospitality firms. Historically business cycles are known to cause fluctuations in the credit availability in the markets. Further, these credit fluctuations affect the liquidity in the market which is in great demand by the growing firms. Not all firms have the same propensity for credit acquisition. This credit demand varies, based on the size of the

firms. Thus, variation in credit requirement based on firm size in different economic times; i.e., extreme points of the business cycle, must be examined to explore the changes exhibited in the capital structure of the lodging firms. It will also highlight whether firm size plays a role in restricting credit extension.

Purpose of the Study

Despite being a widely researched topic, very few studies in the hospitality and tourism field have been done on the topic of capital structure theory and leverage behavior. A significant bankruptcy cost effect on capital structure and firm value was reported by Kwansa and Cho (1995). They investigated the impact of the trade-off between financial distress costs and tax earnings in the US restaurant industry. A positive relationship between before and after tax rates of US restaurant companies and their leasing activities was identified by Upneja and Dalbor (1999). In the area of the lodging industry, Upneja and Dalbor (2001a) found that debt ratio is positively related to growth opportunities, firm quality, and share of fixed assets for publicly traded US lodging companies. On the other hand, non-debt expenses and debt ratio seemed to be negatively related. In another study, Upneja and Dalbor (2001b) reported that the long-term debt usage is positively related to risk and firm size in publicly traded US restaurant firms. In addition, firm quality and growth opportunities, were found negatively related with long-term debt usage. Their study found that the debt ratios in the UK lodging industry are higher than the debt ratios in the UK retail industry.

Nuri and Archer (2001) revealed that the trade-off theory is more consistent with the lodging and retail industries rather than with the pecking order theory. Tang and Jang (2007) found that long-term debt level is positively related to fixed-assets level and

growth opportunities for the US lodging companies. However, they failed to find evidence on the relationship of leverage ratio to volatility of earnings, firm size, profitability, and free cash flow.

All the studies mentioned before evaluate the capital structure of the lodging or restaurant firms, but no study has been done so far to assess the impact of changes in credit availability on the capital structure of lodging firms in US. There is a need to investigate the leverage behavior of lodging firms in the times of credit expansion and credit contraction.

The lodging industry is highly capital-intensive in nature, and access to capital becomes a key constraint in the growth and development of lodging firms (Brotherton, 2003). This study will try to explore the leverage behavior of various US lodging firms based on their size. i.e. total assets value. It will examine the extent to which various firms adhere to the tenets of different capital structure theories, as already discussed. Also, this study will compare the leverage behavior of lodging firms at two different time points. The first time point being at the peak of business cycle when the credit expansion occurs, and the second being at the trough of business cycle when credit contraction occurs. During expansions, an investment boom generates a profit boom but this induces lenders to adopt more speculative financial arrangements. It will highlight differences, if any, in the capital structure of lodging firms of different sizes within each point of time. At the same time this study will also explore any changes within the same group of firms from credit contraction to credit expansion point.

Research Questions

The fundamental objective of any firm is to maximize its shareholders value, which translates into higher profits and increased stock value (Brealy & Myers, 2007). In other words, usually a firm will be growing to capture a larger market share in expectations of higher profits and to increase its value. As discussed earlier, the boom times present businesses with increased investment opportunities for the firms, along with relaxed norms for credit extension. Thus, during the two extreme points of a business cycle, the question arises: Do all lodging firms change their capital structure in a similar way, or are there differences amongst different lodging firms based on their sizes in these times; and if so, where the differences are? At the same time it will be interesting to explore leverage behavior of lodging firms in the view of various capital structure theories. Conceptually, this dissertation is proposing that leverage is a function of credit availability. Asea and Bloomberg (1998) observed periodic and regular patterns in lending standards of banks. These lending standards tightened credit in recession and eased it during expansion phase of a business cycle.

Banks are willing to lend when the borrowing capacity of households and firms increases. The borrowing capacity is determined by households' collateral, such as houses or real estates. When an economy grows an individual household's capacity to borrow increases due to an increase in its real estate's price.When a household can borrow more it will consume more, which in turn encourages firms to invest more. More investment leads to more economic growth, which then increases asset prices and borrowing capacity (Hoffman, 2004).

On the other hand, during times of recession, the borrowing capacity decreases and banks change their lending practices. One of the major reasons for contraction of bank lending is due to changes in lending policies. The lending criteria become stricter as opposed to the one in times of recovery and boom. More firms qualify for securing loans and hence the credit expansion.

Based on these systematic patterns of lending it is hypothesized that as lending policies become more relaxed during boom time, more businesses try to avail credit to achieve higher leverage. Thus it is hypothesized that all lodging firms will alter their capital structure based on relaxed credit extension standards during the peak time of a business cycle. Consequently, credit extension will help all firms to increase leverage in their capital structure, irrespective of their size.

Objectives of the Study

Hospitality financial research has made significant progress since early 1990's and has contributed to the development of a rich body of knowledge over the past years regarding the identification and analysis of various factors impacting the capital structure of a hospitality firm. All studies mentioned before evaluate the capital structure of lodging or restaurant firms, but no study has been done so far to assess the impact of changes in credit availability on the capital structure of lodging firms in US. There is a literature gap in terms of lodging firm's differing capital structure in the times of credit expansion and credit contraction. So far no study has been to the researcher's knowledge which analyzes the impact of credit availability on the capital structure of firms in the lodging industry.

This study will attempt to provide insights into the leverage behavior of US lodging firms based on their size, contributing significantly to the existing body of knowledge. Previous studies have focused on identification and importance of various factors on the financial structure of hospitality firms but none looked at the impact of credit availability. This particular study will be looking at three time points with excessive, stringent, and average availability of credit in the economy and analyze the capital structure at these three points whether there is any effect on overall capital structure of lodging firms in US.

This study will present opportunities, if any, for lending institutions to focus on under-invested hospitality firms, needing capital for growth activities. It will also attempt to provide insights regarding usage of optimal capital structure at the three different time points of excess, stringent, and average credit to enhance the value of firm. It will help investors to make informed decisions as they become aware of how the risk profile for lodging firms alters at these time points.

Delimitations and Limitations

This research study is limited to publicly traded hospitality firms which were identified by their individual 'Standard Industrial Classification' (SIC) code numbers, which are listed in the New York Stock Exchange (NYSE), the American Stock and Options Exchange (AMEX), and the National Association of Securities Dealers Automated Quotation System (NASDAQ) in years 1995, 2006, and 2009. A major limitation of this study is the survival bias, a common feature of the industry. Firms categorized into different groups based on the total asset size were not the same for all three observed years. Some firms went out of business and some merged with others.

Also, only those firms that reported the required variables for this study were included for analysis, excluding some other potential firms. There are also some concerns with respect to the financial information since different firms could follow different accounting procedures.

This particular research study analyzes hotel and casino hotel firms jointly due to the fact that there are limited observations in each category and also these firms share certain common features. These both sectors are capital and labor intensive. Finally, although many other factors such as a firms goodwill, service quality, corporate culture, human resource practices, and marketing strategies will affect a firms overall business results which in turn affect the credit worthiness of a firm and ultimately the leverage behavior of a firm. This study only focuses on a firm's financial variables which are considered as good indicators of its leverage.

This dissertation analyses focuses on the size of lodging firms and not by different segments such as hotel, resorts, and casinos. A combined analysis of all the segments is a much more practical approach because of the limitation of data needed for analysis. Also, more importantly this dissertation concentrates on leverage behavior which is evidenced to be impacted by size of a firm. In future if the number of firms increase in each individual segment of hospitality industry, it will be more meaningful to conduct segment wise analysis.

Furthermore the size of a firm has been measured with different variables such as sales, total assets, number of employees, number of rooms (Mathews, 1989). Obi (1994) mentions that total assets are the second best indicator for firm size after the market value of a firm. Also, since capital structure is closely associated with the total assets owned by

a firm, this study will be utilizing total asset as a measure for determining lodging firm size.

Definitions

Dependent variables: Those variables which influence variables (Berenson, Levine, & Krehbiel, 2009).

Independent variables: Those variables that are influenced by other variables (Berenson, Levine, & Krehbiel, 2009).

Leverage: Use of borrowed capital for an investment instead of equity capital by a firm, expecting profits made to be greater than the interest payable (Andrew, Damitio, & Schmidgall, 2007).

Liquidity: A financial construct indicating a firm's capability of meeting its short-term obligations and the quickness and certainty of an asset to be converted into cash at its fair market value (Andrew, Damitio, & Schmidgall, 2007).

Debt: An amount owed to a person or organization for borrowed funds (Andrew, Damitio, & Schmidgall, 2007).

Equity: An amount invested by the owners in a business (Andrew, Damitio, & Schmidgall, 2007).

Assets: Things of value owned by a business (Andrew, Damitio, & Schmidgall, 2007).

Business cycle: The periodic of irregular up-and-down movements in economic activity, measured by fluctuations in real 'Gross Domestic Produce' (GDP) and other macroeconomic variables (Zarnowitz, 1996).

Size: A measure indicating the extent of business operations of a firm, its total net worth.

Case-Schiller Index: A monthly report that measures the change in prices of a group of homes in 20 major metropolitan areas in the US (Fact Sheet S&P, 2011).

Growth: A financial measure reflecting a firm's future earnings ability (Collins, 2006).

Credit: A contractual agreement in which a borrower receives something of value now and agrees to repay the lender at some future time (Collins, 2006).

Capital: cash, property and other valuables used to generate income and represent the wealth of a firm (Collins, 2006).

Multivariate analysis of variance (MANOVA): A statistical procedure used to test the significance of the effects of one or more independent variables on two or more dependent variables (Tabachnick & Fidell, 2007).

Summary

The importance and necessity to analyze capital structure at the times of credit availability and credit crunch were discussed in this chapter. The significance and contribution of an analysis investigating hospitality firms' capital structure and leverage behavior at different time points was highlighted. The terms used throughout this dissertation were defined. Next, a review of related literature will be discussed in Chapter 2.

CHAPTER II

LITERATURE REVIEW

Introduction

This chapter reviews the relevant literature with regard to the nature of business cycle and its impact on economy. The nature of business cycles in general will be discussed which will be followed by the impact these cycles have on availability of credit. These credit fluctuations effect the liquidity in the market, much sought after by the growing firms. The growth of firms is, to an extent, dependent on the availability of bank loans to meet their capital requirements. Not all firms have the same propensity for credit acquisition. This credit demand varies, based on the size of the firms. Thus, variation in credit requirement based on firm size in different economic times; i.e., extreme points of business cycle, must be examined to explore the changes exhibited in the capital structure of the lodging firms. It will also highlight whether firm size plays a role in restricting credit extension.

Major theories of capital structure, Modigliani and Miller capital structure propositions, Trade-Off Theory, and Pecking order theory will also be reviewed in context of the credit behavior of lodging firms at different points of business cycles.

Business Cycles

Recent times witnessed fluctuations in the overall economy. The world economy has faced a downswing. House price downturns in the last few quarters have been of concern in the US housing market. After an initial boom in the late 1990's, and even into the early 2000's, activity in the US housing market has of late waned (NAR, 2006). According to the 'International Monetary Fund' (IMF), this downturn represented by far the deepest global recession since the Great Depression' (International Monetary Fund,

2009). The same was evident in the US housing market. Booms and busts in housing prices can have significant impact on the confidence of consumer expenditure, and in turn, on financial markets. Stock and Watson (2003) pointed to the role of asset prices in forecasting inflation, and have highlighted the dominance of house prices in this regard. Prior to this in 2004-5, the world economy witnessed an upward swing, which was driven by extremely dynamic expansion in the US. National output expanded with a sharp increase in productivity with an annualized rate of 9% (Economic Bulletin, 2004). This periodic fluctuation in economic activity is attributed to the effect of business cycles.

In the field of economics, business cycle is defined as the periodic irregular up-and-down movements in economic activity, measured by fluctuations in real 'Gross Domestic Produce' (GDP) and other macroeconomic variables (Zarnowitz, 1996). An economy can be defined as a system constituting activities related to the production and distribution of goods and services in a particular geographic region (Collin, 2006). It recurrently experiences periods of expansion and contraction, referred to as business cycles, with usually irregular time periods. Typically a complete business cycle lasts from 3 – 5 years, but it could last ten years or more and is usually divided into four phases: expansion, peak, contraction, and trough (Tvede, 2006).

Gray (1982) mentioned the contributions of economics to tourism. The research in economics needs periodic and territorial (business and geographic) re-verifications. The conclusion drawn by economists may not apply uniformly at all the places to all the industries. The tourism industry is very different from manufacturing industries, major difference being the product itself. Services are the main product of tourism industry as compared to physical and tangible products from manufacturing industry. Because of the

different nature of the tourism industry, an orthodox version of international trade was developed into a more comprehensive theory of international trade, inclusive of the services sector. Thus, realizing that there are differences amongst different industries based on products and processes, there is need to investigate the lodging specific firms' financial behavior with respect to the concept of leverage in the times of business cycle fluctuations.

Commercial banks along with life insurance companies are considered as traditional lenders to the hospitality and lodging industry. Commercial banks do respond to the fluctuations in business cycles by changing their lending policies. Significant amount of research has been done in the field of economics on the behavior of banks and business cycles. Empirical research suggests that how banks alter their lending standards over economic peaks and troughs is one of the major contributors to the boom and bust nature of business cycles (Farmer, 1985, 1988; Gorton & Kahn, 1993; Greenwald & Stiglitz, 1993; Smith, 1995; and Zarnowitz, 1985). Systematic patterns in lending standards, with banks tightening credit in recession and easing it during expansions were reported by Asea and Bloomberg (1998). They observed that changes in lending standards which are usually not so stringent during expansions do become the cause of future recessions because of non – exclusion of the default likely borrowers. Bank lending, in general, tends to be pro-cyclical, that is, it contracts during an economic slowdown and rises during an expansion. One of the major reasons for contraction of bank lending is due to changes in lending policies. The lending criteria become stricter as opposed to the one in times of recovery and boom. More firms qualify for securing loans and hence the credit expansion.

Ferreira (2002) mentions that in the aftermath of a business cycle downturn; firms tend to behave extremely carefully, as the memory of the previous downturn affect their expectations regarding the future state of the economy. The financial structures are then characterized as static and the economy is stabilized. As this stable environment allows profits to start rising, expectations are revised, and firms start taking riskier positions. Firms' leverage increases, but some of these firms may become more exposed to risk than others; financial structures become weak, if the growth in debt commitments of the more exposed firms becomes greater than the increase in their profits. Banks may eventually start refusing the refinancing of loans, leading the more exposed firms to face increasing difficulties and even bankruptcy. The economy moves again toward a downturn of the business cycle, with most firms undertaking less risky behavior.

The pro-cyclical feature of bank lending to businesses is also partly driven by demand. Business cycle impacted banks' profitability through decreased demand for credit. During recessions, the demand for net working capital falls with a decrease in business investments and employment. During an economic expansion, the opposite occurs, as more businesses become eligible for loans at the banks' terms and conditions of lending (Bernanke & Gertler, 1989).

Availability of bank loans to fund the economic activities may further aggravate the magnitude of business cycles (Berger & Udell, 1992. On the other hand when banks are faced with adverse business cycle conditions, banks may choose to ration credit. This has happened a number of times in the US and Europe in the past. The same pattern of banks excessive restrictive behavior in terms of lending to businesses has been observed in the recent economic downturn, both in the US and Europe (The Economist, 2002).

Furthermore, Berger and Udell (1994) reported that credit rationing played a significant role in limiting the expansion of bank loans to businesses during the 1991-2 recession in the USA. This was mainly due to tighter regulatory oversight and changes in bank lending practices, as banks attempted to reduce the riskiness of their overall asset portfolios. Interest rates increase during the recession times because of tighter liquidity in market affecting demand and supply equation.

The upswing in economy brings growth which is seen in all the business sectors. This is characterized by accelerated capital investment by the firms. During boom time economic activity increases, increased consumption leads to increased production which in turn increases the investments by businesses for growth and expansion.

Capital Investment Accelerator

A financial accelerator refers to the interaction between credit and economic activity that can lead to excessive credit growth. Banks are willing to lend when the borrowing capacity of households and firms increases. The borrowing capacity is determined by households' collateral such as houses or other real estate. When an economy grows an individual household's capacity to borrow increases due to an increase in its real estate's price. When a household can borrow more it will consume more, this in turn encourages firms to invest more. More investment leads to more economic growth, which then increases asset prices and borrowing capacity. This self-reinforcing process amplifies business cycle fluctuations (Hoffman, 2004). Also, lending rates gets affected by the fluctuation in liquidity, which in turn is affected by the overall economic activity.

Basically, the firm's ability to finance its production plan is an increasing function of the value of its assets. When the value of these assets increases, the firm is able to

expand its production plan because its borrowing limits become less stringent. Furthermore, a higher level of production and investment increases asset demand and in turn asset prices along with earnings. This increases the value of firm's assets and its ability to expand its production plan, and so on.

This concept of capital investment accelerator further highlights the expansion and contraction of a firm's growth paralleling the business cycle. As, the cycle is in upswing the value of a firms assets is increasing, making it more credit worthy. It will have an easy access to credit extension by commercial banks. The opposite stands true when the cycle is in downswing. Then the firm's assets lose value and there is a decrease in demand because of decreased consumption. This contracts the borrowing limits and a firm has decreased access to credit availability.

Purpose of the Firm

The theory of the firm states that the primary objective of any firm is to maximize profits or shareholders wealth (Moyer & McGuigan, 2009). In other words, usually a firm will grow to capture a larger share of market in expectations of higher profits. Lodging firms also operate with the same objective. The purpose of growth is to create more wealth for the owners by harnessing emerging opportunities, increasing market share of the business, and generating profits.

Park (2004) mentioned that extension of credit by banks to firms has special importance because firms will be able to finance their growth plans. The demand for credit depends on the investment decisions of firms. The firms that intend to carry out investment projects need capital for further growth (Bertocco, 2005).

Recently, the emphasis has been put on social responsibility of corporations along with profit generation. Drucker (1997) discussed the purpose and objectives of business. He suggests that the concept of profit maximization is meaningless and may actually cause harm to society. He states that profitalbility is not a goal but rather a required outcome to ensure the business continues to achieve its primary purpose of innovation and marketing. On the same lines several other researchers (Guarnieri & Kao, 2007; Kreps, 2003; Pinkston & Carroll, 1996) have emphasized that businesses are one of many social agents and, therefore, must assume responsibilities related to their impact on society while pursuing their primary purpose.

Wood (1991) suggested that the renewed emphasis on corporate social responsibility stems from a fundamental shift in social discourse from a business in society perspective to a business and society perspective. The former perspective views business as an agent in society that serves an economic function. This agent, if left to its own accord, will operate exclusively for its own benefit and not that of society. This is counteracted with regulatory oversight by other agents, including government as well as advocacy groups. These agents ensure that broader social needs are both recognized and respected.

Socially responsible behavior of corporations can actually improve the present value of a firm's future cash flows, consistent with the ultimate goal of shareholder's wealth maximization of any business firm. Socially responsible behavior can enable a firm to differentiate its products from competitors (Waddock & Graves, 1997). Being socially responsible can help avoid costly government-imposed fines (Freedman &

Stagliano, 2008). Also, this socially responsible behavior can reduce a firm's exposure to risk (Godfrey & Hatch, 2004)

Firm Size and Capital Structure

Several studies have attempted to determine the influence of company size on financial leverage. Gupta (1969), and Taub (1975) reported that firm size influenced financial leverage. Relationship between size and leverage of a firm is discussed in two different contexts. One point of view supports a positive relationship between firms' size and leverage. Titman and Wessels (1988) state that large firms do not consider bankruptcy costs in deciding the level of leverage as these are just a small percentage of the total value of the firm. Therefore large firms may prefer to use higher level of leverage.

The issuance of debt introduces financial or default risk. As the amount of debt in a firm increases, its default risk also increases. A firm's likelihood of bankruptcy increases with an increase in its financial risk. Direct costs of bankruptcy include legal fees, management time devoted to filing for bankruptcy and proceedings instead of time devoted to the operation of the firm. Indirect bankruptcy costs include loss of sales revenue as customers reduce or completely stop doing business with the firm.

Friend and Lang (1988) and Marsh (1982) also support the positive relationship between size of firm and leverage levels. Another group of researchers provides evidence about the existence of a negative relationship between the size of firms and their leverage. Rajan and Zingales (1995) find that large firms are generally well-established and have a good performance track record, which enables them to issue equity at fair prices. In turn, this reduces their reliance on debt and therefore a negative relationship

exists between size and leverage of a firm. Also, smaller firms have a much larger costs of issuing equity than large firms (Smith, 1977). This argument implies that smaller firms may have higher leverage.

From the perspective of capital theories there are different arguments with supporting empirical evidence in favor and against these theories. Basic tenets of trade-off theory propose that there should be a positive relationship between firm size and debt ratio. The reason for this proposition is that the larger firms are better diversified and have a lower probability of experiencing financial distress. On the same lines, several studies concluded that lower bankruptcy costs allow larger firms to take advantage of leverage (Bevan and Danbolt, 2002). On the other hand, the pecking order hypothesis implies a negative relationship between firm size and leverage because of the fact that the asymmetrical information is less severe issue in larger firms than as compared to the smaller firms. Thus , the cost of capital for larger firms is much less than the smaller firms (Rajan and Zingales, 1995; Zou and Xiao, 2006) .

Thus, there arises a question with regards to effects of firm size on the capital structure of lodging firms. This leads to the development of hypotheses 1 – 1c in this dissertation.

Research Question 1

Is there any significant relationship between the size of the firm and the leverage behavior of lodging firms, as measured by leverage, net leverage, and short-to-long-term debt ratio?

Hypothesis 1.

$H1_0$: There is no effect of firm size on the leverage behavior of lodging firms, as measured by leverage, net leverage, and short-to-long-term debt ratio.

H_{1a0}: There no effect of firm size on the leverage of lodging firms.

H_{1b0}: There is no effect of firm size on the net leverage of lodging firms.

H_{1c0}: There is no effect of firm size on the short-to-long-term debt ratio of lodging firms.

Industry Effect on Capital Structure

Previous research has demonstrated that firms' capital structure varies by industry (Bowen, Daley, & Huber, 1982; Martin & Scott, 1975). Titman and Wessels (1988) found that firms manufacturing machines and equipment were financed with relatively less debt, and concluded a significant industry effect. Errunza (1979) and Aggrwal (1981) also found a significant industry effect in Central American firms and large European companies. According to Titman (1984), manufacturing firms may find liquidation relatively more expensive. They invest majorly in assets that are difficult to liquidate. In other words, they have lower levels of leverage by the nature of their business.

Each industry has its own unique characteristics, for instance some are labor intensive while some are capital intensive. Montgomery and Wernerfelt (1988) also confirmed that industry effects are major factors of firm success. Thus, it becomes necessary to focus on a homogeneous industry rather than a heterogeneous group. Lancaster and Stevens (1999) reported that significant industry effects were found in the capital structure of firms.

As compared to other industries, the nature of lodging industry is quite different. The lodging industry is highly capital-intensive in nature, and ability to raise capital becomes the key driver in the growth and development of lodging firms (Brotherton, 2003). Also, since these companies mostly consist of fixed assets, share of long-term debt and equity becomes high in them. Andrew, Damitio, and Schmidgall (2007) mentioned that because of the nature of the lodging industry, lodging companies are highly sensitive to systematic risks. Therefore, these companies face high operating and financial risks. Thus, there is a necessity to focus on lodging specific firms with respect to their leverage behavior.

A Review of Capital Structure Theories

Different theories have attempted to explain the leverage behavior of firms. One of the major theories established is the Modigliani and Miller's (MM) capital structure proposition I and II. They proposed that firms tend to increase leverage, for the tax benefits it generates. The cost of equity is much higher than the cost of debt. The Trade-off theory of capital structure states that firms target for an optimal balance between debt and equity. After a certain level of debt the benefits of tax shields are overshadowed by the costs involved, and firms risk level increases. The Pecking-order hypothesis states that managers prefer to choose debt over equity, if external funds are required. The Debt signaling hypothesis states that under conditions of asymmetric information, firms may prefer debt to equity financing.

Modigliani and Miller Capital Structure Propositions I & II

Modigliani and Miller (1958) employed a simple arbitrage proof to demonstrate that the mix of debt and equity is immaterial to the value of the firm. Their capital

structure irrelevance proposition has assumptions such as of zero tax rates, capital market being frictionless, and firms' share being a perfect investment substitute. In other words they suggested that, in a tax-less world, the value of an unlevered firm is equal to the value of a levered firm that is identical in all other aspects.

In their second proposition, Modigliani and Miller (1963) maintain that interest payments of debt decrease the tax base, thus cost of debt is less than the cost of equity. The tax advantage of debt motivates the optimal capital structure theory, which implies that firms may attain optimal capital structure and increase firm value by altering their capital structures.

MM proposition I.

In Proposition I, Modigliani and Miller theorized that the market value, i.e., total capitalization, of any firm is not dependent on its capital structure. Simply stated, the absence of the arbitrage principal implies that the market value of the firm is represented by its expected payouts (Ross, 1985). Proposition I implies that capital structure, or the composition of firm's debt (bonds) and equity (common stock), is irrelevant in determining market value in equilibrium and in perfect markets, given their assumptions with respect to disregarding business and financial risks, transaction costs, symmetric information, taxes, agency costs, and growth of the firm. The fundamental relationship in their first proposition was defined as:

$Vj = (Sj + Dj) = Xj/pk$ or alternatively,
$pk=Xj/Vj$

where,

Vj = the market value (total capitalization) of the firm j,

Sj = the market value of its common shares,

Dj = is the market value of its debt,

Pk = is the average cost of capital of a firm in industry k, and

Xj = is earnings of the firm before deductions for interest or income taxes (Modigliani et al., 1958).

The above equations basically state that the value of the firm is independent of its capital structure, given the Modigliani and Miller assumptions with respect to business and financial risks, transaction costs, symmetric information, taxes, and growth. A major conclusion with respect to this irrelevancy proposition is that for a firm attracting additional funding for a particular investment, it is irrational to select between debt (levered firm) and common stock (unlevered firm).

Thus, the arbitrage principal, or the one price law, simply states that the selection between debt and equity is irrelevant as a levered firm cannot command a valuation greater than an unlevered firm, and unlevered investors could simply personally borrow the funds needed to complete the transaction (Varían, 1993).

MM proposition II.

Modigliani and Miller (1963) revised their equations to include the value of a leveraged firm, V_L, i.e., a company with equity as well as debt financing, to provide for the following tax shield from debt:

$$V_L = \frac{EBIT(I - t_c)}{r_e} + \frac{t_c r_d D}{r_d}$$

where,

EBIT = earnings before interest and taxes,

t_c = corporate effective income tax rate,

r_d = interest rate cost of debt,

D = total value of debt outstanding, and

r_e = cost of equity.

This equation suggests that equity investors will receive additional value in the firm, which represents the tax shield from debt, with the following present value:

$$\text{Present Value of the Tax Shield} = \frac{t_c r_d D}{r_d} = t_c D$$

That is, the value of the firm may be calculated as its unleveraged equity plus the leveraged component, i.e., the present value of the tax shield from debt (Brealey & Mayers, 2007).

Since MM (1963), several authors including Stiglitz (1969, 1973), Turnbull (1979), Ross (1985), Brick and Fisher (1987), and Mackie-Mason (1990) have indicated that the issuance of debt produces a material advantage arising from tax deductibility of interest payments. In the absence of debt-related bankruptcy or agency costs, firms would benefit most by financing entirely with debt.

Agency costs / Tax shield Trade-Off Theory of Capital Structure

Agency costs arise when the incentives of stakeholders are not aligned with or do not reinforce each other (Jensen & Meckling, 1976; Jensen, 1986). This may be best illustrated with the asset substitution phenomenon (Gavish & Kalay 1983; Myers 1977). As a firm's proportion of debt financing increases, equity holders/managers have an increased incentive to carry out more risky projects. Equity holders/managers are insulated from potential losses if the project is a failure since the debt issuers bear the bulk of the downside risk. If the project is successful, debt issuers do not share in the upside gains and the benefits accrue to the managers and equity holders. By not sharing in the downside risk, the expected payout to equity holders skews managerial behavior

toward riskier projects that have the potential to decrease the value of the firm. Under the asset substitution framework the increased use of debt is related to firm value destruction.

The tax benefit-bankruptcy cost trade-off models (DeAngelo & Masulis, 1980) predict that firms will seek to maintain an optimal capital structure by balancing the benefits and the costs of debt. The benefits include the tax shield whereas the costs include expected financial distress costs. Under the agency theoretical models (Jensen & Meckling, 1976; Jensen, 1986; Myers, 1977) firms use the benefits of reducing potential free cash flow problems and other potential conflicts between managers and shareholders, to offset costs associated with underinvestment and asset substitution problems. Managers are made responsible towards the timely payment of principal and interest. These theories predict that firms maintain an optimum capital structure where the marginal benefit of debt equals the marginal cost. The implication of these trade-off models is that firms have target leverage and they adjust their leverage toward the target over time.

As firms increase their leverage ratios, they are faced with an increasing likelihood of failure (Warner, 1977), greater degree of agency conflict between lenders and owners. Debt financing raises the pressure on managers to perform, because it reduces the moral hazard behavior by decreasing the free cash flow at the disposal of managers (Jensen & Meckling, 1976; Myers, 1977). If firms have positive free cash flows that are not distributed back to equity holders, managers will have excess cash to direct toward pet projects, perquisites, and empire building. Demonstrated investment sensitivity to cash flow indicates that when excess cash resources are available, managers are more likely to seek out investment options. Decisions regarding these investments are

not as rigorous as when excess cash flows are not available. Under this heuristic, managers are overly optimistic about cash flow, and/or executives are overconfident in their ability to achieve high returns on the investment for the firm (Shefrin, 2007). Consequently, equity holders would prefer to have excess free cash flows returned via a dividend or stock repurchase and altogether avoid the poor behavior of managers with excess cash (so they can reinvest at a higher expected return given the same underlying risk profile). When debt financing is implemented free cash flows are reduced and/or covenants set in place that limit the investment behavior of managers. Thus, some debt financing (leverage) does increase the value of the firm by imposing financial discipline on managers.

Debt financing also generally increases levels of financial risk. Financial risk of a firm is directly related to the capital structure of the firm and refers to the possibility that a firm will not be able to meet its financial obligations. This financial default may be a result of too much leverage or inadequate cash flow. In either situation the firm has an obligation greater than the liquid assets available to make payments. Consequently, firms are forced into default or a "fire sale" liquidation of an asset that they would prefer not to liquidate (Shleifer & Vishny 1992).

On the other hand, the incentive for debt lies in the tax deductibility of interest expenses, where in debt holders receive only a promised stream of income and do not share in a firm’s profitability. As the proportion of debt is increased, the tax deductibility of interest expense reduces aggregate costs of capital. However, beyond a certain optimal capital structure, the enhanced rate of return required by shareholders outweighs the factors that may have initially raised firm value.

Pecking Order Theory

The pecking order theory (Myers & Majluf, 1984) is based on the idea of asymmetric information between managers and investors. Managers know more about the true value of the firm and the firm's riskiness than less informed outside investors. To avoid the underinvestment problem, managers will seek to finance the new project using a security that is not undervalued by the market, such as internal funds or riskless debt.

The theory is based on the following arguments: dividend policies are long-term; managers act in the interest of existing stockholders; managers prefer internal financing over external financing; and, if firms require external financing, managers will choose to issue debt before equity (Donaldson & Stone, 1984). Within this framework firms have no well defined target leverage ratio. New debt or equity will be issued only when the firm faces an imbalance between funds required and internal cash flows. Assuming fixed dividend policies, less profitable firms will have fewer internal funds for new investments and thus will be relatively more reliant on external funds (Myers, 1989).

According to pecking order theory, financial managers automatically choose the cheapest available financing sources. The more profitable a company, the less the company borrows, for it can draw on its internal equity for future development without incurring any information or issuing costs (Barclay & Smith, 2006). Myers (2001) reported that in most of the years for US corporations, external financing accounts for less than 20 percent of investment funds and most of them are debts. In year 1999, internal cash flow financed $805 billion out of $944 billion investment in US non-farm, non-financial firms. External financing covered the rest, which was $139 billion.

However, the borrowing was $283 billion and the equity financing was negative $144 billion (Myers, 2001). These findings were consistent with the pecking order theory.

The Debt Signaling Hypothesis

The theory of signaling states that information asymmetry between a firm and outsiders leads the former to make certain changes in its capital structure. Ross (1977), Myers & Majluf (1984) and John (1987) have shown that under asymmetric information, firms may prefer debt to equity financing. In other cases, the asymmetric information may leave corporate insiders with a degree of residual uncertainty leading to the pecking order effect, i.e., the relative preference of equity financing (Noe, 1988). The outcome of the prevailed information asymmetry is that outsiders do not know quite enough and/or accurate information about the firm's future decisions. This may lead the firm to make certain changes in its capital structure to send certain signals to the outsiders concerning the quality of its financial decisions.

Housing Industry in US and Home Price Index

Muth and Goodman (2001) stated the performance of housing market traditionally has a major impact on overall economy. According to Topel and Rosen (1988), the housing market is an attractive candidate for studying the investment behavior. They noted that price movements and construction activity are positively correlated. Construction costs as a whole closely match the movements in housing prices and construction activity. Rise in the price of factors of production is indicative of a boom in a business cycle. Their study concluded that investment responds to change in housing prices. This correlation and positive movement of the elements in an economy are witnessing the phenomenon of capital investment accelerator.

Banks are willing to lend when the borrowing capacity of households and firms increases. The borrowing capacity is determined by households' collateral such as houses or real estates. An individual's capacity to borrow increases when there is an increase in real estate's prices. This happens during the times of economic growth. When a household can borrow more it will consume more, this in turn encourages firms to invest more. More investment leads to more economic growth, which then increases asset prices and borrowing capacity. This self-reinforcing process amplifies business cycle fluctuations (Hoffman, 2004).

Thus, housing prices can be used as good indicators of general economic activity. Topel and Rosen (1988), mention those housing prices are a function of supply and demand. If there a credit crunch, it will decrease the housing demand which in turn will decrease the housing prices. In this dissertation, a housing price index will be utilized to identify the years of boom and bust in the business cycle related to the US economy. These years will be representative of credit availability and credit crunch, depending on the phase of the business cycle.

Prior research in the area of housing price fluctuations (Case 1991; Case & Shiller, 1994) has shown that housing price fluctuations has a strong impact on regional economies and national mortgage markets. The boom period, indicated by increased house prices, lead to increased spending, rising costs of business, and an income disparity. In bust periods, falling home prices are indicative of a weakening economy, higher unemployment, and general decrease in spending (Case & Schiller, 1994).

Chan, Treepongkaruna, Brooks, and Gray (2010) mention that there exist strong linkages between different asset markets such as financial, real estate and commodity

markets. Larsen and Sommervoll (2004) state that house prices are not only important for purchasers who are trying to compute a favorable entrance point to the housing market, but also to banks and financial institutions. This is because housing loans make up a large proportion of credit creation in an economy. Also, since the aggregate of mortgages influences macroeconomic performance, lending institutions and financial authorities keep a tight watch over house price fluctuations.

In order to identify the peak and trough of business cycle, an indicator of overall economic condition, this study will utilize Case-Shiller housing price index as shown in Figure 1. The S&P/ Case-Shiller home price indices are described as the leading measure of United States residential real estate prices. The S&P/ Case-Shiller home price index is a quarterly index of single-family home prices and are calculated monthly. The calculation of index involves repeat sales methodology which measures the movement in the prices of single-family homes in their specific regions. When a home is resold, months or years later, the new sale price is matched to its first sale price. These two data points are referred to as a sale pair. The difference in the sale pair is measured and recorded. Finally, all the sales pairs in a region are aggregated in to one index (Fact Sheet S&P, 2011).

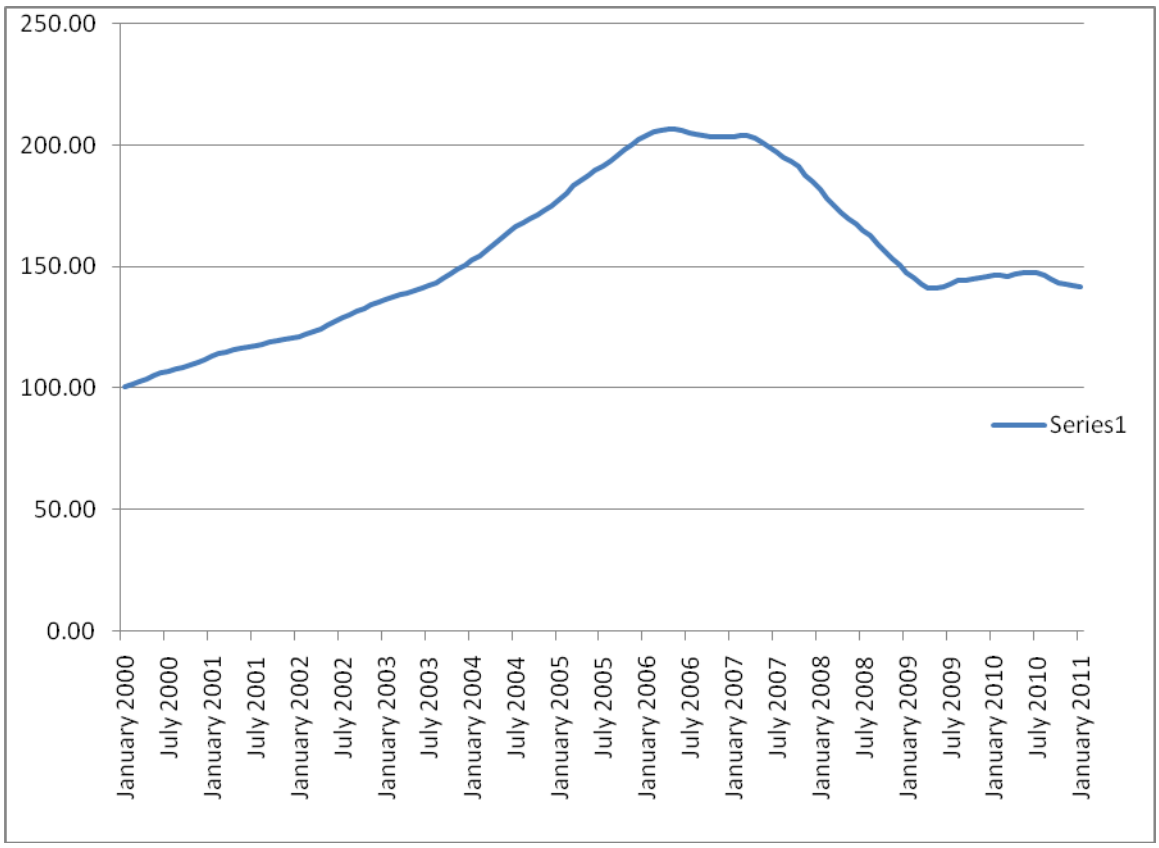

Figure 1. Case-Shiller Housing Price Index Janary 2000 to January 2011

Thus, there arises a question with regards to effects of credit availability on the capital structure of lodging firms. . This leads to the development of hypotheses 2 – 2c in this dissertation.

Research Question 2

Is there any significant relationship between the availability of credit and the leverage behavior of lodging firms, as measured by leverage, net leverage, and short-to-long-term debt ratio?

Hypothesis 2.

$H2_0$: There is no effect of availability of credit on the leverage behavior of lodging firms, as measured by leverage, net leverage, and short-to-long-term debt ratio.

H_{2a0}: There is no effect of availability of credit on the leverage of lodging firms.

H_{2b0}: There is no effect of availability of credit on the net leverage of lodging firms.

H_{2c0}: There is no effect of availability of credit on the short-to-long-term debt ratio of lodging firms.

Capital Structure Studies in the Domain of the Lodging Industry

Sheel (1994) analyzed the relationship between a firm's capital structure, its cost of capital, and its stock value. He employed cross sectional regression analysis for examining the leverage behavior of 33 firms from two different groups of industries namely the hotel industry and the manufacturing industry. His study used collateral value of assets, non-tax debt shields, firm size, profitability, and volatility of earnings as the independent variables. The dependent variable and measure of leverage uses was total debt to total assets ratio of the firms. All the firms used for this study were retrieved from COMPUSTAT annual files ranging from 1971 to 1988. All variables were found to have a significant effect on the total-debt-to-asset ratio of both the hotel and manufacturing industries, at an alpha of 0.10.

Collateral value of assets, firm size, and earnings volatility were positively related to the total-debt-to-asset ratio of firms in both industries. Whereas non-debt tax shield and profitability of the firms were negatively related to the total-debt-to-asset ratio. For

short-term-debt behavior, collateral assets, profitability, and earnings volatility were found to have a significant relationship. The collateral value of assets in hotels had stronger negative influence as compared to the manufacturing industry. Volatility in earnings had a larger negative relation to short-term-debt for hotel industry as compared to manufacturing industry. With respect to long-term-debt behavior, it was found to be less sensitive to non-debt tax shields in hotels as opposed to the manufacturing firms. This research study clearly brought forward the differences in the capital structure between service industry and manufacturing industry. This fact can be attributed to the uniqueness of hospitality industry.

In a study done by Kim (1995), a comprehensive panel data research was done in the area of financial structure in hospitality industry. This research study analyzed corporate financing decisions of 251 restaurant companies and 81 lodging firms listed on the US stock exchange, from a period of 1986 to 1992. To represent financial structure, the dependent variable, three different measures were used. These measures were long-term debt, short-term debt, and total debt to the market value equity ratio. Firm characteristics such as size, earning volatility, profitability, growth opportunity, non-debt tax shield, and asset structure, were used as independent variables for explaining a firm's financial structure. The study utilized several measures for each of the independent variables. For example, natural log of sales revenue and natural log of total assets was used to define firm size. Furthermore, some industry specific variables that had never been examined before were employed in the multiple regression models. An independent variable for franchising was utilized in the model for restaurant industry which was measured by the ratio of number of franchised properties to total number of properties.

Similarly, a dummy variable, indicating whether it was a management company or not, was included for the lodging industry.

Kim employed Ordinary Least Squares (OLS) regression for analysis. The results of the study confirmed that conventional corporate financial theories explained the existing financial structure in US hospitality industry. It was found that the asset structure of hospitality firms, represented by tangibility level of the firms, have a strong positive relation with debt ratio or leverage. The finding was true for both, the restaurant industry as well as hospitality industry. On the other hand, profitability was strongly negatively related to the leverage of hospitality firms. Higher the profitability, lower the leverage of a firm. This study showed that growing hospitality firms have a lesser reliance on debt financing. Lastly, there was no impact of independent variables franchising and management company on influencing the hospitality firm's leverage.

Upneja and Dalbor (2001a) analyzed the financial structure of restaurant industry in US. They used total debt ratio, long-term debt ratio, and short-term debt ratio in their empirical model to study the financial structure decisions of all restaurant firms listed on the US stock exchange. The authors determined the estimate of Ohlson's O-score (a measure of the probability of bankruptcy), the number of years the restaurant firm has been traded on stock exchange, firm's operating cash flow, and the interaction variable between operating cash flow and firm's age since its listing on stock exchange as the characteristics influencing a firm's financial structure.

Authors found that operating cash flow of a firm, which they used as a proxy for a firm's growth, has a positive effect on firm's leverage. Firm's age in terms of listing years was also found to be positively related to the debt ratio. Their results of the

regression model for long-term debt were similar to the the total debt ratio model, but results for short-term debt were not similar. Operating cash flow was found to be negatively related to the short-term debt. There was no effect of listing years or the interaction variable on the debt ratio of restaurant firms.

In another study, Upneja and Dalbor (2001b) used pooled regression model for analyzing the determinants of long-term debt of publicly traded US restaurant firms. Determining variables such as growth opportunity, firm size, bankruptcy probability and effective tax rate of the firm were regressed on long-term debt. Except effective tax rate of the firm, all other variables had a significant effect on the long-term debt of restaurant firms. From the results of positive relation between firm size and its long-term debt, authors concluded that it becomes difficult for smaller firms to pay the substantial fixed cost of long-term debt. The study also pointed that firms with greater insolvency probability do not have an easy access to the equity market, and thus they recourse to seeking long-term debt for their financing needs.

In a research study done by Kwansa and Cho (1995), the trade-off between financial distress costs and tax earnings in the US restaurant industry was investigated. They studied a sample of ten restaurant firms that went bankrupt between 1980 and 1992.Their study reported that a restaurant firm's capital structure and its value were significantly affected by the magnitude of bankruptcy costs involved. Their study also found that generally the size of the indirect bankruptcy cost outweighs the size of the tax savings from debt use as a firm nears filing for bankruptcy. Thus the trade-off between tax savings and indirect bankruptcy costs can be used as a measure for indicating an onset of financial distress.

Upneja and Dalbor (1999) analyzed the capital structure of small restaurant firms in US with respect to leasing policy and marginal tax rates. Their study focused on leasing versus borrowing debt for purchasing assets. They used restaurant firm data downloaded from COMPUSTAT for the years 1981 to 1992. A significant positive relationship between before and after tax rates of US restaurant firms was identified by their study.

Another study regarding the analyses of prevalent capital structure in lodging industry was conducted by Nuri and Archer (2001). They tested the lodging firms operating in United Kingdom and compared them to the retail industry firms. They used pooled cross-sectional regression for analyzing the data from 134 retail and 22 hotel firms. Results of the study were more consistent with the trade-off theory of capital structure rather than pecking order for lodging and retail industry firms. Authors found that the debt ratios in the UK lodging industry are higher than the debt ratios of UK retail industry.

Tang and Jang (2007) analyzed 27 lodging firms for a period of 1997 to 2003 to reassess the determinants of capital structure in US lodging industry. They reported a significant positive relationship between the long-term debt level of a lodging firm and the fixed-asset level, and growth opportunities of a firm. However, their study did not find any significant relationship between the long-term debt of a lodging firm and the other four theory based variables – volatility of earnings, profitability, free cash flow, and profitability.

All the studies mentioned above analyzed the capital structure of lodging firms or the prevalent leverage with other relevant variables, but none of the studies so far have

looked at the macro-economic variable of business cycle fluctuations. This dissertation attempts to study the leverage behavior of lodging firms in US at these time points of differing credit availability. Thus, this study will be first of its kind in lodging industry and will provide with useful insights for all stakeholders.

Finally, there arises a question whether the capital structure of large and small lodging firms changes in a similar pattern in differing credit availability time points: high credit availability, low credit availability, and average credit availability. This leads to the development of hypotheses 3 – 3c in this dissertation.

Research Question 3

Does the leverage behavior of lodging firms, as measured by leverage, net leverage, and short-to-long-term debt ratio gets significantly affected by the interaction between credit availability and the size of the firm?

Hypothesis 3.

$H3_0$: There is no effect of firm size and credit availability on the leverage behavior of lodging firms, as measured by leverage, net leverage, and short-to-long-term debt ratio.

H_{3a0}: There is no interaction effect of firm size and credit availability on the leverage of lodging firms.

H_{3b0}: There is no interaction effect of firm size and credit availability on the net leverage of lodging firms.

H_{3c0}: There is no interaction effect of firm size and credit availability on the short-to-long-term debt ratio of lodging firms.

Summary

Theoretical arguments and empirical evidence regarding the impact of the business cycle on credit flexibility; and in turn, on the capital structure of lodging firms were presented. Theoretical foundations for the research study were explored by reviewing major theories in the field of capital structure. The review of related financial literature from the general business studies and hospitality industry directs the study to examine and evaluate the proposed hypotheses. The following chapter will present the research design and methodology for this study.

CHAPTER III

METHODOLOGY

Introduction

Chapter III discusses the methodology of this study**.** It begins with a discussion about the study design, and the sample. It continues with a description of the variables utilized for analysis and concludes with a discussion of data collection methods, data analysis, and statistical procedures utilized. It concludes with results from the analyses.

Study Design

The literature review in Chapter 2 provides both theoretical and empirical foundations for using statistical analysis to examine the impact of three time points, easy, stringent, and average availability of credit, on the overall capital structure of lodging firms in US. For the identification of high, low, and average credit availability time-points, the Case-Schiller housing index will be used as a proxy. Furthermore factorial design of 'Multivariate Analysis of Variance' (MANOVA) will be utilized to assess the differences in leverage of US lodging firms at these three different time points.

The research design for this study is a descriptive correlation, and 3 X 2 factorial multivariate analyses of variance (MANOVA). This analysis will be conducted using secondary data downloaded from COMPUSTAT for SIC code 7011 (hotels and lodging establishments).

Data Analysis and Statistical Techniques

The data will be prepared and analyzed using 'Statistical Package for the Social Sciences (SPSS) version 18' statistical software. The research questions for this study will be addressed individually by testing individual hypothesis.

MANOVA is a procedure used to test the significance of the effects of one or more IV's (independent variables) on two or more DV's (dependent variables). A factorial multivariate analysis of variance (3 X 2 MANOVA) is appropriate for this study because univariate tests have no mechanism for addressing the correlations among the dependent variables. Multivariate analysis allows for the covariance of the dependent variables to be built right into the test statistics (Stevens, 2002). Using univariate tests in an analysis involving more than one dependent variable leads to greatly inflated type I error. Also, a multivariate test will be more powerful when the groups may not be significantly different on any of the variables individually, but jointly the set of dependent variables may differentiate the groups (Stevens, 2002). Therefore a factorial MANOVA will be performed on the two dependent variables listed above to determine whether statistically significant differences exist on the set of dependent variables based on credit availability and size of the firm. MANOVA and ANOVA test results were analyzed at the significance level of 0.05, which is a widely accepted norm in social sciences (Tabachnick & Fidell, 2007).

Factorial MANOVA and its Assumptions

MANOVA is utilized for analyzing group differences based on linear combination of two or more dependent variables. It is generally described as the extension of the univariate analysis of variance (ANOVA). The major distinction

between the two tests is that ANOVA evaluates the mean difference on a single dependent variable, whereas MANOVA utilizes a combination of two or more independent variables simultaneously.

Factorial MANOVA uses two or more independent variables, each with two or more levels. This study will be using the credit availability and firm size as the independent variables. Credit availability will be analyzed at three levels, high credit availability, low credit availability, and average credit availability. Firm's size will be analyzed at two levels, large firms and small firms.

To test the null hypothesis for MANOVA, Wilk's lambda (Λ) is one of the choices.

$$\Lambda = |W| \; / \; |B + W|$$

Matrix B is a measure of between-group variability, which is a multivariate generalization of the univariate SS_B . It measures the differential effect of the different treatments on the set of dependent variables.

Matrix W is a measure of the within-group variability and is a multivariate generalization of the univariate SS_W .

Matrix B+W is a measure of the total variability in the set of dependent variables. The determinant of the matrix is a measure of generalized variance.

Wilks' Lambda is a positive-valued statistic that ranges from 0 to 1. Small values of Λ indicate more evidence of treatment effects. The sampling distribution of Λ is complicated and two approximations are available: (1) Bartlett's $\chi 2$ and (2) Rao's F. In some software such as in SPSS, Λ is transformed into F-statistics and F-statistics are used as an approximation for significance tests.

The other statistics used to test the null hypothesis in MANOVA are:

Pillai's trace = trace($B*(B + W)^{-1}$)

Hotelling-Lawley trace = trace($W^{-1} *B$)

Roy's gcr (greatest characteristic root) = largest eigenvalue of ($W^{-1}*B$)

These three statistics are positive-valued statistics. Big values of these statistics are evidence of treatment effects. Each multivariate statistic is transformed into a test statistic with an approximate or exact F distribution. The degrees of freedom related to the approximate or exact F-statistic can be different and may be non-integer.

Among the above four tests, Pillai's trace, Wilk's lambda, and Hotelling's trace take into consideration all the eigenvalues of the test matrix ($W^{-1} *B$), while Roy's largest root is the largest eigenvalue of the test matrix. Hotelling's trace is always larger than Pillai's trace or Roy's largest root. When the eigenvalues of the test matrix are small, Hotelling's trace and Roy's largest root will be nearly equal.

Typically these four statistics will lead to the same conclusion (Tabachnick & Fidell, 2007). However, Wilk's lambda and Pillai's trace are the two statistics robust to the violation of assumptions. Evidence also shows that Pillai's trace is more robust. Roy's largest root is more powerful when all assumptions are strictly met and the dependent variables are representative of a single dimension of effects.

In addition to the above mentioned statistics, the power of the statistical test will also be provided. Power is the probability of correctly rejecting the null hypothesis. Typically a cut-off point of 0.7 is acceptable in social sciences. The power of a test is dependent on three factors:

1. The alpha level set by the experimenter;

2. Sample size; and

3. Effect size.

As for the F statistics, power is heavily dependent on sample size (Stevens, 2002). Effect size measures how much of a difference the treatments make, or the extent to which the groups differ in the population on the dependent variable(s). In other words, it captures the degree of association between the effect (e.g., a main effect, an interaction, a linear contrast) and the dependent variable.

Four of the commonly used measures of effect size in the analysis of variance are: Eta-Square (η^2), partial Eta-Squared (η'^2), Omega-Square (ω^2), and the intraclass correlation (ρ_I). Eta-Square and partial Eta-Square are estimates of the degree of association for the sample. Omega-Square and the intraclass correlation are estimates of the degree of association in the population. The formula for Eta-Square, partial Eta-Square, and Omega-Square are:

$$\eta^2 = SS_{effect} / SS_{total}$$

$$\eta'^2 = SS_{effect} / (SS_{effect} + SS_{error})$$

$$\omega^2 = (SS_{effect} - (df_{effect})(MS_{error})) / MS_{error} + SS_{total}$$

The Eta-Square is the proportion of the total variance attributed to the effect, and the partial Eta-Square is the proportion of the (effect + error) variance that is attributable to the effect. Omega-Square is an estimate of the dependent variance accounted for by the independent variable in the population for a fixed effects model. Because (partial) Eta Square(s) are sample estimates and Omega-Square is a population estimate, Omega-Square is always smaller than either Eta-Square or partial Eta-Square.

The intraclass correlation is an estimate of the degree of association between the independent variable and the dependent variable in the population for a random effects model, and thus it will not be discussed here.

According to Cohen's rule for effect size: $\eta^2 \leq 0.01$indicates small effect; $0.01 < \eta^2 \leq 0.06$ indicates medium effect; $\eta^2 > 0.06$ indicates large effect size. This classification is helpful in thinking about how readily an effect stands out from the background variability, but does not provide the practical importance of an effect nor its usefulness to theory. Furthermore, according to Stevens (2002), many researchers have noted that occurrence of small and a medium effect size is very common in social sciences research.

Assumptions Checking

Before data analysis, data screening and assumption checks are necessary for any analysis using inferential statistics. Most statistics are built upon certain ideal assumptions and limitations. After outliers are filtered out of the data set, checking assumptions will follow.

Multivariate normality

The underlying assumption of MANOVA is multivariate normality. This assumption states that observations on the dependent variables follow a multivariate normal distribution in each group. Multivariate normality is difficult to test and many software packages do not include such procedures. In case the assumption of multivariate normality is violated, F test is considered relatively robust to the violation when the numbers of observations are more than 20 in each cell. Stevens (2002) reports that both univariate and multivariate tests are somewhat robust to violations of normality and that

violation of the normality assumption produce only slight effects on Type I error rates and power due to the Central Limit Theorem (Tabachnick & Fidell, 2007).

Linearity

MANOVA assumes linear relationship among all pairs of dependent variables. Deviations from linearity reduce the power of the statistical test because the linear combinations of dependent variables do not maximize the separation of groups for the independent variables. Linearity can be assessed by designating one dependent variable as the dependent and other dependent variables as independent variables in an ANOVA and residual plots are examined (Tabachnick & Fidell, 2007).

Homogeneity of Variance-Covariance Matrices

MANOVA assumes that variance-covariance matrices within each cell of the design are sampled from the same population variance-covariance matrix and can reasonably be pooled to create a single estimate of error. If the within-cell error matrices are heterogeneous, the pooled matrix is misleading as an estimate of error (Tabachnick & Fidell, 2007). If sample sizes are equal, robustness of significance tests is expected and Box's M test can be disregarded, which is a very sensitive test of homogeneity of variance-covariance matrices available in SPSS MANOVA.

However, if sample sizes are unequal and the Box M test is significant at $p < .001$, then robustness is not guaranteed. The more numerous the dependent variables and the greater the discrepancy in cell sample sizes, the greater will be the potential distortion of α levels (Tabachnick & Fidell, 2007). Pillai's criterion instead of Wilk's Lambda should be used to evaluate multivariate significance.

Variable Selection

Dependent Variables

Leverage: With respect to particular proxies for leverage, the empirical literature proposes a number of measures in terms of ratios. These ratios include total liabilities to total assets, total capitalization (total debt to total equity), and total debt to net assets. This study will be using the ratio of short-term debt plus long-term liabilities to total assets, as a measure of leverage.

Net Leverage: Sharpe (1994) mentions that the primary measure of financial leverage is called the net-leverage ratio. This ratio is computed as the book value of total debt over book value of assets, with net short-term assets subtracted from both numerator and denominator. Net short-term assets include cash plus short-term investment plus receivables less payables. Netting out short-term liquid assets is meant to produce a comprehensive measure of overall tightness of the firm's balance sheet.

Short to Long Term Debt Ratio: The differences in the financing of lodging companies are not limited to their debt-equity composition. Since companies can raise short term debt and provide liquidity to their long term debt holder, this particular ratio is of interest for capital structure analysis of lodging firms in three time points described previously. This research study will be utilizing a ratio of a lodging firm's current liabilities to long-term liabilities.

Independent Variables

Years (Time Points): This study will be using Case-Shiller housing pricing index (HPI) to identify the years when the house prices were highest, lowest, and average (the recent lowest prices). The Case-Shiller index was used as a proxy to identify the years

with high credit availability - when the house prices were at the peak, the year with low credit availability - when the house prices were at the lowest, and the year with an average credit availability - when the house prices were somewhat in the middle of these high and low price years. Year 1995 was identified as the year with tighter credit regulations, 2006 was identified as the year with relaxed credit regulations and year 2009 was identified as a year with average credit availability. See Figure 2 (HPI's 1995 = 76.66, 2006 = 226.82, 2009 = 152.22). Thus, independent variable year was utilized with three categories – Low Credit, High Credit, and Average Credit.

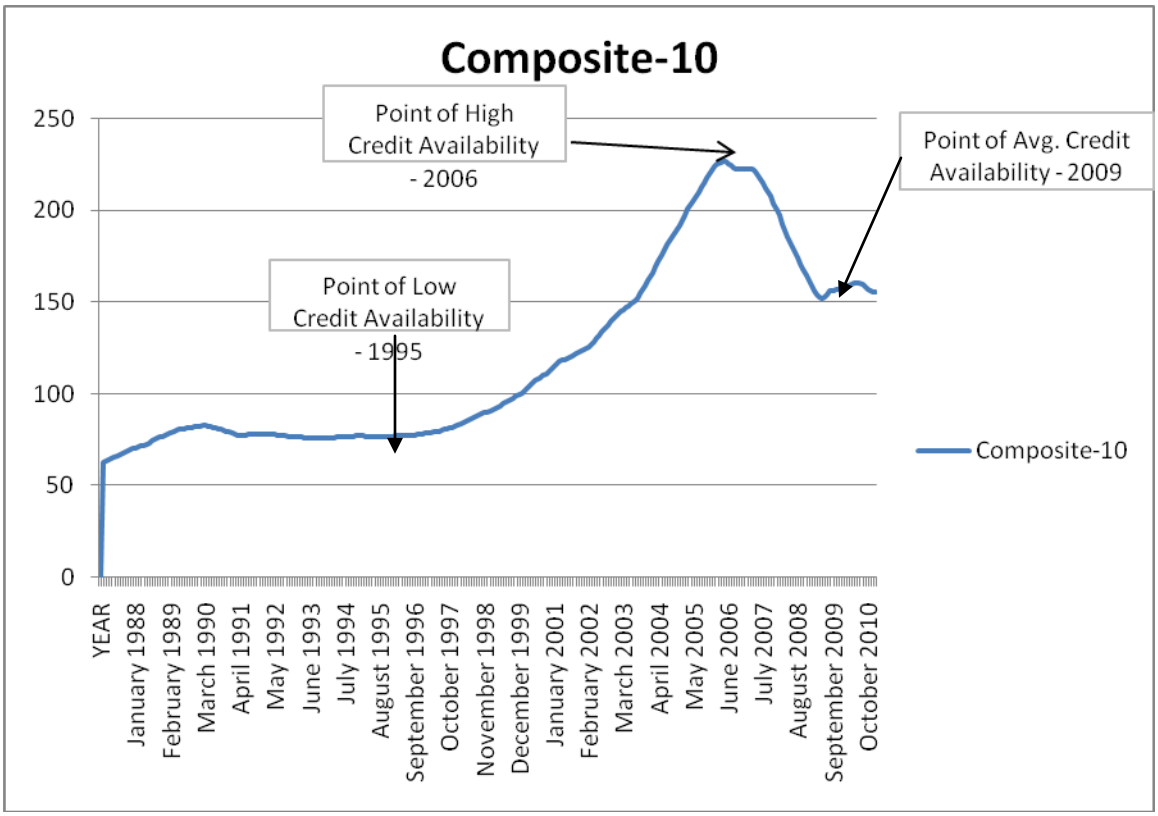

Figure 2. Case-Shiller Housing Price Index December 1987 to December 2010.

Firm Size: For the purpose of this research analysis, all the lodging firms in these three different time points with differing credit availability were divided into large and

small firms. This study used mid-point as the criteria for this grouping so as to get groups with equal sizes. For 'Low Credit' year, total assets worth $1 million dollars were the criteria for differentiating large and small firms. For 'High Credit' year, total assets worth $3 million were the criteria for differentiating large and small firms. For 'Average Credit' year, a total asset worth $4 million was the criteria for differentiating large and small firms.

Sample and Data

The sample for this study will consist of all publicly traded lodging firms in US with available data from Standard & Poor's COMPUSTAT database. This analysis will be conducted using secondary data downloaded from COMPUSTAT for SIC code 7011 (Hotels and lodging establishments). All the firms will be divided into two groups based on their asset size, namely small, and large firms. As the literature has shown contrasting effect in terms of leverage and firm size, this study will be exploring the effect of firm size on leverage. Firms will be classified as small and large in three years with different cutoffs for total assets. This is done because the firm sizes increased with time.

Research Questions and Research Hypothesis

Research Question 1

Is there any significant relationship between the availability of credit and the leverage behavior of lodging firms, as measured by leverage, net leverage, and short-to-long-term debt ratio?

Hypothesis 1.

$H1_0$: There is no effect of availability of credit on the leverage behavior of lodging firms, as measured by leverage, net leverage, and short-to-long-term debt ratio.

H_{1a}: There is no effect of availability of credit on the leverage of lodging firms.

H_{1b}: There is no effect of availability of credit on the net leverage of lodging firms.

H_{1c}: There is no effect of availability of credit on the short-to-long-term debt ratio of lodging firms.

Research Question 2

Is there any significant relationship between the size of the firm and the leverage behavior of lodging firms, as measured by leverage, net leverage, and short-to-long-term debt ratio?

Hypothesis 2.

$H2_0$: There is no effect of firm size on the leverage behavior of lodging firms, as measured by leverage, net leverage, and short-to-long-term debt ratio.

H_{2a}: There is no effect of firm size on the leverage of lodging firms.

H_{2b}: There is no effect of firm size on the net leverage of lodging firms.

H_{2c}: There is no effect of firm size on the short-to-long-term debt ratio of lodging firms.

Research Question 3

Does the leverage behavior of lodging firms, as measured by leverage, net leverage, and short-to-long-term debt ratio gets significantly affected by the interaction between credit availability and the size of the firm?

Hypothesis 3.

$H3_0$: There is no interaction effect of firm size and credit availability on the leverage behavior of lodging firms, as measured by leverage, net leverage, and short-to-long-term debt ratio.

$H3_{a0}$: There is no interaction effect of firm size and credit availability on the leverage of lodging firms.

$H3_{b0}$: There is no interaction effect of firm size and credit availability on the net leverage of lodging firms.

$H3_{c0}$: There is no interaction effect of firm size and credit availability on the short-to-long-term debt ratio of lodging firms.

Justification of Study and Limitations

This research study will be based on the secondary financial data retrieved from COMPUSTAT. The purpose of this study is to describe the interrelationships of the variables discussed previously. All the studies mentioned previously evaluate the capital structure of the lodging or restaurant firms, but no study has been done so far to assess the impact of changes in credit availability on the capital structure of lodging firms in US. There is a literature gap in terms of lodging firm's differing capital structure in the times

of credit expansion and credit contraction. This research study will analyze the impact of credit availability on the leverage of US lodging firms based on their size.

Multivariate analysis MANOVA examines the group differences based on combined DV of leverage at three time points. Major limitation of this study is the usage of secondary data. The researcher has no control over the independent variables; that is, there is no experimental manipulation or random assignment to groups.

Summary

In summary, this chapter discussed the research design, the sample, data collection, and data analysis procedures used in the conduct of this study. The following chapter will present results of the data analysis and a discussion of the findings.

Chapter IV

ANALYSIS AND RESULTS

Introduction

Chapter IV presents the results from this study. The study investigated the effects of different credit availability levels and firm sizes on the linear combination of Leverage, Net Leverage, and Short to Long term debt ratio. This research analysis primarily investigated whether there is an interaction effect of credit levels and firms sizes on the dependent variables.

This chapter is organized according to the data analyses testing the hypothesis that were formulated to examine the effects of three different levels of credit availability and two levels of firm sizes on (a) leverage, (b) net leverage, and (c) short to long term debt ratio. A 3 X 2 between-subjects multivariate analysis of variance (MANOVA) was performed on three dependent variables: leverage; net leverage; and Short to Long term debt ratio. This analysis used two independent variables: credit availability with three levels (low credit, high credit, average credit); and firm size (large firms, small firms). All analyses were conducted using the Statistical Package for the Social Sciences (SPSS) version 18 to test the research hypothesis.

Results of the study are presented in the following six sections:

1. Data screening describing the processes and results from reviewing the data prior to data analysis;
2. Descriptive statistics describing the attributes of the data utilized for analysis;
3. Results of the 3 X 2 factorial MANOVA analyses are presented in detail;

4. A summary of all results;
5. Hypothesis testing utilizes the results of the analysis for answering the research questions established in Chapter 2, tests the postulated hypotheses, and presents the outcomes;
6. A summary of chapter IV presented at the end.

First, the process of data screening is described in detail; next, the results of the analysis are presented.

Data Screening

A total of 308 observations were downloaded from COMPUSTAT. From these 308 observations for the dependent variables (leverage, net leverage, and short to long term debt ratio), 47 observations were found to be incomplete and not usable; therefore, were removed from the analysis dataset. The final dataset was comprised of 261 observations which were then examined for multivariate outliers using the Mahalanobis's distance test.

Outliers

Mahalanobis distance is described as the distance of a case from the centroid of the remaining cases where the centroid is the point created at the intersection of the means of all the variables (Tabachnick & Fidell, 2007). In most of the data sets, the observations or cases form a swarm around the centroid in multivariate space. Each case is represented in the swarm by a single point at its own peculiar combination of scores on all dependent variables, similar to the manner in which each case is represented by a point with its own X and Y combination in a bivariate scatterplot. An observation that is a multivariate outlier lies outside the swarm at some distance from other cases.

Mahalanobis distance is one measure determining that multivariate distance and it can be evaluated for each case using the Chi-square distribution. A total of 26 observations were identified as multivariate outliers based on the Mahalanobis distance statistics ($\chi^2 > 16.26$, for $df = 3$, since 3 DV's), and were removed from the dataset. Thus, only 235 observations were utilized for this study.

Multivariate Normality

Multivariate normality is often considered difficult to obtain for behavioral sciences. Firstly, normality on each of the dependent variable is necessary, but not itself a sufficient condition for assuring multivariate normality. Second, all pairs of dependent variables must be bivariate normal (Stevens, 2002). For this study leverage, net leverage, and short-to-long-term debt ratio were used as the dependent variables. Each dependent variable was assessed for normality within each level of the independent variable.

There are two aspects to normality of a distribution, skewness and kurtosis. These both must be tested in order to establish normality (Tabachnick & Fidell, 2007). Skewness describes the uneven distribution of data with a majority of scores piled up on one side of the distribution. The skewness values can be divided by the standard error for skewness to get a Z score for skewness. The Z score for skewness must be less than 3.3 in order for data to be within acceptable limits of skewness. Kurtosis is described as how peaked or flat a distribution is. Similar to skewness, kurtosis values can also be divided by kurtosis error to get the Z score for kurtosis. Here again, the Z score for kurtosis must be less than 3.3 in order for data to be within acceptable limits of kurtosis.

First, leverage was assessed for normality within three levels of credit level; low, high, and average. Then it was assessed for normality within two levels of firm size; large

and small. Skewness for leverage was within range for all the levels of credit level, and firm size. Kurtosis was above the critical value for high credit level, and thus violated the assumption of normality. Tabachnick and Fidell (2007) mention that skewness rather than kurtosis tends to have more influence on analyses.

Second, short-to-long-term debt ratio was assessed for normality within three levels of credit level; low, high, and average. Then it was assessed for normality within two levels of firm size; large and small. Skewness for short-to-long-term debt ratio was above range for low and average levels of credit level, and both levels of firm size, thus it violated the assumption of normality. Kurtosis was within the critical value for all the levels of credit level, and firm size.

Lastly, net leverage was assessed for normality within three levels of credit level; low, high, and average. Then it was assessed for normality within two levels of firm size; large and small. Skewness for net leverage was within range for all the levels of credit level, and firm size. Kurtosis was above the critical value for high credit level, and thus violated the assumption of normality.

As evident from the tests mentioned above that the assumption of normality was violated for all groups. However, the F test is relatively robust to the violation of this assumption and it is more robust when the sample size is larger than 25 observations in each group (Lomax, 2001). In this research study, the smallest cell count of 26 observations lies in the small firm group in high credit level. All other cell counts are more than 25. The observations are more than the required for analysis, $n > 150$. Therefore the violation of multivariate normality is not a serious concern for this analysis.

Furthermore, ‘Pillai’s’ Trace criterion, which is considered most robust to the violation of the assumption of multivariate normality will be utilized for assessing significances.

Next, Normal Q-Q plots are presented for all the dependent variables for each level of the independent variable credit level in Fig.’s 3 - 11.

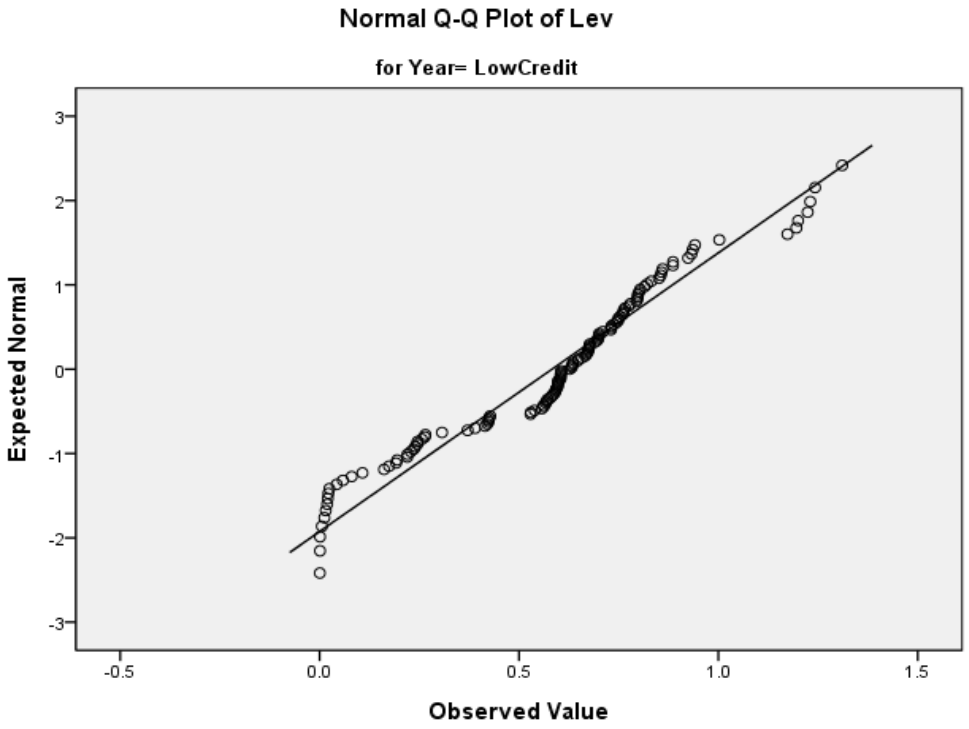

Figure 3. Normal Q-Q plot of leverage for low credit.

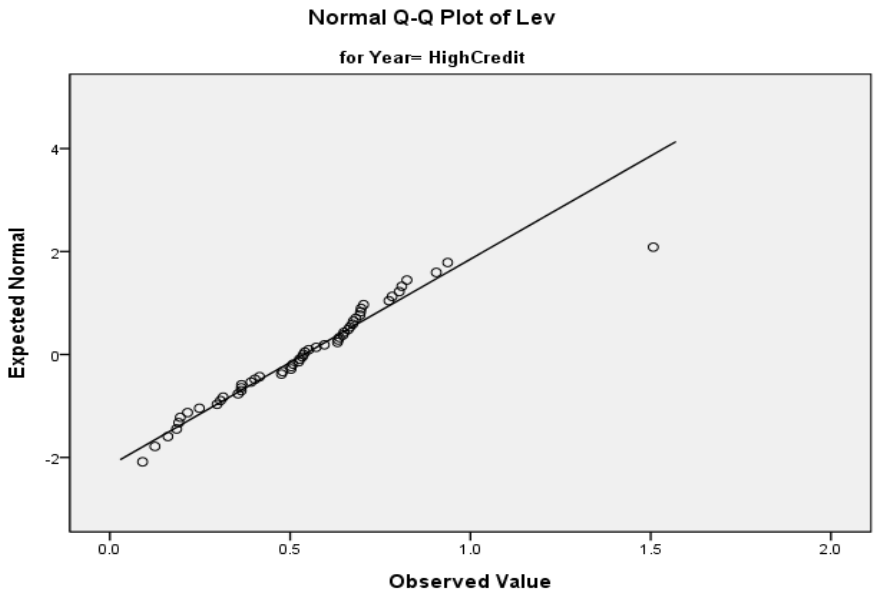

Figure 4. Normal Q-Q plot of leverage for high credit.

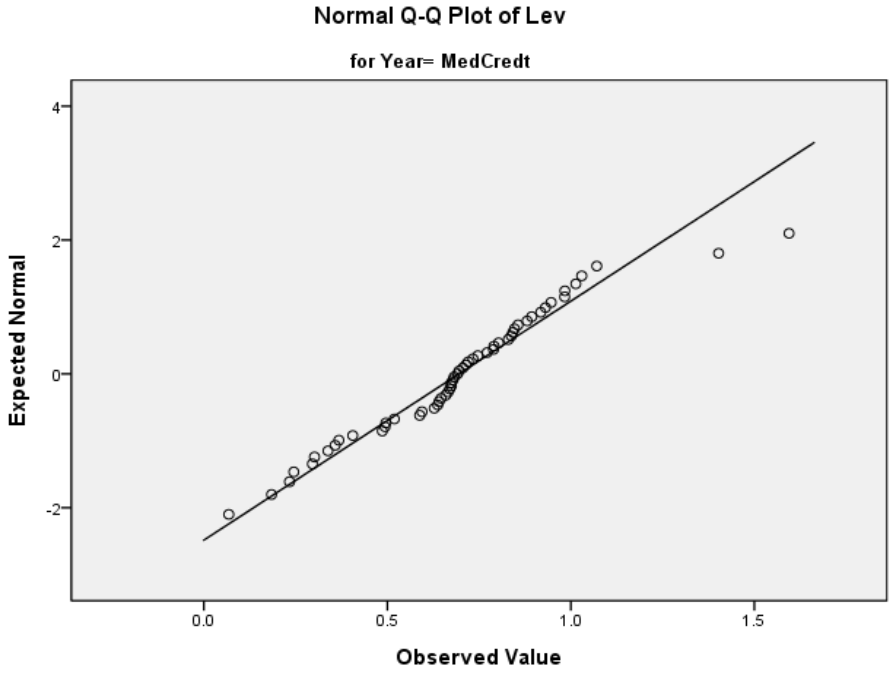

Figure 5. Normal Q-Q plot of leverage for average credit.

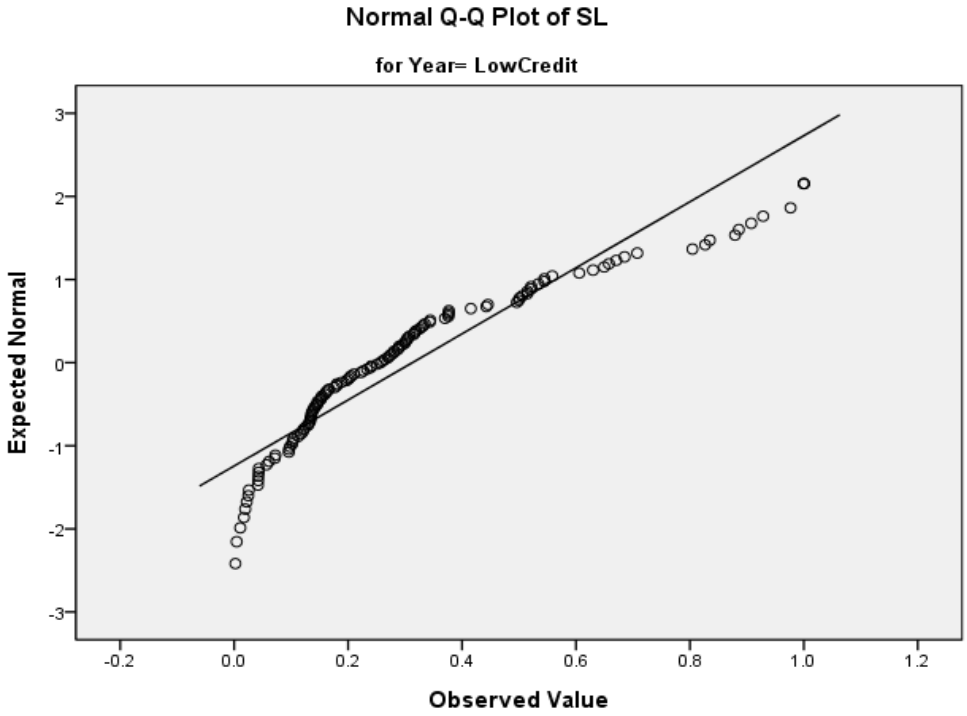

Figure 6. Normal Q-Q plot of short to long term debt ratio for low credit.

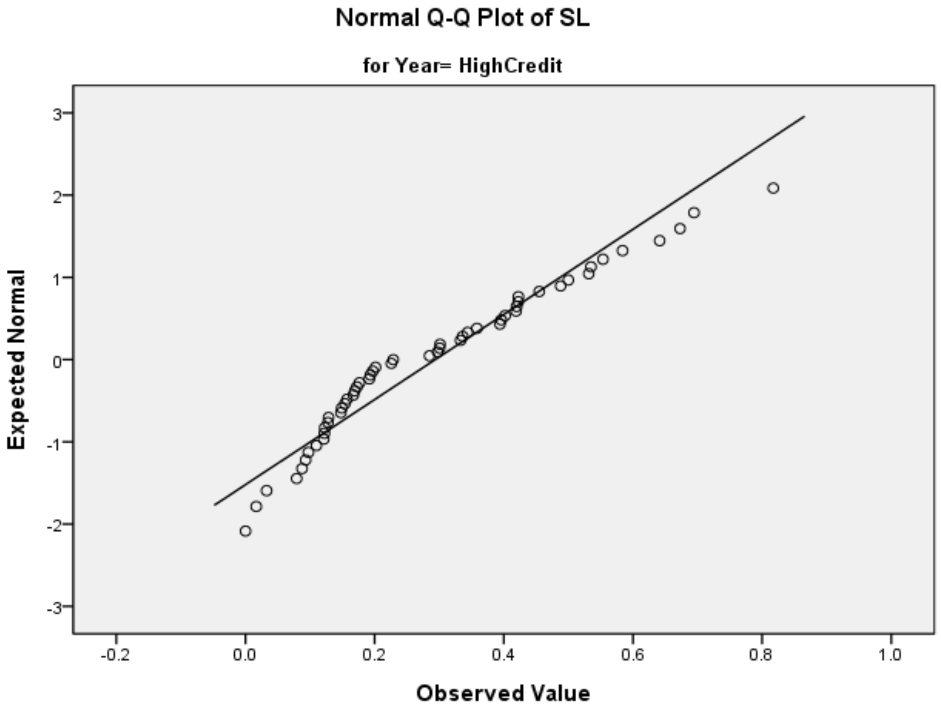

Figure 7. Normal Q-Q plot of short to long term debt ratio for high credit.

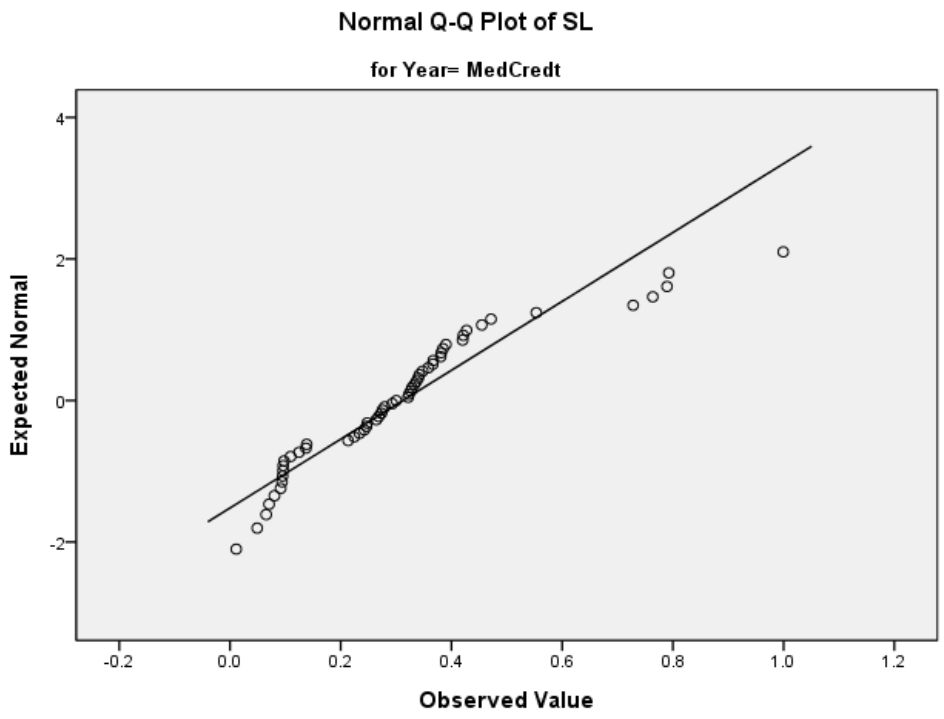

Figure 8. Normal Q-Q plot of short to long term debt ratio for average credit.

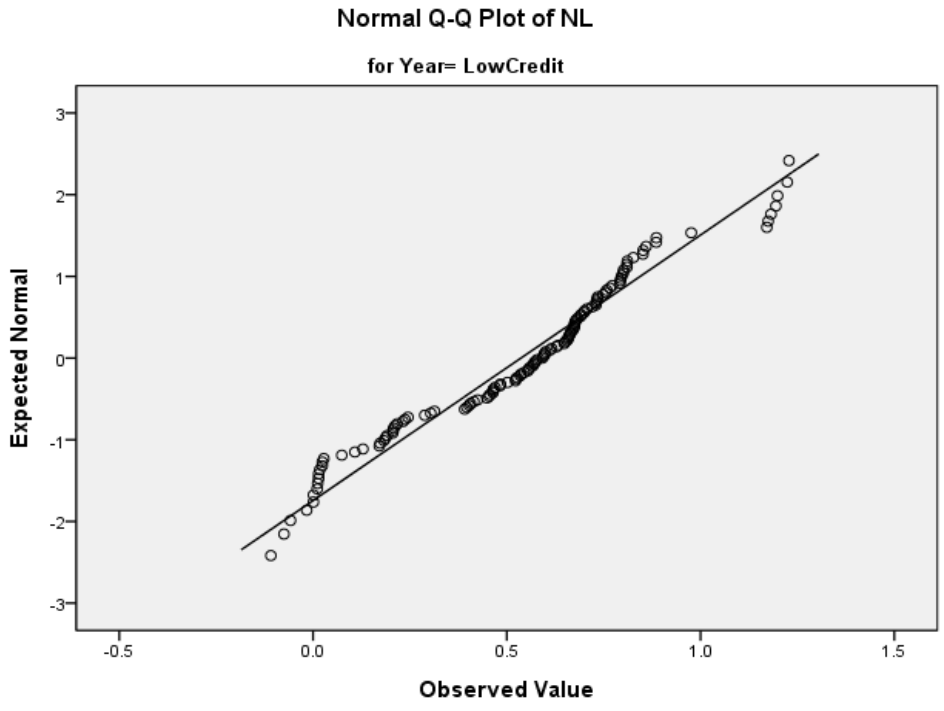

Figure 9. Normal Q-Q plot of net leverage for low credit.

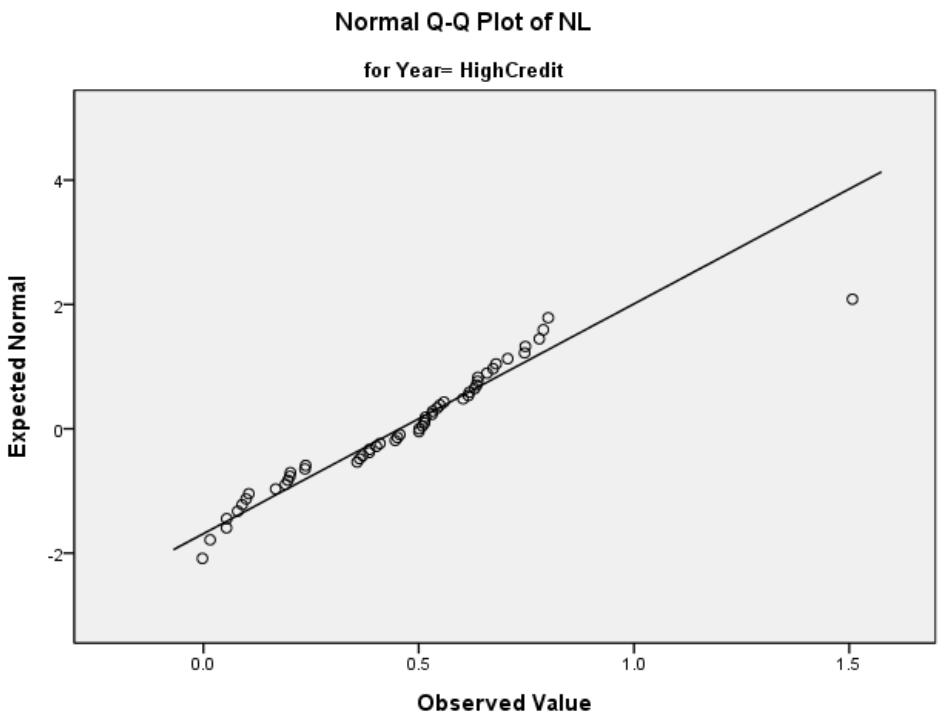

Figure 10. Normal Q-Q plot of net leverage for high credit.

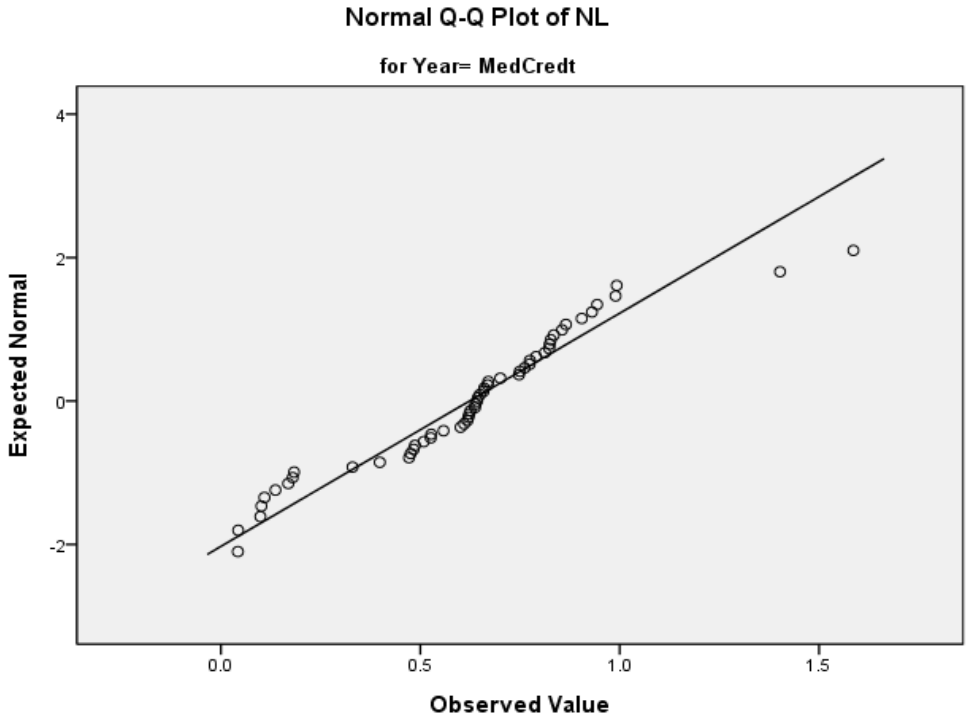

Figure 11. Normal Q-Q plot of net leverage for average credit.

Next, Normal Q-Q plots are presented for all the dependent variables in each level of independent variable ‘Firm Size’ in Fig.’s 12 - 17.

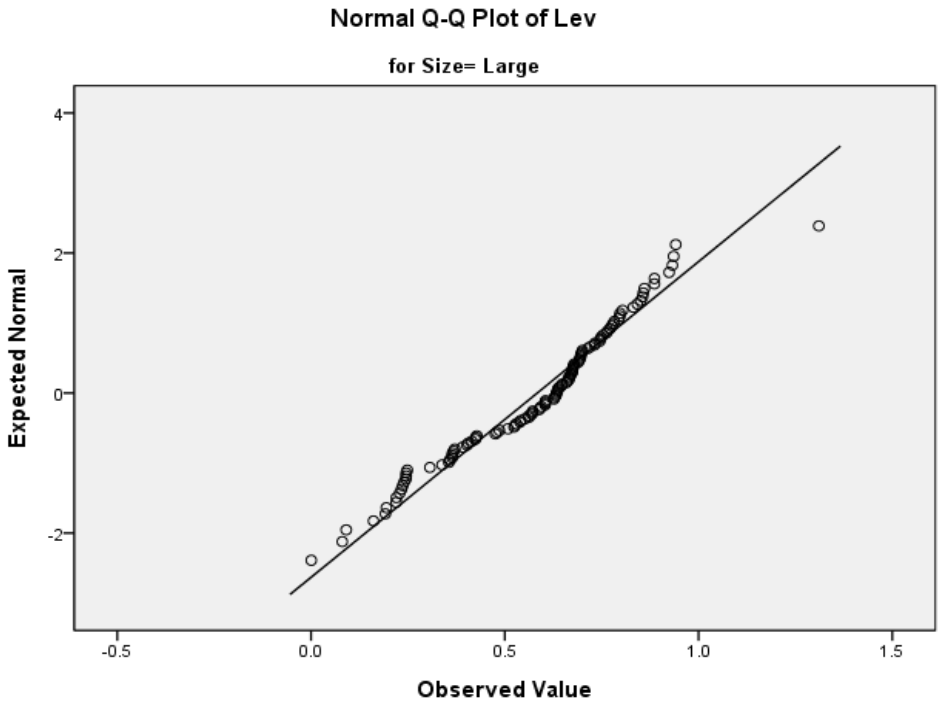

Figure 12. Normal Q-Q plot of leverage for large firms.

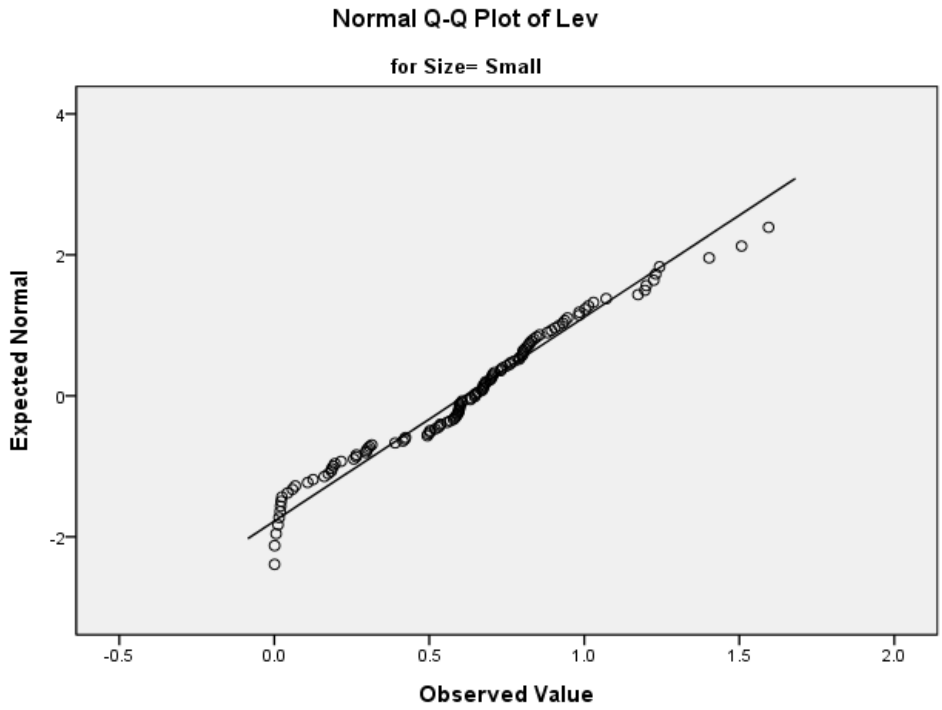

Figure 13. Normal Q-Q plot of leverage for small firms.

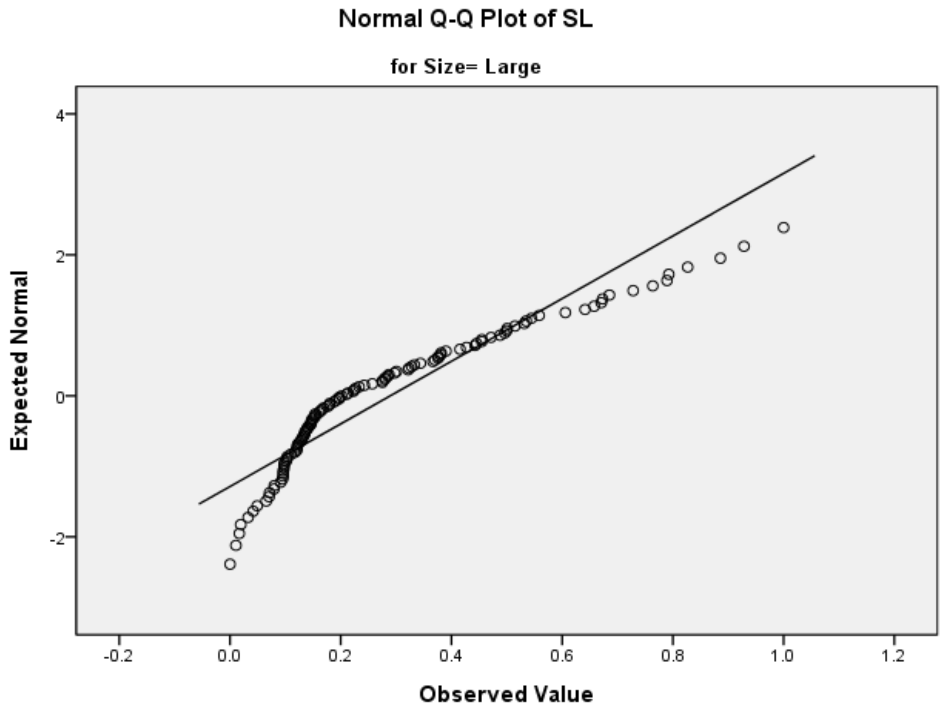

Figure 14. Normal Q-Q plot of short to long term debt ratio for large firms.

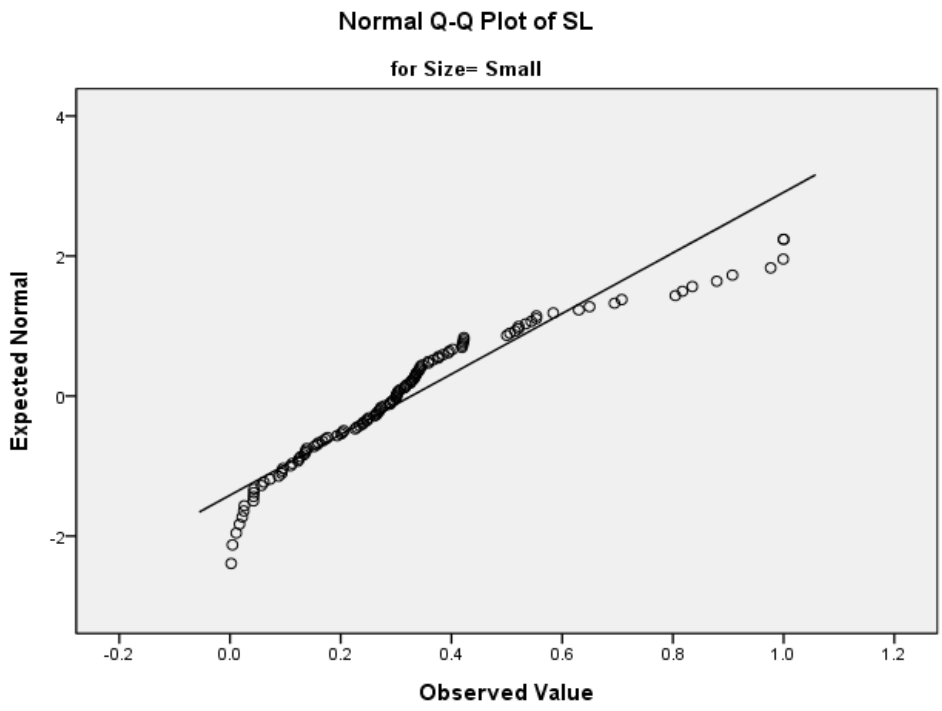

Figure 15. Normal Q-Q plot of short to long term debt ratio for small firms.

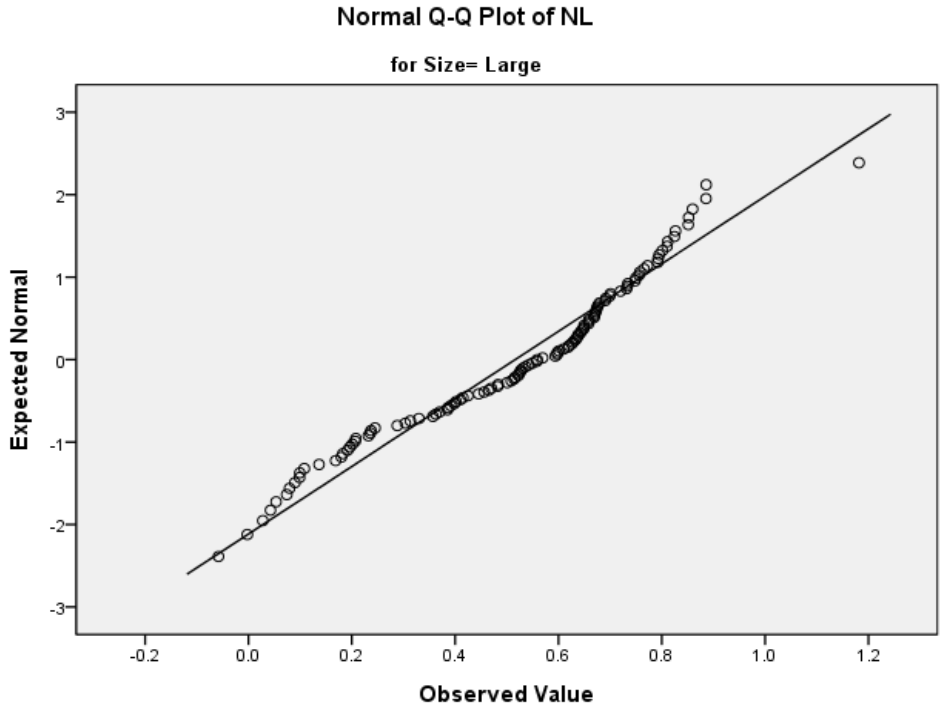

Figure 16. Normal Q-Q plot of net leverage for large firms.

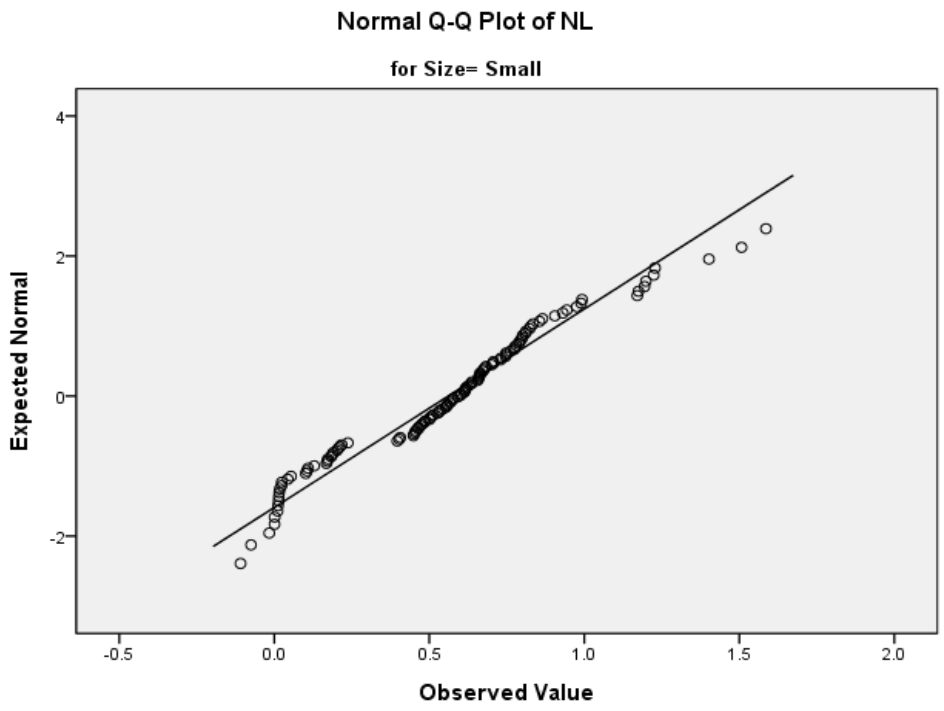

Figure 17. Normal Q-Q plot of net leverage for small firms.

Linearity

As mentioned previously, MANOVA assumes linear relationship among all pairs of dependent variables. Deviations from linearity reduce the power of the statistical test because the linear combinations of dependent variables do not maximize the separation of groups for the independent variables. Linearity can be assessed by designating one dependent variable as the dependent and other dependent variables as independent variables in an ANOVA and residual plots are examined (Tabachnick & Fidell, 2007). Bivariate scatter plots were examined to assess linearity. Significant ($p < .05$) linear relationships were observed between the dependent variables.

Homogeneity of Variance-Covariance Matrices

Hair, Black, Babin, Anderson, and Tatham (2006) mentioned that homogeneity of variance-covariance matrices is the multivariate analog of homogeneity of variance. The population covariance matrices for the p dependent variables are equal. The Box's M test of equality of the covariance matrix is employed to check this assumption. Box's M statistic tests the null hypothesis that the observed covariance matrices of the dependent variables are equal across the groups. Results of Box's M test are presented in Table 1.

Table 1

Multivariate Test for Homogeneity of Covariance Matrices (*n* = 235)

Homogeneity of Covariance:	Test Result	P – Value
Box's M	147.406	
F with (30, 53959)	2.39	.000*

Note. *$p < .001$.

The results show that the null hypothesis of homogeneity of covariance matrices of the dependent variables across the groups is rejected with $F(30, 53959) = 2.39$, $p < .001$. Stevens (2002) states that it is highly unlikely, the equal covariance matrices assumption would ever be satisfied in practice. Moreover, Box's M test is highly sensitive and often shows a significant difference in the variance-covariance matrix of the dependent variables. Tabachnick and Fiddel (2007) advocate the use of Pillai's Trace for assessing multivariate significance since it is more robust to violation of this assumption.

Homogeneity of Error Variances

Levene's test is utilized to test the homogeneity of error variances for univariate analysis. Each dependent variable is tested individually for equality of error variances across groups. Since univariate ANOVAs and post-hoc tests are conducted after a significant multivariate effect, this test provides direction regarding which post-hoc tests to analyze for assessing significances. For this study the assumption of homogeneity of error variances is violated as shown by the Levene's test in Table 2 for two dependent variables, Leverage and Net Leverage. This study will use Tamhane's T2 post-hoc test instead of Tukey's, a more stringent measure for assessing the significances, as this assumption has been violated

Table 2

*Levene's Test for Homogeneity of Variances (*n = 235*)*

Variable	*df*	*F*	*Sig.*
Leverage	5	3.71	.003*
Short to Long	5	1.60	.160
Net Leverage	5	2.36	.041*

Note. $*p < .05$.

Descriptive statistics

Low credit availability was determined for year 1995 using Case-Shiller housing price index (HPI = 76.66). High credit availability was determined for year 2006 using Case-Shiller House Price Index (HPI = 226.82). Average or medium credit availability was determined for year 2009 using Case-Shiller housing price index (HPI = 152.22). After screening the data, a total of 261 observations were utilized for preliminary analysis. Out of 261 observations, 26 observations were found to be multivariate outlier

cases. For the sake of this analysis these multivariate outliers were dropped, as it is one of the appropriate actions that can be taken (Tabachnick & Fidell, 2007).

Descriptive statistics of all three dependent variables are summarized in Table 3.

Table 3

Average Means and Standard Deviations of the Leverage, Short to Long Term Debt ratio, and Net Leverage by Credit Level and Firm Size

			Leverage		Short to Long		Net Leverage	
Credit Level	Size	*N*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*
Low Credit	Large	63	0.62	0.25	0.29	0.24	0.58	0.25
	Small	64	0.54	0.34	0.33	0.27	0.50	0.35
	Total	127	0.58	0.30	0.31	0.25	0.54	0.31
High Credit	Large	27	0.48	0.17	0.25	0.19	0.38	0.19
	Small	26	0.60	0.30	0.34	0.19	0.54	0.31
	Total	53	0.54	0.25	0.29	0.19	0.46	0.27
Average Credit	Large	27	0.60	0.16	0.33	0.23	0.51	0.21
	Small	28	0.79	0.33	0.30	0.18	0.73	0.35
	Total	55	0.70	0.28	0.31	0.21	0.62	0.31
Total	Large	117	0.58	0.22	0.29	0.23	0.52	0.24
	Small	118	0.61	0.35	0.33	0.23	0.56	0.35
	Total	235	0.60	0.29	0.31	0.23	0.54	0.30

The final data for analysis consisted of a total of 117 (49.79%) large and 118 (50.21%) small firms. Low credit level has the maximum number of observations 127 (54.04%), followed by average credit level totaling 55 (23.40%) and high credit level had minimum, total 53 (22.55%) observations. Even though low credit level had the maximum number of observation but within it the firms were equally distributed based

on their total asset size. Large firms made up 49.61% and small firms made up 50.39% of the total sample. Similar equal distribution was evident within high credit level, large made up 50.94% and small made up 49.06%; and in average credit level, large made up 49.09% and small made up 50.91% of the total sample.

The average mean of leverage of hospitality firms was highest in the average credit level at .70, followed by low credit level at .58 and it was the lowest in high credit level at .54. Short to long term debt ratio of the hospitality firms was lowest in the high credit level at .29, and was same at .31 for both low and average credit levels. net leverage of hospitality firms was highest in the average credit level at .62, followed by low credit level at .54, and was the lowest for high credit level at .46.

The average mean of large hospitality firms for leverage was lower at .58 than small firms at .61. The average mean of short to long term debt ratio ratio of small firms was higher at .33 than large firms at .29. The average mean of net leverage of small hospitality firms was higher at .56 than large firms at .52.

Table 4 lists the zero order correlations for all the variables considered in this analysis. All correlations are calculated and tested for two-tailed significance based on this study's sample of 235 observations. In this study, years indicative of credit availability based on Case-Shiller house price index were coded as 1 = low credit, 2 = high credit, and 3 = average credit. The hospitality firms analyzed were grouped into two levels of sizes based on the net book value of their total assets. Large firms were coded as 1, and small firms were coded as 2.

Table 4

Zero-Order Correlations among the Independent and Dependent Variables Considered For Use in This Study (n = 235).

	Year	Size	Leverage	Short to Long Term Debt Ratio	Net Leverage
Year	1.000				
Size	.002	1.000			
Leverage	.132*	.053	1.000		
Short to	-.008	.083	-.461*	1.000	
Net	.084	.074	.975*	-.433*	1.000

Note. *$p < 0.05$.

Significant correlation is evident between leverage and net leverage. This study will utilize both these variables as theoretically it is deemed appropriate to ascertain overall leverage of firms with these variables.

Results

A 3 X 2 between-subjects multivariate analysis of variance (MANOVA) was performed using SPSS version 18. Three dependent variables used in this study were leverage, net leverage, and short to long term debt ratio. Leverage of a firm was computed as the ratio of short-term debt plus long-term liabilities to total assets. Net leverage was computed as the book value of total debt over book value of assets. short to long term debt ratio was computed as a ratio of a lodging firm's current liabilities to long-term liabilities.

This analysis used two independent variables: credit availability with three levels (low credit, high credit, average credit), and firm size (large firms, small firms). This

study used mid-point as the criteria for this grouping so as to get groups with equal sizes. For low credit year, total assets worth $1 billion dollars were the criteria for differentiating large and small firms. For high credit year, total assets worth $3 billion were the criteria for differentiating large and small firms. For average credit year, total assets worth $4 billion were the criteria for differentiating large and small firms.

Using an alpha level of .001 to evaluate homogeneity of variance-covariance matrices assumption, Box's M test of homogeneity of covariance was significant ($p <$ .001), Table 1. The Box's M test is highly sensitive, more than often it results in a significant value. Since in this case the homogeneity of variance-covariance matrices assumption is violated, instead of Wilk's lambda criterion Pillai's Trace criterion will be utilized for assessing the multivariate significance. Multivariate test results are presented in Tables 5, 6, and 7.

Table 5

Multivariate F-test of Significance for Credit Level

Test	Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Pillai's Trace	0.111	4.461	6	456	0.000**	0.055
Wilks' Lambda	0.892	4.444a	6	454	0.000**	0.055
Hotelling's Trace	0.118	4.426	6	452	0.000**	0.055
Roy's Largest Root	0.066	5.047c	3	228	0.002**	0.062

Note. *$p < .01$.

Using Pillai's Trace as the omnibus test statistic, the combined dependent variables resulted in significant main effects for credit level, F (6, 456) = 4.461, $p < .001$, partial $\eta^2 = .55$.

Table 6

Multivariate F-test of Significance for Firm Size

Test	Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Pillai's Trace	0.057	4.570a	3	227	0.004**	0.057
Wilks' Lambda	0.943	4.570a	3	227	0.004**	0.057
Hotelling's Trace	0.06	4.570a	3	227	0.004**	0.057
Roy's Largest Root	0.06	4.570a	3	227	0.004**	0.057

Note. *$p < .01$.

For firm size also, the combined dependent variables resulted in significant main effects using Pillai's Trace, F (3, 227) = 4.57, $p < .01$ partial $\eta^2 = .57$.

Table 7

Multivariate F-test of Significance for Credit Level X Firm Size

Test	Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Pillai's Trace	0.079	3.14	6	456	0.005**	0.04
Wilks' Lambda	0.922	3.157a	6	454	0.005**	0.04
Hotelling's Trace	0.084	3.173	6	452	0.005**	0.04
Roy's Largest Root	0.071	5.403c	3	228	0.001**	0.066

Note. $*p < .01$.

Using Pillai's Trace as the omnibus test statistic, the combined dependent variables resulted in statistically significant interaction effects for credit level X firm size, $F(6, 456) = 3.140$, $p < .01$ partial $\eta^2 = .04$.

Next, to probe the statistically significant multivariate effects, univariate 3 X 2 ANOVAs were conducted on each individual dependent variable. Results of univariate ANOVAs for effect of credit level are presented in Table 8, 11, and 13.

Table 8

Univariate F-test of Significance for Credit Level

Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Leverage	0.716	2	0.358	4.519	0.012*	0.038
Short to Long	0.013	2	0.007	0.124	0.883	0.001
Net Leverage	0.724	2	0.362	4.216	0.016*	0.036

Note. *$p < .05$.

Analysis of the univariate F-test reveals that for the leverage dependent variable, there was a significant main effect of credit level, F (2, 229) = 4.519, p = .012, partial η^2 = .04. For the net leverage dependent variables also, there was a significant main effect of credit level, F (2, 229) = 4.216, $p < .05$, partial η^2 = .04. But for the short-to-long-term debt ratio dependent variable, there was a no significant main effect of credit level, F (2, 229) = .124, $p > .05$, partial η^2 = .001, see Table 7.

Since significant main effects of Credit level were found on leverage and net leverage, post-hoc comparison test will be utilized to determine where the differences lie. As it was reported earlier, the homogeneity of variance assumption for the leverage dependent variable was violated, evident with Levene's test ($p < .05$). Therefore, post-hoc test must adjust for this violation, and Tamhane's T2 will be used for this purpose. Results of Tamhane's T2 post-hoc test are presented in Table 8.

Table 9

Tamhane's T2 Post-Hoc test for Effect of Credit Level on Leverage

					95% Confidence Interval	
(I) Year	(J) Year	Mean Difference (I-J)	Std. Error	Sig.	Lower Bound	Upper Bound
Low Credit	High Credit	0.0444	0.04353	0.672	-0.0611	0.1498
	Average Credit	-.1129*	0.04632	0.048*	-0.2253	-0.0006
High Credit	Low Credit	-0.0444	0.04353	0.672	-0.1498	0.0611
	Average Credit	-.1573*	0.05098	0.008*	-0.281	-0.0336
Average Credit	Low Credit	.1129*	0.04632	0.048*	0.0006	0.2253
	High Credit	.1573*	0.05098	0.008*	0.0336	0.281

Note. *$p < .05$.

A post-hoc analysis of this main effect using Tamhane's T2 revealed that leverage levels were significantly higher ($p < .05$) for average credit level ($M = .70$) relative to lower credit level ($M = .58$), and high credit level was the lowest ($M = .54$), see Table 10.

Table 10

Means and Standard Deviations for Leverage, Short to Long-Term Debt Ratio and Net Leverage as a function of Credit Level

		Leverage		Short to Long-Term Debt Ratio		Net Leverage	
Credit Level	n	Mean	SD	Mean	SD	Mean	SD
Low Credit	127	0.58	0.30	0.31	0.25	0.54	0.31
High Credit	53	0.54	0.25	0.29	0.19	0.46	0.27
Average Credit	55	0.70	0.28	0.31	0.21	0.62	0.31
Total	235	0.60	0.29	0.31	0.23	0.54	0.30

Next, results of univariate ANOVAs for effect of firm size are presented in Table 11.

Table 11

Univariate F-test of Significance for Firm Size

Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Leverage	0.296	1	0.296	3.734	0.050*	0.016
Short to Long	0.068	1	0.068	1.304	0.255	0.006
Net Leverage	0.486	1	0.486	5.662	0.018*	0.024

Note. *$p < .05$.

Analysis of the univariate F-test reveals that for the leverage dependent variable, there was a marginally significant main effect of firm size, F (1, 229) = 3.73, p = .05, partial η^2 < .02. Main effect of firm size was also significant on net leverage, F (1, 229) = 5.66, p < .05, partial η^2 < .02. But here again, for the short-to-long-term debt ratio dependent variable, there was no significant main effect of firm size, F (1, 229) = 1.304, p > .05, partial η^2< .006, see Table 11.

Table 12

Means and Standard Deviations for Leverage, Short to Long-Term Debt Ratio and Net Leverage as a Function of Firm Size

		Leverage		Short to Long-Term Debt Ratio		Net Leverage	
Firm Size	*n*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*
Large Firms	117	0.58	0.22	0.29	0.23	0.52	0.24
Small Firms	118	0.61	0.35	0.33	0.23	0.56	0.35
Total	235	0.60	0.29	0.31	0.23	0.54	0.30

Leverage levels were significantly higher for Small firms (M = .61) relative to large firms (M = .58). Net leverage levels were significantly higher for small firms (M = .56) relative to large firms (M = .52). Main effect for firm size on short-to-long-term debt ratio dependent variable was also not significant, F (1, 229) = 1.304, p > .05, partial η^2 < .006.

Table 13

Univariate F-test of Significance for Credit Level X Firm Size

Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Leverage	0.819	2	0.41	5.174	0.006**	0.043
Short to Long	0.106	2	0.053	1.006	0.367	0.009
Net Leverage	1.068	2	0.534	6.222	0.002**	0.052

Note. $^{**}p < .01$.

Lastly, the effect of credit level X firm size interaction was analyzed with univariate F-test for all three dependent variables. The interaction effect was statistically significant on leverage, F (2, 229) = 5.174, $p < .01$, partial $\eta^2 = .043$. The effect of credit level X firm size interaction was also statistically significant for net leverage, F (2, 229) = 6.222, $p < .01$, partial $\eta^2 = .052$. The effect of credit level X firm size interaction was non-significant, F (2, 229) = 1.006, $p > .05$, partial $\eta^2 = .009$. See Table 13.

Since significant interaction effects were found for leverage and net leverage, post-hoc comparison test will be utilized to determine the differences based on credit level X firm size. It was reported earlier that Levene's test statistics indicated that assumption of homogeneity of variance was violated ($p < .05$), see Table 2. Simple effects test were conducted, using Bonferroni procedure with adjusted alpha, to probe the interaction.

The simple effects of firm size at each credit level were examined to determine the significances. Results of simple effects are presented in Table 14, 16, and 18.

Table 14

Univariate F-test of Significance for Firm Size within Average Credit

Dependent Variable	*Type III Sum of Squares*	*df*	*Mean Square*	*F*	*Sig.*
Leverage	0.52	1	0.52	7.420	0.009**
Short to Long	0.01	1	0.01	0.239	0.627
Net Leverage	0.634	1	0.634	7.508	0.008**

Note. $^{**}p < .01$.

The simple effects of firm size at average credit level were first examined for the dependent variable leverage. For average credit level, small firms (M = .79, SD = .33) were significantly more levered than large firms (M = .60), F (1, 53) = 7.42, $p < .01$. For average credit level, small firms (M = .73) have significantly higher net leverage than large firms (M = .51), F (1, 53) = 7.51, p = .01. For short to long term debt ratio there was a non significant simple effect of firm size at average credit level, F (1, 53) = .239, $p >$ .05, indicating that there were no differences in the short to long term debt ratio of large and small hospitality firms. Means and standard deviations of the dependent variables for large and small hospitality firms at the Average credit level are presented in Table 15.

Table 15

Means and Standard Deviations for Leverage, Short to Long-Term Debt Ratio and Net Leverage as a Function of Firm Size within Average Credit Level

		Leverage		Short to Long		Net Leverage	
Size	*N*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*
Large	27	0.60	0.16	0.33	0.23	0.51	0.21
Small	28	0.79	0.33	0.30	0.18	0.73	0.35
Total	55	0.70	0.28	0.31	0.21	0.62	0.31

Next, the simple effects of firm size at low credit level were examined. The dependent variable leverage was first analyzed for simple effects of firm size within low credit level. Results of these simple effects are presented in Table 16.

Table 16

Univariate F-test of Significance for Firm Size within Low Credit Level

Dependent Variable	*Type III Sum of Squares*	*df*	*Mean Square*	*F*	*Sig.*
Leverage	0.184	1	0.184	2.03	0.157
Short to Long	0.053	1	0.053	0.834	0.363
Net Leverage	0.203	1	0.203	2.16	0.144

Table 17

Means and Standard Deviations for Leverage, Short to Long-Term Debt Ratio and Net Leverage as a Function of Firm Size within Low Credit Level

		Leverage		Short to Long		Net Leverage	
Size	*N*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*
Large	63	0.62	0.25	0.29	0.24	0.58	0.25
Small	64	0.54	0.34	0.33	0.27	0.50	0.35
Total	127	0.58	0.30	0.31	0.25	0.54	0.31

For low credit level, no statistically significant differences were found in the leverage levels of small firms (M = .54) and large firms (M = .62), F (1, 125) = 2.03, p >.05. For low credit level, no statistically significant differences were found in the net leverage levels of small firms (M = .50) and large firms (M = .58), F (1, 125) = 2.16, p >.05. Means and standard deviations of large and small hospitality firms at the low credit level are presented in Table 16. For short to long term debt ratio there was a non significant simple effect of firm size at low credit level, F (1, 125) = .834, p > .05, indicating that there were no differences in the short to long term debt ratio of large and small hospitality firms. Means and standard deviations of large and small hospitality firms at the low credit level are presented in Table 17.

Lastly, the simple effects of firm size at high credit level were examined. The dependent variable leverage was first analyzed for simple effects of firm size within High credit level. Results of these simple effects are presented in Table 18.

Table 18

Univariate F-test of Significance for Firm Size within High Credit Level

Dependent Variable	*Type III Sum of Squares*	*df*	*Mean Square*	*F*	*Sig.*
Leverage	0.167	1	0.167	2.773	0.102
Short to Long	0.126	1	0.126	3.525	0.066
Net Leverage	0.342	1	0.342	5.033	0.029*

Note. *$p < .05$.

For High credit level, no statistically significant differences were found in the leverage levels of small firms ($M = .60$) and large firms ($M = .48$), F (1, 51) = 2.77, $p > .05$. For high credit level, statistically significant differences were found in the net leverage levels of small firms ($M = .54$) have significantly higher net leverage than large firms ($M = .38$), F (1, 51) = 5.03, $p < .05$. For short to long term debt ratio there was a non significant simple effect of firm size at high credit level, F (1, 51) = 3.525, $p > .05$, indicating that there were no differences in the short to long term debt ratio of large and small hospitality firms. Means and standard deviations of the dependent variables for large and small hospitality firms at the High credit level are presented in Table 19.

Table 19

Means and Standard Deviations for Leverage, Short to Long-Term Debt Ratio and Net Leverage as a Function of Firm Size within High Credit Level

		Leverage		Short to Long		Net Leverage	
Size	*N*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*
Large	27	0.48	0.17	0.25	0.19	0.38	0.19
Small	26	0.60	0.30	0.34	0.19	0.54	0.31
Total	53	0.54	0.25	0.29	0.19	0.46	0.27

Finally, the simple effects of credit level at each level of firm size were examined to determine the significances. First, the simple effects of credit level for large firm size were examined to determine the significances. Results of simple effects are presented in Table 20.

Table 20

Univariate F-test of Significance for Credit Level within Large Firm Size

Dependent Variable	*Type III Sum of Squares*	*df*	*Mean Square*	*F*	*Sig.*
Leverage	0.365	2	0.182	3.895	0.023*
Short to Long	0.087	2	0.044	0.860	0.426
Net Leverage	0.751	2	0.376	6.951	0.001*

Note. $*p < .05$.

For large firms, there were significant differences in leverage levels, F (2, 114) = 3.90, $p < .05$, partial $\eta 2 = .064$. Post-hoc analyses using Bonferroni correction revealed that leverage levels were significantly higher ($p < .03$) for low credit level ($M = .62$) than high credit level ($M = .48$). No significant differences were found for leverage between average credit level and low credit level ($p > .05$), and average credit level and high credit level ($p > .05$).

For large firms, there were significant differences in net leverage levels, F (2, 114) = 6.95, $p < .05$, partial $\eta 2 = .11$. Post-hoc analyses using Bonferroni revealed that net leverage levels were significantly higher ($p < .03$) for low credit level ($M = .58$) than high credit level ($M = .38$). No significant differences were found for net leverage between average credit level and low credit level ($p > .05$), and average credit level and high credit level ($p > .05$).

For short to long term debt ratio there was a non significant simple effect of credit level for large firms, F (2, 114) = 3.525, $p > .05$, indicating that there were no differences in the short to long term debt ratio of large hospitality firms at the low credit, high credit, and average credit level. Means and standard deviations of the dependent variables for low credit, high credit, and average credit level for large firms are presented in Table 21.

Table 21

Means and Standard Deviations for Leverage, Short to Long-Term Debt Ratio and Net Leverage as a Function of Credit Level within Large Firm Size

		Leverage		Short to Long		Net Leverage	
Credit Level	*N*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*
Low Credit	63	0.62	0.25	0.29	0.24	0.58	0.25
High Credit	27	0.48	0.17	0.25	0.19	0.38	0.19
Average Credit	27	0.60	0.16	0.33	0.23	0.51	0.21
Total	117	0.58	0.22	0.29	0.23	0.52	0.24

Next, the simple effects of credit level for small firm size were examined to determine the significances. Results of simple effects are presented in Table 22.

Table 22

Univariate F-test of Significance for Credit Level within Small Firm Size

Dependent Variable	*Type III Sum of Squares*	*df*	*Mean Square*	*F*	*Sig.*
Leverage	1.193	2	0.596	5.361	0.006*
Short to Long	0.032	2	0.016	0.294	0.746
Net Leverage	1.065	2	0.533	4.537	0.013*

Note. $*p < .05$.

For small firms, there were significant differences in leverage levels, F (2, 115) = 5.361, $p < .01$, partial $\eta^2 = .085$. Post-hoc analyses using Bonferroni correction revealed that leverage levels were significantly higher ($p < .03$) for average credit level ($M = .79$) than low credit level ($M = .54$). No significant differences were found for leverage between high credit level and low credit level ($p > .05$), and high credit level and average credit level ($p > .05$).

Also, for small firms, there were significant differences in net leverage levels, F (2, 115) = 4.537, $p < .05$, partial $\eta^2 = .073$. Post-hoc analyses using Bonferroni correction revealed that net leverage levels were significantly higher ($p < .03$) for average credit level ($M = .73$) than low credit level ($M = .50$). No significant differences were found for leverage between high credit level and low credit level ($p > .05$), and high credit level and average credit level ($p > .05$). Means and standard deviations of the dependent variables for low credit, high credit, and average credit level for Large firms are presented in Table 23.

Table 23

Means and Standard Deviations for Leverage, Short to Long-Term Debt Ratio and Net Leverage as a Function of Credit Level within Large Firm Size

		Leverage		Short to Long		Net Leverage	
Credit Level	*N*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*
Low Credit	64	0.54	0.34	0.33	0.27	0.50	0.35
High Credit	26	0.60	0.30	0.34	0.19	0.54	0.31
Average Credit	28	0.79	0.33	0.30	0.18	0.73	0.35
Total	118	0.61	0.35	0.33	0.23	0.56	0.35

3 X 2 Factorial MANOVA Results Summary

A 3 X 2 between-subjects multivariate analysis of variance (MANOVA) was performed on three dependent variables: leverage, net leverage, and short to long term debt ratio. This analysis used two independent variables: credit availability with three levels (low credit, high credit, average credit), and firm size (large firms, small firms). Using an alpha level of .001 to evaluate homogeneity assumption, Box's M test of homogeneity of covariance was significant ($p < .001$). Since Box's M test is highly sensitive, more than often it results in a significant value. In this case the homogeneity assumption is violated, so instead of Wilk's lambda criterion, Pillai's Trace criterion will be utilized for assessing the multivariate significance.

Using Pillai's Trace as the omnibus test statistic, the combined dependent variables resulted in significant main effects for both credit level, $F(6, 456) = 4.461$, $p <$

.001, partial η^2 = .55, and firm size, $F(3, 227) = 4.57$, $p < .01$ partial η^2 = .57. The credit level X firm size interaction was also statistically significant, $F(6, 456) = 3.140$, $p < .01$ partial η^2 = .40. For all effects, the effect sizes were significantly medium in magnitude.

To probe the statistically significant multivariate effects, univariate 3 X 2 ANOVAs were conducted on each individual DV. For the leverage DV, there was a significant main effect for credit level, F (2, 229) = 4.519, p = .012, partial η^2 = .04. The homogeneity of variance assumption for the leverage DV was violated, as is evident with Levene's test ($p < .05$). Therefore, post-hoc test must adjust for this violation, and Tamhane's T2 will be used for this purpose. A post-hoc analysis of this main effect using Tamhane's T2 revealed that leverage levels were significantly higher ($p < .05$) for average credit level (M = .70) relative to lower credit level (M = .58), and high credit level was the lowest (M = .54). Main effect for firm size was also significant, F (1, 229) = 3.73, p = .05, partial $\eta^2 < .02$. Leverage levels were significantly higher for small firms (M = .64) relative to large firms (M = .57). The effect of credit level X firm size interaction was also statistically significant, F (2, 229) = 5.174, $p < .01$, partial η^2 = .043. Simple effects test were conducted, using Bonferroni procedure with adjusted alpha, to probe the interaction.

The simple effects of firm size at each level of credit level were first examined for dependent variable leverage. For average credit level, small firms (M = .79) were significantly more levered than large firms (M = .60), F (1, 53) = 7.42, $p < .01$. For low credit level, no statistically significant differences were found in the leverage levels of small firms (M = .54) and large firms (M = .62), F (1, 125) = 2.03, $p > .05$. For high credit level, no statistically significant differences were found in the leverage levels of Small

firms (M = .60) and large firms (M = .48), F (1, 51) = 2.77, p >.05.

The simple effects of credit level at each level of firm size were then examined. For large firms, there were significant differences in leverage levels, F (2, 114) = 3.90, p < .05, partial η^2 = .064. Post-hoc analyses using Bonferroni correction revealed that leverage levels were significantly higher (p < .03) for Low credit level (M = .62) than high credit level (M = .48). No significant differences were found for leverage between average credit level and low credit level (p > .05), and average credit level and high credit level (p >.05).

For small firms, there were significant differences in leverage levels, F (2, 115) = 5.361, p < .01, partial η^2 = .085. Post-hoc analyses using Bonferroni correction revealed that leverage levels were significantly higher (p < .03) for medium credit level (M = .79) than low credit level (M = .54). No significant differences were found for leverage between high credit level and low credit level (p > .05), and high credit level and average credit level (p >.05).

For the net leverage dependent variable, there was a significant main effect for credit level, F (2, 229) = 4.216, p < .05, partial η^2 = .04. The homogeneity of variance assumption for the net leverage DV was also violated, as is evident with Levene's test (p < .05). Therefore, post-hoc test must adjust for this violation, and Tamhane's T2 will be used for this purpose. A post-hoc analysis of this main effect using Tamhane's T2 revealed that net leverage levels were significantly higher (p < .05) for average credit level (M = .62) relative to lower credit level (M = .54), and high credit level was the lowest (M = .46). Main effect for firm size was also significant, F (1, 229) = 5.66, p < .05, partial η^2 < .02. Net leverage levels were significantly higher for small firms (M =

.58) relative to large firms (M = .49). The effect of credit level X firm size interaction was also statistically significant, F (2, 229) = 6.222, p < .01, partial η^2 = .052. Simple effects test, using Bonferroni procedure with adjusted alpha, were conducted to probe the interaction.

The simple effects of firm size at each level of credit level were examined for dependent variable net leverage. For average credit level, small firms (M = .73) have significantly higher net leverage than large firms (M = .51), F (1, 53) = 7.51, p = .01. For high credit level, statistically significant differences were found in the net leverage levels of amall firms (M = .54) have significantly higher net leverage than large firms (M = .38), F (1, 51) = 5.03, p <.05. For low credit level, no statistically significant differences were found in the leverage levels of small firms (M = .50) and large firms (M = .58), F (1, 125) = 2.16, p >.05.

The simple effects of credit level at each level of Firm size were then examined. For large firms, there were significant differences in net leverage levels, F (2, 114) = 6.95, p < .05, partial η^2 = .11. Post-hoc analyses using Bonferroni revealed that net leverage levels were significantly higher (p < .03) for low credit level (M = .58) than high credit level (M = .38). No significant differences were found for net leverage between average credit level and low credit level (p > .05), and average credit level and high credit level (p >.05).

For small firms, there were significant differences in net leverage levels, F (2, 115) = 4.537, p < .05, partial η^2 = .073. Post-hoc analyses using Bonferroni correction revealed that net leverage levels were significantly higher (p < .03) for average credit level (M = .79) than low credit level (M = .50). No significant differences were found for

leverage between high credit level and low credit level ($p > .05$), and high credit level and average credit level ($p > .05$).

For the short to long term debt ratio DV, there was a non-significant main effect for credit level, F (2, 229) = .124, $p > .05$, partial $\eta^2 = .001$. Main effect for firm size was also non-significant, F (1, 229) = 1.304, $p > .05$, partial $\eta 2 < .006$. The effect of credit level X firm size interaction was also statistically non-significant, F (2, 229) = 1.006, $p > .05$, partial $\eta^2 = .009$.

Hypothesis Testing

This section present the results of the nine hypotheses constructed in chapter 2 and 3, for answering three research questions.

Research Question 1

Is there any significant relationship between the size of the firm and the leverage behavior of lodging firms, as measured by leverage, net leverage, and short-to-long-term debt ratio?

Since a significant effect of firm size was observed on the leverage behavior of lodging firms, as measured by leverage, net leverage, and short-to-long-term debt ratio, null hypothesis is rejected. There exit a significant relationship between firm size and leverage behavior of lodging firms.

Hypothesis 1.

$H1_0$: There is no effect of firm size on the leverage behavior of lodging firms, as measured by leverage, net leverage, and short-to-long-term debt ratio.

Since a significant effect of firm size was observed on the leverage behavior of lodging firms, as measured by leverage, net leverage, and short-to-long-term debt ratio, null hypothesis is rejected.

$H1_{a0}$: There is no effect of firm size on the leverage of lodging firms.

Results of the analysis reveal that there was a significant main effect of firm size on the leverage of lodging firms. Thus, null hypothesis is rejected for $H_{1a.}$ Leverage levels for small lodging firms were significantly higher than the large lodging firms.

$H1_{b0}$: There is no effect of firm size on the net leverage of lodging firms.

Results of the analysis reveal that there was a significant main effect of firm size on the net leverage of lodging firms. Thus, null hypothesis is rejected for $H_{1b.}$ Net Leverage levels for small lodging firms were significantly higher than the large lodging firms.

$H1_{c0}$: There is no effect of firm size on the short-to-long-term debt ratio of lodging firms.

Results of the analysis reveal that there was a non significant effect of credit availability on the short-to-long-term debt ratio of lodging firms. Thus, null hypothesis is not rejected for $H_{1c.}$ short-to-long-term debt ratio of lodging firms was same for both large and the small lodging firms.

Thus, it can be concluded from these results that there exists a relation between the firms' size and the leverage levels of hospitality firms.

Research Question 2

Is there any significant relationship between the availability of credit and the leverage behavior of lodging firms, as measured by leverage, net leverage, and short-to-long-term debt ratio?

Hypothesis 2.

$H2_0$: There is no effect of availability of credit on the leverage behavior of lodging firms, as measured by leverage, net leverage, and short-to-long-term debt ratio.

Since a significant effect of credit availability was observed on the leverage behavior of lodging firms, as measured by leverage, net leverage, and short-to-long-term debt ratio, null hypothesis is rejected.

$H2_{a0}$: There is no effect of availability of credit on the leverage of lodging firms.

Results of the analysis reveal that there was a significant main effect of credit availability on the leverage of lodging firms. Thus, null hypothesis is rejected for $H_{2a.}$ Leverage levels for lodging firms were significantly higher at the 'Average Credit' availability than at the Low Credit availability.

$H2_{b0}$: There is no effect of availability of credit on the net leverage of lodging firms.

Results of the analysis reveal that there was a significant effect of credit availability on the net leverage of lodging firms. Thus, null hypothesis is rejected for net leverage levels for lodging firms were significantly higher at the average credit availability than at the low credit availability.

$H2_{c0}$: There is no effect of availability of credit on the short-to-long-term debt ratio of lodging firms.

Results of the analysis reveal that there was a non significant effect of credit availability on the short-to-long-term debt ratio of lodging firms. Thus, null hypothesis is not rejected for $H_{2c.}$ short-to-long-term debt ratio of lodging firms was same at all levels of credit availability.

Thus, it can be concluded that there exists a relation between the credit availability and the leverage levels of hospitality firms.

Research Question 3

Does the leverage behavior of lodging firms, as measured by leverage, net leverage, and short-to-long-term debt ratio gets significantly affected by the interaction between credit availability and the size of the firm?

Hypothesis 3.

$H3_0$: There is no interaction effect of firm size and credit availability on the leverage behavior of lodging firms, as measured by leverage, net leverage, and short-to-long-term debt ratio.

Since a significant interaction effect credit availability and firm size was observed on the leverage behavior of lodging firms, as measured by leverage, net leverage, and short-to-long-term debt ratio, null hypothesis is rejected.

H_{3a0}: There is no interaction effect of firm size and credit availability on the leverage of lodging firms.

Results of the analysis reveal that there was a significant interaction effect of firm size and credit availability on the leverage of lodging firms. Thus, the null hypothesis is rejected for $H3_{a0.}$ Small lodging firms had significantly higher leverage levels than large lodging firms in the times of average credit availability. But there were no differences in the leverage levels of large and small lodging firms in the times of high and low credit availability. Also, leverage levels were significantly higher for large lodging firms at the low credit availability than the high credit availability. No significant differences in leverage of large hospitality firms were found between average credit availability and low credit availability, and average credit availability and high credit availability. For small lodging firms, leverage levels were significantly higher in the average credit availability than in low credit availability. No significant differences were found in the leverage of small lodging firms in the high credit availability and low credit availability, and leverage of small lodging firms in the high credit availability and average credit availability.

$H3_{b0}$: There is no interaction effect of firm size and credit availability on the net leverage of lodging firms.

Results of the analysis reveal that there was a significant interaction effect of firm size and credit availability on the net leverage of lodging firms. Thus, the null hypothesis is rejected for $H3_{b0.}$ Small lodging firms had higher net leverage levels than large lodging firms in the times of average credit availability and high credit availability. But there were no differences in the net leverage levels of large and small lodging firms in the times of low credit availability. Also, net leverage levels were significantly higher for large lodging firms at the low credit availability than the high credit availability. No significant differences in leverage of large hospitality firms were found between average

credit availability and low credit availability, and average credit availability and high credit availability. For small lodging firms, net leverage levels were significantly higher in the average credit availability than in low credit availability. No significant differences were found in the net leverage of small lodging firms in the high credit availability and low credit availability, and net leverage of small lodging firms in the high credit availability and average credit availability.

$H3_{c0}$: There is no interaction effect of firm size and credit availability on the short-to-long-term debt ratio of lodging firms.

Results of the analysis reveal that there was no interaction effect of firm size and credit availability on the short-to-long-term debt ratio of lodging firms. Thus, null hypothesis is not rejected for $H3_{c0.}$ short-to-long-term debt ratio of lodging firms was same for both large and the small lodging firms and also was the same at all levels of credit availability.

Thus, it can be concluded from these results that leverage behavior of lodging firms, as measured by leverage, net leverage, and short-to-long-term debt ratio gets significantly affected by the interaction between credit availability and the size of the firm.

Summary

The 3 X 2 factorial MANOVA results were presented in this chapter. The underlying assumptions were checked in the preliminary data analysis. Summaries of descriptive statistics were reported followed by the test procedures. From the analysis results, relevant data analysis results were presented. Results of hypotheses testing are summarized in Table 24. Next, a discussion of results, summary and future research will be presented in Chapter 5.

Table 24

Summary of Study Hypotheses

Hypothesis	Test	Sig. (*p* Value)	Decision
$H1_0$: There is no effect of firm size on the leverage behavior of lodging firms, as measured by leverage, net leverage, and short to long term debt ratio.	Factorial MANOVA	.004*	Reject $H1_0$
$H1_{a0}$: There is no effect of firm size on the leverage of lodging firms.	ANOVA	.050*	Reject $H1_{a0}$
$H1_{b0}$: There is no effect of firm size on the net leverage of lodging firms.	ANOVA	.018*	Reject $H1_{b0}$
$H1_{c0}$: There is no effect of firm size on the and short to long term debt ratio of lodging firms.	ANOVA	0.255	Do Not Reject $H1_{c0}$
$H2_0$: There is no effect of availability of credit on the leverage behavior of lodging firms, as measured by leverage, net leverage, and short to long term debt ratio.	Factorial MANOVA	.000*	Reject $H2_0$
$H2_{a0}$: There is no effect of availability of credit on the leverage of lodging firms.	ANOVA	.012*	Reject $H2_{a0}$
$H2_{b0}$: There is no effect of availability of credit on the net leverage of lodging firms.	ANOVA	.016*	Reject $H2_{b0}$
$H2_{c0}$: There is no effect of availability of credit on and short to long term debt ratio of lodging firms.	ANOVA	0.883	Do Not Reject $H2_{c0}$
$H3_0$: There is no interaction effect of firm size and credit availability on the leverage behavior of lodging firms, as measured by leverage, net leverage, and short to long term debt ratio.	Factorial MANOVA	.005*	Reject $H3_0$

Summary of Study Hypotheses Continued...

Hypothesis	Test	Sig. (*p* Value)	Decision
$H3_{a0}$: There is no interaction effect of firm size and credit availability on the leverage of lodging firms.	Factorial ANOVA	.006*	Reject $H3_{a0}$
$H3_{b0}$: There is no interaction effect of firm size and credit availability on the net leverage of lodging firms.	Factorial ANOVA	.002*	Reject $H3_{b0}$
H_{3c0}: There is no interaction effect of firm size and credit availability on and short to long term debt ratio of lodging firms.	Factorial ANOVA	0.367	Do Not Reject $H3_{c0}$

Note. $*p < .05$.

Chapter V

DISCUSSION, CONCLUSIONS AND IMPLICATIONS

Introduction

Moyer, McGuigan, & Kretlow (2009) state that financial management of a firm has a single objective, to establish the best possible financial policy to improve firm's overall performance. The best possible financial policy includes decisions regarding financing, investing, and dividends. A number of research studies have been conducted in the area of corporate finance, focusing on the optimal capital structure for firms.

Financing is considered as one the most important and crucial decision in the area of corporate finance (Keister, 2004). Decision regarding the constituents of overall capital structure is one of the most critical issues among financing decisions. Capital structure of a firm is defined by the mix or proportion of a firm's financing through debt and equity (Van Horne & Wachowicz, 2001). These financing decision are even more critical to lodging firms because of the unique nature of the lodging industry. The lodging industry is highly capital intensive in nature and requires major investment in land, buildings, fixtures and equipments, as compared to other industries.

This study focused on the financing decisions of lodging firms in different economic environments. It is well known that business cycles are an inherent part of an economy. Economic activity fluctuates with time because of the impact of various factors present in an economy. Factors beyond the control of firms affect the overall business environment and results in various financial decisions.

The main objective of this study was to assess how different US lodging firms, respond to these cyclic fluctuations in the economy. This dissertation analyzed the impact

of business cycles on availability of credit on the lodging firms' capital structure. Historically business cycles are known to cause fluctuations in the credit availability in the markets.

The main research question for this study asked whether the leverage of lodging firms is affected by the availability of credit and the size of the firm. Leverage of lodging firms was measured by three dependent variables, leverage, net leverage, the and short to long term debt ratio. Thus, the research study explores whether leverage of lodging firms in the US are significantly affected by credit availability and firm size, as measured by the dependent variables. At the same time this research study analyzed if the firm size and credit availability have any significant effect on the capital structure of lodging firms individually. Finally, the study explored whether these differences were significant between large and small lodging firms.

Summary of the Study

The purpose of this study was to analyze leverage behavior of lodging firms in the US. It attempted to investigate leverage of lodging firms as a function of credit availability, firm sizes, and an interaction between credit availability and firm sizes.

Results of the analyses helped answering all the questions asked by testing the various hypotheses postulated. First question asked whether the leverage of lodging firms gets affected by the availability of credit. Multivariate analysis results show that there was a significant effect of credit level or credit availability on the leverage of lodging firms as measured by the three dependent variables. Further univariate analysis revealed that both leverage and net leverage were significantly affected by the credit availability. Leverage and net leverage levels of lodging firms were significantly higher at the average

or medium credit availability than at the low credit availability. Short to long term debt ratio was not impacted by credit fluctuations.

Higher leverage and net leverage at average credit availability (2006) is consistent with pecking order hypothesis. The pecking order theory (Myers and Majluf, 1984) is based on the idea of asymmetric information between managers and investors. Managers know more about the true value of the firm and the firm's riskiness than less informed outside investors. To avoid the underinvestment problem, managers will seek to finance the new project using a security that is not undervalued by the market, such as internal funds or riskless debt. Lodging firms appear to avail the available credit in 2006 which is assessed as having higher levels of credit availability than in the year 1995, when credit was stringent because of the stricter lending policies.

However, the results showed no differences in the leverage and net leverage levels of lodging firms, between high credit availability and low credit availability and high credit availability and average credit availability. One possible reason for this lack of difference could be the federal government's intervention. The Federal Reserve responded aggressively to the financial crisis of 2007. It reduced the target federal funds rate from 5.25% to effectively 0%. This was an extraordinary relaxation in order to support the liquidity of financial institutions and foster improved conditions in financial markets (Federal Reserve, 2011). Thus, even though the economic conditions started witnessing recession after June 2006, the leverage of the lodging firms was still significantly higher than in 1995, and the differences are more significant and prominent.

The second research question attempted to answer if there is a significant relationship between the size of the firm and the leverage behavior of lodging firms, as

measured by the three dependent variables, leverage, net leverage, and short to long term debt ratio. Multivariate analysis results show that there was a significant effect of firm size on the leverage of lodging firms as measured by the three dependent variables. Further univariate analysis revealed that both leverage and net leverage were significantly affected by the firm size. Leverage and net leverage levels of small lodging firms were significantly higher than the large lodging firms. This finding is again in a way consistent with pecking order hypothesis that manager's, acting in the interest of owners; prefer internal financing over external financing. New debt is issued only when the firm faces an imbalance between funds required and internal cash flows. If firms require external financing, managers will chose to issue debt before equity.

This is an important finding in view of previous research in the field of capital structure. Prior studies have reported that there is a positive relationship between size of firm and leverage levels (Friend & Lang, 1988; Marsh, 1982). Titman and Wessels (1988) state that large firms do not consider bankruptcy costs in deciding the level of leverage as these potential costs are just a small percentage of the total value of the firm. Therefore, large firms may prefer to use higher level of leverage.

However, another group of researchers provides evidence about the existence of a negative relationship between the size of firms and their leverage. Rajan and Zingales (1995) find that large firms are generally well-established and have a good performance track record, which enables them to issue equity at fair prices. In turn, this reduces their reliance on debt and therefore a negative relationship exists between size and leverage of a firm. Also, smaller firms have a much larger costs of issuing equity than large firms (Smith, 1977). The latter view is supported by this research study in the case of lodging

firms. Findings suggest that large lodging firms are less reliant on external debt financing as compared to smaller lodging firms and thus exhibit lower leverage levels. In this study Short to long term debt ratio was not impacted by firm size.

Lastly, the final research question investigated if leverage of lodging firms, as measured by leverage, net leverage, and short to long term debt ratio gets significantly affected by the interaction between credit availability and firm size. Multivariate results reveal that there was a significant interaction effect of credit availability and firm size on the leverage of lodging firms. Analysis of simple effects showed that small lodging firms have significantly higher leverage than the large lodging firms during average credit availability. This can be viewed as an after effect of federal government's efforts to provide liquidity to financial institutions, which is more sought after by small firms. Further, it was found that large lodging firms have significantly higher leverage at low credit availability than high credit availability. This finding suggests that larger lodging firms are seen as less risky and are more credible than the smaller firms in times of stricter credit policies. Large firms, have lesser need for credit in boom times when their internal cash flows are high. On the other hand, small lodging firms had high leverage in average credit availability than in low credit availability.

Simple effects for net leverage show that small lodging firms had higher net leverage levels than large lodging firms in the times of average credit availability and high credit availability. Also, net leverage levels of large lodging firms were higher at low credit availability than at high credit availability. These findings also suggest that large firms do not have the same propensity for debt in boom times as small firms, because of healthy internal cash flows and hence can utilize these internal funds if

needed. This finding is also consistent with pecking order hypothesis that managers, acting in the interest of owners prefer internal financing over external financing. Small lodging firms have significantly higher net leverage levels in average credit availability than in low credit availability. This finding suggests that small firms seek higher debt during the boom time because of expansions and new projects, as compared to large firms. Smaller firms were able to secure debt, a more convenient source for capital than equity for them, because of relaxed credit extension policies supported by the enhanced liquidity provided by the Federal Reserve.

Implications of the Findings

Implications of the results are discussed next for both the lodging firms and their stakeholders.

Small Lodging Firms

It is evident from the results that leverage of small lodging firms increased in the average credit availability (2009). The main reason for this enhanced leverage, despite the overall economy witnessing a recession, appears to be the Federal Reserve's efforts to provide enough liquidity to financial institutions. Small firms were able to secure higher debt levels to continue their market expansion projects, probably undertaken during boom times. These firms must assess the market conditions and make decisions regarding their future plans. In this specific case, it was very clear that the economy is witnessing a downward trend. Despite this fact smaller firms continued with the projects undertaken and raised capital through increased debt financing.

Debt financing is the first option for smaller firms as raising equity capital is often seen as a difficult task for them. There are dangers inherent in this increased

leverage for small lodging firms, as with leverage their unsystematic risk is also increasing. This can certainly pose problems in future for these small lodging firms. They should carefully analyze the overall economic trend and plan accordingly by limiting their debt levels. They can take actions such as decreasing the magnitude of expansions, and disposing off assets acquired for future expansions. If these companies were securing debt because of decreased cash flows, they might face much bigger financial problems in the near future. It is advisable for them to keep their unsystematic risk levels low. These results indicate that Federal Reserve's efforts to provide extra liquidity may only be effective as a short term solution for small lodging firms.

Large Lodging Firms

The results displayed a completely different scenario with respect to large lodging firms. Their leverage levels were the highest during low credit availability and lowest during the high credit availability. The possible reason for this high leverage during slow economic times or low credit levels is decreased internal cash flows and their higher credibility in the market as compared to small lodging firms. In contrast, their leverage decreased significantly during high credit availability or the boom time. Again, one possible reason is increased internal cash flows which enabled them to meet their financial obligations. This finding is consistent with pecking order hypothesis. Managers were possibly utilizing internal cash flows to meet the financial obligations and to fund any new projects.

Strategic suggestion for management of large hospitality firms will be to enhance their leverage levels in the times of higher credit availability. They can utilize excess internal funds for investment into other businesses. This diversification will help them

mitigate the overall risk of these firms. As far as funding expansions or future projects is concerned, they should strategically harness this opportunity to increase their leverage. Increased leverage will ensure a higher return on equity and eventually help increase the wealth of owners by improving stock prices. A possible concern on the other hand could be the enhanced risk profiles of these large firms. Large firms will still be seen as a safer investment option than the small firms, because of the magnitude of their business operations.

Contribution of the Study

Hospitality financial research has significantly contributed to the development of a rich body of knowledge over the past years regarding the identification and analysis of various factors impacting the capital structure of a hospitality firm. All studies mentioned before evaluated the capital structure of the lodging or restaurant firms in terms of the factors affecting the leverage, but no study has been done so far to assess the impact of changes in credit availability on the capital structure of lodging firms in US. There is a literature gap in terms of lodging firm's differing capital structure in the times of credit expansion and credit contraction. So far no study has been conducted to the researcher's knowledge which analyzes the impact of credit availability on the capital structure of firms in the lodging industry.

This study attempted to provide insights into the leverage behavior of US lodging firms based on their size, contributing significantly to the existing body of knowledge in the area of lodging industry corporate finance. This particular study analyzed three time points with excessive, stringent, and average availability of credit and analyzed their effects on the capital structure of lodging firms at these three points. Significant

differences were found in the leverage behavior of lodging firms, at different levels of credit availability, based on their size. Further, this study pinpointed where the differences existed. This study provided insights into the positive and negative relation of leverage with respect to firm size.

Limitations of the Study

This research study was limited to publicly traded hospitality firms which were identified by their individual 'Standard Industrial Classification' (SIC) code numbers, which are listed in the New York Stock Exchange (NYSE), the American Stock and Options Exchange (AMEX), and the National Association of Securities Dealers Automated Quotation System (NASDAQ) in years 1995, 2006, and 2009. A major limitation of this study was the survival bias, a common feature of the industry. Firms categorized into different groups based on the total asset size were not the same for all three observed years. Some firms went out of business and some merged with others. Also, only those firms that reported the required variables for this study were included for analysis, excluding some other potential firms. There are also some concerns with respect to the financial information since different firms could follow different accounting procedures.

This particular research study analyzed hotel and casino hotel firms jointly due to the fact that there are limited observations in each category and also these firms share certain common features. These both sectors are considered capital and labor intensive. Finally, although many other factors such as a firms goodwill, service quality, corporate culture, human resource practices, and marketing strategies will affect a firms overall business results which in turn affects the credit worthiness of a firm and ultimately the

leverage behavior of a firm. This study only focuses on a firm's financial variables which are considered as good indicators of its leverage and not other factors which might have an impact on a firms leverage levels.

This research analyses focused on the size of lodging firms and not by different segments such as hotel, resorts, and casinos. A combined analysis of all the segments was considered a much more practical approach because of the limitation of data availability for analysis. In future, if the number of firms increases in each individual segment of hospitality industry, it will be more meaningful to conduct segment wise analysis.

Furthermore, the size of a firm has been measured with different variables such as sales, total assets, number of employees, number of rooms (Mathews, 1989). Obi (1994) mentions that total assets are the second best indicator for firm size after the market value of a firm. Also, since capital structure is closely associated with the total assets owned by a firm, this study focused on total asset as a measure for determining lodging firm size rather than other indicators.

The effects observed at the different points of credit availability could have resulted from decisions made in the prior years. Therefore, a possible lag effect could be present in the observations.

Recommendations for Future Research

This research study empirically investigated if leverage behavior of lodging firms gets significantly affected by the credit availability and the firm size. This research study provides a foundation for future research in the same area.

Firstly, there was a significant finding regarding leverage behavior of large lodging firms. Large lodging firms were not inclined towards harnessing the available

credit opportunities. These firms preferred lower leverage levels and possibly resulted in much smaller return on equity for owners, making them much less attractive as an investing option eventually impacting the stock prices negatively. This phenomenon should be investigated in future studies.

Secondly, the year of average credit availability witnessed Federal Reserve's intervention to increase liquidity. Future studies must compare leverage levels of lodging firms by taking out this impact or controlling for it.

Thirdly, this study analyzed total debt of the lodging firms; a more realistic study will be to analyze the public and private debt separately. Analyzing them separately will provide insights into public and institutional lending behavior with respect to lodging firms.

Finally, short term to long term debt ratio did not exhibit any significant differences for large and small lodging firms over different levels of credit availability. This should be investigated further in future studies to get a better understanding regarding short term leverage behavior of the lodging firms.

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