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AN INITIAL INVESTIGATION OF FIRM SIZE AND DEBT USE BY SMALL RESTAURANT FIRMS

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ABSTRACT

This study examines whether or not size affects the use of debt used by small restaurant firms. Owners often use debt as a mechanism to minimize agency costs in large firms. However, there is no consensus in the literature about how to measure firm size. This study uses different proxies for size and finds the significant measures to be total assets, total sales, number of owners, and number of employees. The study finds number of owners and total assets to be variables with maximum explanatory power.

Introduction

The purpose of this paper is to provide a preliminary investigation into the use of debt by small restaurant firms. Specifically, we will assess the major capital structure theory relating debt to free cash flow. Although there is a significant amount of literature available regarding capital structure, only a limited amount of work has been completed regarding U.S. restaurant firms alone (Sheel, 1994; Kim, 1997). Moreover, no research has been conducted to date involving small restaurant firms (those with fewer than 500 employees). As argued by Myers, capital structure theories are not intended to be general and applied to a diverse sample of companies (Myers, 2001). Accordingly, we attempt to assess if one of the major capital structure theories that tends to support debt choice in large publicly traded firms is also applicable to small restaurant firms.

As discussed by Wolken (1998), data on small firms have traditionally been very difficult to find. However, a number of new sources have become available. For example, the Bank and Thrift Call Report on small business lending has been completed every year since 1993. Another survey, completed by the Federal Reserve Board of Governors, is the 1995 Survey of Consumer Finances. Finally, the Federal Reserve Board of Governors and the Small Business Association completed the third Survey of Small Business Finances (SSBF) in 1998. This has been the data source used in recent research and is used in this paper.

A small firm is generally considered to have fewer than 500 employees, although few of the restaurant firms we examined had more than 100. The sample in the 1998 SSBF survey involved the performance of firms for fiscal year 1998. 19,792 firms were deemed eligible to participate and 3,561 completed the survey. The SSBF survey represents firms in every major SIC Code category.

The recent availability of these databases has increased the amount of capital structure research involving small firms. Berger and Udell (1998) hypothesize about (but do not specifically test for) the amount and maturity structure of debt in small firms. Their focus is primarily on the use of debt by firms as they go through the "financial growth cycle." Van Auken and Holman (1995) find similar financing characteristics between small, private firms and large corporations. On the other hand, Scherr and Hulbert (2001) focus on the capital structure choice of small firms in the SSBF and obtain mixed results regarding capital structure theories typically tested using incorporated firms.

This paper is organized as follows. The next section two will describe the pertinent literature. This is followed by a discussion of the data and methodology used in the study. We then discuss the results and conclusions and the implications for further research.

Literature Review

Literature Regarding Capital Structure Theories

According to Myers (2001), capital structure choice can be divided into three major theories: (1) the trade-off theory; (2) the pecking order theory; and (3) the free cash flow theory. The trade-off theory states that interest tax shields have value to the firm and will be used up to the point where the marginal tax benefits of debt equal the costs of potential financial distress. The pecking order and free cash flow theories both involve the management and minimization of agency costs between shareholders and lenders and shareholders and managers. The free cash flow theory also relates debt levels to information asymmetry between lenders and owners. The recent literature tends to provide support to the pecking order and free cash flow theories as opposed to the tradeoff theory.

Although the trade-off theory was the first major attempt to explain capital structure, it may only explain a portion of the capital structure decision. For example, under the trade-off theory, profitable firms would always take advantage of interest tax shields. Moreover, firms with other tax shields such as depreciation would use less debt. However, as discussed by Myers, there are many successful and profitable firms that have little or no debt in their capital structures (Microsoft and pharmaceutical companies are two examples). Fama and French (1998) completed a study that found no evidence that interest tax shields contributed to the value of the firm. Additionally, Scherr and Hulburt (2001) did not find depreciation tax shields to be a significant factor in debt choice by small firms.

The pecking order theory as put forth by Myers describes the preference of firms to minimize the various agency costs of debt and equity by first using retained earnings, then debt, and finally, outside equity. Accordingly, as postulated by the pecking-order theory, firms with fewer retained earnings will use more debt. This is because retained earnings are simply not available and the agency costs of new external equity are too high. Thus, debt becomes the default financing choice.

The pecking order and free cash flow theories are similar in that these two theories both help explain the use of debt for firms with growth opportunities. Growth opportunities are generally expressed by comparing market values to book values in one form or another. Both of the theories hypothesize that the choice of financing is used to minimize the agency costs and is dependent upon the type of asset investment. Given that the market value of the firm is expressed as the book value and assets in place (tangible) and the market value of its growth opportunities (intangible assets), these intangible assets can play a significant role in the choice of financing.

Debt is positively related to firm size as hypothesized by Jensen's free cash flow theory (Jensen, 1986). As firms grow, managers have more power as the number of assets under their control increases. Accordingly, there may be excess "free cash flow"—cash flows in excess of those required to invest in positive net present value projects. Therefore, interest and principal payments can help alleviate this overinvestment problem for the firm. Furthermore, smaller and younger firms typically have not established reputations and have higher levels of information asymmetry for lenders. A number of recent papers have found a positive relationship between firm size and the use of debt, including Wald (1999) and Mackay and Phillips (2002). Both papers use the log of total assets to measure firm size. Dalbor and Upneja (2002) found a positive relationship between size and debt for publicly traded restaurant firms. Their proxy for size is the log of the market value of stockholder equity.

How Variables Are Operationalized in the Literature

Unfortunately, SSBF data does not include the variables typically used to evaluate capital structure theories for large corporate firms. For example, the trade-off theory involves a measure of tax rates to find a positive relationship between high tax rate firms and the use of interest tax shields. Although Upneja and Dalbor (1999) find this relationship, their research was completed for publicly traded corporate firms.

Small firm tax data is much more problematic as discussed by Scherr and Hulburt (2001). Many small firms do not have a separate tax line item because they are sole proprietorships or partnerships. Given this problem, Scherr and Hulburt used a dummy variable to proxy for a tax bill based solely on profitability. However, this variable was not significant in their analysis of small firms. Additionally, the trade-off theory states firms with high non-debt tax shields should use more debt. This was also tested by Scherr and Hulburt for small firms and found to be insignificant.

There are a number of proxies for growth opportunities in the literature. Capital structure researchers such as Barclay and Smith (1995) used the ratio of the market value of assets to their book value as a measure. Their calculation used the market values of assets as the book value of assets plus the difference between the market value of equity and the book value of equity. Unfortunately, since most SSBF firms are not traded, the market value of equity for these firms is not available.

Other growth opportunity proxies include Kim's (1997) use of the ratio of capital expenditures to assets and Scherr and Hulbert's (2001) ratio of research and development

expenditures to employees. Once again, these variables are not delineated in the survey results. Moreover, research and development costs are not considered a typical expenditure for most restaurant firms.

The free cash flow theory uses variables that are more commonly tracked by the SSBF and is the focus of this paper. Variables that provide insight into a firm's reputation such as size and age are commonly used. Firm size is measured a variety of ways, including natural log of sales and natural log of total assets. Firm age is measured by the natural log of one plus firm age. Firm size and age will be used to test the level of debt use and information asymmetry for small restaurant firms in the 1998 SSBF. We also use the number of owners and number of employees as a proxy for firm size.

Hypothesis, Data, and Methodology

The sample for this study is a sample of U.S. restaurant firms as listed in the SSBF for fiscal year 1998. The initial sample contained 171 restaurant firms; a number of firms that were technically insolvent (i.e., firms reporting negative equity) were removed. Additionally, firms that reported no sales or assets were removed. The final sample contained a total of 122 firms.

Given the theories from the literature previously discussed, the main hypothesis to be tested is if debt use by small restaurant firms is explained by firm size. Therefore, the alternative hypothesis can be stated as follows:

H_1: Debt use will be positively and significantly related to firm size.

The free cash flow theory is based upon debt payments being used to reduce cash in management control and the associated agency costs. Additionally, larger and perhaps older, established firms provide more information to lenders. Therefore, we will assess a number of variables related to firm size and reputation that have been used in the literature.

Accordingly, the regression model will be as follows:

Total Debt $= \alpha_0 + \alpha_1$ Firm Size $+ \varepsilon_i$

Where:

Total Debt is the amount of debt, including loans and current liabilities.

α_0 is the intercept of the regression; firm size will be measured in a variety of ways including:

Assets $=$ the natural log of total assets;

Sales $=$ the natural log of total sales;

Owners $=$ the total number of owners;

Age = the natural log of one plus firm age in years;

Employees = the total number of employees at the firm.

Each of these variables will be used in separate simple regression models and evaluated for their explanatory power. Summary descriptive statistics for the sample are shown in Table 1.

Table 1
Descriptive statistics for the sample

Variable	N	Mean	Standard Deviation	Minimum	Maximum
Total Debt	122	266,906	627,965	0	4,573,470
Total Assets	122	677,387	1,789,662	451	14,764,514
Ln Total Assets	122	12.05	1.85	6.11	16.51
Total Sales	122	1,410,573	3,329,936	6,000	33,181,055
Ln Total Sales	122	13.14	1.50	8.70	17.32
Number of owners	122	2.78	7.32	1.0	60.0
Age of firm	122	15.15	10.67	1.0	55.0
Number of employees	122	44.39	75.53	1.0	451.0

The table shows the descriptive statistics for the variables used in the regression. Total assets, total sales and the age of firm were not used in the regression but are displayed here for a more meaningful interpretation of the variables.

As shown in the table, the average small restaurant firm in the sample had nearly $267,000 of debt on its balance sheet. In order to make the analysis more meaningful, we present both the total assets figure and the natural log of total assets used in the regression. The amount of debt equates to approximately 39 percent of assets. This ratio is somewhat lower than recent research for publicly traded restaurant companies. Upneja and Dalbor (1999) report a mean debt ratio of 51 percent of assets. This could be large restaurant firms have less information asymmetry for lenders or else large firms may be able to afford the higher fixed costs associated with long-term debt. The average firm in the sample has approximately three owners and 44 employees. The average age of the firm is approximately 15 years.

Regression Results

We ran five separate regression models using the amount of total debt as the dependent variable in each. The results of the five separate regressions are shown in Table 2.

Table 2
Regression results

Independent Variable	Coefficient	F Test	R Squared
Ln Total Assets	188,565***	53.61***	30.9%
Ln Total Sales	204, 418***	37.68***	23.9%
Number of Owners	54,504***	81.38***	40.4%
Ln (1+ Age of firm)	9,473	0.01	0.0%
Number of employees	4,443.5***	47.99***	28.6%

***Significant at the 1 percent level.

The table shows the results of five separate univariate regression models with total debt as the dependent variable. The coefficients are not standardized. The F Test statistic is the test for overall regression relationship. The r squared shows the percentage of variation in the dependent variable explained by the independent variable.

All but one of the size variables is highly significant. However, the results indicate the variable with the best explanatory power is the number of owners. The coefficient is positive and highly significant as expected. The positive sign on this variable lends support to the free cash flow theory. As the number of owners grows and ownership interests are dispersed, debt may be used to help control the actions of management. The next most effective proxy for firm size is the natural log of total assets. The sign on this coefficient is positive as expected and is highly significant. This is consistent with the results found by Wald (1999) and Mackay and Phillips (2002). The log of total sales variable is also positive and significant, as there is often a high correlation between sales and assets.

The number of employees proxy for firm size is highly significant with a positive sign on the coefficient. The r-squared value is higher than that for the log of total sales. This result is as expected because firm size is often correlated with the number of employees, particularly for restaurant firms.

The age of firm variable is the only size proxy that was not significant. This may be attributable to the responses by the business owners surveyed. The age of the firm could produce different responses. An example of this for a restaurant firm could be the number of years at a current location as opposed to the total number of years the owner has been in business. Furthermore, although older firms should, on average, provide more information to lenders, it may be the case that lenders are looking for firms with tangible assets for collateral or tangible evidence of success (such as sales). Two separate regression models (not shown) using interaction variables of assets and age and total sales and age produced positive and significant results.

Conclusions and Implications for Further Research

This paper attempted to assess the free cash flow theory of capital structure for small restaurant firms by using different measures for firm size. We evaluated firm size in

terms of total assets, total sales, number of owners, age, and number of employees. Only the proxy for firm age (the natural logarithm of one plus firm age) was not significant. The results largely confirm the size variables used in the financial literature for publicly traded companies both inside and outside the hospitality industry.

Further research should be conducted into the capital structure of small firms. As argued by Myers (2001), capital structure theories are not meant to be general, and thus there may be important findings regarding different types of industries and firms. Specific research could examine the relationship between growth opportunities and debt use as more data become available. Additionally, more research into the financial growth cycle as suggested by Berger and Udell (1998) could be completed for small hospitality companies including hotels and restaurants.

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