

The Determinants of Capital Structure of Qatari Listed Companies

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ABSTRACT

This paper aims to investigate whether the capital structure choice of Qatari companies can be explained by factors that have been found by previous studies as dominant determinants of capital structure choice (i.e., company size, company asset structure, company growth, and company profitability). Using panel data regression, this paper extends the research on the determinants of corporate capital structure choice by looking at the issue from the perspective of Qatar "developing country" that has institutional arrangements likely to be quite distinct from those in developed and most other developing countries, especially in terms of its tax policies. The results reveal that among the variables, company size and profitability have a dominant role in explaining the variation in the total debt ratios of Qatari companies. Meanwhile, company size, company assets structure and company profitability have a dominant role in explaining the variation in the long-term debt ratios of Qatari companies. However, only company size has a dominant role in explaining the variation in the short-term debt ratios of Qatari companies.

KEY WORDS

Financing – capital structure, Qatar, company, panel data, debt

JEL CODES

D24, E22, G32

1. Introduction

Corporate sector growth is essential to economic development. Since the middle of 1990's, Qatar, a developing country, took several steps towards liberating the economy. Among these steps were the introduction of privatization programme and the creation of a national securities market.

It is necessary for companies in developing countries to be able to finance their activities to support the economic development. Financing decisions of the company involve a broad range of policy issues. At the macroeconomic level, they have implications for the development of capital

markets, interest rate and security price determination, and regulations. At the company level, they have implications for capital structure, corporate governance and company development (Green, Murinde, & Suppakitjarak, 2003). To be aware of the manner through which companies in developing countries finance their activities, it is imperative to examine the factors that influence their capital structure decisions.

Much of the empirical research on the determinants of companies' capital structure has been directed largely towards companies listed in developed countries, such as the U.S., U.K. and Western Europe. More recent studies have examined companies listed in developing countries that share many similar institutional features as those of developed countries (e.g., Booth et al., 2001). In addition, the recent studies that used data derived from developing countries to investigate the issue of capital structure determinants, even those studies that have investigated the issue within countries that share similar institutional features, have reported mixed results (e.g., Omet and Mashharawe, 2002; Deesomsak et al., 2004).

This paper aims to identify the determinants of capital structure for publicly listed Qatari companies, using a panel data of publicly listed companies over the period of 2004-2008. Identifying the determinants of capital structure for publicly listed Qatari companies is important because Qatar is a fast growing developing country with institutional features likely to be quite distinct from those in developed and most other developing countries, especially in terms of its tax policies. All Qatari owned companies and joint ventures are exempted from corporate income taxes. Qatar levies corporate income taxes on foreign companies at rates from 5 percent to 35 percent of net profits, including profits from majority-owned Qatari joint ventures exceeding 100,000 Qatari riyals (approximately US\$ 30,000). Under Law No. 13 of 2002, the Ministry of Finance may grant a tax holiday of up to ten years for new foreign investments in key sectors. Other foreign companies may be granted tax exemptions on a case-by-case basis by monarchical Decree. However, in 2008 a new law has been issued which exempts non Qatari shareholders of certain Qatari shareholding companies from tax. This law is effective from 3 April 2008. In addition, dividends are generally not taxed. Tax is assessed on the share of profits allocable to foreign shareholders according to the financial statements of a company, as adjusted for tax purposes. Capital gains are aggregated with other income and are subject to tax at the regular corporate income tax rates. Moreover, Zakat payment in Qatar is not institutionalized. However, Qatar does have a Zakat Fund which is voluntary. Therefore, this study contributes to the existing literature by providing additional evidence from the Qatari context which can be described as distinct from the other contexts that have been researched before, especially in terms of the corporate tax regime.

We find that among the variables, company size and profitability have a dominant role in explaining the variation in the total debt ratios of Qatari companies. Meanwhile, company size, company assets structure and company profitability have an important role in explaining the variation in the long-term debt ratios of Qatari companies. However, only company size has a significant role in explaining the variation in the short-term debt ratios of Qatari companies.

The rest of the paper is organized as follows. The next section provides a review of literature and develops our hypotheses. The third section explains the data and methods used in our analysis. The fourth section presents the result of the empirical analysis and a discussion of the conclusions that can be derived from the results. Finally, we summarize our findings in the last section.

2. Literature Review and Hypotheses Development

We begin our discussion on theories of capital structure, and then followed by review of literature on the four factors identified in this paper (i.e., size, company asset structure, company growth, and company profitability) as the determinants of capital structure choices.

2.1. Theories of Capital Structure

Capital structure is defined as the particular mix of debt and equity a company uses to finance its activities. Four theories have been developed to explain the capital structure decisions. These are based on tax benefits associated with debt use, bankruptcy cost, agency cost and asymmetric information.

2.1.1. Tax Benefits

The tax benefits associated with debt use can give explanations about the capital structure of the company. These benefits are realized, as companies are allowed to deduct the interest payments associated with debt in computing their taxable profit. Payments associated with equity, such as dividends is not tax deductible. Therefore, companies are encouraged to use more debt, as the use of debt increases the after tax proceeds to the owners (Modigliani and Miller, 1963; Miller, 1977). However, Myers (2001) argues that the tax advantages of equity to investors could, in some cases, offset the value of interest tax shields to the corporation. It is the trade-off that eventually determines the net effect of taxes on debt usage (Miller, 1977; Myers, 2001).

2.1.2. Bankruptcy Costs

Bankruptcy costs increase with debt, and hence reduces the value of the company (Warner, 1977). However, Modigliani and Miller (1963) confirm that companies should be financed by debt so as to benefit from the tax deductibility of debt. But increasing debt would lead to an increased probability of bankruptcy. Hence, the wise financial policy is that which aims to balance the tax shield benefits against the financial distress (including bankruptcy costs) and agency costs of leverage (Myers, 1977).

However, Haugen and Senbet (1978) argue that bankruptcy costs, which affect the capital structure decisions, must be trivial or nonexistent if one merely assumes that capital market prices are competitively determined by rational investors.

2.1.3. Agency Costs

The use of debt financing by the company also leads to agency costs. According to Jensen and Meckling (1976) the conflict between shareholders interest and debt-holders interest, gives shareholders an incentive to invest sub-optimally and/or not to invest in profitable projects if they believe they would have to share the returns with debt-holders.

To protect themselves from this potential behavior, debt holders need to restrict and monitor the company's behavior. Consequently, contractual covenants are incorporated into debt contracts. These contractual covenants should increase the cost of capital offered to the company. Therefore, companies with relatively higher debt agency costs should have lower levels of debt financing and leverage. However, Barnea et al. (1980) demonstrate that the call provision and the maturity structure of debt serve as identical purposes in solving agency problems.

2.1.4. Asymmetric Information

Due to the existence of information asymmetries between the company and likely finance providers, the relative costs of finance will vary among different sources of finance. For example, an internal source of finance where the funds provider is the company (retained profits or contributions of existing shareholders), will have more information about the company than potential shareholders. Therefore, potential shareholders will expect a higher rate of return on capital invested, resulting in new equity finance being more costly to the company than using existing internal funds. Similarly, this argument can be provided between internal finance and potential debt holders. Furthermore, the greater the exposure to the risk associated with the information asymmetries for the various external financing alternatives available, the higher the return of capital demanded by each source. Therefore, the company will prefer internal finance to debt and debt over external equity (Myers, 1984). Consequently, the pecking order theory suggests that companies with high profitability are expected to use less debt than less profitable companies.

2.2. Determinants of Capital Structure

In choosing the explanatory variables to be used in the analysis of cross-sectional variation in capital structure is filled with difficulty (Titman and Wessels, 1988, Harris and Raviv, 1991). After reviewing the available empirical literature on capital structure determinants, four key independent variables have been identified as the most used to explain capital structure choice. These variables are: company size; company assets structure; company growth; and company profitability.

2.2.1. Company Size

Larger companies are more diversified (and hence have lower variance of earnings) and typically less prone to bankruptcy (and hence have lower probability of bankruptcy and less bankruptcy costs). Therefore, larger companies are able to choose the higher optimal debt capacity (Castanias, 1983; Titman and Wessels, 1988). Castanias (1983) states that due to relatively high costs to resolve information asymmetries with lenders, small companies have less incentive to raise debt. By contrast, according to Rajan and Zingales (1995) the less asymmetric information within larger companies reduces the chances of undervaluation of the new equity issue. This encourages the use of equity financing.

Transaction costs of issuing long-term debt or equity are higher for small companies than large companies, this seem to lead small companies to use more short-term finance than larger companies (Titman and Wessels. 1988). The positive relationship between company size and leverage has been supported empirically. Among others, Kim et al. (1998), Al-Sakran (2001), Frank and Goyal (2004), Gaud et al. (2005), Kim et al. (2006), Qian et al. (2007), Feidakis and Rovolis (2007), Dragota and Semenescu (2008), and Akintoye (2008) provide evidence to the positive relationship between company size and capital structure. However, Ooi (1999) and Cole (2008) find an inverse relationship between company size and leverage. In addition, Omet and Mashharawe (2002) and Deesomsak et al. (2004) find mixed results. Moreover, Shah and Khan (2007) find that size variable is not a proper explanatory variable of debt ratio.

In addition, company size is found to be positively associated with long-term debt ratio, but negatively associated with short-term debt ratio (Cassar and Holmes, 2003; and Hall et al., 2004). However, regardless of some contradictory evidence, the majority of available empirical evidence

finds company size to be positively correlated with both leverage and debt maturity. Thus, the following hypotheses are proposed.

H1: company size is positively related to total debt ratio and long-term debt ratio but is negatively related to short-term debt ratio.

2.2.2. Company Assets Structure

According to Wedig et al. (1988), companies that have more durable assets to secure their debt also have high financial leverage since they can use debt more readily. Bradley et al. (1984) affirm that companies with high proportion of tangible assets use more debt since they can borrow at lower interest rates if their debt is secured by such assets. Pledging the company's assets as collateral reduces the costs associated with adverse selection and moral hazard. This will lead to greater liquidation value and in turn easier access to finance and lower cost of financing, resulting in higher level of debt or outside financing in the capital structure. Furthermore, Berger and Udell (1998) suggest that banks will be willing to supply loans, only if the lending can be secured by tangible assets. According to agency cost theory, because of the conflict between shareholders interest and lenders interest, shareholders may have incentives to invest in a sub-optimal manner. In this case, lenders will protect themselves by requiring tangible assets as collateral (Harris and Raviv, 1991).

However, Grossman and Hart (1982) show that company's tangible assets could be negatively correlated with company's leverage because of information asymmetry in companies with limited tangible assets and, hence, less collateralized debt would indicate more difficulty in monitoring employees. By increasing leverage, companies with limited tangible assets might receive help from creditors, including financial intermediaries to monitor employees, and, therefore, reduce the costs of information asymmetry (Kim et al. 2006).

The empirical evidence suggests a positive relationship between asset structure and leverage of the company (Wedig et al., 1988; Rajan and Zingales, 1995; Frank and Goyal, 2004; Gaud et al., 2005; Shah and Khan, 2007; and Cole, 2008). However, Akintoye (2008) finds a negative relationship between asset tangibility and debt financing. Omet and Mashharawe (2002) find mixed results.

Bevan and Danbolt (2002) find tangibility to be positively correlated with long-term debt but negatively with short-term debt. However, Buferna et al. (2005) find a negative relationship between tangibility and long term debt. Despite some inconsistency in the prior evidence, the following hypotheses are proposed.

H2: tangibility of company assets is positively related to total debt ratio and long-term debt ratio but is negatively related to short-term debt ratio.

2.2.3. Company Growth

Hall et al. (2004) argue that owing to greater demand on internally generated funds, companies with high growth opportunities are pushed to look outside to finance the growth. For that reason, growing companies are likely to have higher financial leverage. However, growth opportunities valuation is fraught with difficulty, but this especially so for observers outside the company. In view of that, asymmetric information should be more intense for companies have more growth opportunities. Therefore, the pecking order theory predicts that companies with more growth prospects would hinge on inside equity instead of debt (Cole, 2008).

Jensen and Meckling (1976) argue that when a company issues debt, agents have an incentive to engage in asset substitution and transfer wealth away from debt holders to

shareholders. It is commonly recognized that the agency costs associated with debt are higher for companies with substantial growth opportunities. Therefore, applying the trade-off model, it is predicted that companies with more investment opportunities would have lower debt ratios because they have stronger incentives to stay away from underinvestment and asset substitution that can arise from shareholders – debt holders agency conflicts. This prediction is supported by Jensen's (1986) free cash flow theory which predicts that companies with more investment opportunities have less need for the disciplining effect of debt payments to control free cash flows.

Furthermore, Myers (1977) argues that agency costs of debt are high for companies with high growth opportunities and therefore such companies will be able to borrow less. Moreover, Myers (1977) argues that growth opportunities can generate moral hazard situations and small enterprises have an incentive to take risks to grow. Lenders will only recover the amount of their loans and will not enjoy the benefits of growth. This will be reflected in high interest rates of long-term debt that can be avoided by the use of short-term debt.

Results of previous empirical studies provide inconclusive evidence. Some of the past empirical studies find positive relationship between growths and leverage (e.g., Bhaduri, 2002; Feidakis and Rovolis, 2007; Akintoye, 2008). Some other studies find that company growth is negatively related to leverage (e.g., Rajan and Zingales, 1995; Al-Sakran, 2001; Frank and Goyal, 2004; Buferna et al., 2005; Gaud et al., 2005). Mazur (2007) finds that company growth and capital structure are not significantly correlated in the case of Polish companies. Cassar and Holmes (2003) and Hall et al. (2004) find that growth is positively related to both short term and long term debt. However, Voulgaris et al. (2004) find company growth is associated with higher use of short-term debt. Thus, the evidence of the effect of growth opportunities on the cross-sectional variation in corporate leverage is rather mixed. However, based on the theoretical considerations the following hypotheses are proposed:

H3: company growth is negatively related to total debt ratio and long-term debt ratio but is positively related to short-term debt ratio.

2.2.4. Company Profitability

Modigliani and Miller (1963) interest tax shield hypothesis predicts a positive relationship between profitability and leverage. According to this hypothesis companies with high profit rates should prefer debt to benefit from the tax shield. Beside that, since profitable companies may be in a position enable them to service their debt easily and on time they are more capable of tolerating more debt.

On the contrary, according to the pecking order theory companies have a pecking order in financing their activities and they prefer to use internal sources of financing first, then debt and finally external equity obtained by stock issues (Myers, 1984). By this token, the relationship between profitability and leverage is expected to be negative. Titman and Wessels (1988) support this view and assert that all things being equal the more profitable companies would use less debt since they are able to generate funds internally.

The negative relationship between company profitability and leverage has been supported by the results of the majority of previous empirical studies (Rajan and Zingales, 1995; Al-Sakran, 2001; Omet and Mashharawe, 2002; Bevan and Danbolt, 2004; Frank and Goyal, 2004; Qian et al., 2007; Shah and Khan, 2007; Akintoye, 2008; and Cole, 2008). Moreover, Cassar and Holmes (2003), Hall et al. (2004) and Feidakis and Rovolis (2007) find a negative relationships between profitability and both long-term debt and short-term debt ratios. However, Buferna et al. (2005) report a positive relationship between profitability and both long-term debt and short-term debt

ratios. While, Ooi (1999) finds that company profitability is not a significant determinant of capital structure of UK property companies. Thus, the prior empirical evidence supports the pecking order theory. Therefore, the following hypotheses are proposed:

H4: company profitability is negatively related to total debt ratio, long-term debt ratio and short-term debt ratio.

3. Methodology of research

3.1. Sample Selection and Data

Our sample covers all companies listed on Doha Securities Market during the period of 2004–2008. There are thirty six companies listed on Doha Securities Market during the identified period. Since their capital structures are not comparable to the capital structures of companies in industrial and services sectors, companies in banking and financial sector and insurance sector were excluded from the sample. This resulted in a final sample of nineteen non-financial companies. We obtained our data on capital structure from the information disclosed in companies' financial reports available at (http://www2.dsm.com.qa/pps/dsm/portal/Pages/DSM_Home), the official website of Doha Securities Market.

3.2. Model and Measurement of the Variables

3.2.1. Model

The panel nature of the data allows for the use of panel data methodology. Therefore, to examine the relationship between the explanatory variables and the dependent variables this study uses a panel regression model. Panel data involves the pooling of observations on a cross-section of units over a number of time periods. A panel data approach is more useful than either cross-section or time-series data alone because it allows sorting out economic effects that cannot be distinguished with the use of either cross-section or time-series data alone (Pindyck and Rubinfeld, 1998). Further, Pindyck and Rubinfeld (1998) point to the increased number of data points when using panel dataset, which in turn generates additional degrees of freedom. Another advantage of a panel data set is that incorporating information relating to both cross-section and time-series variables can substantially reduce the problems that arise when there is an omitted-variables problem (Hsiao, 2003) which is otherwise present in Ordinary Least Squares (OLS) procedure.

The panel regression equation differs from a regular time-series or cross-section regression by the double subscript attached to each variable. The general form of the model can be specified as:

$$Y_{it} = \alpha_i + \beta X_{it} + \varepsilon_{it} \quad (1)$$

With the subscript i denoting the cross sectional dimension and t representing the time series dimension. The left-hand variable Y_{it} , represents the dependent variable in the model, is the one of three debt ratios for the i th firm at the time t , α is the intercept, X_{it} is a $1 \times k$ vector of observations on k explanatory variables for the i th firm in the t th period, β is a $k \times 1$ vector of parameters, and ε_{it} is a disturbance term defined as $\varepsilon_{it} = \mu_i + v_{it}$, where μ_i denotes the unobservable individual effect and v_{it} indicates the remainder disturbance.

The regression was carried out utilizing three estimation methods which are pooled OLS, fixed effect, and random effects. The models for the empirical investigation are therefore given as follows:

$$TDR_{it} = \beta_0 + \beta_1 \text{SIZE} + \beta_2 \text{ASST} + \beta_3 \text{GROWTH} + \beta_4 \text{PROF} + \varepsilon_{it} \quad (2)$$

$$\text{LTDRit} = \beta_0 + \beta_1 \text{SIZE} + \beta_2 \text{ASST} + \beta_3 \text{GROWTH} + \beta_4 \text{PROF} + \varepsilon_{it} \quad (3)$$

$$\text{STDRit} = \beta_0 + \beta_1 \text{SIZE} + \beta_2 \text{ASST} + \beta_3 \text{GROWTH} + \beta_4 \text{PROF} + \varepsilon_{it} \quad (4)$$

Where:

TDR = total debt ratio (book value of total debt/book value of total assets) for firm *i* in time *t*.

LTDR = long-term debt ratio (book value of total long-term debt/book value of total assets) for firm *i* in time *t*.

STDR = short-term debt ratio (book value of total short-term debt/book value of total assets) for firm *i* in time *t*.

SIZE = the size of the company (Natural logarithm of sales) for firm *i* in time *t*.

ASST = the structure of the company's assets (Book value of fixed asset/book value of total asset) for firm *i* in time *t*.

GROWTH = the growth rate of the company {(Book value of total asset - book value of equity plus market value of equity)/book value of total asset} for firm *i* in time *t*.

PROF = the profitability rate of the company (Net income/book value of total assets) for firm *i* in time *t*.

ε = the error term.

3.2.2. Measurement of the Variables

Dependent Variable

The debt ratios that are considered as dependent variables in this study include: total debt to total assets, long-term debt to total assets and short-term debt to total assets. Our study employs the book value measure of leverage. This is in line with some of the previous studies (e.g., Buferna et al., 2005; Kim et al., 2006; Mazur, 2007; Cole, 2008). Shad and Khan (2007) argue that book value based measures of leverage are more relevant than market value based measures of leverage. According to Shad and Khan (2007) the primary cost of borrowing is the increased chances of bankruptcy and if a company falls in financial distress and goes into bankruptcy, then the relevant value of the debt is the book value of debt. Further, Shad and Khan (2007) point out to the relative ease and accuracy with which book value measure can be calculated.

Independent Variables

There are four independent variables used in this study, namely size, assets structure, growth and profitability. Natural logarithm of sales is used as a measure of company size by large number of previous studies, among others, Titman and Wessels (1988), Rajan and Zingales (1995), Omet and Mashharawe (2002), Bevan and Danbolt (2004), Gaud et al. (2005), Qian et al. (2007), Rovolis and Feidakis (2007), and Shah and Khan (2007). In line with these studies, the present study uses the natural logarithm of sales as a proxy for company size. According to, Shah and Khan (2007) this measure smoothens the variation in the figure over the periods of time.

We measure assets structure by using the ratio of fixed assets to total assets. This proxy is used by Rajan and Zingales (1995), Booth et al. (2001), Omet and Mashharawe (2002), Deesomsak et al. (2004), Frank and Goyal (2004), Hall et al. (2004), Buferna et al. (2005), Mazur (2007), Qian et al. (2007), Feidakis and Rovolis (2007), Akintoye (2008), Cole (2008), and Dragota and Semenescu (2008).

In the literature several measures such as capital expenditures scaled by total assets, the growth of total assets, research and development over sales, and the market-to-book ratio, have

been employed as proxies for company growth. We measure growth using the market-to-book ratio. This proxy is used by Rajan and Zingales (1995), Omet and Mashharawe (2002), Bevan and Danbolt (2004), Deesomsak et al. (2004), Frank and Goyal (2004), Gaud et al. (2005), Feidakis and Rovolis (2007), and Dragota and Semenescu (2008). Following Shah and Khan (2007) and Cole (2008), we measure profitability variable by using Return on Assets (ROA). This can be done by dividing net income by total assets.

4. Analysis and Discussion of Results

4.1. Descriptive Statistics

Tables 1 and 2, show the mean, median, minimum, maximum and standard deviations of the dependent and independent variables used in our study.

Table 1. Descriptive statistics of dependent variables

| | 2004 | 2005 | 2006 | 2007 | 2008 | All |
|---------------------------------------|------|------|------|------|------|-----|
| Panel A: total debt ratio | | | | | | |
| Observations | 19 | 19 | 19 | 19 | 19 | 95 |
| Mean | 23. | 23. | 27. | 30. | 33. | 27. |
| Median | 67 | 15 | 85 | 22 | 38 | 65 |
| Minimum | 16. | 25. | 25. | 25. | 30. | 24. |
| Maximum | 06 | 54 | 64 | 93 | 88 | 80 |
| Standard deviation | 2.8 | 2.7 | 5.2 | 7.6 | 6.7 | 2.7 |
| | 8 | 6 | 5 | 0 | 1 | 6 |
| | 64. | 49. | 55. | 65. | 90. | 90. |
| | 49 | 19 | 69 | 07 | 37 | 37 |
| | 20. | 14. | 17. | 18. | 22. | 18. |
| | 68 | 61 | 74 | 65 | 21 | 96 |
| Panel B: Long-term debt ratio | | | | | | |
| Observations | 19 | 19 | 19 | 19 | 19 | 95 |
| Mean | 11. | 10. | 13. | 14. | 15. | 13. |
| Median | 88 | 13 | 30 | 55 | 84 | 14 |
| Minimum | 4.0 | 4.8 | 7.5 | 10. | 10. | 5.2 |
| Maximum | 5 | 1 | 9 | 55 | 05 | 6 |
| Standard deviation | 0.0 | 0.0 | 0.0 | 0.4 | 0.3 | 0.0 |
| | 0 | 0 | 0 | 1 | 9 | 0 |
| | 56. | 42. | 44. | 49. | 55. | 56. |
| | 14 | 87 | 78 | 97 | 75 | 14 |
| | 16. | 12. | 14. | 16. | 17. | 15. |
| | 98 | 20 | 49 | 39 | 54 | 44 |
| Panel C: Short-term debt ratio | | | | | | |
| Observations | 19 | 19 | 19 | 19 | 19 | 95 |
| Mean | 11. | 13. | 14. | 15. | 17. | 14. |
| Median | 79 | 02 | 55 | 67 | 60 | 53 |
| Minimum | 6.9 | 8.9 | 9.2 | 9.8 | 11. | 9.6 |
| Maximum | 2 | 5 | 4 | 3 | 82 | 6 |
| Standard deviation | 0.5 | 2.6 | 3.8 | 2.3 | 5.7 | 0.5 |
| | 5 | 4 | 2 | 4 | 2 | 5 |
| | 40. | 42. | 53. | 42. | 36. | 53. |
| | 74 | 26 | 81 | 56 | 44 | 81 |
| | 11. | 10. | 12. | 11. | 11. | 11. |
| | 37 | 68 | 27 | 35 | 11 | 31 |

As can be seen from table 1, the mean values of all debt ratios are increasing slightly from year to year from 2004 – 2008. However, the overall mean value of total debt ratio is 27.65%. This reveals that on average the use of debt financing by Qatari companies is low. In addition there are large differences between the values of total debt ratio as indicated by the high value of the standard deviation of 18.96%.

The mean value of total debt ratio (27.65%) is much lower than the 58% (US), 69% (Japan), 73% (Germany), or the 54% (UK) reported by Rajan and Zingales (1995). It is also lower than the 38% (Jordan), 33% (Kuwait) or the 46% (Oman), while very close to the 26% (Saudi Arabia) reported by Omet and Mashharawe (2002). Since there are no corporate or personal taxes in Qatar, our result supports the tax benefits model of capital structure theory.

The overall mean value of long-term debt ratio is 13.14%. This indicates that Qatari companies maintain moderated values of long-term debt in their respective capital structures. However, there are large differences between the values of long-term debt ratio as indicated by the high value of the standard deviation of 15.44%. Much lower mean values of long-term debt to total asset, (5.4% in Jordan, 8% in Kuwait, 13% in Oman and 9% in Saudi Arabia), were reported by Omet and Mashharawe (2002).

Claessens et al. (1998) report that long term debt (as a share of total debt) has been low, across the whole period of 1988 to 1996, in all East Asian Countries. They find that Malaysia, Taiwan and Thailand stand out with less than 1/3. They also find that Japan and the Philippines have the highest shares, while the others are about 43%. In contrast, they report that about ¾ of debt of US corporates is long term, while in Germany the ratio is 55%.

Table 2. Descriptive statistics of independent variables

| | 2004 | 2005 | 2006 | 2007 | 2008 | All |
|--------------------------------|---------|---------|---------|---------|---------|---------|
| SIZE (sales in millions of QR) | | | | | | |
| Observations | 19 | 19 | 19 | 19 | 19 | 95 |
| Mean | 679.58 | 919.33 | 1225.69 | 1775.44 | 2878.36 | 1495.68 |
| Median | 118.58 | 253.89 | 328.09 | 464.21 | 478.12 | 336.83 |
| Minimum | 0.04 | 4.28 | 0.05 | 1.29 | 3.36 | 0.04 |
| Maximum | 5257.78 | 6578.04 | 7778.07 | 10373.4 | 20318.9 | 20318.9 |
| Standard deviation | 1286.16 | 1606.48 | 1999.37 | 3066.42 | 5521.21 | 3135.77 |
| Company asset structure (in %) | | | | | | |
| Observations | 19 | 19 | 19 | 19 | 19 | 95 |
| Mean | 60.8 | 61.58 | 62.67 | 67.17 | 66.94 | 63.83 |
| Median | 62.38 | 65.32 | 71.29 | 70.9 | 73.67 | 70.15 |
| Minimum | 0.24 | 1.75 | 0.89 | 0.3 | 15.5 | 0.24 |
| Maximum | 97.46 | 97.93 | 95.57 | 96.3 | 93.67 | 97.93 |
| Standard deviation | 27.43 | 26.85 | 27.81 | 24.27 | 21.88 | 25.34 |
| Company growth (in %) | | | | | | |
| Observations | 19 | 19 | 19 | 19 | 19 | 95 |
| Mean | 256.37 | 273.05 | 164.47 | 186.74 | 122.95 | 200.72 |
| Median | 234 | 242 | 150 | 155 | 113 | 168 |
| Minimum | 38 | 27 | 38 | 69 | 38 | 27 |
| Maximum | 604 | 639 | 325 | 415 | 235 | 639 |
| Standard deviation | 145.65 | 151.98 | 70.25 | 93.53 | 46.84 | 121.39 |
| Profitability (in %) | | | | | | |
| Observations | 19 | 19 | 19 | 19 | 19 | 95 |
| Mean | 8.30 | 8.73 | 7.96 | 8.57 | 10.29 | 8.77 |
| Median | 6.69 | 9.18 | 6.47 | 6.68 | 8.45 | 8.08 |
| Minimum | -7.35 | -9.71 | -9.97 | -3.68 | -4.38 | -9.97 |

| | 2004 | 2005 | 2006 | 2007 | 2008 | All |
|--------------------|-------|-------|-------|-------|------|------|
| Maximum | 28.84 | 26.42 | 24.34 | 24.75 | 32.2 | 32.2 |
| Standard deviation | 8.78 | 7.5 | 8.47 | 7.68 | 8.48 | 8.07 |

Notes: This table provides descriptive statistics of independent variables (Size, Asset Structure, Growth and Profitability) for the period 2004 to 2008.

From table 2, it can be seen that the mean value of company sales is 1,496 million QR and the median value is 337 million QR. The large part of Qatari companies is small as the minimum value of sales is 40 thousands QR and the maximum value is 20,319 million QR. Besides that, the differences in companies' sales are large as indicated by the high standard deviation of 3,136 million QR. The mean value of company assets structure is 63.83%, which means that the ratio of fixed assets to total assets is relatively high as the minimum value is 0.24% and the maximum value is 97.93%. Moreover, the low value of standard deviation (25.38%) indicates that there are small differences in the ratio of fixed assets to total assets among Qatari companies.

The mean value of company growth (market to book ratio) is 200.72%. It reveals that some Qatari companies have less growth prospects as the minimum value is 27.00% and the maximum value is 639.00%. The mean value of company profitability is 8.77%, which means that the level of profitability of Qatari companies is moderate as the minimum value is -9.97% and the maximum value is 32.20%. However, the very high standard deviation of profitability (8.07%) demonstrates that the differences in levels of profitability among companies are too large.

4.2. Correlation Analysis

Table 3 shows the correlations between total debt ratio, long-term debt ratio and short-term debt ratio as dependent variables and company size, company assets structure, company growth and company profitability as independent variables.

Table 3. Correlation matrix for all the dependent variables and independent variables

| | TDR | LTDR | STDR | SIZE | ASST | GROWTH | PROF |
|--------|-------|-----------|-----------|-----------|------------|------------|------------|
| TDR | 1.000 | 0.802(**) | 0.583(**) | 0.355(**) | 0.108 | -0.106 | -0.066 |
| LTDR | | 1.000 | -0.017 | 0.076 | 0.319(**) | -0.123 | -0.275(**) |
| STDR | | | 1.000 | 0.492(**) | -0.254(**) | -0.010 | -0.120 |
| SIZE | | | | 1.000 | -0.116 | 0.070 | 0.591(**) |
| ASST | | | | | 1.000 | -0.270(**) | -0.300(**) |
| GROWTH | | | | | | 1.000 | 0.454(**) |
| PROF | | | | | | | 1.000 |

*** Correlation is significant at the 0.01 level (1-tailed).

Notes: This table provides the correlation matrix for all the dependent variables and independent variables. TDR is total debt ratio, measured as book value of total debt divided by book value of total assets. LTDR is long term debt ratio, measured as book value of long-term debt divided by book value of total assets. STDR is short-term debt ratio, measured as book value book value of short-term debt divided by book value of total assets. SIZE is company size, measured as natural logarithm of sales. ASST is company assets structure, measured as book value of fixed asset divided by book value of total assets. GROWTH is company growth, measured as book value of total asset minus book value of equity plus market value of equity divided by book value of total assets. PROF is company profitability, measured as net income divided by total assets.

From table 3 it can be noted that company size is correlated positively (0.355) and statistically significant at 1% level with total debt, positively (0.076) but has low correlation with

long-term debt. However, the correlation between size and short-term debt is positive and significant at 1% level.

Company assets structure is correlated positively but not significant with total debt. However, the correlation between company assets structure and long-term debt is positive (0.319) and significant at 1% level. Meanwhile, a significant negative correlation is observed between company assets structure and short-term debt. On the other hand, company growth is correlated negatively but not statistically significant with all debt ratio measures.

Company profitability is found to be significantly negatively correlated with long-term debt (p-value = 0.01) but the correlations with total debt and short-term debt are not significant. There are moderate correlations between independent variables, which suggest that multicollinearity is not a major issue in our regression model.

4.3. Regression Analysis

This section discusses the relationships between total debt ratio, long-term debt ratio and short-term debt ratio as dependent variables and company size, company assets structure, company growth and company profitability as independent variables, using panel regression models. To estimate the panel regression model three alternative methods, pooled ordinary least squares, the fixed effects model and the random effects model, have been used. However, the Breusch-pagan test and Hausman test results indicate that the appropriate estimation model for the Qatari companies is the random effects model which takes cross-section specific constant terms as being randomly different across the cross-sectional units.

The estimation results of the model are presented in tables 4. Panel A of table 4 reports the determinants of total debt as a proportion of total assets. Panel B of table 4 reports the determinants of long-term debt as a proportion of total assets. While Panel C of table 4, reports the determinants of short-term debt as a proportion of total asset.

Table 4. Regression model estimates

| | Pooled OLS | Fixed effects | Random effects |
|-------------------------------------|--------------------|-------------------|-------------------|
| Panel A: TDR | | | |
| Constant | -53.655 (0.002)*** | -8.715 (0.724) | -27.709 (0.167) |
| Size | 4.459 (0.000)*** | 1.396 (0.235) | 2.743 (0.005)*** |
| Assets structure | 0.049 (0.502) | 0.273 (0.047)** | 0.150 (0.137) |
| Growth | 0.011 (0.508) | -0.004 (0.799) | -0.002 (0.909) |
| Profitability | -1.050 (0.001)*** | -0.795 (0.014)** | -0.791 (0.008)*** |
| Adjusted R-square (%) | 21.60% | 64.50% | |
| F-statistic | 7.489 (0.000) | 8.750 (0.000) | |
| Test for differing group intercepts | | 7.024 (0.000) | |
| Breusch-pagan test | | | 44.819 (0.000) |
| Hausman test | | | 5.92816 (0.205) |
| Panel B: LTDR | | | |
| Constant | -35.164 (0.012)** | 18.458 (0.354) | -5.211 (0.749) |
| Size | 2.251 (0.002)*** | -0.861 (0.362) | 0.586 (0.045)** |
| Assets structure | .156 (0.011)** | 0.314 (0.005)*** | 0.219 (0.009)*** |
| Growth | 0.018 (0.197) | -0.013 (0.256) | -0.004 (0.709) |
| Profitability | -.939 (0.001)*** | -0.712 (0.006)*** | -0.681 (0.006)*** |
| Adjusted R-square (%) | 19.40% | 65.20% | |
| F-statistic | 6.639 (0.000)*** | 9.017 (0.000)*** | |
| Test for differing group intercepts | | 7.599 (0.000)*** | |
| Breusch-pagan test | | | 41.663 (0.000) |

| | Pooled OLS | Fixed effects | Random effects |
|-------------------------------------|------------------|------------------|-------------------|
| Hausman test | | | 4.821 (0.318) |
| Panel C: STDR | | | |
| Constant | -18.540 (0.055)* | -27.164 (0.085)* | -22.520 (0.056)* |
| Size | 2.212 (0.000)*** | 2.260 (0.003)*** | 2.198 (0.000)*** |
| Assets structure | -.106 (0.013)** | -0.041 (0.630) | -0.077 (0.188) |
| Growth | -.691 (0.480) | 0.009 (0.301) | 0.005 (0.554) |
| Profitability | -.112 (0.540) | -0.084 (0.677) | -0.116 (0.514) |
| R-square (%) | 29.50 | 69.30 | |
| Adjusted R-square (%) | 26.30 | 59.90 | |
| F-statistic | 9.399 (0.000)*** | 7.392 (0.000)*** | |
| Test for differing group intercepts | | 5.194 (0.000)*** | |
| Breusch-pagan test | | | 34.517 (0.000)*** |
| Hausman test | | | 2.441 (0.655) |

Notes: In model one (Panel A) the dependent variable TDR = (book value of total debt) / (book value of total assets). In model two (panel B) the dependent variable LTDR = (book value of total long-term debt) / (book value of total assets). In model three (panel C) the dependent variable STDR = (book value of total short-term debt) / (book value of total assets). The independent variables are identical in all three models, where Size = Natural logarithm of sales, Assets structure = (Book value of fixed asset) / (book value of total asset), Growth = (Book value of total asset — book value of equity plus market value of equity) / (book value of total asset), and Profitability = (Net income) / (book value of total assets).

***, ** or, * indicates coefficient is significant at 1%, 5%, or 10% level respectively.

As can be seen from table 4, the coefficients for company size are positive and statistically significant for all debt ratios. Given that most Arabic countries including Qatar are most likely to have a weak secondary market for assets and a weak takeover market, bankruptcy costs are expected to be high. Thus, the significant positive coefficients for size imply that debts holders are prudent to bankruptcy costs. The results are similar with that found by Titman and Wessels (1988).

Table 4 shows that the relationship between assets structure and total debt ratio is positive but not significant. It also shows a positive relationship and very significant at 1% level with long-term debt but reports negative and not statistically significant with short-term debt. These results suggest that in the Qatari setting there are significant information asymmetries. Lenders consider the proportion of the fixed assets of the companies in order to provide them long-term debt. According to the pecking order theory, companies that issue debt secured by collateral may diminish asymmetric information related in costs of financing. Companies offer high levels of fixed assets as collateral to mitigate asymmetric information. The implication of this is that there is a strong positive relationship between the proportion of the fixed assets and long-term debt but not between the proportion of the fixed assets and short-term debt. This indicates that Qatari companies match their assets with their liabilities and therefore they use fixed assets (long-term assets) as collateral for long-term debt (long term liabilities). These results are similar to those found by Booth et al. (2001) and Feidakis and Rovolis (2007).

Table 4 reveals that the coefficients for company growth are negative but not significant for total and long-term debt ratios, positive but also not significant for short-term debt ratio. It can be argued that these results, however not statistically significant, which support debt agency costs model of capital structure theory. The insignificant signs could be due to the facts that Qatari bond market is still underdeveloped when compared to the traditional bank and equity financing avenues and that most debt in Qatar is in the form of bank loans. Banks have robust ties with borrowing companies stemming from a number of reasons including: (1) banks encourage long-term relationships with their clients and (2) banks may have partial ownership stakes in their client

companies. Moreover, since managers of banks' client companies are Muslims, banks may not expect managers to have incentives to enhance shareholders' wealth at the expense of debt holders due to the religious restraint. Consequently, it is expected that debt agency costs to be relatively lower in Qatar. Therefore, growth is not expected to cause any solemn agency conflicts.

The coefficients for company profitability are negative for all debt ratios. However the sign is not significant for short-term debt ratio. It can be said that our result supports the pecking order theory, which argues that debt is costly and companies prefer to rely on internal generated funds to finance their operations. The insignificant sign for short-term debt may imply that profitable companies may not favor to tie themselves with long-term debt contracts when their financing needs temporary exceeds their internal generated funds.

5. Conclusions

This study investigates the capital structure of 19 Qatari companies that are listed on Doha Securities Market for the period of 2004-2008. We find that, on average the use of debt finance by Qatari companies is low. Since Qatari companies and individuals are not subject to any form of corporate or personal taxes, it can be argued that this finding is in line with debt tax benefits theory of capital structure. Moreover, the low use of debt finance is consistent with the underdeveloped Qatari bond market.

The results reveal that company size and profitability have dominant role in explaining the variation in the total debt ratios of Qatari companies. Company size, company assets structure and company profitability play important role in explaining the variation in the long-term debt ratios of Qatari companies. Company size plays significant role in explaining the variation in the short-term debt ratios of Qatari companies. In a nutshell, our study support debt tax benefits theory, bankruptcy costs theory, asymmetric information theory, and debt agency costs theory of capital structure.

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