Original Research Article

Determinants of Capital Structure: Evidence from Saudi Arabia

Abstract

The study investigates the determinants of capital structure from a sample of 71 non-financial Saudi Arabian firms from 2010-2021 using a fixed effect regression. The study finds a positive relationship between each size, asset tangibility, and market- to book with leverage. A negative relationship is found between profitability and sales growth.

Introduction

The capital structure is a significant element in firm's valuation since it affects the level of risk, the cash flow and then the market value of the firm for the last few decades, capital structure is one of the most contentious topics in corporate finance due to its impact of firm's success. The capital structure controversy started in 1958 when Modigliani and Miller (MM) suggested that the capital structure is irrelevant to the firm's value. It evolved from here, and different capital structure theories arose from MM theory. As noticed in the literature and throughout the years, tradeoff theory by Myers (1977), and the pecking order theory by Myers and Majluf (1984), and agency theory by Jensen and Meckling (1976) are the three most comparable theories among scholars when analyzing the capital structure. Each of which has its own views, assumptions and conclusions. Many of the literature on the determinants of capital structure

This paper explains the determinants of capital in listed firms in Saudi Arabia between 2010-2021. There are many studies in the literature about the determinant of capital structure but the findings are different. This suggests that country context may play a role in explaining the different mixed results of determining the capital structure. The scarcity of studies regarding the determinants of capital structure in Saudi Arabia motivates the author to fill up this gap. Saudi Arabia has a unique institutional structure in terms of its bond market, tax system or (Zakat), that makes it an attractive context for this study that can add value to the literature in this regard. To illustrate, the capital market in Saudi Arabia is underdeveloped, and only in 2009 that Capital Market Authority (CMA) approved Islamic bond (sukuk) trading. The government only started to issue local currency debt and sukuk in 2015. The issuance of government debt is crucial in setting the benchmarks for the yield curve and developing the bond market in Saudi Arabia. Government related entities represent about 90% of ($26 billion) listed corporate bonds and sukuk issued in 2019 and 2020. All of these recent developments support the kingdom's credit profile, however, currently it is still considered underdeveloped. Saudi firms depend on banks for short term debt, and trade borrowing or trade credit instead of long term debt as main financing sources. This led it to use total liabilities over total assets as measure of leverage. In terms of tax system, firms in Saudi Arabia are not subject to income tax, instead, they are subject to Zakat that is levied at a rate of 2.5%. Thus, the advantage of tax shield is assumed to be minimal unlike the potential benefit of tax, (tax shield) in global countries when they decide to issue debt. Thus, leverage is a big matter of concern when studying capital structure in Saudi Arabia. The result shows a negative association between each of profitability and sales growth with leverage, and a positive relationship size, asset tangibility, and market to book with leverage.

The rest of the paper is organized into six sections. Section two is the review of capital structure theories. Section three is the development of hypotheses. Section four is data and methodology. Section five is empirical results and discussion. Finally, section six is the conclusion.

Review of Capital Structure Theories

A number of capital structure theories, with controverted insights and assumptions, were created because there were inadequate understanding of corporate financing behavior and the consequences of this behavior. The development of the theoretical framework of capital structure has all started with Modigliani and Miller (1958) proposition I, or as it called the irrelevance theory. This proposition states that firm value is irrelevant and independent of the capital structure under the assumptions. of frictionless market conditions where there are no transaction costs, no bankruptcy costs, no tax. In other words, the firm's debt ratio does not affect the market value or the average cost of the firm. In Modigliani and Miller (1963) Proposition II, they introduce the corporate tax and the benefit of tax deductibility of interest on debt. This proposition encourages firm to maximize their debt proportion to benefit from the interest tax shield, and thereby increase the value of the firm.

In Myers (1977) The trade off theory was derived from the debate over MM theory. The trade-off theory states that there is an optimal capital structure that maximizes the firm's value. It suggests that firms will borrow up to a point where the marginal benefit of using the debt is offset by the cost of using debt. Firms can gain from the advantage of the tax deductibility on interest until it is offset by the bankruptcy and agency costs.

The agency cost theory was introduced by Jensen and Meckling (1976). The design of the corporation is separation of ownership (by shareholders) and control (by managers), therefore, the asymmetric information is a consequences of the corporation design. The theory affirms the importance of considering information asymmetry in making decisions about the firm's capital structure because asymmetric information facilitates the agency problem. The agency cost happens as a result of a conflict between managers and shareholders. Mangers try to enhance their own value by their managerial behavior and consumption of perks, instead of focusing on increasing the firm value, thus, the value of the firm will be affected. Another possibility of raising the agency cost as mentioned by (Jensen & Meckling,1976) is from the free cash flow. This is because the excess cash flow reduces the need for raising capital from capital markets, thus, managers would not be monitored by bondholders.

In 1994, picking order theory was introduced by (Myers and Majluf, 1984). The theory does not have an optimal capital structure like the trade off theory, instead it emphasis the difference in information that leads to adverse selection and agency costs. It states that due to the asymmetric information between internal management and external shareholders, the cost of issuing securities will be high, thus, the value of the firm will be negatively affected. The pecking order theory suggests that there is hieratical order should be used in financing decisions. According to the theory, firms prefer using its internal funds first where there is no information asymmetry. Then, if additional fund is required, firms turn to debt and make equity their last

financing option. The trade off theory and the picking order theory were the most important theories when discussing the capital structure, however, other theories were introduced.

In 1977, the idea of the signaling theory was introduced by (Ross,1977). It states that that financing decisions signals the information about the firm performance to outside investors. The theory was introduced as a result of the asymmetric information between managers and outside shareholders. When managers increase the firm' debt ratio, they send a signal to outside shareholders of a higher future cash flow and high confidence that the firm is in a good position and it is capable of handling the cost of debt. Thus, outside investors will consider the higher level of leverage as a signal of higher quality. According to the signaling theory, there is a positive association between leverage and firm performance.

In 2002, The market timing theory that was originated by (Baker and Wurgler, 2002). It claims that there is no optimal or target capital structure like the pecking order theory. However, unlike the pecking order, market timing theory states that the real role of debt is that it gives managers the chance to observe the equity market and issue stocks when the the prices are overvalued. This implies that the firm's observed capital structure represent the accumulative selling of overpriced equity shares. All asymmetric information theories of pecking order, market timing, and signaling state that there is no optimal capital structure.

Hypotheses Development

Profitability

It is considered one of the most used factor in the literature as a determinant of the capital structure. The proxy of profitability used in the study is calculated as the earning before interest and tax (EBIT) over total assets (Rajan & Zingales, 1995). The trade-off theory (Myers,1977) suggests that firms with high profitability are more encouraged to consume more debt to acquire the benefit of the tax shield, which mean a positive relationship between leverage and profitability. However, the picking order theory (Myers and Majluf, 1984). suggest a negative relationship. That is when the profit in a firm increase then the firm will use the profit as a source of internal fund. Literature found mixed results, however, since the Saudi market does not benefit from the (tax shield) as other markets in developed and developing countries, a negative relationship is suggested.

H1: There is a negative relationship between profitability and leverage.

Asset tangibility

It is also called (asset structure) and it is considered as an important determinant of firm performance (Dada and Ghazali,2016) calculated as the ratio of net fixed assets to total assets.
The most commonly mentioned prospective in the literature is that tangible assets are easy to monitor and can serve as a good collateral, therefore, the higher tangible assets will mitigate the agency conflict with bondholders and lower the borrowing costs (Rajan& Zingales, 1995). In other words, using assets as a collateral will reduce the information asymmetry based on the

picking order theory. (Goh et al.,2018). Also, (Akintoye,2008) claim that firms that have large investments in tangible asset will have lower financial distress costs than firms that count on intangible assets, which suggest a positive relationship between tangibility and leverage (Wald,1999; Chen,2004; Goh et al.,2018). On the other hand, some studies suggest a negative relationship between the two variables. The rational is that some firms with low level of tangible assets may choose higher level of debt to control the agency issue between shareholders and managers when managers tend to consume more than the optimal level of perquisites. (Booth et al.,2001). However, this study supports the conclusion of (Rajan & Zingales, 1995) and hypothesis:

H2: There is a positive relationship between tangibility and leverage.

Firm Size

It is defined as the natural log of the book value of total assets. (Lin and Chang ,2011; Khemiri &Noubbigh 2020; Lartey et al., 2020). Large firms are more diversified, therefore, they have lower probability of default and relatively lower bankruptcy cost (Rajan & Zingales,1995; Wald,199). Also, large rims have lower monitoring costs because their cash flow is less volatile and lower agency cost of debt and easier access to capital market. Larger firms are able to reduce the risk, information asymmetry, and transaction costs, which all suggest a positive relationship between the size of the firm and level of debt.

H3: There is a positive relationship between firm size and leverage.

Growth:

Sales growth will be used as a growth measure and it represent the increase in sales from the current year compared to the previous year and its calculated as the sales of current year minus the sales of the previous year divided by sales in the previous year. The agency cost of debt is higher in growing firms who have flexibility in their finance choices of future investments. (Titman &Wessels, 1988). Thus, increasing growth rate should be negatively related to the firm's level of debt.

H4: There is a negative relationship between firm's growth and leverage.

Market-to- book

Market -to-book ratio is defined as the book value of assets less the book value of equity plus the market value of equity and all divided by the book value of assets. (Rajan & Zingales,1995; Kalyanaraman,2020). Firms with high market to book ratio usually have higher bankruptcy cost which suggest a negative relationship. Another reason that suggest the inverse relationship between market to book and leverage is that firms tend to issue stocks when the stock price is high relative to book value (Rajan & Zingales,1999).

H5: There is a negative relationship between market-to book ratio and leverage.

Data and Methodology

The sample consists of the listed firms on the main market of Saudi Arabia from 2010 to 2021.The data is extracted from Saudi Stock Exchange (TADAWUL) and (Argaam) official websites, and firms financial statement data is collected from COMPUSTAT database. Financial and insurance firms are excluded since there is a significant difference in their presentation of the financial statements than other sectors. Also, firm with missing values of the study variables during the period of the study are also excluded from the sample. After the exclusion process, we have a balanced panel sample consists of 71 firms with 852 firm year observations.

The coefficients are estimated using firm fixed effect regression with robust standard errors is used. This method reduces the heterogeneity in panel as well as diminish the potential endogeneity issue. The research model is given below whereas table 1 explains the measures of variables used in the study.

$$Debt_{it} = + \beta_0 + \beta_1 ROA + \beta_2 \text{ Size} + \beta_3 \text{ Tan} + \beta_4 \text{ Age} + \beta_5 \text{ Growth} + \beta_6 \text{ MTB} + \varepsilon_{it}$$

Where i denote firm and t denoted time, ε_{it} is error term.

Table 1: Variables Measure

Variable	Definition	Abbreviation	EXPECTED SIGN
Leverage	Total liabilities/Total assets	Debt	Dependent variable
Profitability	Earnings before interest and taxes/Total assets	ROA	Negative
Size	Log (total assets)	Size	Positive
Asset tangibility	Fixed assets/ Total Assets	Tan	Positive
Sales growth	(Current year sales – previous year sales)/(previous year of sales)	Growth	Negative
Market-to-Book	Total assets – Shareholders Equity+(closing price ×outstanding shares)/Total assets	MTB	Negative

Empirical Results and discussion

Table 2 shows the estimated coefficients for the variable used in the study. The result shows that as we hypothesized, there is a significant negative relationship between profitability and leverage with a coefficient of -0.38. This conclusion supports the picking order theory. (Booth et al.,2001) suggest that the negative association can be related to the undeveloped bond market and this conclusion fits the characteristics of the Saudi bond market. The result is consistent with (Rajan & Zingales,1995; Sheikh,2011). As for the firm size, the result shows a significant positive relationship with leverage with a small coefficient of 0.079 which indicates that size does not have a strong effect on Saudi firms. This result is consistent with the trade off theory that large firms should have high debt level because they have low level of risk and so they can get the benefit of tax shield. (Shah & Hijazi,2004; Gaud et al.,2005). Asset tangibility is found to be positively associated with leverage with a coefficient of 0.289, which is consistent with (Wald,1999, Chen 2004; Shah & Hijazi,2004; Gaud et al.,2005). Result implies a significant negative relationship between sales growth and leverage with a coefficient of -0.347 and this is consistent with (Akhtar,2005; Li &Islam,2019). Finally, unlike we hypothesized, there is a positive relationship between market to book ratio and Leverage. However, the coefficient is very small 0.0092 coefficient which suggest that market-to- book ratio has a little impact on the capital structure in Saudi Arabia.

Table 2: Regression Result

Variables	Coefficient	Robust SE	t-ratio	P-value
Profitability	-0.38927	0.08516	-4.57	0.000
Size	0.07969	0.03122	2.55	0.013
Asset tangibility	0.28915	0.11007	2.63	0.011
Sales growth	-0.34770	0.00842	-4.13	0.000
Market to book	0.00929	0.00347	2.68	0.009
Constant	-0.35181	0.23744	-1.48	0.143

Conclusion

The limited studies conducted in the context of Saudi Arabia about the capital structure motivates the author to study the determinants of capital structure in Saudi Arabia. The study examines 71 public firms in Saud Arabia from 2010 to 2021. The result shows a negative association between each profitability and sales growth with leverage, and a positive relationship size, asset tangibility, and market- to- book with leverage. The results affirm our hypothesis except for the market- to-book ratio that has small coefficient of positive relationship. Some of the result support the picking order theory like the profitability and some support the trade off theory like the size. Future studies can investigate the existence of the optimal level of capital structure like it is suggested by the trade off theory.

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