THE DETERMINANTS OF CAPITAL STRUCTURE: AN EMPIRICAL STUDY OF OMANI LISTED INDUSTRIAL COMPANIES

Mawih Kareem AL ANI[1], Maha Saud AL AMRI[2]

[1]*Accounting and Finance Department, College of Commerce and Business Administration,*
Dhofar University, Salalah 211, Sultanate of Oman
[2]*Management and Marketing Department, College of Commerce and Business Administration,*
Dhofar University, Salalah 211, Sultanate of Oman
E-mails: [1]mawih@du.edu.om (corresponding author); [2]maha11a@hotmail.com

Abstract. This study investigates five determinants of capital structure (leverage) in three subsectors of the Omani Industrial companies (food, construction and chemical) listed on Muscat Securities Market for the period 2008–2012. According to available information and literature review, the determinants are profitability measured by return on assets (ROA), risk measured by the standard deviation of return on assets, the size of the company measured by the natural logarithm of total assets, rate of growth measured by the market-book value ratio (P/E) and assets tangibility measured by fixed assets to total assets ratio. The capital structure or leverage is measured by total debt ratio. In the industrial sector as whole; the findings of the study indicate that there is a statistically positive association between risk and tangibility and leverage. Also, there is a statistically negative association between growth rate and profitability and leverage, while there is no association with size. Regression analysis indicates that size, tangibility and risk have a statistically significant effect on leverage.

Keywords: leverage, size, return on assets, P/E ratio, risk, total assets.

JEL Classification: G32, F65, L25.

Introduction

Over the past 50 years, there were many capital structure studies that produced empirical evidences concerning the determinants of capital structure in the real business world. The main objective of most of these studies is to determine, examine and investigate some factors or forces that influence corporate financing behavior in different countries and business sectors. The problem is that the results of these studies about the associations between some determinants of capital structure and leverage are mixed. Some of them concluded positive relations, others negative associations and several studies conclude that there is no correlation between them.

This study is one of the most rarely attempts to determine the determinants of capital structure in a sample of the Omani Industrial companies (food, construction and chemical) listed on Muscat Securities Market. This study investigates five determinants of capital structure (leverage) in three subsectors of the Omani Industrial companies (food, construction and chemical) listed on Muscat Securities Market for the period 2008–2012. The study attempts to find an answer to the following question: what are the determinants of capital structure in those three subsectors? Five hypotheses in each sector were tested. These hypotheses are related to the five determinants in the present study.

The methodology of the study is a content analysis of annual reports of a sample of 18 out of 18 (100%) companies in the food sector, 10 out of 10 (100%) in the construction sector and 10 out of 10 (100%) in chemical sector for the period 2008–2012.

In Sultanate of Oman, there is very limited evidence about the association and impact of determinants of capital structure on the leverage of the industrial companies.

There are many motivations to prepare the present study. The business environment in Sultanate of Oman is a very big opportunity for investors in the industrial sector because the investment laws and regulation give them this opportunity to build their investments. Unfortunately, there are very limited studies that examine the associations between so many determinants of capital structure in the industrial sector (or any other sectors) despite the importance of this sector. The investments in the industrial sector are very large, and they need to be analyzed and examined. Finally, the financial statements of the industrial companies are distorted. For example, there is a very large gap between assets and incomes. The amounts of assets are very big, but the net income and return on assets are very low. Therefore, this is the one of the most rarely attempts to examine and analyze the determinants of capital structure in this sector.

The study consists of six sections. The theories of capital structure are discussed in the first section. The second section presents the literature review. In the third section, the study presented the model, data and methodology used in this study. Sections four and five provide results of the analysis, and finally, in section six; the study presented the summary and conclusions.

1. Capital structure theories

The decision how companies work out their capital structure is one of the most widely researched areas. The capital structure used to finance the 'companies assets has implications shareholders value and firm value. Therefore, the financial manager should seek that capital structure which maximizes the value of the firm (the optimal capital structure).

Capital structure is the mixture of sources of funds a company uses (debt, preferred stock, retain earnings, and common stock). The amount of debt that a company uses to finance its assets is called leverage. A company with a lot of debt in its capital structure is said to be highly levered. A firm with no debt is said to be unlevered. A company's capital structure is determined by the assumptions of debt and equity capital used in financing the company's assets. (Pahuja, Sahi 2012).

In the literature review, the title determinants of capital structure were examined widely. This is because there is no theory of capital structure could be applied in all cases. According to Myers (2001: 81), *"there is no universal theory of the debt -equity choice, and no reason to expect one"*. However, most of the studies used a conditional theory to examine the determinants of capital structure in one company, sector or country. A conditional theory means that there are some determinants related to the case subject to analysis. Frank and Goyal (2009) explain that the conditional theories can be divided into three theories:

Pecking-order theory, Tradeoff theory and Market timing theory. In the Pecking-Order Theory (POT), the company prefers the internal financing or sources such as retained earnings then it is tending to external financing or sources. According to POT the profitable companies are less likely to undertake external financing for new projects because they have the available internal financing for this purpose (Hijazi, Tariq 2006).

The second theory is Static Trade-off Theory (STT). In this theory, the company follows a target debt-equity ratio (leverage) and then behaves accordingly. The company has a capital structure consisted of equity and debt, so the balancing between them is very important. The balancing required that using more external financing will increase the risk of the company despite the fact that it is accompanied by an increase in the return.

The last theory is Market Timing Theory (MMT). The MMT explains that the company prefers equity when the cost of this equity is low and prefers debt otherwise. According to this theory, companies sometimes perceive their risky securities as misstated values by the market. Conditional on having financing needs, companies issue equity when the cost of equity is low, and issue debt when the cost of equity is high (Huang, Ritter 2004).

Miglo (2010) reviewed these theories in details, basic models, major results and evidence. Under the trade-off theory, the prediction is the leverage which should be inversely related to the expected bankruptcy costs. The explanations provided by pecking order theory for such phenomena are that there is a negative correlation between external financing and profitability, negative share price reaction on equity issue announcements and better share price reaction on debt issues than on equity issues. Evidence mostly support market timing theory in that companies wait until the market conditions get better and that share has a high return prior to equity issues.

2. Literature review

The literature review of determinants of capital structure is not new. The origin of these studies is backing to the pioneered work of Modigliani and Miller (1958).

Chen (2004) examined the determinants of capital structure of 88 Chinese-listed companies using firm-level panel data for a period from 1995–2000. Capital structure determinants are except tax shields, profitability, size, assets tangibility, growth, signaling and cost of financial distress. The study concluded a positive association for all determinants except profitability in explaining the leverage.

Hijazi and Tariq (2006) attempt to determine the capital structure of listed firms in the cement industry of Pakistan. The study took 16 of 22 firms in the cement sector, listed at the Karachi Stock Exchange for the period 1997–2001 and

analyzed the data by using pooled regression in a panel data analysis. These determinates are: firm size (measured by natural log of sales), tangibility of assets, profitability and growth and further analyzed the effects on leverage. The results of the study, except for firm size, were found to be highly significant.

Frank and Goyal (2009) examine the relative importance of many factors in the capital structure decisions of publicly traded American firms from 1950 to 2003. The determinants of leverage are: median industry leverage, market-to-book assets ratio, tangibility, profits, log of assets and expected inflation. However, for book leverage, the impact of firm size, the market-to-book ratio, and the effect of inflation are not reliable.

Chhapra and Asim (2012) examine the determinants of optimal capital structuring of the 90 firms in textile sector in Pakistan of period 2005–2010. The determinants of fixed assets, profitability, size and tax were tested in associated with financial leverage.

The study used some statistical methods such as correlation, regression analyses and F-value to test the fitness of overall model. The study showed a negative relationship between all independent variables financial leverage.

Khrawish and Khraiwesh (2010) tested the capital structure of 30 listed industrial companies on Amman Stock Exchange for the period 2001–2005. The capital structure was measured by two proxies: total leverage ratio and long-term debts ratio. The independent variables are size, tangibility, profitability, long-term debt and short-term debt. The study showed a significant positive association between total leverage ratio and size, tangibility, long-term debt and short-term debt and there was a significant negative association between leverage ratio and profitability of the firm.

Mokhova and Zinecker (2013) investigate the determinants on capital structure in 32 European countries. The study examines the independent variables such as size, tangibility, profitability, growth, and non-debt tax shields on the leverage. The results showed that in most countries the profitability and size have negative and significant influence on corporate capital structure. Also, the study concluded that tangibility, growth opportunities and non-debt tax shields split up: selected countries experience positive impact, another part negative.

Sbeiti (2010) investigates the determinants of capital structure for three GCC countries (Oman, Saudi Arabia and Kuwait). The study examine the impact of determinants like liquidity of firms, profitability, financial market development variables, cost of debt, growth rate, tangibility size of firms on the leverage. The results revealed that all variables except size have a negative impact while the size has a positive impact on the leverage.

Afza and Hussain (2011) tested the determinants of capital structure of the industry specific attributes of 22 automobile firms, 8 engineering firms, and 7 cable and electrical goods firms. The debt to total assets ratio is used as a proxy for leverage and the impact of size, profitability, and tangibility of assets, cost of debt, taxes, liquidity, and non-debt tax shield is analyzed on leverage. The results showed that firms of these three sectors with good liquidity position and large depreciation allowances use retained earnings, followed by debt financing for growth and smooth operations and equity financing is considered as a last resort.

Baharuddin *et al.* (2011) examined determinants of capital structure for 22 construction companies listed in the Bursa Malaysia market during a seven-year period from 2001 to 2007. The dependent variable used is debt ratio and expressed by total debt divided by total assets while the independent variables are profitability, size, growth, and assets tangibility. The findings of the study indicated that only growth has impact on the capital structure and construction companies depend heavily on debt financing compared to equity financing for expansion and growth.

Abdul Wahab *et al.* (2012) investigate the determinants of capital structure of 10 listed Malaysian property developers during the period of 2001–2010. Variables used for the analysis include debt ratio as the dependent variable, profitability, non-debt tax shield, tangibility, growth opportunity, and liquidity as the independent variables. The study indicates that profitability and tangibility have impact on leverage of the top five developers. The study also shows that all of the independent variables are insignificant in explaining variation in leverage of the bottom five developers.

Pahuja and Sahi (2012) analyze the factors determining the capital structure of Indian companies. This analysis is grounded on agency theory and pecking order theory. The paper takes into consideration dependent variable being debt equity ratio and independent variables viz. size, growth, profitability, liquidity and tangibility. The data for a sample of 30 companies constituting Bombay Stock Exchange's SENSEX (sensitivity index) were considered for a period comprising 2008–2010. Two major determinants of capital structure are found to be growth and liquidity according to the results of the study.

Ghazouani (2013) analyzes the determinants of capital structure of 20 Tunisian firms listed in Tunis Stock Exchange for a period from 2004 to 2010. The study examined the impact of profitability, assets tangibility, risk, size, and growth rate on the leverage. The results of the study showed that the profitability and asset tangibility have impact on leverage of Tunisian firms.

Maxwell and Kehinde (2012) examine the determinants of capital structure in 110 Nigerian firms listed on the Nigerian stock exchange. The study found that size has a positive and significant impact on capital structure while age has a negative and significant influence. Tangibility, growth of a firm and profitability do not have any significant impact on the leverage of firms in Nigeria.

Qayyum (2013) examined the determinants of capital structuring of the 20 cement industry firms in Pakistan of period 2007–2009. The study examined the impact of profitability, assets tangibility, size, and growth rate on the leverage. The study indicated that except size, all other variables have significant association with leverage.

Fauzi *et al.* (2013) investigate capital structure determinants of 79 New Zealand-listed firms. Capital structure determinants are except non-debt tax shields, profitability, size, tangibility, growth; signaling, and managerial ownership. The study concluded that all independent variables, except non-debt tax shields and profitability, exhibit a significant impact on leverage.

Awan and Amin (2014) investigate which factors affect which of 68 textile firms of Pakistan listed on Karachi Stock Exchange during 2006–2012 and which type of capital structure theory does more prevail in textile sector of Pakistan. The study tested the impact of eight determinants like liquidity of firms, non-debt tax shields like depreciation, more collateral net fixed assets, earnings volatility, size of firms, net commercial trade position and firms' profits have impact on the capital structure choice on two types of leverage; total leverage and long term leverage.

Ab Wahab and Ramli (2014) tested the firm specific characteristics of 13 Listed Malaysian Government linked Companies (GLCs) from 1997 to 2009. The leverage was measured by two elements of leverage, book value of total debt ratio and long term debt ratio. The study showed that the tangibility and size are the most significant variables to determine the corporate financing of GLCs. Liquidity and interest rates are negatively significant with two measures of leverage.

Handoo and Sharma (2014) investigate the determinants of capital structure of 870 listed Indian firms in both private sector firms and government firms for the period 2001–2010. Ten independent variables (profitability, growth rate, size, cost of debt, tax rate, tangibility of assets, financial distress, liquidity, debt serving capacity, and age of firm) and three dependent variables (total debt ratio, long-term debt ratio, and short-term debt ratio) have been tested using regression analysis. It has been concluded that factors such as profitability, growth, asset tangibility, size, cost of debt, tax rate, and debt serving capacity have significant impact on the leverage for those firms.

It may be noted that the literature review discusses some firm-specific determinants where capital structure theories describe assumptions on the associations between determinants and leverage. These determinants are profitability, firm size, asset tangibility, growth rate, liquidity and risk. Also, it is noted that the results of previous studies are mixed. For example, the results of study of Ghazouani (2013) indicate that the profitability and asset tangibility of the firm are significant determinants related to leverage in contrast the result of the study of Abdul Wahab *et al.* (2012).

On the other hand, the results of study of Chhapra and Asim (2012) indicated that the all independent variables have negative impact on leverage.

It becomes especially worthwhile to examine some of the firm-specific determinants such as profitability, size of the firm, risk, asset tangibility, and growth rate since different outcomes are expected to conclude in this area. Also, these determinants are prevailing in the literature and previous studies, and they were not been examined in Oman.

3. Research design and hypotheses

3.1. Hypotheses development

Based on the literature review and theoretical implications of capital structure, the following determinants were examined and analyzed.

3.1.1. Tangibility of assets

Assets structure is a group of assets (tangible) holding by the firm to establish and expand its business (Reyhani 2012). It is assumed that tangible assets can be used as collateral. In this regard, many studies assert that if the company has large tangible assets, the leverage will be increased. Moreover, the high level of fixed assets gives the company a good opportunity to increase the level of leverage because the company can use these assets as collateral. Therefore, Bauer (2004) determined that a positive relation between tangibility and leverage is predicted. For the purpose of the present study, we measured the tangibility assets as fixed assets divided by total assets. In this case, the hypothesis is as follows:

H1: Firms with higher levels of tangibility of assets exhibit higher levels of leverage.

3.1.2. Size of the company

There is a negative relation between size of the company and bankruptcy. Therefore, size has been viewed as a determinant of company's capital structure. Larger firms are more diversified and hence have lower variance of earnings, making them able to tolerate high leverage (Kilani 2012). Frank and Goyal (2009) indicate that there are empirical evidences that support a positive relationship between size and capital structure.

For the purpose of the present study, we measured the size of the company by the natural algorithm of total assets. The second hypothesis is:

H2 – Firms with higher levels of total assets exhibit higher levels of leverage.

3.1.3. Growth rate

According to Myers (1977), firms with high future growth opportunities should use more equity financing because a

higher leveraged company is more likely to pass up profitable investment opportunities. This is because firms with higher growth rates, which demand more resources than they can generate, would tend to seek these resources required for expansion outside the company (Correa *et al.* 2007). Therefore, most of the studies found a negative relation between growth and leverage. For the purpose of the present study, the P/B ratio (market-to-book ratio) is used as a proxy for growth opportunities.

H3 – Firms with higher levels of growth exhibit lower levels of leverage.

3.1.4. Profitability

Many literature reviews indicate that there is a negative relationship between profitability and leverage. This means that the high profitable firms will have the funds generated internally by the profits which mean that the financial leverage is low. The profit and retained earnings will be used first as investment funds after which will be moved on to bonds or other types of outside financing (Huang, Song 2006).

For the purpose of the present study, return on assets (ROA) is used as a proxy for profitability.

H4 – More profitable firms exhibit lower levels of leverage.

3.1.5. Risk

Risk is a proxy for the probability of financial distress, and it is generally expected to be negatively related with leverage. This may imply that growing companies have enough internal funds for their financing needs but, more likely, it may imply that as growing companies tend to be more risky, they prefer to use less debt (Buferna *et al.* 2005). However, as Huang and Song (2006: 9) state based on findings of Hsia (1981): *"As the variance of the value of the firm's assets increases, the systematic risk of equity decreases. So the business risk is expected to be positively related to leverage."*

For the purpose of the present study, standard deviation of return on assets is used as a proxy of risk.

H5 – Firms with a greater risk exhibit lower levels of leverage.

3.2. Sample selection

The target population is the industrial sector in Sultanate of Oman. This sector is one of very important sectors in this country. There are 48 companies in this sector listed on Muscat Securities Market (MSM) during the period of this study. There are three samples of the study; companies at food, construction and chemical sectors. The methodology of the study is a content analysis of annual reports of a sample of 18 out of 18 (100%) companies in the food sector, 10 out of 10 (100%) in the construction sector and 10 out of 10 in chemical sector for the period 2008–2012.

The study excluded 10 companies (4 from mining sector, 4 from electricity sector, and 2 from textile sector) for two reasons. Firstly, some companies have made losses for 5 years (period of study). Secondly, some companies did not present their annual reports on the website (their websites and website of MSM). In this case, the number of companies is not supporting the analysis and comparison.

Finally, the annual reports for the sample were checked then calculate the value of determinants (ROA, Standard Deviation of ROA and other values) for testing by using the statistical package for the social sciences (SPSS) software. Unfortunately, the only annual reports of this period are presented on the website of MSM because the market itself began to publish the reports since 2007.

3.3. Definition of variables

Table 1 explained the definition of the independent variables and dependent variable as follows:

Table 1. Defining the variables

Variables	Code	Measure
Independent variables		
Tangibility	T	Fixed assets/total assets
Size	S	Natural algorithm of total assets
Growth rate	G	Price-to-book ratio
Profitability	P	Return on Assets (ROA)
Risk	R	Standard deviation of ROA
Dependent variable		
Leverage	L	Total liability to total assets ratio

The study tested these determinants and examined the associations between above independent variables and dependent variable. These associations are discussed in the following section.

4. Empirical analysis

The study examines the associations and regression as follows.

4.1. Industrial sector (38 companies)

The study tested the correlation and regression in industrial sector. This sector is one of the most important sectors in the Sultanate of Oman. This is because the government of this country encourages the investments in this sector. The growth rate of fixed capital in Sultanate of Oman is 10.5% for 2010 and the increase in fixed assets in the chemical is 35% for 2012. The methodology of the study is the content analysis of annual reports of a sample of 38 companies out of 48 (79%): 18 out of 18 (100%) companies in the food sector, 10 out of 10 (100%) in the construction sector and

10 out of 10 (100%) companies in the chemical companies for the period 2008–2012. The study excluded 10 companies (4 from mechanical sector, 2 from textile sector and 4 from mining sector) due to insufficient availability of required data of these companies.

The results of the correlation showed as in the Table 2 that the correlations of T, G, P, and R are significant at 5% while the correlation of S is insignificant at 5%. The results indicate that there are negative associations between G and P with capital structure or leverage, while there is a positive association between T and R and leverage.

Also, Table 2 showed the summary of regression analysis. The R-square supports the significance of regression where the model is dependable. The model of regression is significant at 5% because the Sig. of F-Value (0.006) is less than 5%.In this case, there is at least one variable in the model does have an impact on the leverage. As indicated in the Table 2, the coefficients of S, T and R are significant at 5% because the Sig. of T-value is less than 5%.

In summary, the size of the company (S), tangibility of assets (T) and risk (R) have an impact on the capital structure (L) in the Industrial sector. This means that the sizable, risky, and high fixed assets ratio companies tend to use more debt and less equity. This is maybe because it is a

very big sector and needs to more finance from outside of the equity. Table 2 summarized the results as follow:

4.2. Food, construction and chemical subsectors

In food sector, there are 18 companies registered on MSM.

The results of the correlation showed as in the Table 3 that the correlations of T and S are significant at 5% while the correlations of G, P and R are insignificant at 5%. The correlations between T and S and capital structure or leverage are positive at 5%.

Table 3 showed the summary of regression analysis. The coefficient of determination is equal to 76.2%, which indicates that independent variables in the model interpret 76.2% of the total variance. The R-square supports the significance of regression where the model is dependable. The model of regression is significant at 5% because the Sig. of F-Value (0.031) is less than 5%. In this case, there is at least one variable in the model does have an impact on the leverage. As indicated in the Table 3, the coefficients of S and T are significant at 5% because the Sig. of T-value is less than 5%.

In summary, the size of the company (S) and tangibility of assets (T) have an impact on the capital structure (L) in the food sector. This means that the sizable, risky and high

Table 2. Summary of correlations and regression for industrial sector (38 companies) (source: output of SPSS)

Model	I.V	Correlation	D.V	R-Square	F-Value	Sig.	Coefficients		
							Variables	T-Value	Sig.
1	T	0.412*	L	0.566	3.747	0.006	Constant	0.435	0.668
	G	−0.485*					T	1.273	0.016
	P	−0.427*					G	0.709	0.485
	S	−0.470					P	0.968	0.343
	R	0.468*					S	1.829	0.041
							R	2.692	0.013

Note: Correlation is significant at the 0.05 level (2-tailed). I.V = Independent Variables, D.V = Dependent Variable, L = Leverage.

Table 3. Summary of correlations and regression for three subsectors (source: output of SPSS)

D.V	I.V	Food (N = 18)			Construction (N = 10)			Chemical (N = 10)		
		R^2 (0.762), F-Value (2.801), Sig. (0.031)			R^2 (0.34), F-Value (5.190), Sig. (0.017)			R^2 (0.573), F-Value (62.114), Sig. (0.040)		
		Corre-lation	T-Value	Sig.	Corre-lation	T-Value	Sig.	Corre-lation	T-Value	Sig.
Leverage	T	0.494*	1.632	0.041	−0.749*	0.014	0.147	-0.154	8.359	0.076
	G	−0.225	1.844	0.108	0.101	1.844	0.108	−0.380	8.338	0.076
	P	−0.378	0.167	1.543	−0.219	−1.543	0.167	0.534*	10.574	0.040
	S	0.496*	1.178	0.027	−0.211	−1.178	0.277	−0.500*	-8.559	0.037
	R	0.439	2.032	0.082	−0.219	2.032	0.082	−0.394*	-12.560	0.025

Note: * Correlation is significant at the 0.05 level (2-tailed).

fixed assets ratio companies tend to use more debt and less equity.

In construction sector, there are 10 companies registered on MSM. The results of the correlation showed as in the Table 3 that the correlation of T is significant at 5% while the correlations of G, P, S and R are insignificant at 5%. The correlation between T and capital structure or leverage is negative at 5%.

Table 3 showed the summary of regression analysis. The coefficient of determination is equal to 34%, which indicates that independent variables in the model interpret 34% of the total variance. The R-square supports the significance of regression where the model is dependable. The model of regression is significant at 5% because the Sig. of F-Value (0.017) is less than 5%.In this case, there is at least one variable in the model does have an impact on the leverage. As indicated in the Table 3, the coefficient of T is only significant but negative at 5% because the Sig. of T-value is less than 5%.

In summary, tangibility of assets (T) has a negative impact on the capital structure (L) in the construction sector. This means that the high fixed assets ratio companies tend to use more equity and less debt.

In chemical sector, there are 10 companies registered on MSM. The results of the correlation showed as in the Table 3 that the correlation of P is positive significant at 5% while the correlations of S and R are negative significant at 5%. T and G are insignificant at 5%.

Table 3 showed the summary of regression analysis. The coefficient of determination is equal to 57.3%, which indicates that independent variables in the model interpret 57.3% of the total variance. The R-square supports the significance of regression where the model is dependable. The model of regression is significant at 5% because the Sig. of F-Value (0.040) is less than 5%. In this case, there is at least one variable in the model which does have an impact on the leverage. As indicated in the Table 3, the coefficients of S, T and R are significant at 5% because the Sig. of T-value is less than 5%.

In summary, the size of the company (S) and risk (R) have a negative impact on the capital structure (L) while profitability (P) has a positive impact on leverage in the chemical sector. This means that the sizable and risky companies tend to use more equity and less debt.

5. Differences analysis

The study used F-test (ANOVA) to test the differences between three samples. The test of normality showed that the distribution is normal for all three samples because the Sig. more than 0.05. Therefore, the study used F-test analysis to examine the differences of between three subsectors.

Table 4 showed that the result of this analysis indicates that there are no differences between the three subsectors about independent variables.

Table 4. F-test analysis (source: output of SPSS)

Variables	ANOVA	
	F	Sig.
T	1.015	0.375
G	0.225	0.800
P	1.036	0.401
S	3.551	0.052
R	0.943	0.401

Summary and conclusions

Capital structure decisions are very important for the firms because they are closely related to maximize the market value of these firms. Most of studies of capital structure are focused on examine the determinants of capital structure to explain the optimal capital structure.

This study provides empirical evidence regarding the determinants of capital structure in three industrial subsectors (food, construction and chemical) listed on Muscat Securities Market (MSM). The financial statements of 38 companies from these sectors (food, construction and chemical) were analyzed for the period of 5 years from 2008 to 2012. There were 48 companies listed on MSM in the industrial sector during the period of study, but some companies (10 companies) were excluded for many reasons. Firstly, some companies have made losses for 5 years (period of study). Secondly, some companies did not present their financial statements on the website (their websites and website of MSM). Finally, there are some other subsectors consisting of two or four companies such as mining sector and textile sector. For those reasons, the final sample subject to analysis is 38 companies.

The study examined five determinants of capital structure; tangibility of assets measured by fixed assets to total assets ratio, growth rate measured by the price-to-book ratio, size of the company measured by total assets, profitability measured by return on assets and risk measured by the standard deviation of return on assets. The capital structure or leverage measured by total debt ratio.

There are two reasons for selecting the above determinants. Firstly, the researchers reviewed many international literature reviews of capital structure. Secondly, according to available data about the financial statements and other information companies, then the study defined five quantitative variables.

For industrial companies, the model interprets 76.2% of the total variance, and there are three significant variables within the regression equation that are size of the company, tangibility and risk.

Tangibility of assets, risk and size are positively associated with leverage in the industrial sector. This suggests that higher fixed ratio, risky and sizable firms in this sector use more debt and less equity. Thus, the conclusion might be

that higher fixed assets, higher risk and size encourage firms to use the debts in the capital structure. This conclusion is supporting the first, second and fifth hypotheses, where it is consistent with the facts of Omani companies were that they use more and more debts in the capital structure. Tangibility and size are positively associated with leverage in the food sector. The model interprets 76.3% of the total variance, and there are only two significant variables within the regression equation that are the tangibility and size. This suggests that sizable and high fixed assets ratio firms in this sector use more debt and less equity. Tangibility is negatively associated with leverage in the construction sector. The model interprets 34% of the total variance, and there is only one significant variable within the regression equation that is the tangibility. This suggests that high fixed assets ratio firms in this sector use more debt and less equity.

Size and risk are negatively associated with leverage while profitability is positively associated in the chemical sector. The model interprets 57.3% of the total variance, and there are three significant variables within the regression equation that are the profitability, size and risk. This suggests that non-sizable, less risky and profitability firms in the this sector use more debt and less equity

In general, the Omani companies and investors prefer dividends more than reinvesting the profit in the capital structure. Therefore, the first (T) and the second (S) hypotheses are accepted while the fifth (R) hypothesis is rejected at the 5% level of significance in industrial sector. The model did support the third (G) and the fourth (P) hypotheses.

The results of present study are consistent with the results of most of previous studies such as study of Maxwell and Kehinde (2012) related to profitability and growth and study of Ghazouani (2013) related to assets tangibility and study of Sbeiti (2010) about size of the firm and tangibility. On the other side, the results of the study are not consistent with the results of most other previous studies such as study of Khrawish and Khraiwesh (2010); Chen (2004) and Awan and Amin (2014) related to profitability.

By using F test, the findings of the study indicate that there are no differences between three sectors about all independent variables.

As any other researches, the present study has some limitations. Due to available information about the companies listed on MSM determinants only five independent variables were considered and examined for a sample of 38 industrial companies. The annual reports for only five years (2008–2012) were analyzed because only those reports are presented on the websites of these companies and MSM. Therefore, further research would be required in Oman and GCC countries. For example, testing other determinants in the other sectors in Oman because of that this issue is not deeply researched. Another research area of interest is exploring the possible reasons explaining the differences between sectors concerning the determinants of capital structure. Finally, the leverage ratio is measured by using book value not the market value of debt and equity. So, it would be more interesting if the leverage measurement can be extended to market value.

Disclosure statement

Authors declare that they don't have any competing financial, professional, or personal interests from other parties.

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Mawih Kareem Al ANI. Assistant Professor of Department of Accounting and Finance. College of Commerce and Business Administration, Dhofar University. Research interests: accounting, auditing and finance.

Maha Saud Al AMRI. Master of Management of Department of Management and Marketing. College of Commerce and Business Administration, Dhofar University. Research interests: finance and capital markets.