New Applicable Approach to Examine The Leverage–Value Relationship

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Abstract:

Many literatures studied the relationship between the leverage and the value of firms. Some studies found no relationship and other studies show that the relationship is positive, however, another studies show that the relationship is negative. Therefore, the leverage–value relationship seems to be an unresolved puzzle in the capital structure empirical literature.

Therefore, this study seeks to examine the leverage–value relationship to interpret the significant and the direction of this relationship by using the effect of industry, size firm's growth opportunities and adding operating efficiency as controlling factors. The importance of this study is to investigate the impact of unique status of the Saudi market companies that have not tax on its profits and illustrate whether the leverage-value relationship hold in the Saudi companies. Moreover, this study seeks to help managers make efficient financial decisions and realize the effect of their decisions on the firm value with considering the impact of industry and the internal level of firm performance such as their growth opportunities and their operating efficiency on the leverage–value relationship.

The results show that leverage for both firm and industry (book or market) as well as the difference between firm leverage and the industry leverage have a significant negative effect on both the firm value and the difference between firm value and the industry value. These results are found in spite of the difference among firms in growth opportunities or in operating efficiency.

Key words: leverage–value relationship, industry leverage, growth opportunities, operating efficiency.

Introduction:

Many literatures studied the relationship between the leverage and the value of firms. There are wide variations in the results among researchers, some studies found no relationship Modigliani and Miller (1958); Coricelli et al., (2012), and other studies illustrate that the relationship is positive (Modigliani & Miller) 1963, (Myers) 1977 and (Chen & Zhao) 2006. Furthermore, Strebulaev & Yang (2013) present negative relationship between the leverage and the value of firms, therefore large public nonfinancial US firms have zero debt and almost 22% have less than 5% book leverage ratio.

Another kind of studies is not limited to test the relationship between the leverage and the value of the firm but they investigated the nature of that relationship according to difference in growth opportunities. In addition, they varied in their results. For example, Jo et al (1994) found a positive relationship between book debt ratios in the Japanese firms and their investment opportunities, but Lang et al (1996) show that there is a negative relation between leverage and future growth at the firm level .However Francis et al (2011) founds that leverage does not affect firm growth and its effect has become less important.

On the other hand, other studies re-examined the relationship between the leverage and the value of the firm with considering the impact of the industry such as McConnell & Servaes (1995), Hovakimian (2004) and Aggarwal & Zhao (2007). They suggested that a firm's leverage should be examined relative to its deviation from the industry leverage.

Based on the previous mentioned results, it is clear that the prior studies extended with test leverage-value relationship but without reaching to a commonly agreed conclusion, so it seems a dilemma, which has not solved yet. Consequently, the main objective of this study is examine the leverage–value relationship to interpret the significance and the direction of this relationship by using the effect of industry, size and firm's growth opportunities as controlling factors. Furthermore, this study will test whether leverage-value relationship varies according to the difference in the level of operating efficiency, which is not address in the prior studies. The importance of this study is to provide a new applicable approach to examine the Leverage–Value in Saudi market, especially companies in the Saudi market that has a special status due to the absence of a tax on corporate profits, while zakat (2.5%) is imposed on profits after deducting the debt service, then it is important to study the impact of such unique status on the company's performance and illustrate whether the leverage-value relationship hold in the Saudi companies. Furthermore, Saudi market is one of the emerging markets that need more studies to contribute in guiding managers when they make financial decisions and the impact of their decisions on the firm value.

The structure of this paper is organized as follows: section 2 presents the literature review. Section 3 discusses the data and variables employed in the tests and the methodology of this study in details. Section 4 presents test hypotheses and empirical results. Finally, conclusions and future research directions will be given in Section 5.

Literature Review:

The leverage–value relationship is one of the important issues in finance and many researchers have been interested in and investigated this relationship theoretically and empirically. Modigliani and Miller (1958) were the prior researchers who show that there is no relationship between leverage and firm value. However, the evidences of Modigliani & Miller(1963) and many later studies such as Myers (1977) found that debt affects firm value because it has tax advantage and debt should increase firm value, until its benefit is offset by the rising expected bankruptcy costs . In addition, Jensen (1986) and Stulz (1990) documented that leverage may increase firm value because it can reduce agency costs between managers and shareholders. Furthermore, McConnell and Servaes (1995) argue that leverage has two faces: it can moderate the over-investment problem on one hand, but may cause the under-investment problem on the other hand. Wiwattanakantang (1999) implied that the tax effect and the agency costs play a role in financing decisions. In addition, large shareholders affect negatively on the debt ratio, therefore, they may monitor the management decisions. Chen & Zhao (2006) show

that firms with higher market-to-book ratios face lower debt financing costs and borrow more. The relation between the market-to-book ratio and leverage ratio is positive for most firms while negative relation is driven by a subset of firms with high market-to-book ratios.

Furthermore, several researchers have empirically investigated the relationship between leverage and firm value depending on firm growth opportunities. Aivazian et al (2005) found that leverage is negatively related to the level of investment, and that this negative effect is significantly stronger for firms with low growth opportunities than those with high growth opportunities. They saw that the negative effect occurs for different measures of leverage, for different samples, and for various econometric methodologies. Their results provide support to agency theories of corporate leverage, and especially to the theory that leverage has a controlling role for firms with weak growth opportunities. Also Lang et al (1996), shows that there is a negative relation between leverage and future growth at the firm level. This negative relation was found for firms with low Tobin's q ratio, but not for high-q firms or firms in

High - Q industries. Therefore, leverage does not reduce growth for firms known to have good investment opportunities, but is negatively related to growth for firms whose growth opportunities are either not recognized by the capital markets or are not sufficiently valuable to overcome the effects of their debt overhang. The previous result is consistent with the empirical results of Serrasqueiro & Nunes (2010) that suggest that creditors recognize high growth opportunities when such opportunities exist, and debt is a way to discipline managers' actions in the presence of low investment opportunities.

Some researchers emphasize the role of financial variables as determinants of firm growth such as Gul (1999) who provided additional evidence on contracting theory arguments for the relation between growth opportunities, capital structure and dividend policies. His results show significant negative relations between growth opportunities and levels of both debt financing and dividend yields after controlling the firm size, profitability, firm keiretsu affiliations and industry regulations. Cooley and Quadrini (2001) provide a model where financial and productivity heterogeneity across firms generates a simultaneous size and age dependence for firm growth. Huynh & Petrunia (2010) found that financial factors, such as leverage and initial financial size, impact growth rates for new firms. Further, the inclusion of leverage has little impact on the economic significance of the conditional age and size relationships with firm growth. Lewis et al(2003)provide evidence illustrate that the relations between firm value, financial leverage, investment opportunities, and the rate of future growth are more complex among convertible debt issuers than situations where firms issue standard financial securities. This situation supports this view that there is a positive rather than a negative relationship between Financial Leverage and other growth variables as implied by the negative signals about the future growth of the company. Wijewardana (2012) found that Financial Leverage in the Sri Lankan context to be positively related to the growth and Strength of Financial performance. However, González (2013) analyzes the effect of financial leverage on corporate operating performance and how this effect varies across 39 countries.

He indicates that the performance of firms with greater leverage is significantly reduced compared to their competitors in industry downturns, in line with the importance of financial distress costs. However, this effect varies according to the legal origin of the countries, being positive in French civil law countries. The protection of shareholder rights and the strength of legal enforcement are the main variables explaining the effect of financial leverage on performance.

Although, previous literatures documented that there is a negative relationship between

leverage and firm growth. Jo et al (1994) found a positive relationship between book debt-stockholders equity ratios and their measure of investment opportunities in Japan that is contrast to the findings in U.S. firms. They refer these Empirical results to the agency conflicts that are mitigated in Japanese firms because of their stronger ties to banks and other institutional arrangements. Moreover, Francis et al (2011) found that leverage does not affect firm growth and the role of debt as a disciplining mechanism has become less important. However, Coricelli et al (*2012*) found similar non-monotonic relationships between leverage and proxies for firm value. On the other hand, Strebulaev & Yang (*2013)* present the puzzling evidence that, from 1962 to 2009, an average 10.2% of large public nonfinancial US firms have zero debt and almost 22% have less than 5% book leverage ratio. Zero-leverage behavior is a persistent phenomenon. Dividend-paying firms with zero-leverage are more profitable, pay higher dividends, pay higher taxes, issue less equity, and have higher cash balances than control firms chosen by industry and size.

Studies that are mentioned above seem to have ignored industry considerations. However, Miao (2005) found that firm capital structure is greatly affected by industry factors. Also, Kovenock and Phillips (1997) show that there is clearly variation in characteristics of the leverages across industries. Because of this variation industry effect, Hovakimian (2004) suggest that a firm's leverage should be examined relative to its deviation from the industry leverage. Therefore other studies re-examined the relationship between the leverage and the value of the firm while considering the impact of the industry and other appropriate independent variables such as Aggarwal and Zhao (2007) who documented that unlike prior literature, leverage is unambiguously negatively associated with firm value among high or low *value* firms.

Therefore, it is very important to study of the relationship between leverage and firm value by using controlling factors such as industry leverage effects.

3. Methodology

3.1. Data   and Sample description

This study uses quarterly data of financial statements for all firms that issue shares in the Saudi stock market (SSM) and represent all sectors (145 firms) -except financial institutions- during the period of 2003-2012.The data are collected from the Saudi stock market (Tadawul) and Gulfbais .

3.2. Derivation of hypotheses:

Based on the review of theoretical and previous literature, this study tests the hypotheses that are formulated as follows:

H$_1$: Firm value is significantly associated with firm leverage.

H$_2$: The leverage-value relationship varies from high value firms to low value firms.

H$_3$: Firm value is significantly associated with industry indicators (industry average of Q_t, industry leverage, deviation of firm leverage from industry leverage).

H$_4$: Firm value is significantly associated with firm size.

H$_5$: Firm value is significantly associated with firm growth opportunities.

H$_6$: Deviation of firm value Q_{it} from the industry average Q_t is significantly associated with deviation of firm leverage from industry leverage

H$_7$: The leverage-value relationship varies according to firm growth opportunities.

H8: The leverage-value relationship varies according to firm operating efficiency.

3.3 Statistical analysis

Cross-sectional regressions analysis is used to investigate the relation between leverage and firm value (Tobin's Q) for the low Q and high Q firms. Furthermore, control factors will be used to interpret the significance and the direction of leverage–value relationship, which include the effect of industry, firm growth opportunities and firm operating efficiency. F-Statistics was performed to test the significance of the parameters in the models at the 1% level of significance, multiple R square (R^2) And D .W test.

Table No. (1)
Replicates the dependent and independent variables as follows:

Variables	
Dependent Variables firm value (Tobin's Qit)	The ratio of market value of total assets to the book value of asset (Fama & French 1997, McConnell & Servaes (1995) Where the market value of total assets is defined as: Book value of asset −book value of equity (BE) + market value of equity (MCAP) (MCAP is defined as stock price times the number of shares outstanding)
DevQit	The difference between firm value Qit and industry averageQt in the same period. Aggarwal and Zhao (2007)
Independent Variables Firms market leverage(ML): Firms book leverage(BL)	The ratio of total debt (debt in current liabilities + long-term debt) to market value of total assets in firm. McConnell and Servaes (1995) The ratio of total debt (debt in current liabilities + long-term debt) to book value of total assets.
SIZE effect	The natural logarithm of total assets in million dollars. Aggarwal and Zhao (2007) growth opportunities include SALES Growth and CAPEX
growth opportunities 1- SALES Growth	1-year real sales growth, defined as the difference in SALES between consecutive years. Wijewardana (2012)
2- CAPEX:	Defined as the ratio of capital expenditure to total assets. Wijewardana (2012)
Profitability (ROA):	defined as the ratio of operating income after depreciation to total assets
operating efficiency Total assets turnover	as a measure of operating efficiency =sales/ total assets
industry variables industry average of Q	industry average of the firms value (Tobin's Qit) in the same industry and in the same year
industry ML	Industry average of total market leverage: Industry average of book leverage
industry BL	Each of industry Q, industry ML, or industry BL: defined based on firms in the same industry in the same year
Devit in book leverage.	the difference between firms' book Leverage it and the industry book leverage ratio
Devit in book leverage	the difference between firms' market Leverage it and the industry market leverage ratio

By using the previous variables in table (1) and a data set, which consists of 4074 firm-

quartile observations. In this study, firms will be separated into three groups according to their Tobin's Qit (low Q firms, Medium Q firms and high Q firms). Table 2 reports the results of the statistics description for the three groups, respectively and characterizes the performance of each group in terms of leverage, profitability, growth opportunities, capital expenditure to total assets and assets turnover. It is seen that firms in the low Q group have market leverage and book leverage higher than firms with high Q group. With regard to their financial performance, the results show that firms in the low Q group have lower than high Q group in size, sales growth rate, profitability and total assets turnover. Therefore low Q firms have low growth opportunities and those in the high Q group (high Q firms) have high growth opportunities and more profitability

Moreover, table 2 shows that capital expenditure ratio (CAPEX) to total asset in the low Q group higher than those in high Q group, in the same time the sales growth and profitability (ROA) for low Q group lower than high Q group which indicates decrease in operation efficiency for their CAPEX specially, the assets turnover in the low Q group is lower than in high Q group. consequently, this study will re -examine leverage–value relationship by using assets turnover as a control factor that is not tested by prior researchers beside industry effects and firm growth opportunities that are tested by prior researchers

Table No. (2)
Description of the sample:

	Low	Medium	High
Q	1.1114	2.0475	4.994
Total market leverage	39.71	20.37	6.809
Total book leverage	43.69	37.43	24.95
size	6.04	6,09	6.14
Total Sales	4.722	4.95	8.246
SALE Growth (%)	-0.876	0.432	8.24
ROA (%)	1.066	1.947	2.383
CAPEX	0.683	0.368	0.614
Total assets turnover	0.796	0.813	0.818
Number of observations	1358	1358	1358

4. Test hypotheses and empirical results.

This study will investigate the relation between leverage and firm value for the low Q and high Q firms. McConnell and Servaes (1995) used the following regression model (1) to examine value –leverage relationship. They used two measures of leverage: total market leverage (equation 1a) and total book leverage (equation 1b). In addition, they used controlling factors which included the industry average $of\ Q$, the size effect and two growth opportunities measures (CAPEX and SALES growth).

$Qit = \beta1 \times$ Industry $Qt + \beta2 \times$ Firm (M L)$_{it} + \beta3 \times$ Size$_{it} + \beta4 \times$ CAPEX$_{it} + \beta5 \times$ SALES growth$_{it}$ + intercept (1a)

$Qit = \beta1 \times$ Industry $Qt + \beta2 \times$ Firm (BL)$_{it} + \beta3 \times$ Size$_{it} + \beta4 \times$ CAPEX$_{it} + \beta5 \times$ SALES growth$_{it}$ + intercept (1b)

Therefore, by using McConnell & Servaes model (1995), this study can test the following hypotheses:

H1: Firm value is significantly associated with firm leverage.

The results from the following table 3 (with Statistical significance at the 1% level) show that both book and market leverage measures are significant negatively related to firm value (Q_{it}) for all the firms which confirm that the hypotheses H_1 is accepted.

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Table No. (3)
The leverage and value relationship
(by using McConnell & Servaes model) Eq 1a ,1b

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	All firm Eq(1a) Eq(1b)		Low Q firms Eq(1a) Eq(1b)		High Q firm Eq(1a) Eq(1b)	
Intercept	20.01 (0.000) *	20.1 (0.000) *	14.65 (0.000)*	13.967(0.000) *	10.34 (0.000) *	10.42(0.000) *
Industry Q	5.251 (0.000) *	-6.44(0.000) *	-1.973(0.048)	-2.818(0.005) *	2.621(0.000) *	2.83 (0.005) ^
Firms, (BL)	-21.50(0.000)		-5.027 (0.000) *		-13.650 (0.000) *	
Firms,(ML)		-11.565(0.000) *		-1.788 (0.074)		-6.46(0.000) *
Size	-10.58 (0.000) *	13.213(0.000) *	1.774 (0.076)	3.513(0.000) *	-4.66 (0.000) *	-6.02 (0.000) *
CAPX	-1.503 (0.133)	0.237(0.813)	0.839 (0.401)	0.405(0.685)	-0.176(0.861)	2.32(0.020) ^
Sale growth	-1.158(0.247)	-1.799(0.076)	0.785 (0.433)	0.896 (0.370)	-0.923 (0.356)	-0.484(0.620)
R-squared	0.172	0.107	0.035	0.018	0.171	0.082
F sig	0.000	0.000	(0.000)	(0.000)	0.000	0. 000
D .W	1.734	1.67	(1. 75)	(1. 53)	1. 60	1. 81

^ Statistical significance at the 5% level.
∗ Statistical significance at the 1% level.

H2: The leverage-value relationship varies from high value firms to low value firms.

The results from table 3 show that both book and market leverage measures are significant negatively related to high Q firms. In addition, book leverage has significantly and negatively related to low Q firms but market leverage has no significant effect with low Q firms. These results are reject hypotheses H_2 and consistent with those founded by McConnell & Servaes (1995) and Aggarwal & Zhao(2007) .

H3: Firm value is significantly associated with industry indicators (industry average of Q_t , industry leverage and deviation from industry leverage).

The results from table 3 show that industry average of value Q_t has negatively and significantly related to low Q firms and positive related to high- Q firms.

In addition to investigate if industry leverage has effect on value –leverage relationship, following regression model (2) will separate the industry leverage into three terms: industry book leverage (Eq 2a), industry market leverage (Eq 2b) and deviation from industry average leverage Dev_{it} (Aggarwal and Zhao 2007).

$Q_{it} = \beta 1 \times$ Industry $Q_t + \beta 2 \times$ Industry Book Leverage $_{it} + \beta 3 \times Dev_{it}$ *in book leverage* $+ \beta 4 \times$ Size $_{it} + \beta 5 \times CAPEX_{it} + \beta 6 \times$ SALES growth $_{it} +$ intercept   (2a)

or

$Q_{it} =$ $\beta1 \times$ Industry $Q_t + \beta2 \times$ Industry market Leverage $_{it} + \beta3 \times$ Dev$_{it}$ *in market leverage* + $\beta4\times$ Size $_{it} + \beta5 \times$ CAPEX$_{it} + \beta6 \times$ SALES growth $_{it} +$ intercept (2b)

Table No. (4)
The effect of industry leverage on value –leverage relationship
And other controlling variables by Eq 2a and 2b.

	All firm		Low Q firms		High Q firm	
	Eq(2a)	**Eq(2b)**	**Eq(2a)**	**Eq(2b)**	**Eq(2a)**	**Eq(2b)**
Intercept	20.25 (0.000)*	18.4 (0.000) *	14.4 (0.000)*	15.55 (0.000) *	9.3 (0.000) *	9.6 (0.000) *
Industry Q	7.064(0.000)*	4.5 (0.000) *	-3.08 (0.002)	-2.87 (0.004) ^	4.96 (0.000) *	2.7 (0.006) ^
Industry BL	-2.38 (0.017) ^		-1.737(0.083)		-2.694 (0.007) ^	
Industry ML		-9.853(0.000) *				-1.754(0.08)
Devit in ML	-9.895 (0.000) *		1.49(0.137)	-1.484 (0.138)	-6.274(0.000) *	
Devit in BL		-22.988(0.000) *		- 6.43 (0.000)		-14.189 (0.000) *
Size	-13.87 (0.000)*	-9.6(0.000) *	3.385 (0.001)	1.375 (0.164)	-6.2(0.000) *	-4.9 (0.000) *
CAPEX	0.63 (0.532) *	-1.30 (0.194)	0.757 (0.449)	1.047(0.295)	2.8 (0.006) *	0.31 (0.754)
SALES growth	-2.287(0.022)	-1.264(0.206)	1.079(0.281)	1.016(0.310)	-0.920(0.35)	- 1.141(0.254)
R-squared	0.095	0.185	0.017	0.045	0.075	0.174
F sig	0.000	0. 000	0.001	0. 000	0.000	0. 000
D .W	1.957	1.740	1. 53	1.585	1. 714	1.724

^ Statistical significance at the 5% level.
∗ Statistical significance at the 1% level.

The results from table (4) continue to prove that the industry average Q_t has negative and significant influence with low Q firms but positive and significant influence with high- Q firms.

Furthermore, Both Industry book leverage and Industry market leverage have significant and negative effect on high Q firms but they have no significant effect on low- Q firms. Also both Dev$_{it}$ in book leverage and Dev$_{it}$ in market leverage have significant and negative effect on high Q firms but Dev$_{it}$ in book leverage has negative and significant effect on low- Q firms but Dev$_{it}$ in market leverage has no significant effect on low- Q firms.

H4: Firm value is significantly associated with firm size.

According to the effect of size, the results from table 3 and 4 show that size is positively and significantly related to low Q firms but it is negatively and significantly related to high- Q firms which is consent with the results of Fama and French model (1997).Therefore the hypothesis H4 is accepted .

H5: Firm value is positively associated with firm growth opportunities.

Jo et al (1994) found a positive relationship between book debt- stockholders equity ratios and their measure of investment opportunities. In addition, McConnell and Servaes (1995) documented that firms with higher growth opportunities have higher valuation. They used two growth opportunities measures (CAPEX and SALES growth).Therefore, this study uses those mention measures to examine hypothesis H5. Although the capital expenditure

ratio to total asset in the low Q group is higher than those in high Q group, the results from table 3 and 4 show that capital expenditure ratio (CAPEX$_{it}$) has not significantly related to low Q firms but negatively and significantly related to high Q firms. *These results* due to the outcomes of this study which appear that sales growth has no significantly related for *both low Q firms and high Q firms. This means that the firms with high growth opportunities which represented by* capital expenditure ratio (CAPEX$_{it}$) *was not related to firm value because it did not simultaneous with a rise in sales growth ratio.* Therefore the hypothesis H$_5$ is rejected.

H$_6$: deviation of firm value Q$_{it}$ from the industry average Q$_t$ is significantly associated with deviation of firm leverage from industry leverage

Previous models in equation 1 and 2 tested leverage - value relationship in the presence of controlling factors. In the next step, firm value Q$_{it}$ is replaced by DevQ$_{it}$ which is defined as the difference between firm value Q$_{it}$ and the industry average Q$_t$ which the firm belongs. As well as industry leverage ratio is replaced by Dev$_{it}$ *in book leverage (BL) and* Dev$_{it}$ *in market leverage(ML)* which are defined as the difference between firms᾽ Leverage and the industry leverage ratio *(for book and market leverage).* The following regression model (3) is used to examine the relationship between DevQit *and* Dev$_{it}$ *leverage.* Furthermore, the model (3) will use controlling factors, which included the size effect and two growth opportunities (CAPEX and SALES growth)

Dev$Q_{it} = \beta1 \times$ Dev$_{it}$ *in market leverage* $+ \beta2 \times$ size$_{it} + \beta3 \times$ CAPEX$_{it} + \beta4 \times$ Sales growth $_{it}$ + intercept   (3 a)

Dev$Q_{it} = \beta1 \times$ Dev$_{it}$ *in book leverage* $+ \beta2 \times$ size$_{it} + \beta3 \times$ CAPEX$_{it} + \beta4 \times$ Sales growth $_{it}$ + intercept   (3 b)

Table No. (5)
The results of testing the relationship
Between DevQit and Dev$_{it}$ leverage by using Eq 3a and 3b

	All firm		Low Q firms		High Q firm	
Intercept	13.3 (0.000)*	11.56(0.000)*	3.1 (0.002)	2.4(0.020) ^	7.54(0.000)*	8.20 (0.000) *
Devit in BL	-11.213 (0.000) *		-2.134 (0.033)		-9.62(0.000)*	
Devit in ML		-19.966 (0.000*)		-4.512 (0.000) *		-13.873(0.000) *
Size	-12.7 (0.000)*	-10.7 (0.000)*	-4.5 (0.000)*	-3.7 (0.000) *	-6.7 (0.000)*	-5.9 (0.000) *
CAPEX	-1.7 (0.076)	-3.15(0.000)*	-1.351(0.177)	-1.310(0.190)	-1.8 (0.068)	- 1.4 (0.151)
SALE growth	-3.4(0.000) *	-3.3(0.000)*	0.395(0.693)	0.371(0.711)	-1.3(0.201)	-1.4(0.161)
R-squared	0.085	0.0.142	0.023	0.031	0.109	0.169
F sig	0.000	0.000	(0.000)	(0.000)	0.000	0. 000
D .W	0,904	0.735	1.90	1. 92	0.369	0.530

^ Statistical significance at the 5% level.
∗ Statistical significance at the 1% level.

The results from table (5) illustrate that both of Dev$_{it}$ *in BL and* Dev$_{it}$ *in ML(* the difference between firm Leverage and the industry average leverage ratio) and size have negative and significant influence with low Q firms and high Q firms. While, CAPEX and

SALE growth have no significant influence with both low Q firms and high Q firms. Therefore, the hypothesis H_5 is accepted with Statistical significance at the 1% level.

H7: The leverage-value relationship varies according to firm growth opportunities.

In this study, firms are split into three groups (low, medium and high growth opportunities) by using two different measures of growth opportunities: capital expenditure (CAPEX) and 1-year real sales growth. Then the same regression models will estimate within each subgroup, and report the results in Table (6)and (7) where Panel A reports results from Eq.(2) and Panel B reports results from Eq. (3).

Table No. (6)

The results of testing the leverage-value relationship according To firm Capital Expenditure.

	Firm classification by Capital Expenditure			
	Low firms		High firm	
Panel A(Eq2)				
Intercept	4.54 (0.000)*	5.549(0.000)*	4.156 (0.000)*	9.75 (0.000)*
Industry Q	2.098 (0.03)	-1.158. (0.247)	2.435 (0.015)	1.169 (0.243)
Industry ML	0.150(0.881)		1.239(0.216)	
Industry BL		-4.175 (0.000)*		-3.28 (0.001)*
Devit in ML	0.256 (0.798))		-2.273(0.023)	
Devit in BL		-12.92(0.000)*		-16.24 (0.000)*
size	3.1 (0.002)^	1.48 (.140)	-3.805 (0.000)*	-5.953 (0.000)*
CAPEX	33.87 (0.000)*	28.12(0.000)*	-2.68 (0.007)^	-2.774(0.006)^
SALE growth	-0.198 (0.843)	-0.508(0.611)	-1.206(0.228)	- 0.130 (0.896)
ROA	4.144(0.000)*	2.223 (0.02)^	9.089 (0.000)*	7.331(0.000)*
R-squared	0.49	0.54	0.282	0.284
F sig	0.001	0. 000	0.000	0. 000
D .W	1. 79	0. 61	1. 64	1. 420
Panel B (Eq3)				
Intercept	9.166(0.000)*	8.074(0.000)*	7.267(0.000)*	4.78 (0.000)*
Devit in ML	-10.695(0.000 *		-3.784 (0.000*	
Devit in BL		-24.33(0.000)*		-13.9 (0.000)*
Size	9.702(0.000)*	7.33(0.000)*	-7.523 (0.000)*	-5.075(0.000)*
CAPEX	8.453(0.000) *	2.033(0.000) *	-2.35 (0.019)*	-2.315 (0.021)
SALE growth	-0.68(0.543)	1.307(0191)	-0.661 (0.508)	-0.313 (0.754)
ROA	-1.543(0.123)	-.43(0.114)	7.489(0.000)*	13.9 (0.000)*
R-squared	0.23	0.41	0.095	0.199
F sig	0.000	0.000	0.000	0. 000
D .W	1.421	1.44	1.74	1.93

^ Statistical significance at the 5% level.
∗ Statistical significance at the 1% level.

The results from table 6 and table 7 illustrate that firms with low growth opportunities or high growth opportunities show that: Industry book leverage and Dev_{it} of leverage have

significant and negative effect on both firm value and firm value deviation from the industry average. However, table (6) shows that size and capital expenditure (CAPEX) have significant and positive (negative) effect on both firm value and firm value deviation from the industry average in firms with low (high) growth opportunities.

Although the results show that leverage - value relationship is negative and significant for both low and high-opportunity growth firms but the effect of leverage on the firm value has explanatory power (R^2=0.54) in firms with low growth opportunities (CAPEX) which is higher than explanatory power in firms with high growth opportunities(R^2=0.284) in Panel A(Eq2). In addition, the book leverage has more significant impact than market leverage on both firm value and firm value deviation from the industry average.

Table No. (7)
The results of testing the leverage-value relationship according to firm Sales growth

	Firm classification by Sales Growth			
	Low firms		High firm	
Eq(2)				
Intercept	14.4 (0.000) *	14.27 (0.000)*	11.46 (0.000)*	11.962 (0.000)*
Industry average Q	1.179 (0.239)	.745 (0.455)	4.784 (0.015)^	3.228 (0.243)
IBL	-2.699 (0.007)		-0.645(0.519)	
IML		-3.505(0.000)*		-2.844 (0.005)^
Devit in ML	-3.957(0.000)*		-10.895(0.023)	
Devit in BL		-2.566 (0.010)^		-4.404 (0.000)
size	-10.818 (0.000)*	-6.227(0.000)*	-4.91 (0.000)*	-5.376 (0.000)*
CAPEX	-0.040 (0.963)	-0.228(0.880)	-1.289 (0.198)	-0.981(0.327)
SALE growth	0.892(0.373)	0.304 (0.761)	-1.180(0.238)	- 1.44 (0.150)
ROA			3.951 (0.000)*	4.286(0.000)*
R-squared	0.102	0.094	0.148	0.122
F sig	0.001	0. 000	0.000	0. 000
D .W	1.894	1.95	1.949	1.99
Eq(3)				
Intercept	10. 702(0.000)*	10.355(0.000)*	4.981(0.000)*	6.050 (0.000)*
Devit in ML	-4.554(0.000)*		-10.024 (0.000)*	
Devit in BL		-3.145(0.002)^		-5.715(0.000)*
Size	-10.7078(0.000)*	-10.412(0.000)*	-3.818 (0.000)*	-5.142(0.000)*
CAPX	-1.422(0.155)	-1.466(0.143)	-3.18 (0.002) ^	-2.88 (0.004)^
SALE growth	-0.239(0.811)	0.223(0.823)	-4.139 (0.000)*	-4.467 (0.000)*
ROA	0.439(0.661)	-.079(0.927)	0.182(0.856)	0.965 (0.335)
R-squared				
F sig	0.098	0.094	0.132	0.087
D .W	0.000	0.000	0.000	0. 000
	1.887	1.885	1.902	1.900

^ Statistical significance at the 5% level.
* Statistical significance at the 1% level.

The results from table 7 illustrate that, 1-year real sales growth illustrate no significant effects on both firm value and firm value deviation from the industry average, also ROA has

no significant effect on both firm value and firm value deviation from the industry average in firms with low or high growth opportunities.

H8: the leverage-value relationship varies according to firm operating efficiency

This study use operating efficiency as a controlling variable in analyzing the relationship between leverage and value. Firms are split into three groups (low, Medium and high by using a measure of operating efficiency (assets turnover). Then the same regression models are estimated in each subgroup, and report the results in Table (8) where Panel A reports results from Eq.(2) and Panel B reports results from Eq. (3)

Table No. (8)
The results of testing leverage-value relationship varies according
To firm operating efficiency

| | Firm classification by Asset turnover | | | |
	Low firms		High firm	
Eq(2				
Intercept	9.122 (0.000) *	7.891 (0.000)*	9.067 (0.000) *	8.271 (0.000)*
Industry average Q	4.852 (0.239)	2.449 (0.014)^	3.603 (0.000)*	3.673 (0.000)*
IBL	-6.413 (0.000)*		-5.174(0.519)	
IML		-12.738(0.000)*		-5.233 (0.000)*
Devit in ML	-12.737(0.000) *		-5.421(0.023)	
Devit in BL		-29.167 (0.00)*		-10.841 (0.000)*
size	-2.332 (0.020)^	0.848(0.396)	-4.048 (0.000) *	-3.747 (0.000)*
CAPEX	-0.428 (0.669)	0.759(0.448)	-3.58 (0.000)*	-16.979(0.000)*
SALE growth	-3.993(0.000)*	- 2.613 (0.009)^	.083 (0.934)	0. 418 (0.678)
R-squared	0.176	0.444	0.268	0.315
F sig	0.001	0. 000	0.000	0. 000
D .W	1.561	2.045	1.574	1.55
Eq(3)				
Intercept	5. 926(0.000)*	5.123(0.000)*	5.943(0.000)*	6.050 (0.000)*
Devit in ML	-12.289(0.000)*		-6.129 (0.000)*	
Devit in BL		-22.006(0.000)*		-1.785(0.074)^
Size	-5.372(0.000)*	-4.380(0.000) *	-4.517 (0.000)	-4.936(0.000)*
CAPX	1.701(0.089)	0.482(0.630)	-17.275 (0.000)*	-8.262 (0.000)*
SALE growth	-5.311(0.000)*	-6.167(0000)*	0.487 (0.626)	0.149 (0.881)
R-squared	0179	0.332	0.260	0.240
F sig	0.000	0.000	0.000	0. 000
D .W	1.700	2.040	1.531	1.532

^ Statistical significance at the 5% level.
∗ Statistical significance at the 1% level.

The results from table (8) illustrate that industry average Q_t *has positive and significant effect on firms' value* Q_{it} *for both low and high assets turnover. However,* industry leverage and Dev$_{it}$ of leverage have significant and negative effect on both firm value and firm value deviation from the industry average for firms with low and high assets turnover.

Although, firms with high assets turnover suppose have operating efficiency more than others but its value and its value deviation from the industry average have Been negatively related with industry leverage and Dev_{it} of leverage. These results are due to the significant negative effect of both size and CAPEX. Furthermore, SALE growth has no significant effect, which is shown in Table 8.

5-Conclusion

Many literatures studied the relationship between the leverage and the value of firms. Some studies found no relationship and other studies show that the relationship is positive however, another studies show that the relationship is negative. Therefore, the leverage–value relationship seems to be an unresolved puzzle in the capital structure empirical literature.

Therefore, this study seeks to examine the leverage–value relationship to interpret the significant and the direction of this relationship by using the effect of industry, size firm˒s growth opportunities and adding operating efficiency as controlling factors. The importance of this study is to investigate the impact of unique status of the Saudi market companies that have not tax on its profits and illustrate whether the leverage-value relationship hold in the Saudi companies. Moreover, this study try to help managers for making efficient financial decisions and to realize the effect of their decisions on the firm value with considering the impact of industry and the internal level of firm performance such as their growth opportunities and their operating efficiency on the leverage–value relationship.

The results show that leverage for both firm and industry (book or market) as well as the difference between firm leverage and the industry leverage have a significant negative effect on both the firm value and the difference between firm value and the industry value. These results founded in spite of the difference among firms in growth opportunities or in operating efficiency. In addition, results became more significant when the leverage–value relationship is analyzing with use capital expenditure (CAPEX) as measure of growth opportunities or use assets turnover as a measure of operating efficiency

Future researches need to test the impact of agency cost on the leverage–value relationship.

References

- Aggarwal Raj A. L.; Zhaob Xinlei. (2007). "The leverage–value relationship puzzle: An industry effects resolution", *Journal of Economics and Business*, 59 286–297.
- Aivazian Varouj A.; Ge Ying, Qiu Jiaping. (2005). "The impact of leverage on firm investment: Canadian evidence", *Journal of Corporate Finance*, Volume 11, Issues 1–2, March, Pages 277-291.
- Chen Long, Zhao Xinlei. (2006). "On the relation between the market-to-book ratio, growth opportunity and leverage ratio", *Finance Research Letters*, Volume 3, 253-266.
- Coricelli Fabrizio, Driffield Nigel, Pal Sarmistha, Roland Isabelle. (2012)."When does leverage hurt productivity growth? A firm-level analysis Original Research Article", *Journal of International Money and Finance*, 31, 1674-1694.
- Francis Bill, Hasan Iftekhar, Sharma Zenu. (2011). "Leverage and growth: Effect of stock options", *Journal of Economics and Business*, 63, 558-581.
- Gul Ferdinand A. (1999). "Growth opportunities, capital structure and dividend policies in Japan", *Journal of Corporate Finance*, 5, 141-168.
- Hovakimian, A. (2004). "The role of target leverages in security issues and repurchase". *Journal of Business*, 77, 1041–1072.
- Jensen, M. C. (1986). "Agency costs of free cash flow, corporate finance and takeovers", *American Economic Review*, 76, 323–339.
- Jo Hoje, Pinkerton John M., Sarin Atulya. (1994). "Financing decisions and the investment opportunity set: Some evidence from Japan", *Pacific-Basin Finance Journal*, 2, 227-242.
- Journal of Economic Dynamics and Control, 34, 1003-1013.
- Kovenock, D. and Phillips, G. M. (1997). "Capital structure and product market behavior", *Review of Financial Studies*, 10, 767–803.
- Lang Larry, Ofek Eli, Stulz RenéM. (1996). "Leverage, investment, and firm growth", *Journal of Financial Economics*, Vol. 40, 3-29
- Lewis Craig M.; Rogalski Richard J. and Seward James K. (2003). "Industry conditions, growth opportunities and market reactions to convertible debt financing decisions", *Journal of Banking & Finance*, 27, 153-181.
- McConnell, J. and Servaes, H. (1995). "Equity ownership and the two faces of debt", *Journal of Financial Economics*, 39, 131–157.
- Miao, J. (2005). "Optimal capital structure and industry dynamics", *Journal of Finance*, 60, 2621–2659.
- Modigliani, F. and Miller, M. H. (1958). "The cost of capital, corporation finance and the theory of investment", *American Economic Review*, 48, 261–297.
- Modigliani, F. and Miller, M. H. (1963). "Corporate income taxes and the cost of capital: A correction", *American Economic Review*, 53, 433–443.
- Myers, S. C. (1977). "Determinants of corporate borrowing", *Journal of Financial Economics*, 5, 147–175.
- Serrasqueiro Zélia, Nunes Paulo Maçãs. (2010). "Non-linear relationships between growth opportunities and debt: Evidence from quoted Portuguese companies", *Journal of Business Research*, 63, 870-878.
- Strebulaev Ilya A., Yang Baozhong. (2013). "The mystery of zero-leverage firms", *Journal of Financial Economics*, In Press, Corrected Proof, Available online.
- Stulz, R. (1990). "Managerial discretion and optimal financing policies", *Journal of Financial Economics*, 26, 3–27.
- Wijewardana Zhao Bei, W.P. (2012). "Financial leverage, firm growth and financial strength in the listed companies in Sri Lanka Original Research Article Procedia", *Social and Behavioral Sciences*, Vol. 40, PP. 709-715.
- Wiwattanakantang Yupana. (1999). "An empirical study on the determinants of the capital structure of Thai firms", *Pacific-Basin Finance Journal*, 7, 371-403.