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Capital Structure and Firm Performance: Dynamic Framework

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ABSTRACT

This study examines the effect of capital structure on firm performance in a dynamic framework using a panel dataset from the Jordanian non-financial sector over the period 2006 -2016. Based on the agency cost prediction, our findings document a significant non-monotonic relationship, i.e. positive at low debt levels but negative at higher debt levels. This study tests for the reverse causality between firm performance and capital structure using the prediction of the franchise value and risk efficiency hypotheses. The results reveal that better performing firms use less financial leverage in their capital structure, thus supporting the franchise value hypothesis.

JEL Classifications: G3; G32; G34.

Keywords: Capital structure; performance; Jordan; dynamic.

1. INTRODUCTION

The debate on capital structure and its influence on firm value dates back to the seminal work of Modigliani and Miller (1958) known as MMI theory. Using several restrictive assumptions, this theory states that capital structure has no effect on firm value, this is known as Irrelevance theory. Later in 1963 and after considerable criticism of the MMI theory and its unrealistic assumptions, Modigliani and Miller provide an extension to the MMI theory after considering the effect of tax and transaction cost. The new extension, which was known as MMII theory, indicates that as financial leverage increases then the firm's weighted average cost of capital decreases, in the meanwhile, using more leverage in the capital structure increases equity cost because of the higher possibility of bankruptcy. Several empirical papers examine the relationship between the capital structure and firm value. The capital structure literature sheds light on the optimal capital

structure, which can be defined as the mix of debt and equity that maximizes firm value and minimizes cost of capital (Ehrhardt and Brigham 2003).

The empirical work provides inconsistent results on the relationship between capital structure and firm value. For example, although a direct and significant positive association between financial leverage and firm value was documented by Ahmad and Yousaf (2018), David and Olorunfemi (2010), Fosu (2013), Goyal (2013), Saeed et. al., (2013) and Sharma (2006). A contrary negative and insignificant effect was however reported by several studies (Cole et. al., 2015; El-Sayed Ebaid 2009; Hasan et. al., 2014; Le and Phan 2017; Mohamad and Abdullah 2012; Toraman et. al., 2013). Moreover, most of the prior studies examine the direct effect of capital structure on firm value, i.e., how the increase or decrease in financial leverage may affect firm value, ignoring the possibility of reverse causality. This mean firm value may affect the choices of capital structure, for instance, better performing firms may choose a lower level of financial leverage to protect the franchise value and avoid bankruptcy risk. The opposite may also be true; where firms with high performance may select higher leverage ratios, because such profitable firms can meet debt obligations and bear more risk. Therefore, the main objective of this study is to examine the relationship between capital structure and firm value in a dynamic framework. More specifically, the researchers first test the direct effect of capital structure on firm value, then test for reverse effect from firm value on capital structure.

Our study contributes to the literature in two ways. First, most of the empirical evidence available on this topic comes from developed markets (see for example, Cole et. al., 2015; Gill and Mathur 2011; Hossain and Nguyen 2016; Mollik 2008). Whereas few studies consider developing markets, although the differences between the two markets justify the need for further research in order to resolve the problems arising from generalizing findings. Second, the empirical evidence on the relationship between capital structure and firm performance employing a dataset from Jordan is quite limited (see for example, Khraiwesh and Khrawish 2010; Ramadan 2015; Soumadi and Hayajneh 2012; Shubita and Alsawalhah 2012). The focus of all these studies was limited to the direct effect of capital structure on firm performance, and to the best of our knowledge, this is the first study to test the reverse causality between capital structure and firm performance within the Jordanian context. The rest of the paper is structured as follows: the next section provides the literature review and hypotheses development followed by data and methodology, then empirical results and finally, the conclusion.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Voluminous quantities of literature have examined how capital structure is related to firm performance since the seminal work of Modigliani and Miller (1958) and their subsequent revision in 1963, see Harris and Raviv (1988) and Myers (2001) for detailed surveys. Several theories thereafter emerge to explain how capital structure may affect firm value such as trade-off theory, pecking order theory, market timing theory and agency theory. The agency cost theory, which lies at the heart of the agency theory proposed by Jensen and Meckling (1976), is widely used to explain this relationship. The theory discusses the basic conflicts between managers and shareholders that result from separation between ownership and management. Although shareholders expect mangers to maximize firm value, managerial behaviour may not necessarily concur with shareholder interest, but instead their primary interest may be their own goals and concerns. From a different angle, other conflicts may arise between shareholders and debtholders due to the differences in risk and investment preferences. As higher debt level becomes used in the capital structure, so conflicts between debtholders and shareholders arise since shareholders, who are well diversified and have limited

liability, prefer to invest in high-risk projects at the expense of debtholders. Therefore, the agency cost theory predicts a negative association between debt and firm value. From another perspective, a positive link between debt and firm value is expected within the agency cost context. Using higher levels of debt results in higher interest expense and thus increases corporate obligations, and this may serve as a motive for managers to work harder in order to avoid bankruptcy risk.

The empirical evidence however, provides mixed and inconclusive results, for instance, Shubita and Alsawalhah (2012) analyse 39 industrial companies listed on Amman Stock Exchange over the period 2004-2009. The study employs multiple-regression, and concludes that there is a negative and significant relationship between capital structure and firm performance. Further consistent evidence from Jordan results from the study by Soumadi and Hayajneh (2012) who expand the sample by including 53 industrial firms and 23 service corporations, the findings documenting a negative and significant relationship between financial leverage and firm performance. The study reports that the effect of financial leverage on performance is similar for both the high and low leveraged firms, as well as for the high and low growth firms. A similar negative effect was also documented by a study in the US by Cole et. al., (2015) using thirty firms from three different sectors: Industrial, Healthcare, and Energy Sectors over the period 2004 to 2013. Using return on assets and operating return as proxies for firm performance, Cole et. al., (2015) conclude that capital structure negatively affects firm performance in all three sectors.

Hossain and Nguyen (2016) employ a sample from the ten largest Canadian oil and gas companies over the period 2004-2013. The study creates three sub-periods i.e., pre-crisis, crisis and post-crisis periods in order to test the effect of financial leverage on financial performance, with results indicating a strong negative effect of financial leverage on financial performance. Recently, Kanwal et. al., (2017) construct a sample from 213 companies listed on Karachi Stock Exchange for the years 1999 to 2015. The findings show that financial leverage is negatively related to the firms' financial performance. Similarly, Le and Phan (2017) investigate the effect of capital structure on firm performance using a sample from Vietnamese non-financial firms over the period 2007-2012. The study reports strong significant negative relationship between all leverage measures and firm performance. The authors explain that in a developing country such as Vietnam, the negative effect can be attributed to the high information asymmetry, high bankruptcy cost and under-developed financial system.

Another group of empirical papers however, document a positive relationship between financial leverage and financial performance. Mollik (2008) examines how the financial leverage affects the market value of a sample listed on the Australian Stock Exchange. The results confirm that the firms' market value increases with the level of financial leverage. Chowdhury and Chowdhury (2010) construct a sample from four different sectors i.e., engineering, food & allied, fuel & power, and chemical & pharmaceutical, listed on the Dhaka Stock Exchange (DSE) and Chittagong Stock Exchange (CSE) in Bangladesh. The study tests the relationship between capital structure and firm value taking into consideration the effect of firm size and growth opportunities. The results show a strong positive and significant relationship between capital structure and firm value. Gill and Mathur (2011) employ a sample of 272 listed companies from the service and manufacturing industries listed on New York Stock Exchange, the findings documenting a positive and significant relationship between capital structure measures and financial performance in both sectors. Consistent evidence from Pakistan is provided by Javed and Akhtar (2012) who investigated a sample of 21 different sectors all listed in Karachi stock exchange, for five years. The regression results

indicate a positive and significant relationship between capital structure and financial performance. Fosu (2013) examines the effect of financial leverage on firm performance in 257 South African firms, taking into consideration how this relationship is influenced by product-market competition. The findings reveal that financial leverage positively and significantly affects firm performance, in addition to which, the level of product market competition found to be positively enhanced by this leverage-performance effect. Similar positive evidence was presented by Dewi et. al., (2017) whose study examined the way in which capital structure and good corporate governance influence dividend policy and firm performance. Using a sample from the Indonesian banking sector, the study reports a positive and significant association between capital structure and bank performance. A recent study from Pakistan provided by Ahmad and Yousaf (2018) used a sample from the textile sector companies listed on the Pakistan stock exchange. The study examines how capital structure, dividend policy and sustainability are related to firm value that is measured by return on assets. The study concludes that using more financial leverage leads to better firm performance, thus assuming a positive effect. Given the inconclusive results on the relationship between financial leverage and firm performance, we propose the following null hypothesis.

H_{01}: There is no statistically significant relationship between financial leverage and firm performance.

All the above studies test the direct relationship between capital structure and firm performance; however the opposite is also possible. In other words, financial performance may have an effect on the firm's capital structure choices. The reverse causality from performance to capital structure can be theoretically explained under the efficiency risk and franchise value hypotheses. Based on the efficiency risk hypothesis, firms with better performance select a higher level of leverage in their capital structure, since more efficient and profitable firms are more capable of fulfilling debt obligations and avoiding financial distress (Berger and Di Patti 2006; Margaritis and Psillaki 2010). Based on the justification of efficiency risk hypothesis, the relationship between performance and leverage is expected to be positive, whereas the franchise value hypothesis suggests an opposite effect i.e., a negative relationship between firm performance and leverage, so firms with higher performance may avoid higher leverage in their capital structure in order to protect the franchise value from the risk of liquidation (Berger and Di Patti 2006; Demsetz 1973; Margaritis and Psillaki 2010; Yeh 2010).

The empirical evidence on reverse causality is quite limited with only a few studies addressing this issue. For example, mixed results were reported by Berger and Di Patti (2006) and Margaritis and Psillaki (2007)which provides support for both the efficiency risk and franchise value hypotheses. Margaritis and Psillaki (2007) use the quantile regression to analyse a sample from New Zealand firms and the findings document a positive effect from efficiency to leverage, particularly, at low to mid-levels of financial leverage whereas negative effect is documented at higher leverage levels only. Margaritis and Psillaki (2010) and Yeh (2010)find that firms with better performance take more leverage and this positive association is in favour of the efficiency-risk hypothesis. Recent consistent evidence is provided by Adhari and Viverita (2015) who use a sample of 215 non-financial firms from three ASEAN countries, Indonesia, Malaysia and Singapore. The two-stage regression analysis indicates a positive association between capital structure and firm performance, and when examined by the reverse causality test, a positive effect was found between firm performance and capital structure, thus supporting the efficiency-risk hypothesis. Depending on the prediction of both efficiency risk and franchise value hypotheses, we propose a null hypothesis to test the reverse causal effect from firm performance on financial leverage:

H_{02}: There is no statistically significant relationship between firm performance and financial leverage.

3. DATA AND METHODOLOGY

The study sample initially comprised all of the 77 industrial public firms listed on Amman Stock Exchange over the period 2006-2016, but was finally reduced to 70 after excluding firms that failed to provide the required data on leverage or performance, and financial variables data sourced from annual reports available on Amman Stock Exchange (ASE) website.

To examine the effect of capital structure on firm performance two dependent variables were used, return on assets measured as net income divided by total assets, and secondly, return on equity measured as net income divided by shareholder equity. Capital structure is measured by financial leverage in three ways: total leverage ratio measured as total debt divided by total assets, short term debt ratio measured as short term debt divided by total debt and equity, and long term debt ratio measured as long term debt divided by total debt and equity (Anarfo 2015; Hasan et. al., 2014). It is important to note that the present study examines the reverse causality from firm performance to financial leverage as an indication of whether the firm capital structure is influenced by firm performance. For this purpose, the dependent variable is financial performance in the first model, whereas financial leverage is the variable in the second model; the control for firm size in both models is measured as natural logarithm of total assets, asset tangibility measured as fixed tangible asset divided by total assets, risk measured as standard deviation of earnings before income and tax divided by total assets and growth opportunities measured as market to book value (Margaritis and Psillaki 2010). Table 1 presents the definitions and measurements of all the variables used in the study.

3.1. Model Specification

Following Margaritis and Psillaki (2010), investigation of the relationship between financial leverage and firm performance was performed by the following regression, using the dynamic panel estimator i.e., two-step system GMM. This econometric technique, which was presented by Arellano and Bond (1991) and Blundell and Bond (2000) is considered a powerful tool by which to demonstrate dynamic relationships such as that inherent in capital structure–performance. According to Wintoki et. al., (2012, p.13), the two-step system GMM begins with differencing in order to cancel any probable bias that might result from unobserved time-invariant heterogeneity, followed by the lagged value of explanatory variables as instruments for current changes in these variables.

$$FP_{it} = x_0 + x_1 FP_{it-1} + x_2 FL_{it} + x_3 FL_{it}^2 + x_4 Z_{it} + \varepsilon_{it} \quad (1)$$

In the above equation, FP is financial performance measured by return on assets or return on equity, and FL is financial leverage which is measured by three different ratios: total leverage ratio measured as total debt divided by total assets, second, short term debt ratio measured as short term debt divided by total debt and equity, and finally, long term debt ratio measured as long term debt divided by total debt and equity. FL2 is the squared term of financial leverage, while Z includes all the control variables. Firm size is measured as the natural logarithm of total assets, asset tangibility is measured as fixed tangible asset divided by total assets, and risk is measured as standard deviation of earnings before income and tax divided by total assets and growth opportunities measured as market to book value.

The second model demonstrates the reverse relationship between financial leverage and firm performance. Definitions of variables as for model (1)

$$FL_{it} = x_0 + x_1 FL_{it-1} + x_2 FP_{it} + x_3 Z_{it} + \varepsilon_{it} \quad (2)$$

Table 1
Summary of Variables Definition and Measurement

Variable	*Measurement*
Return on equity (ROE)	Net income divided by total equity
Return on assets (ROA)	Net income divided by total assets
Short term debt ratio (ST DR)	Short-term debt divided by total debt and equity.
Long term debt ratio (LT DR)	Long term debt divided by total debt and equity
Total debt ratio (TD/TA)	Total debt divided by total assets
Firm size LN (TA)	Natural logarithm of total assets
Asset tangibility (TAN)	Fixed tangible asset divided by total assets
Firm risk (Risk)	Standard deviation of earnings before income and tax divided by total assets
Growth opportunity (MTB)	Market to book value

3.2. Descriptive Statistics

Table 2 presents the descriptive statistics for all the study variables: Starting with the dependent variables, the average return on equity (return on asset) is 3.8% (7.2%) with a maximum value of 54.8% (27%) for return on equity and return on asset respectively, whereas the average value of financial leverage ranges from 34% for total debt ratio, 28% for short-term debt ratio and around 5% for the long-term debt ratio. Firm size is presented in logarithm form and ranges from 16.6 to a maximum value of 20.7. The average value of the remaining control variables is 38.4%, 6% and 1.24 for asset tangibility, firm risk and market to book value respectively; these figures are similar to recent Jordanian studies see for example Khraiwesh and Khrawish (2010) and Soumadi and Hayajneh (2015).

Table 2
Descriptive Statistics

Variable	*Mean*	*Sta. Dev.*	*Min*	*Max*
ROE	0.038	0.261	–1.393	0.548
ROA	0.072	0.104	–0.437	0.270
TD/TA	0.34	0.226	0.008	1.057
ST DR	0.280	0.173	0.005	0.779
LT DR	0.048	0.102	0.000	0.581
LN(TA)	16.619	1.320	13.993	20.731
TAN	0.384	0.202	0.007	0.883
Risk	0.064	0.059	0.005	0.280
MTB	1.244	1.079	0.075	7.573

4. RESULTS AND DISCUSSION

The results of model (1) are presented in Table 3 using the dynamic panel estimator GMM, and indicate a positive and significant relationship between short-term debt ratio and firm performance. Increasing short-term debt ratio positively improve firm performance under both measures, namely return on equity and return on assets. This positive association provides support for the agency cost hypothesis, since debt

viewed as a disciplinary device reduces wasteful managerial spending and therefore improves performance (Jensen and Meckling 1976). However, the agency cost theory predicts that using more debt in the capital structure may exacerbate the under investment problem (Stulz 1990). Therefore, to examine this aspect the square term of short-term leverage ratio was included in the model. The coefficient on the square term is negative and significant. Despite the debt obligations from using short-term debt to mitigate opportunistic managerial behaviours, it is obvious from Table 3, that using higher levels of debt in the capital structure negatively affects firm performance. This negative effect is confirmed where the coefficient on the squared term is negative and significant under both firm performances. The agency cost theory suggests that excessive debt financing may be used in suboptimal investment that may reduce the firm's ability to meet debt obligations, increase default risk and therefore lead to a debt overhang problem (Myers 1977). Thus, we reject the first null hypothesis, which states there is no statistically significant relationship between financial leverage and firm performance. The present study results confirm a statistically significant non-monotonic relationship (positive for low levels of debt and negative for high debt levels) between capital structure measured by short-term debt ratio and firm performance.

This table presents the results for model (1) that investigates the relationship between capital structure measured by short-term debt ratio and firm performance. Two measures used to assess firm performance i.e., ROE and ROA.

All *t*-statistics are based on robust standard errors.

Table 3
Regression Results of Short-Term Debt Ratio and Firm Performance

	ROE	*ROA*
First lag of performance	0.339***	0.390***
	(0.000)	(0.000)
ST DR	0.607*	0.143**
	(0.092)	(0.040)
$(ST\ DR)^2$	-1.169*	-0.294*
	(0.052)	(0.093)
LN(TA)	0.028**	0.021**
	(0.037)	(0.017)
TAN	-0.187*	-0.124***
	(0.092)	(0.007)
Risk	-0.126	0.092
	(0.637)	(0.493)
MTB	0.007	-0.002
	(0.588)	(0.656)
Constant	-0.520**	-0.321**
	(0.021)	(0.027)
AR(1) test (p-value)	0.014	0.001
AR(2) test (p-value)	0.496	0.506
Hansen test of over-identification (p-value)	0.852	0.942
Diff-in-Hansen tests of exogeneity (p-value)	0.985	0.951
No. of observations	539	539

***; **; *represent significance at the 1%, 5% and 10% level. For definitions and measurements of all the variables, see Table 1.

Table 3 illustrates the specification tests of the two-step GMM, the first test, autocorrelation (AR (2)) shows a *p*-value of 0.496, 0.506 for ROE and ROA respectively. This suggests no second-order serial correlation, and correct specification of the model. The *p*-values for the Hansen test of over-identification are 0.852 and 0.942 for ROE and ROA respectively. These values confirm the validity of the instruments used in the estimated model. The p-values of the final test (Diff-in-Hansen tests of exogeneity) show that the instruments used for the equations in levels are exogenous.

This table presents the results for model (1) that investigates the relationship between capital structure measured by long-term debt ratio and firm performance. Two measures used to assess firm performance i.e., ROE and ROA.

All *t*-statistics are based on robust standard errors.

Table 4
Regression Results of Long-Term Debt Ratio and Firm Performance

	ROE	*ROA*
First lag of performance	0.369***	0.419***
	(0.000)	(0.000)
LT DR	1.072	0.361
	(0.132)	(0.155)
$(LT\ DR)^2$	-2.369	-0.677
	(0.288)	(0.164)
LN(TA)	0.031**	0.023***
	(0.050)	(0.001)
TAN	-0.359*	-0.087**
	(0.082)	(0.042)
Risk	-0.308	0.061
	(0.366)	(0.698)
MTB	-0.003	-0.002
	(0.839)	(0.708)
Constant	-0.418	-0.377***
	(0.128)	(0.003)
AR(1) test (p-value)	0.026	0.001
AR(2) test (p-value)	0.609	0.505
Hansen test of over-identification (p-value)	0.983	0.966
Diff-in-Hansen tests of exogeneity (p-value)	0.832	0.873
No. of observations	539	539

***; **; *represent significance at the 1%, 5% and 10% level. For definitions and measurements of all the variables, see Table 1.

Table 4 shows the results for model (1) again but using a different measure of capital structure i.e., long-term debt ratio. When we include the long-term debt ratio in the model, the relationship between capital structure and firm performance becomes insignificant. The coefficients under both firm performance measures are positive but insignificant. Similarly, the coefficients for the squared term of long-term debt ratio under both performance measures are negative but insignificant. This insignificant effect may be explained from Table 2 of descriptive statistics, where we can notice that the average long-term debt ratio is only 4.8%. This low mean indicates that the Jordanian firms rely more on short-term debt financing.

All the specification tests of the two-step GMM estimator pass in Table 4, indicate no problem of second order autocorrelation, and verify the instruments used to be valid and exogenous.

Table 5 illustrates the results between the third measure of capital structure i.e., the total debt ratio and firm performance. The coefficient of total debt ratio is positive and significant at 5% significance level under ROE. While the positive effect between the total debt ratio and the ROA is a little weaker as the coefficient is positive and significant at 10% significance level. This result implies that higher level of debt leads to better firm performance and this positive association supports the agency cost hypothesis as explained above. Table 5 shows a strong negative and significant relationship between the squared term of total debt ratio and both performance measures, the *p*-values are 0.001 and 0.044 for ROE and ROA respectively.

This table presents the results for model (1) that investigates the relationship between capital structure measured by total debt ratio and firm performance. Two measures used to assess firm performance i.e., ROE and ROA.

All *t*-statistics are based on robust standard errors.

Table 5
Regression Results of Total Debt Ratio and Firm Performance

	ROE	*ROA*
First lag of performance	0.314***	0.375***
	(0.000)	(0.001)
TD/TA	0.873**	0.198*
	(0.039)	(0.087)
$(TD/TA)^2$	-0.776***	-0.125**
	(0.001)	(0.044)
LN(TA)	0.039*	0.024***
	(0.108)	(0.001)
TAN	-0.272*	-0.010**
	(0.073)	(0.042)
Risk	-0.294	0.156
	(0.324)	(0.283)
MTB	-0.010	-0.006
	(0.633)	(0.218)
Constant	-0.436	-0.372***
	(0.275)	(0.003)
AR(1) test (p-value)	0.024	0.003
AR(2) test (p-value)	0.788	0.371
Hansen test of over-identification (p-value)	0.953	0.836
Diff-in-Hansen tests of exogeneity (p-value)	0.922	0.921
No. of observations	539	539

***; **; * represent significance at the 1%, 5% and 10% level. For definitions and measurements of all the variables, see Table 1.

This negative effect confirms that higher levels of debt financing harm firm performance due to the under-investment and debt overhang problems. The results from Table 5 confirm the significant non-

monotonic relationship between capital structure and firm performance, thus Jordanian industrial firms can improve their performance using low-level debt financing, where debt at this level disciplines managerial behaviour and enhances firm performance, whereas increasing debt financing to higher levels results in lower firm performance. These findings are consistent with several recent studies such as Margaritis and Psillaki (2010) that document the positive effect of debt financing on firm performance, using a sample of French firms, while Majumdar and Sen (2010) use firms in India, and Javed and Akhtar (2012) firms in Pakistan. The negative effect has also been documented in several recent empirical papers, such as that by Soumadi and Hayajneh (2015), who report a negative relationship between debt financing and firm value using a sample from the Jordanian industrial and service sectors, while Hossain and Nguyen (2016) and Kanwal et. al., (2017) report similar negative evidence.

Regarding the control variables, the results from Tables 3, 4 and 5 reveal better performance by larger firms. This positive effect may be explained by greater diversification ability and scales of economy for larger firms (Soumadi and Hayajneh 2015; Vijayakumar and Tamizhselvan 2010; Zeitun and Tian 2007). Asset tangibility is negatively related to the firm value, since a higher level of fixed assets, which are considered of lower liquidity, might reduce a firm's opportunity for growth and in turn harm firm value. This negative effect is consistent with Rao et. al., (2007), Zeitun and Tian (2007) and Weill (2008). Return variability and market to book ratiowere insignificantly related to the firm performance.

The next test is of reverse causality between firm performance and capital structure. Table 6 presents the results of model 2 that illustrate the effect of past firm performance on firm choices of capital structure. Basically the model includes the first lag of firm performance measure based on the prediction of the franchise value and risk efficiency hypotheses of reverse causality, in the meanwhile, while controlling for current performance along with the other firm characteristics. From Table 6, the first lag of return on equity is significant and negative under the three capital structure measures. This negative relationship implies that firms with better performance records avoid higher debt financing in their capital structure. These findings support the franchise value hypothesis, which assumes that higher performance firms avoid including extra leverage in order to maintain the value they have over time.

Table 7 confirms the findings illustrated in Table 6 and presents consistent evidence on the reverse causality relationship between firm performance and capital structure using a different firm performance measure i.e., return on asset. The negative association appears between the first lag of return on assets and total debt ratio, long-term debt ratio and short-term debt ratio. The franchise value hypothesis is again supported, and explained as above, better performing firms' increase equity financing and reduce debt financing to protect their value and avoid takeover in case of bankruptcy. Accordingly, we reject the second null hypothesis which states that; there is no statistically significant relationship between firm performance and financial leverage. The findings from Tables 6 and 7 confirm the negative relationship between firm performance and capital structure and the existence of reverse causality. These results are in line with Margaritis and Psillaki (2007) who document negative relationship between firm performance and capital structure using a sample from New Zealand. The findings of the present study however, are inconsistent with Margaritis and Psillaki (2010), Adhari and Viverita (2015) who report a positive relationship between firm performance and capital structure, therefore supporting the efficiency risk hypothesis.

This table presents the results for model (2) that investigates the relationship between return on equity and capital structure. Three measures used of capital structure i.e., short-term debt ratio, long-term debt ratio and total debt ratio.

All *t*-statistics are based on robust standard errors.

Table 6
Regression Results of Return on Equity and Capital Structure

	TD/TA	*LT/DR*	*ST/DR*
First lag of Debt	0.858***	0.869***	0.854***
	(0.000)	(0.000)	(0.000)
ROE $_{t-1}$	-0.225***	-0.037*	-0.084**
	(0.000)	(0.062)	(0.017)
ROE	-0.074***	-0.006*	-0.042*
	(0.008)	(0.098)	(0.056)
LN(TA) $_{t-1}$	0.002*	-0.001	0.006
	(0.075)	(0.599)	(0.337)
TAN $_{t-1}$	0.035	0.019	0.044
	(0.538)	(0.720)	(0.325)
Risk $_{t-1}$	-0.115*	0.156	0.020
	(0.053)	(0.283)	(0.826)
MTB $_{t-1}$	-0.002	-0.048	-0.008*
	(0.488)	(0.330)	(0.098)
Constant	-0.042*	0.029	-0.083
	(0.092)	(0.521)	(0.483)
AR(1) test (p-value)	0.013	0.009	0.274
AR(2) test (p-value)	0.435	0.369	0.269
Hansen test of over-identification (p-value)	0.654	0.877	0.827
Diff-in-Hansen tests of exogeneity (p-value)	0.763	0.894	0.811
No. of observations	526	526	526

***; **; * represent significance at the 1%, 5% and 10% level. For definitions and measurements of all the variables, see Table 1.

This table presents the results for model (2) that investigates the relationship between return on equity and capital structure. Three measures used of capital structure i.e., short-term debt ratio, long-term debt ratio and total debt ratio.

All *t*-statistics are based on robust standard errors.

Table 7
Regression Results of Return on Asset and Capital Structure

	TD/TA	*LT/DR*	*ST/DR*
First lag of Debt	0.764***	0.814***	0.840***
	(0.000)	(0.000)	(0.000)
ROA $_{t-1}$	-0.703***	-0.139*	-0.215**
	(0.009)	(0.061)	(0.014)

	TD/TA	*LT/DR*	*ST/DR*
ROA	-0.185**	-0.040*	-0.031**
	(0.021)	(0.071)	(0.033)
LN(TA) $_{t-1}$	0.018**	0.004	0.012**
	(0.047)	(0.208)	(0.044)
TAN $_{t-1}$	0.185**	0.018	0.047
	(0.037)	(0.599)	(0.382)
Risk $_{t-1}$	-0.072	-0.033	0.079
	(0.591)	(0.311)	(0.463)
MTB $_{t-1}$	-0.011	-0.001	-0.008*
	(0.126)	(0.371)	(0.067)
Constant	-0.270*	-0.065	-0.171*
	(0.077)	(0.274)	(0.080)
AR(1) test (p-value)	0.000	0.441	0.397
AR(2) test (p-value)	0.321	0.454	0.143
Hansen test of over-identification (p-value)	0.956	0.537	0.902
Diff-in-Hansen tests of exogeneity (p-value)	0.981	0.863	0.855
No. of observations	526	526	526

***; **; * represent significance at the 1%, 5% and 10% level. For definitions and measurements of all the variables, see Table 1.

5. CONCLUSION

The relationship between capital structure decisions and firm performance cannot be ignored, given that the correct composition of capital structure is essential for the success and long-term survival of the firm. The fact that prior empirical studies on the relationship between capital structure and firm performance have produced inconsistent results, these diverse results and the lack of consensus served as motivation to conduct this study. This paper examines the relationship between capital structure and firm performance using a panel dataset from the Jordanian non-financial sector over the period 2006 -2016. Three measures of capital structure were employed: short-term debt ratio, long-term debt ratio and total debt ratio, whereas firm performance was measured by return on assets and return on equity. This study uses two models; results of the first model, to test the direct relationship between capital structure and firm performance based on the theoretical prediction of agency cost, confirm a significant non-monotonic relationship, i.e. positive at low debt levels but negative at higher debt levels. The results indicate that using low level financial leverage may improve firm performance because it may discipline managerial behaviour, however increasing the financial leverage in the capital structure may have a negative impact on firm value since more debt means more interest obligations and higher bankruptcy risk.

The second model tests for the reverse causality that might exist between firm performance and capital structure. Despite the results of the first model revealing that financial leverage affects firm performance, the opposite may be true, prompting examination of the premise that firm performance may affect the choice of capital structure based on the prediction of the franchise value and risk efficiency hypotheses. The results provide support for the franchise value hypothesis that firms performing well avoid using higher debt level in their capital structure since they wish to maintain the value that they have sustained over time. The outcomes of this study have several implications since the findings may be an important aid to firm

managers, providing them with information and guidance which could help them to shape the optimal combination of debt and equity, thus improving firm value and maintaining shareholder confidence The results of this study specify advice that managers should take advantage of financial leverage and try to find the optimal combination, to enhance the firm value with a balanced ratio of financial leverage, and avoiding excessive levels which may have a negative impact on firm value. Our results may also be important to the regulators who are responsible for creating sound regulation that aim to protect shareholders particularly minority shareholders who usually lack the capacity and resources to observe managerial decisions. Future research may extend this analysis and use different proxies for firm performance since the focus of the present study is limited to two accounting measures, and may also conduct a comparison between financial and non-financial sectors in terms of capital structure and its effect on firm value.

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