Capital Structure and Corporate Performance: Evidence from Jordan

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ABSTRACT

This study is to investigate the effect which capital structure has had on corporate performance using a panel data sample representing of 167 Jordanian companies during 1989-2003. Our results showed that a firm's capital structure had a significantly negative impact on the firm's performance measures, in both the accounting and market's measures. We also found that the short-term debt to total assets (STDTA) level has a significantly positive effect on the market performance measure (Tobin's Q). The Gulf Crisis 1990-1991 was found to have a positive impact on Jordanian corporate performance while the outbreak of Intifadah in the West Bank and Gaza in September 2000 had a negative impact on corporate performance.

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1. INTRODUCTION

The topic of optimal capital structure has been the subject of many studies. It has been argued that profitable firms were less likely to depend on debt in their capital structure than less profitable ones. It has also been argued that firms with a high growth rate have a high debt to equity ratio. Bankruptcy costs (proxied by firm size) were also found to be an important effect on capital structure (Kraus and Litzenberger, 1973; Harris and Raviv, 1991). If these three factors are considered as determinants of capital structure, then these factors could be used to determine the firm's performance.

In practice, firm managers who are able to identify the optimal capital structure are rewarded by minimising a firm's cost of finance thereby maximising the firm's revenue. If a firm's capital structure influences a firm's performance, then it is reasonable to expect that the firm's capital structure would affect the firm's health and its likelihood of default. From a creditor's point view, it is possible that the debt to equity ratio aids in understanding banks' risk management strategies and how banks determine the likelihood of default associated with financially distressed firms. In short, the issue regarding the capital structure and firm performance are important for both academics and practitioners.

The objective of the current paper is to examine the effect which capital structure has on corporate performance in Jordan. There is a lack of empirical evidence about the effect of capital structure on the performance of firms in both developed and developing countries. Most of the previous evidence on capital structure comes from the determinants of corporate debt ratio. To the best of the authors' knowledge, this research provides the first attempt to investigate the effect of capital structure on corporate performance in Jordan. Our reason for choosing Jordan as a case for this topic is its uniqueness, which we discuss below.

First, the Jordanian economy has been subject to a large number of external shocks in the Middle East region during the period of our study. The first Gulf War was broken out in 1990-1991. Both the return of migrant workers and refugees due to this war increased the poverty level and unemployment level in Jordan. For example, more than 300,000 people returned to Jordan from Gulf countries during that period of time (World Bank, 2003). In addition, the continuing strife in the West Bank and Gaza, and the second Gulf War in 2003 has had a negative impact on tourism and investment in Jordan. Furthermore, Jordan was badly affected by the Palestinian Intifadah[1] which began in September 2000. The Palestinian Intifadah affected firm performance negatively as most of Jordanian companies' export production goes to these neighbour countries. These macroeconomic factors (shocks), which have had an important effect on firm performance and default, are unique Jordanian case and are hardly found in any other existing study.

Secondly, the banking system in Jordan also makes this study unique. The banking system[2] in Jordan is different from western countries as it contains both conventional commercial banks and Islamic banks[3]. The credit policy in Islamic banks is different from the commercial banks, which could affect corporate performance and default risk. Since bond markets and Mutual Funds markets are undeveloped and inactive, both commercial and Islamic banking systems play an important role in providing lending to Jordanian firms. These bank lending are the main source of funds for these firms Therefore, this unique dual banking systems offers us a new insight into the study on the effect of capital structure on firm performance.

Thirdly, it is worth noting that both Islamic and non-Islamic banks have a credit policy which requires banks to provide more short-term loans rather than long-term loans (Creane et al. 2003). Under this credit policy, banks concentrate their lending to the services sector rather than the industrial sectors which normally requires long-term loans. This banking credit policy could also have an impact on the capital structure of the borrowing companies, and could also force these firms to choose a less than optimal capital structure, which could make them vulnerable in the short term to an increase in the interest rate. This is especially true for smaller firms, which are more exposed to insolvency than larger ones.

[1] It refers to the Palestinian upheaval against Israel in Gaza and on the West Bank.

[2] In Jordan, banks tend to play a measured role in collecting the deposits and issuing loans to companies that require capital and finance, and it also provides risk assessments.

[3] It is worth noting that there are other emerging countries that have the same characteristics such as the Middle Eastern countries (Saudi Arabia, Lebanon, Syria, Yemen, Kuwait, UAE, Qatar, Libya, and Bahrain), Muslim counties such as Malaysia, Indonesia, and Pakistan. Furthermore the MENA countries have the same characteristics as been established by the World Bank. Therefore, the result of this paper is important.

The remainder of this paper is organised as follows. Section 2 discusses the literature review. Section 3 discusses the methodology and the empirical models used to investigate the effect of capital structure on corporate performance. Section 4 presents the analysis and discussion of results. Section 5 summarises and concludes the paper.

2. LITERATURE REVIEW

One of the main factors that could influence the firm's performance is capital structure. Since bankruptcy costs exist, deteriorating returns occur with further use of debt in order to get the benefits of tax deduction. Therefore, there is an appropriate capital structure beyond which increases in bankruptcy costs are higher than the marginal tax-sheltering benefits associated with the additional substitution of debt for equity. Firms are willing to maximise their performance, and minimise their financing cost, by maintaining the appropriate capital structure or the optimal capital structure. Harris and Raviv (1991) argued that capital structure is related to the trade-off between costs of liquidation and the gain from liquidation to both shareholders and managers. So firms may have more debt in their capital structure than is suitable as it gains benefits for both shareholders and managers. However, as stated in the previous literature, underestimating the bankruptcy costs of liquidation or reorganization, or the aligned interest of both managers and shareholders, may lead firms to have more debt in their capital structure than they should (see, for example, Harris and Raviv, 1991). Krishnan and Moyer, (1997) found a negative and significant impact of total debt to total equity (TD/TE) on return on equity (ROE). Another study by Gleason, Mathur and Mathur, (2000) found that firms capital structure has a negative and significant impact on firms performance measures return on assets (ROA), growth in sales (Gsales), and pre tax income (Ptax). Therefore, high levels of debt in the capital structure would decrease the firm's performance.

However, not only does a firm's level of leverage affect corporate performance and failure but also its debt maturity structure (Barclay and Smith, 1995 and Ozkan, 2002). Schiantarelli and Sembenelli (1999) investigated the effects of firms' debt maturity structure on profitability for Italy and the United Kingdom. They found a positive relationship between initial debt maturity and medium term performance. A study by Barclay and Smith (1995) provides evidence that large firms and firms with low growth rates prefer to issue long-term debt. Another study by Stohs and Mauer (1996) suggested that larger and less risky firms usually make greater use of long-term debt. They also found that debt maturity is negatively related to corporate tax, the firm's risk and earning surprises. In other words, the choice of debt structure could have an impact on both corporate performance and failure risk. Furthermore, there are other factors, besides capital structure, that may influence firm performance such as firm size, age, growth, risk, tax rate, factors specific to the sector of economic activity, and factors specific to macroeconomic environment of the country. These variables will be considered in this study. We provide a definition of performance and the types of performance measures below.

The concept of performance is a controversial issue in finance largely due to its multi-dimensional meanings. Research on firm performance emanates from organization theory and strategic management (Murphy et al., 1996). Performance measures are either financial or organisational. Financial performance such as profit maximisation, maximising profit on assets, and maximising shareholders' benefits are at the core of the firm's effectiveness (Chakravarthy, 1986). Operational performance measures, such as growth in sales and growth in market share,

provide a broad definition of performance as they focus on the factors that ultimately lead to financial performance (Hoffer and Sandberg, 1987).

The usefulness of a measure of performance may be affected by the objective of a firm that could affect its choice of performance measure and the development of the stock and capital market. For example, if the stock market is not highly developed and active then the market performance measures will not provide a good result. The most commonly used performance measure proxies are return on assets (ROA) and return on equity (ROE) or return on investment (ROI). These accounting measures representing the financial ratios from balance sheet and income statements have been used by many researchers (e.g., Demsetz and Lehn, 1985, Gorton and Rosen, 1995, Mehran, 1995, and Ang, Cole and Line, 2000).

However, there are other measures of performance called market performance measures, such as price per share to the earnings per share (P/E) (Abdel Shahid, 2003), market value of equity to book value of equity (MBVR), and Tobin's Q. Tobin's Q mixes market value with accounting value and is used to measure the firm's value in many studies (e.g., Morck, Shleifer, and Vishny, 1988, McConnel and Serveas, 1990, and Zhou, 2001). The performance measure ROA is widely regarded as the most useful measure to test firm performance (Reese and Cool, 1978 and Long and Ravenscraft, 1984, Abdel Shahid, 2003, among others)[4]. Two accounting measures, ROA and ROE, are used as proxy measures for corporate performance, and three market performance measures, P/E, MBVR, and Tobin's Q. The stock market efficiency and other economic and political factors could affect a firm's performance and its reliability (See Abdel Shahid, 2003).

In summary, a firm's performance could be affected by the capital structure choice and by the structure of debt maturity. Debt maturity affects a firm's investment options. Also, the tax rate is expected to have an impact on a firm's performance. So, investigating the impact of capital structure variables on a firm's performance will provide evidence of the effect of capital structure on firm performance.

3. ESTIMATION METHOD

3.1 Data

The data used in this section comes from the Amman Stock Exchange (ASE) and includes the traded companies for the period 1989-2003[5]. All companies were required to deliver their financial statements for every year between 1989 and 2003. The data set contains detailed information about each firm. The items of interest were: balance sheets, income statements, tax paid, interest paid, depreciation, and market valuation. By law, the full balance sheets and income statements are available from firms. The data set is a moderately sized unbalanced panel, consisting of 167 individual quoted firms, of which 47 were defaulted firms in the following year. Our sample contains 16 sectors. No financial companies, such as banks, insurance firms, and financial firms, are included in this analysis as their characteristics are different. The firms that

[4] The performance measure ROA has received some occasional criticism. For more details see Fisher and McGowan, 1983.

[5] It is worth noting that the data is unavailable after 2003 for all firms included in the study. Therefore, our sample does not extend after 2003.

failed to deliver their statement for two years or more are considered failed, as they should deliver their statement by law. Our sample includes 47 defaulted firms and 120 non-defaulted firms.

3.2 Empirical Model and Proxies Variables

We used different measures of corporate performance: the return on assets (ROA), return on equity (ROE), earnings before interest and tax plus depreciation to total assets (PROF), market value of equity plus book value of debt to the book value of assets (Tobin's Q)[6], market value of equity to the book value of equity (MBVR), price per share to the earnings per share (P/E), and market value of equity and book value of liabilities divided by book value of equity (MBVE). In this study, Tobin's Q, MBVR, P/E, and MBVE are used to measure the market performance of firms, while the ROE, ROA, and PROF are employed as measures representing accounting performance measures.

More than one proxy for performance was used in this study in order to investigate whether the independent variables explained the performance measures (accounting, market, and stock market) at the same level or not. The researcher used the proxy (ROA) as an accounting performance measure and the (Tobin's Q) as a market performance measure. Tobin's Q has been used as a major indicator of firms' performance. Even Tobin's Q, as agreed by many researchers, is a noisy signal. Because of the limitations of Tobin's Q, other performance measures, ROE and PROF, P/E, MBVR, MBVE, are employed as supplementary measures. Using accounting and market measures of performance may shed light on the stock market activity and if there are other factors that may affect corporate performance.

If capital structure does affect a firm's performance and value, then a strong correlation between the firm's performance and capital structure would be found. So, we argue that a firm's debt ratio affects its performance negatively. Furthermore, it has been argued that short-term debt influences a firm's performance negatively, because short-term debt exposes firms to the risk of refinancing. It is expected that the debt maturity ratios (short-term debt and long-term debt) will have a significant impact on corporate performance because of the banking credit policy. Thus, the hypotheses are:

H_1**:** *A firm's capital structure does influence its performance.*

H_2**:** *Short-term debt decreases firm performance.*

Growth opportunities are measured by growth of sales (Growth)[7]. It is expected that firms with high growth opportunities have a high performance ratio, as growth firms are able to generate profit from investment. So, growth opportunities are expected to positively affect a firm's performance. Thus, Hypothesis 3 can be stated as follows:

H_3**:** *Growth opportunities increase firm performance.*

[6] It is worth noting that firms in Jordan do not issue preference shares.
[7] It is worth noting that growth of assets and book value of total assets minus book value of equity plus market value of equity divided by the book value of total assets are used in this study.

A firm's size is measured by log of assets (Size1) and log of sales (Size2). The firm's size is hypothesised to be positively related to the firm's performance, as bankruptcy costs decrease with size. Thus, a firm's size is expected to have a positive influence on a firm's performance. Gleason, among others, found that firm size has a positive and significant effect on firm performance ROA. In contrast, many other researchers such as Mudambi and Nicosia, (1998), Lauterbach and Vaninsky, (1999), Durand and Coeuderoy, (2001), and Tzelepis and Skuras, (2004) have found an insignificant effect of firm size on the firm's performance. Based on this discussion, Hypothesis 4 can be stated as:

H_4 ***:*** *A firm's size is expected to have a positive influence on a firm's performance.*

Risk is measured by the standard deviation of cash flow (net income plus depreciation) for the last three years (STDVCF). According to the classic risk-return trade-off arguments, firms with higher variability in operating income are expected to have higher returns. Thus, the Hypothesis to be tested is as follows:

H_5 ***:*** *There is a positive relationship between risk and corporate performance.*

The capital structure for firms varies from one sector to another and so do their optimal capital structures (see Bradley, Jarrell and Kim, 1984). Also, a firm's growth and business cycle varies from one industry to another (see for instance, Wei, Xie, and Zhang, 2005). Since capital structure, risk, growth, business cycle, and a firm's access to external sources of funds, and the sensitivity to external shocks, vary across industries, the corporate profitability would be affected by the industries sector. Therefore, the industries sector is expected to have an impact on corporate performance. Based on this discussion, Hypothesis 6 can be stated as

H_6 ***:*** *Industrial sectors affect corporate performance.*

To control for the effect of industrial sectors on a firm's performance, 16 dummy variables are used. Sector 1 (Foods), Sector 2 (Paper, Glass, and Packaging), Sector 3 (Steel, Mining and Heavy Engineering), Sector 4 (Medical and Pharmacy), Sector 5 (Chemical and Petroleum), Sector 6 (Textiles and Clothing), Sector 7 (Utilities and Energy), Sector 8 (Tobacco), Sector 9 (Construction and Engineering), Sector 10 (Hotels and Tourism), Sector 11 (Transportation), Sector 12 (Real Estate), Sector 13 (Media), Sector 14 (Medical Services), Sector 15 (Trade, Commercial Services, Rental and Communication), and Sector 16 (Educational Services). The dummy variable takes the value 1 if the firm is in that sector; otherwise it takes the value 0.

During our sampling period of 1989-2003, political instability around Jordan, or regional crises such as Gulf Crisis in 1990-1991 and Intifadah in 2000, affected the Jordanian economy. The Jordanian economy has been subject to a large number of regional crises such as the Gulf War 1990-1991 and Intifadah 2000, which affected the performance of the Jordanian economy and corporate leverage. For example, the trading volume of the secondary market increased substantially in 1992, while it decreased in 2000. Also most of the Jordanian firms depend heavily on international trade, and exports to the Arab region and the West Bank

represent most of Jordan's production (ASE, 2002). The Gulf Crisis in 1990-1991 and Intifadah in 2000 are hypothesised to influence firm efficiency and performance. Therefore, these regional crises may cause time-series effects on corporate leverage. Based on the above argument, the Hypothesis to be tested is as follows:

H_7: *Political Instability around Jordan (regional crises) affects corporate performance*

To control for the effect of macroeconomic factors, 12 dummy variables are used to control for the time effect (DUM1991, DUM1992, DUM1993, DUM1994, DUM1995, DUM1996, DUM1997, DUM1998, DUM1999, DUM2000, DUM2001, and DUM2002). DUM1991 and Dum1992 control for the effect of the Gulf Crisis 1990-1991, while DUM2000 controls for the effect of the outbreak of Intifadah in 2000. The dummy variable takes the value of 1 and 0.

The regression model takes the form of the Random Effects model for unbalanced panel data (Greene, 2003). The Random Effects model is better suited to our data set, since we need to control for the effect of the Industrial sectors on firm performance and the Fixed Effects model does not allow us to control for the effect of the Industrial sectors. The reason is that the industrial dummies do not change over time and, so, are not being reported in the Fixed Effects model. The usual identification tests and Hausman's Chi-square statistics, for testing whether the Fixed Effects model estimator is an appropriate alternative to the random effects model, are computed for each model (Judge et al., 1985). Furthermore, the Breusch and Pagan (1980) test for the random effect is reported for each model.

We estimate Equation (1) to test the two hypotheses that a firm's capital structures influence its performance for our sample using the panel data Model. The empirical models to be estimated as follows:

$$y_{it} = \beta_0 - \beta_1 Leverage_{it} + \beta_2 Growth_{it} + \beta_3 Size_{it} + \beta_4 STDVCF_{it} + \beta_5 TAX_{it} + \beta_6 Tangibility_{it} + \mu_i + u_{it} \quad (1)$$

$$y_{it} = \beta_0 - \beta_1 Leverage_{it} + \beta_2 Growth_{it} + \beta_3 Size_{it} + \beta_4 STDVCF_{it} + \beta_5 TAX_{it} + \beta_6 Tangibility_{it} + PoliticalCrisis_{it} + INDUST_{it} + \mu_i + u_{it} \quad (2)$$

where y_{it} is alternatively *ROA, ROE, PROF, Tobin's Q, MBVR, MBVE, P/E*, for firm *i* as a measure of performance. The independent variables are represented by *Leverage*, *Growth*, *Size*, *STDVCF*, *TAX*, and *Tangibility*. Five measures of leverage are used in the study[8]: total debt to total assets (TDTA)[9], total debt to total equity (TDTE), long-term debt to total assets

[8] The researcher used more than one proxy for leverage as different hypotheses for leverage were developed to investigate their effect on corporate performance. For example, the STDTA and LTDTA are used to investigate the effect of short-term and long-term debt on a firm's performance. The proxy of TDTE was used in the study to validate our result.

[9] In order to examine if there is any endogeneity problem as growth and size were used as independent variables in determining TD/TA. I re-estimated these equations by introducing instrumental variables; however, the results remain almost the same without

(LTDTA), short-term debt to total assets (STDTA), and total debt to total capital (TDTC). We used the short-term debt and long-term debt to examine H_2. Tax is measured by total tax to earnings before interest and tax (TAX). The other variable that may affect a firm's capital structure and performance is the assets structure measured by the tangibility. Tangibility is fixed assets to total assets (TANGB). Tangibility is expected to be positively related to corporate performance. *Political crisis* refers to the Gulf Crisis 1990-1991 and the outbreak of Intifadah in 2000. *INDUST* refers to the dummy variables for the 16 industries used in the study.

4. EMPIRICAL RESULTS

4.1 Descriptive Statistics

Table 1 reports summary statistics for the variables used in the study. The average return to assets for the sample as a whole is 1.2%, while the average return to equity is about -14.2%. The two accounting measures of performance show that Jordanian companies have a very low accounting performance. The four measures of market performance show a high percentage of performance compared with the accounting measures. For example, the average values of Tobin's Q and MBVR are 170% and 195%, respectively. The high ratios for the market performance measures could be as a result of the increase in firms' share price and equity without any increase in the real activities performance of the firms.

The lower returns may also be affected by firms' leverage. For example, the average total debt to total assets for the sample as a whole is about 36%. In addition, the lower returns for Jordanian companies may reflect the higher corporate tax, a 3 percent mean tax on their earnings before interest and tax, during the time period 1989-2003. So, the high taxation of returns could have an important impact on firm performance.

The correlation matrix for the variables is reported in Table 2 in order to examine the correlation between the explanatory variables. The results show that there is a negative relationship between growth and size and between growth and leverage, while size has a positive relationship with all leverage ratios except STDTA, which is negative. This implies that larger companies tend to have a higher leverage ratio with lower growth opportunities. It also implies that small firms have high growth opportunity which is consistent with Myers (1977). It also shows that most Jordanian companies had negative growth in the sample period, and there is a positive correlation between risk and leverage ratio, which implies that leveraged firms have a high risk as debt holders can take over the firm.

changing estimated parameters significantly. The estimation is carried using the Stata 8. In order to save the space, these results are not reported in this research.

Table 1: Summary Statistics of the Explanatory Variables, 1989-2003

Variable	Mean	Std. Dev.	Min	Max	Skewness	Kurtosis	Shapiro-Wilk	Probability
ROA	0.012	0.152	-4.071	0.681	-13.460	343.435	465.132	0.000
ROE	-0.142	4.195	-159.390	1.998	-35.248	1317.897	930.45	0.000
Tobin's Q	1.701	15.443	0.000	538.734	31.815	1066.859	840.099	0.000
MBVR	1.947	12.636	-2.556	450.000	34.959	1239.922	758.284	0.000
MBVE	4.601	48.552	-19.545	1682.340	30.545	1025.611	828.224	0.000
PROF	0.088	0.245	-6.248	0.696	-16.039	364.366	620.849	0.000
P/E	21.255	599.663	-9778.85	15692.430	10.458	428.860	732.556	0.000
TDTA	0.357	0.268	0.0002	2.600	2.184	15.356	128.768	0.000
LTDTA	0.061	0.101	0.000	0.570	2.127	7.787	144.407	0.000
STDTA	0.304	0.847	0.000	26.709	24.260	682.875	828.669	0.000
TDTC	1.232	2.347	-1.278	31.992	5.582	47.301	516.079	0.000
TDTE	1.965	35.628	-15.671	1407.987	38.827	1531.417	940.538	0.000
Growth	0.716	8.633	-1.000	292.979	30.888	1037.096	736.898	0.000
Size1	6.911	0.599	5.066	9.035	0.730	4.221	41.986	0.000
Size2	14.81	2.0564	0.	20.4917	-.539338	5.6287	26.154	0.000
STDVCF	0.056	0.243	0.000	6.496	20.207	481.994	624.147	0.000
TAX	0.085	0.279	-3.661	7.715	13.530	406.426	628.024	0.000
TANGB	0.474	0.257	0.000	0.978	0.035	1.996	26.688	0.000
CF	0.058	0.242	-6.248	0.684	-16.394	374.025	637.732	0.000

Note: ROA=the return on assets; ROE= return on equity; Tobin's Q= Market value of equity+ book value of debt/ book value of assets; MBVR Market value of equity/ Book value of equity; P/E=price per share/ earnings per share; MBVE= market value of equity and book value of liabilities divided by book value of equity; TDTA= total debt to total assets; LTDTA= long-term debt to total assets; TDTE= total debt to total equity; STDTA =short-term debt to total assets; TDTC = total debt to total capital; Growth= Growth opportunities measured by growth of sales; Size1= log of assets; Size2=log(sales), STDVCF=the standard deviation of cash flow for the last three years; TAX = total tax to earnings before interest and tax. TANGB = the fixed assets to total assets, CF=net income plus depreciation to total assets.

Table 2: Correlation Matrix of the Explanatory Variables, during 1989-2003

	TDTA	LTDTA	STDTA	TDTC	TDTE	Growth	Size1	Size2	STDVCF	TAX	TANGB	CF
TDTA	1											
LTDTA	0.325	1										
STDTA	0.201	-0.034	1									
TDTC	0.494	0.277	0.049	1								
TDTE	0.197	0.103	0.027	0.237	1							
Growth	-0.008	-0.022	-0.002	-0.022	-0.002	1						
Size1	0.201	0.340	-0.025	0.455	0.076	-0.060	1					
Size2	0.153	0.212	-0.053	0.413	0.073	0.005	0.795	1				
STDVCF	0.031	0.062	0.290	-0.041	-0.006	0.011	-0.073	-0.080	1			
TAX	-0.048	-0.043	-0.022	0.057	-0.014	-0.014	0.088	0.132	-0.030	1		
TANGB	0.160	0.362	-0.051	-0.003	0.004	-0.015	0.081	-0.066	-0.012	-0.073	1	
CF	-0.037	-0.054	-0.765	0.020	-0.075	0.026	0.100	0.132	-0.294	0.072	0.027	1

Note: TDTA= total debt to total assets; LTDTA= long-term debt to total assets; TDTE= total debt to total equity; STDTA =short-term debt to total assets; TDTC = total debt to total capital; Growth= Growth opportunities measured by growth of sales; Size1= log of assets; Size2= log (sales) STDVCF=the standard deviation of cash flow for the last three years. TAX = total tax to earnings before interest and tax. TANGB = the fixed assets to total assets, CF=net income plus depreciation to total assets.

4.2 Result Discussion

The results of the estimation of the panel data models with each of the performance measures and for the full sample of observations for the period 1989-2003 are displayed in Tables 3 to 6. The regression model using price per share to earnings per share (P/E)[10] is not significant using any measure of capital structure and, hence, is not reported. The regression model using return on equity (ROE) is excluded from the analysis because the ROE measure does not have any significant variable in the estimation and the R-squared value using this measure in most cases was less than 0.1%[11]. The market value of equity to book value of equity (MBVE) is also excluded from the analysis as the R-squared is very small and the result is very similar to Tobin's Q[12]. These results make the ROA and Tobin's Q the most powerful measures of performance in the Jordan case. Therefore, our discussion will concentrate on these two measures of performance beside the MBVR and PROF measures.

From Hypothesis 1, the firm's capital structure is expected to influence its performance. Four capital structure variables are used, TDTA, LTDTA, STDTA, and TDTE. From the regression results in Table 3, Table 4, Table 5, and Table 6, as expected the coefficients of those variables are significantly and negatively related to the accounting performance measure ROA[13]. For example, the LTDTA is significantly and negatively related to ROA. These results show that higher level of leverage lead to lower ROA.

[10] The reason for the insignificance of P/E could be that the share price does not reflect the actual situation for the firm. There may be other factors affecting a firm's performance other than the variable used in the study. Another reason could be that most investors still depend on the accounting measure of performance rather than the P/E measure due to the investor favoured payment of dividends or the inactivity of the stock market. Furthermore, including default firms in our sample that have a low or even negative P/E affects the validity of the P/E as a measure of performance.

[11] It is worth noting that our sample included defaulted firms with a negative value of equity for some firms in some cases which may affect the validity of ROE as a measure of performance in our study.

[12] TDTA, LTDTA, and TDTE are found to have a significant impact on MBVE. Also, Size1 and Tangibility are found to have a significant impact on MBVE.

[13] TDTA, LTDTA, and LTDTA are found to be significant at the 1% level of significance, while STDTA is found to be significant at the 5% level of significance. The high level of significance for STDTA reflects the important impact of short-term debt on a firm's performance.

Table 3: Estimation Results for Panel Data Models Using TDTA

	ROA	Tobin's Q	MBVR	PROF
Constant	-0.2779	-16.1825	0.3337	-0.1628
	(-4.59)***	(-2.88)***	(0.25)	(-1.45)
TDTA	-0.1245	-4.6224	0.0345	-0.0232
	(-9.03)***	(-2.6)***	(0.12)	(-0.79)
Growth	0.0008	-0.02059	-0.0051	0.0009
	(2.8)***	(-0.43)	(-0.17)	(1.21)
Size1	0.0533	2.3007	0.2604	0.0339
	(6.15)***	(2.84)***	(1.38)	(2.09)**
STDVCF	-0.0223	68.6502	-0.0434	-0.2438
	(-1.88)*	(20.95)***	(-0.12)	(-8.55)***
TAX	0.0186	0.426158	0.1086	0.0402
	(2.15)**	(0.29)	(0.79)	(1.85)*
TANG	-0.0830	0.4874	-1.1971	0.0764
	(-4.92)***	(0.25)	(-3.72)***	(2.16)**
No. Observation	1050	972	945	1050
R-Square	0.2121	0.3161	0.0337	0.09
Wald Test	170.14	446.06	18.17	91.42
P-value	(0.00)***	(0.00)***	(0.01)***	(0.00)***
Breusch and Pagan Test	207.14	25.19	171.91	43.87
	(0.00)***	(0.00***	(0.00)	(0.00)***
Hausman Test	12.26	7.87	3.88	24.22
	(0.06)*	0.2478	(0.692)	(0.00)***

Notes: ***Significant at 1% level, ** Significant at 5% level, and *Significant at 10% level. Numbers in parentheses are asymptotic t-values. ROA=the return on assets; Tobin's Q= Market value of equity+ book value of debt/ book value of assets; MBVR= Market value of equity/ Book value of equity; PROF= (earnings before interest and tax + depreciation) / Total assets; TDTA= total debt to total assets; Growth= Growth opportunities measured by growth of sales; Size1= log of assets; STDVCF =the standard deviation of cash flow for the last three years. TAX = total tax to earnings before interest and tax. TANGB = the fixed assets to total assets.

Table 4: Estimation Results for Panel Data Models Using LTDTA

	ROA	Tobin's Q	MBVR	PROF
Constant	-0.3050	-14.9455	0.3817	-0.2126
	(-4.5)***	(-2.52)**	(0.29)	(-1.84)*
LTDTA	-0.1385	-2.1074	0.2344	-0.1704
	(-3.3)***	(-0.35)	(0.32)	(-1.81)*
Growth	0.0009	-0.0218	-0.0054	0.0009
	(2.96)***	(-0.45)	(-0.17	(1.22)
Size1	0.0519	1.9409	0.2541	0.0403
	(5.37)***	(2.30)**	(1.36)	(2.43)**
STDVCF	-0.0222	68.0131	-0.0477	-0.2406
	(-1.81)*	(20.74)***	(-0.13)	(-8.42)***
TAX	0.0183	0.5718	0.1115	0.0393
	(2.06)**	(0.39)	(0.81)	(1.81)*
TANG	-0.0914	-0.2576	-1.2097	0.0916
	(-4.98)***	(-0.13)	(-3.75)***	(2.51)**
No. Observation	1050	972	945	1050
R-Square	0.1444	0.31	0.0323	0.0976
Wald Test	88.34	436.01	18.31	92.45
P-value	(0.00)***	(0.00)***	(0.0055)***	(0.00)***
Breusch and Pagan Test	244.28	23.32	156.80	43.19
	(0.00)***	(0.00)***	(0.00)***	(0.00)***
Hausman Test	12.2	4.33	7.79	17.33
	(0.06)*	(0.6323)	(0.2541)	(0.008)***

Notes: ***Significant at 1% level, ** Significant at 5% level, and *Significant at 10% level. Numbers in parentheses are asymptotic t-values. ROA=the return on assets; Tobin's Q = Market value of equity+ book value of debt/ book value of assets; MBVR Market value of equity/ Book value of equity (BR); PROF= (earnings before interest and tax + depreciation) / Total assets; LTDTA= long-term debt to total assets; Growth= Growth opportunities measured by growth of sales; Size1= log of assets; STDVCF=the standard deviation of cash flow for the last three years. TAX = total tax to earnings before interest and tax. Tangibility = the fixed assets to total assets.

Table 5: Estimation Results for Panel Data Models Using STDTA

	ROA	Tobin's Q	MBVR	PROF
Constant	-0.2538	-12.2080	0.3134	-0.0134
	(-3.72)***	(-2.97)***	(0.24)	(-0.15)
STDTA	-0.0075	16.0625	-0.0486	-0.2058
	(-2.22)**	(56.56)***	(-0.88)	(-42.04)***
Growth	0.0009	-0.0003	-0.0055	0.0007
	(2.93)***	(-0.01)	(-0.18)	(1.61)
Size1	0.0448	1.2048	0.2662	0.0206
	(4.61)***	(2.06)**	(1.43)	(1.59)
STDVCF	-0.0197	17.6787	0.0778	-0.0743
	(-1.51)	(9.13)***	(0.2)	(-4.11)***
TAX	0.0192	0.4094	0.1079	0.0282
	(2.16)**	(0.57)	(0.79)	(2.18)**
TANG	-.10933	-1.7994	-1.1925	0.0568
	(-6.09)**	(-1.45)	(-3.79)***	(2.27)**
No. Observation	1050	972	945	1050
R-Square	0.1260	0.8215	0.0346	0.6117
Wald Test	79.09	4675.21	18.92	1977.36
P-value	(0.00)***	(0.00)***	(0.0043)***	(0.00)***
Breusch and Pagan Test	265.09	10.20	172.73	577.35
	(0.00)***	(0.00)***	(0.00)***	(0.00)***
Hausman Test	11.67	278.14	2.66	62.51
	(0.086)*	(0.00)***	(0.8507)	(0.00)***

Notes: ***Significant at 1% level, ** Significant at 5% level, and *Significant at 10% level. Numbers in parentheses are asymptotic t-values. ROA=the return on assets; Tobin's Q= Market value of equity+ book value of debt/ book value of assets; MBVR =Market value of equity/ Book value of equity; PROF= (earnings before interest and tax + depreciation) / Total assets; STDTA =short-term debt to total assets; Growth= Growth opportunities measured by growth of sales; Size1= log of assets; STDVCF =the standard deviation of cash flow for the last three years. TAX = total tax to earnings before interest and tax. TANGB = the fixed assets to total assets.

Table 6: Estimation Results for Panel Data Models Using TDTE

	ROA	Tobin's Q	MBVR	PROF
Constant	-0.2645 (-4.05)***	-14.2677 (-2.54)**	0.9582 (1.03)	-0.1605 (-1.47)
TDTE	-0.0026 (-4.24)***	-0.0034 (-0.03)	0.1328 (8.39)***	-0.0026 (-1.92)*
Growth	0.0009 (2.93)***	-0.0219 (-0.45)	-0.0059 (-0.2)	0.0009 (1.21)
Size1	0.0466 (5.01)***	1.8435 (2.3)**	0.1557 (1.18)	0.0335 (2.14)**
STDVCF	-0.0259 (-2.12)**	67.9859 (20.74)***	-0.0929 (-0.27)	-0.2471 (-8.7)***
TAX	0.0195 (2.2)**	0.5991 (0.41)	0.1470 (1.07)	0.0411 (1.89)*
TANG	-0.1095 (-6.24)***	-0.5056 (-0.26)	-1.2596 (-4.79)***	0.0670 (1.96)**
No. Observation	1050	972	945	1050
R-Square	0.1441	0.3114	0.0886	0.1016
Wald Test	97.23	436.27	93.38	96.45
P-value	(0.00)***	(0.00)***	(0.00)***	(0.00)***
Breusch and Pagan Test	265.54	23.20	243.49	41.26
	(0.00)***	(0.00)***	(0.00)***	(0.00)***
Hausman Test	15.31	4.77	14.02	19.86
	(0.02)**	(0.573)	(0.03)**	(0.00)***

Note: ***Significant at 1% level, ** Significant at 5% level, and *Significant at 10% level. Numbers in parentheses are asymptotic t-values. ROA=the return on assets; Tobin's Q= Market value of equity+ book value of debt/ book value of assets; MBVR= Market value of equity/ Book value of equity; MBVE= market value of equity and book value of liabilities divided by book value of equity; PROF= (earning before interest and tax + depreciation) / Total assets; TDTE= total debt to total equity; Growth= Growth opportunities measured by growth of sales; Size1= log of assets; STDVCF=the standard deviation of cash flow for the last three years. TAX = total tax to earning before interest and tax. TANGB = the fixed assets to total assets.

Furthermore, it may provide support for the proposition that due to agency conflicts, companies over-leveraged themselves, thus affecting their performance negatively. Our results are consistent with the findings of previous studies such as Gleason, Mathur and Mathur (2000), Tzelepis and Skuras (2004), Krishnan and Moyer (1997), among others. Also, capital structure as measured by LTDTA, STDTA, and TDTE is found to be significantly and negatively related to a firm's profitability (PROF), while TDTA has a negative and insignificant impact on a firm's profitability measure (PROF). However, the negative and significant coefficient of LTDTA does not support Brick and Ravid's (1985) argument that long-term debt increases a firm's value, which could be due to the low ratio of long-term debt in the capital structure of Jordanian companies.

Hypothesis 2 predicts that firms with high short-term debt in their capital structure tend to have lower performance; thus short-term debt decreases a firm's performance. From the regression results in Table 5, as predicted, the coefficient of STDTA is negative and significantly different from zero. However, while STDTA is found to have a negative and significant effect on ROA and PROF, it also found to have a positive and significant effect on Tobin's Q. These findings indicate that the STDTA ratio negatively affects the accounting performance measures ROA and PROF. These findings indicate that short-term debt exposed firms to the risk of re-finance as it has a negative impact on ROA and PROF. Therefore, we accept the hypotheses that short-term debt decreases corporate performance ROA and PROF.

The TDTA ratio is found to be significant and negatively related to the market performance measure Tobin's Q, while LTDTA and TDTE are found to be insignificant and negatively related to Tobin's Q. Interestingly, STDTA has a positive and significant coefficient, indicating that higher levels of short-term debt in the capital structure are associated with a higher Tobin's Q ratio. The other measure of market performance is MBVR with which TDTA and LTDTA are found to have a positive but insignificant influence on the market performance measure MBVR, while the capital structure STDTA has a negative and insignificant impact on the market performance measure MBVR. The TDTE coefficient in the MBVR model has a positive and significant coefficient, indicating that higher levels of debt to equity in the capital structure are associated with a higher level of market performance (MBVR).

From Hypothesis 3, the firm's growth opportunity is expected to influence its performance. From the regression results in Tables 3 to Table 6, Growth is found to have a positive and significant effect on the performance measure ROA only, and is not significantly related to any other performance measures. However, Growth1 is found to have a positive but insignificant impact on PROF. The high growth rates are associated with the lower cost of capital and high performance ratio of ROA. Therefore, we accept the hypotheses that growth opportunity increases corporate performance ROA.

Hypothesis 4 predicts that firm size has a positive and significant effect on firm performance. The significance of firm size indicates that large firms earn higher returns compared to smaller firms, presumably as a result of diversification of investment and economies of scale. This result is consistent with previous findings including Gleason, Mathur, and Mathur (2000), among others. Firm size has a positive and significant impact on firm performance ROA, PROF, and Tobin's Q, indicating that a firm's size is an important determinant of corporate performance.

Another interesting result from Tables 3 to 6 is the significant negative coefficient for the risk variable STDVCF in the accounting measure of performance ROA, and in profitability measure PROF. Hypothesis 5 predicts a positive relationship between risk and corporate performance. In contrast to the classic risk-return trade-off arguments, in which firms with higher variability in operating income are expected to have higher returns, our results show that firms with higher variability in operating income have a lower return. This could be as a result of liquidity risk in that they face a higher risk of default (failure) as a result of fluctuations in the cash flow. A higher operating risk implies a higher probability of financial distress and higher bankruptcy costs and, therefore, lowers firm performance. This result could also confirm that most Jordanian companies have a high risk that affects their performance negatively. However, the risk variable STDVCF in the Tobin's Q has a positive and significant impact on Tobin's Q, which supports the classic risk-return arguments. Therefore, we reject Hypothesis 5 that predicts a positive relationship between risk and corporate performance.

The significance of the variable TAX suggests that the better performance of Jordanian companies is related to the higher corporate income tax payment, and also to other factors such as the firm's risk, size, and debt ratio (see Tables 3 to 6). This result indicates that firms with high tax payments have a higher performance rate. The composition of the asset structure (TANGB) has a negative and significant impact on the accounting measure of performance (ROA) and the market measure of performance (MBVR). This result indicates that firms with a high ratio of

TANGB have a lower performance ratio, which implies that Jordanian companies invest too much in fixed assets in a way that does not improve their performance, or that they do not use their fixed assets efficiently, so it has a negative impact on their performance.

Industrial Sector

The research further investigates the effect of the Industrial sector on corporate performance and whether the significance of a firm's capital structure will be affected as the industrial dummy variables are added to the model. Hypothesis 6 predicts that industrial sectors affect corporate performance. Table 7 shows that the industry dummy variables for sector 2 (Paper, Glass, Packaging), sector 5 (Chemical and Petroleum), sector 8 (Tobacco), sector 10 (A-Hotels and Tourism), sector 12 (Real Estate), sector 13 (Media), and sector 16 (Educational services) are significantly and positively related to the accounting measure of performance ROA using TDTA as a measure of capital structure. The positive and significant impacts of these industrial dummy variables indicate that a higher level of investment in these sectors could be associated with a higher ratio of ROA. However, it should be noted that the significance of these industrial sectors may imply the presence of the industry sector[14].

The high profitability ratio for Sector 10 (A-Hotels and Tourism) may indicate that the tourism industry is profitable, and the Jordanian economy depends to some extent on tourism as a source of income. Furthermore, the positive impact of sector 12 (Real Estate), sector 13 (Media), and sector 16 (Educational services), indicates that investing in these sectors is profitable. The main reason for this is that, given the location of Jordan in the Middle East, refugees from other countries (especially from Palestine and Iraq) increase the demand on these services. Also, the results could explain the important contribution of these sectors in GDP. The dummy variables for sector 14 (Medical services) (using TDTA) and sector 15 (Trade and Commercial Services, Rental, and Communication) (using TDTE) are the only dummy variables that have a significant impact on the market performance measure Tobin's Q. The dummy variables for sector 1 (Foods), sector 3 (Steel, Mining and Heavy Engineering), sector 4 (Medical and Pharmaceutical), sector 6 (Textiles and Clothing), sector 7 (Utilities and Energy), sector 9 (Construction and Engineering), and sector 11 (Transportation) are found to have a positive but insignificant impact on the firm performance measure ROA.

The negative sign for some industries could be as a result of the negative equity value for some firms included in the analysis as a result of distress. Therefore, we accept the hypothesis that industrial sectors affect Jordanian corporate performance ROA. As mentioned earlier in this section the significance and sign of these industrial sectors changed as the performance measure changed which may imply the presence of the industry sector. But it should be noted that including industrial dummy variables in the regression increased the model robustness and accuracy.

[14] It is worth noting that we have used each industrial dummy separately in each regression which provided similar results to Table 7.

Table 7: Estimation results for panel data models including dummy variables for industrial sectors.

	TDTA				TDTE			
	ROA	**Tobin's Q**	**MBVR**	**PROF**	**ROA**	**Tobin's Q**	**MBVR**	**PROF**
Constant	-0.3272	-0.3335	-16.3192	3.282	-0.1329	-17.9246	2.1705	-0.1311
	(-3.54)***	(-3.28)***	(-1.68)*	(2.48)**	(-0.88)	(-1.86)*	(1.1)	(-0.82)
Leverage	-0.1312	-0.0026	0.0059	0.140	-0.0031	-4.3115	-0.0033	-0.0382
	(-9.3)***	(-4.17)***	(0.04)	(8.94)***	(-2.33)**	(-2.3)**	(-0.01)	(-1.35)
Growth	0.0009	0.0009	-0.0143	-0.005	0.0009	-0.0127	-0.0025	0.0009
	(2.94)***	(3.03)***	(-0.3)	(-0.17)	(1.25)	(-0.26)	(-0.08)	(1.25)
Size1	0.0505	0.0448	1.5447	0.098	0.0312	1.9726	0.2087	0.0325
	(5.04)***	(4.08)***	(1.62)	(0.68)	(1.93)*	(2.05)**	(0.97)	(1.89)*
STDVCF	-0.0216	-0.0250	60.2086	-0.048	-0.2209	61.4841	-0.0098	-0.2181
	(-1.8)*	(-2.02)**	(16.06)***	(-0.13)	(-7.82)***	(16.27)***	(-0.03)	(-7.66)**
TAX	0.0175	0.0184	0.4686	0.118	0.0411	0.3311	0.0949	0.0394
	(2.02)**	(2.07)**	(0.32)	(0.87)	(1.9)*	(0.23)	(0.69)	(1.83)*
TANG	-0.1016	-0.1230	-2.1331	-1.579	0.0221	-1.0602	-1.3360	0.0386
	(-5.57)***	(-6.43)***	(-0.94)	(-5.57)***	(0.63)	(-0.46)	(-3.84)***	(1.05)
Dummy for sector 1	0.0847	0.0988	5.3267	-1.867	0.0080	4.8609	-1.1518	-0.0043
	(1.52)	(1.61)	(0.81)	(-2.44)**	(0.08)	(0.74)	(-1.01)	(-0.04)
Dummy for sector 2	0.1039	0.1095	5.4743	-1.800	0.0353	5.2658	-1.3693	0.0281
	(1.83)*	(1.75)*	(0.83)	(-2.32)**	(0.36)	(0.8)	(-1.18)	(0.28)
Dummy for sector 3	0.0726	0.0882	4.8083	-1.802	0.0187	4.2144	-1.5323	0.0095
	(1.31)	(1.45)	(0.74)	(-2.38)**	(0.19)	(0.65)	(-1.36)	(0.1)
Dummy for sector 4	0.0703	0.0789	3.8631	-1.835	-0.0060	3.4041	-1.5072	-0.0156
	(1.23)	(1.25)	(0.58)	(-2.35)**	(-0.06)	(0.51)	(-1.29)	(-0.15)
Dummy for sector 5	0.0972	0.0994	5.8117	-1.494	0.0178	5.8824	-1.1105	0.0116
	(1.72)*	(1.59)	(0.88)	(-1.94)*	(0.18)	(0.9)	(-0.96)	(0.12)
Dummy for sector 6	0.0597	0.0666	5.7251	-2.017	-0.0030	5.5446	-1.6400	-0.0098
	(1.03)	(1.04)	(0.85)	(-2.51)**	(-0.03)	(0.82)	(-1.35)	(-0.09)
Dummy for sector 7	0.0618	0.0650	5.3111	-2.419	-0.0361	5.7248	-1.7448	-0.0462
	(1.09)	(1.04)	(0.8)	(-3.06)***	(-0.37)	(0.86)	(-1.47)	(-0.45)
Dummy for sector 8	0.1503	0.1393	4.9926	-1.281	0.0707	5.3305	-0.8147	0.0682
	(2.32)**	(1.94)**	(0.7)	(-1.48)	(0.65)	(0.75)	(-0.61)	(0.6)
Dummy for sector 9	0.0888	0.0888	5.8530	-1.649	0.0279	5.9183	-1.0641	0.0192
	(1.51)	(1.36)	(0.86)	(-2.03)**	(0.28)	(0.87)	(-0.87)	0.18
Dummy for sector 10	0.0950	0.0857	6.4345	-1.300	0.0103	5.9503	-1.2513	0.0027
	(1.66)*	(1.36)	(0.97)	(-1.66)*	(0.1)	(0.9)	(-1.07)	(0.03)
Dummy for sector 11	0.0860	0.1086	3.4314	-2.252	0.0521	2.8678	-1.9629	0.0428
	(1.48)	(1.69)*	(0.51)	(-2.82)***	(0.52)	(0.42)	(-1.64)	(0.41)
Dummy for sector 12	0.1104	0.1114	4.6383	-2.128	0.1343	4.2104	-1.9657	0.1299
	(1.9)*	(1.73)*	(0.68)	(-2.62)***	(1.34)	(0.62)	(-1.63)	(1.25)
Dummy for sector 13	0.1140	0.0980	5.5024	0.598	0.1253	5.7099	0.8987	0.1039
	(1.83)*	(1.41)	(0.79)	(0.67)	(1.18)	(0.82)	(0.63)	(0.95)
Dummy for sector 14	0.0359	0.0655	33.1772	-2.456	-0.4862	30.9289	-2.1633	-0.4901
	(0.52)	(0.87)	(3.78)***	(-2.42)**	(-4.06)***	(3.52)**	(-1.43)	(-3.95)***
Dummy for sector 15	0.0306	0.0494	3.2289	-2.224	-0.0441	2.8678	-1.7954	-0.0525
	(0.54)	(0.78)	(0.48)	(-2.81)*	(-0.45)	(0.43)	(-1.52)	(-0.51)
Dummy for sector 16	0.1369	0.1647	6.3304	-1.000	0.0264	5.2245	-0.9014	0.0098
	(2.08)**	(2.26)**	(0.88)	(-1.14)	(0.24)	(0.73)	(-0.67)	(0.09)
No. Observations	1050	972	945	1050	1050	972	945	1050
R-Square	0.2644	0.1794	0.3292	0.1992	0.1812	0.333	0.1222	0.1746
Wald chi2	196.22	111.81	465.83	145.4	182.73	473.73	32.63	165.96
P-value	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.00)***	0.0672	(0.00)***
Breusch and Pagan test	114.89	163.06	37.28	59.59	3.25	39.51	41.39	4.43
	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.0714)*	(0.00)***	(0.00)***	(0.03)**
Hausman Test	10.52	13.39	2.20	9.73	21.32	3.55	1.87	18.23
	(0.10)*	(0.0373)*	(0.900)	(0.136)	(0.002)***	(0.7378)	(0.931)	(0.006)***

Note: ***Significant at 1% level, ** Significant at 5% level, and *Significant at 10% level. Numbers in parentheses are asymptotic t-values. ROA=the return on assets; ROE= return on equity; Tobin's Q= Market value of equity+ book value of debt/ book value of assets; MBVR Market value of equity/ Book value of equity (MBR); MBVE= market value of equity and book value of liabilities divided by book value of equity; PROF= (earnings before interest and tax + depreciation) /total assets; TDTA= total debt to total assets; Growth= Growth opportunities measured by growth of sales; Size1= log of assets; STDVCF=the standard deviation of cash flow for the last three years. TAX = total tax to earnings before interest and tax. Tangibility = the fixed assets to total assets; Dummy refers to the dummy variables for year. . Leverage refers to TDTA or TDTE.

Economic Environment and Regional Risk

The economic environment and policy and regional risk affect firms' performance. Hypothesis 7 states that Political Instability around Jordan (regional crises) affects corporate performance. Table 8 presents the results of the estimation including Year (time) dummy variables to control for the macroeconomic variables and economic environment and policy impact on firms' performance. The estimated coefficients on time dummies suggest a significant effect of macroeconomic variables on firms' performance, implying that major changes to the overall economic environment may significantly affect corporate performance. From 1991 to 1994, time dummies had a positive and significant effect on the firm's performance measured by ROA (using TDTA).

The significance of the time dummies DUM1991 and DUM1992 shows that the Gulf Crisis 1990-1991 may have a positive impact on firm performance measured by ROA. This was probably because the Jordanian market was the only market open to Iraq, so the demand for Jordanian products increased on external level. Also, the return of migrant workers from the Gulf States and refugees from Iraq and the Gulf States increased the demand for both industrial and services products, which resulted in a high performance rate in the short run. While this result may indicate that the Gulf Crisis 1990-1991 had a positive impact on corporate performance, there could be other factors (such as interest rate and inflation) that may lead to an increase in corporate performance rather than the Gulf Crisis 1990-1991 during 1991.

The time dummy variable DUM2000 had a negative and significant effect on firms' performance measured by ROA. The outbreak of the Intifadah in September 2000 had a negative and significant impact on the firm's performance measured by ROA. The reason is that the West Bank and Gaza are major markets for Jordanian products, to which exports decreased by about 16%. Furthermore, it also affected tourism and investment negatively.

The time dummies from 1995 to 1999 and DUM2001, and DUM2002 had no significant effect on firm performance measured by ROA. The time dummies DUM1991, DUM1994, DUM1995, DUM1996, DUM1997, DUM1998, DUM2000, and DUM2002 had a negative and significant impact on firm performance measured by MBVR. The negative and significant impact on MBVR could be as a result of the low market value of equity at which investors expected firm performance to be negative, so the share price decreased during these years. The negative sign could also be as a result of asymmetric information between insiders and outsiders. The significance of the capital structure variables and other determinant variables increased as time dummy variables were added to the model. This may indicate that there are other important factors rather than capital structure that affect corporate performance.

Table 8: Estimation results for panel data models including dummy variables for years

	TDTA				TDTE			
	ROA	**Tobin's Q**	**MBVR**	**PROF**	**ROA**	**Tobin's Q**	**MBVR**	**PROF**
Constant	-0.388	-20.395	-0.7014	-0.1093	-0.3284	-16.9420	1.0817	-0.1066
	(-6.67)***	(-3.35)***	(-0.54)	(-1.22)	(-5.6)***	(-2.81)***	(1.13)	(-1.25)
Leverage	-0.1498	-5.058	-0.3333	-0.0120	-0.0027	0.0064	0.1363	-0.0034
	(-11.24)***	(-2.69)***	(-1.19)	(-0.47)	(-4.61)***	(0.05)	(9.22)***	(-2.62)***
Growth	0.0007	-0.0226	-0.0144	0.0007	0.0008	-0.0217	-0.0159	0.0007
	(2.34)**	(-0.46)	(-0.51)	(0.92)	(2.5)**	(-0.44)	(-0.58)	(0.91)
Size1	0.0694	2.49	0.5120	0.0301	0.0560	1.8620	0.2418	0.0300
	(8.45)***	(2.97)***	(2.80)***	(2.42)**	(6.83)***	(2.28)**	(1.82)*	(2.57)***
STDVCF	-0.0327	68.953	-0.4094	-0.4060	-0.0426	68.1637	-0.4620	-0.4107
	(-2.33)**	(20.86)***	(-1.22)	(-11.8)***	(-2.89)***	(20.63)***	(-1.44)	(-11.99)***
TAX	0.008	0.0631	-0.0972	0.0453	0.0134	0.3967	-0.0654	0.0474
	(0.94)	(0.04)	(-0.77)	(2.06)**	(1.49)	(0.27)	(-0.52)	(2.15)**
TANG	-0.0713	0.4378	-0.6560	0.0441	-0.1035	-0.7338	-0.9536	0.0380
	(-4.46)***	(0.22)	(-2.19)**	(1.54)	-(6.37)***	(-0.38)	(-3.79)***	(1.38)
Dummy 1991	0.0579	3.3129	-0.7971	0.0485	0.0334	1.8545	-0.8771	0.0499
	(4.41)***	(1.41)	(-3.81)***	(1.43)	(2.45)**	(0.8)	(-4.31)***	(1.49)
Dummy 1992	0.0666	3.8968	0.2252	0.0586	0.0472	2.7418	0.0790	0.0584
	(5.08)***	(1.66)*	(1.10)	(1.71)*	(3.45)***	(1.18)	(0.4)	(1.73)*
Dummy 1993	0.0366	3.3102	-0.0266	0.0361	0.0181	2.2977	-0.0550	0.0333
	(2.82)***	(1.43)	(-0.13)	(1.07)	(1.33)	(91)	(-0.28)	(0.99)
Dummy 1994	0.0439	3.2334	-0.5798	0.0476	0.0348	2.5793	-0.6038	0.0466
	(3.4)***	(1.40)	(-2.94)***	(-1.41)	(2.55)**	(1.12)	(-3.11)***	(1.38)
Dummy 1995	0.0189	3.5349	-0.9261	0.0167	0.0123	3.0327	-0.9264	0.0161
	(1.5)	(1.56)	(-4.74)***	(0.50)	(0.92)	(1.34)	(-4.79)***	(0.48)
Dummy 1996	-0.0072	3.0483	-1.2192	-0.0164	-0.0107	2.8003	-1.2267	-0.0167
	(-0.59)	(1.39)	(-6.50)***	(-0.51)	(-0.83)	(1.27)	(-6.61)***	(-0.52)
Dummy 1997	0.0035	2.9744	-1.3312	0.0031	-0.0001	2.6983	-1.3293	0.0033
	(0.3)	(1.37)	(-7.34)***	(0.1)	(-0.01)	(1.24)	(-7.38)***	(0.11)
Dummy 1998	-0.0063	2.9074	-1.4423	-0.0087	-0.0106	2.6349	-1.4554	-0.0090
	(-0.57)	(1.39)	(-8.25)***	(-0.29)	(-0.9)	(1.26)	(-8.38)***	(-0.3)
Dummy 1999	-0.0121	3.3211	-1.4746	-0.0147	-0.0131	3.1038	-1.4788	-0.0111
	(-1.12)	(1.59)	(-8.46)***	(-0.51)	(-1.14)	(1.48)	(-8.54)***	(-0.38)
Dummy 2000	-0.0298	2.466	-1.2521	-0.0307	-0.0300	2.2421	-1.3524	-0.0274
	(-2.72)***	(1.21)	(-7.35)***	(-1.05)	(-2.59)***	(1.09)	(-7.95)***	(-0.94)
Dummy 2001	0.0809	-7.0428	0.2025	1.3074	0.1149	-6.1501	0.3396	1.3266
	(1.1)	(-0.49)	(0.17)	(6.90)***	(1.48)	(-0.42)	(0.28)	(7.00)***
Dummy 2002	-0.0111	5.7828	-0.5847	-0.0821	-0.0147	5.6147	-0.5873	-0.0826
	(-1.03)	(2.87)***	(-3.57)***	(-2.85)***	(-1.3)	(2.78)**	(-3.57)***	(-2.85)***
No. Observations	1050	972	945	1050	1050	845	972	1050
R-Square	0.265	0.3227	0.155	0.163	0.17	0.3175	0.20979	0.1688
Wald Test	297.94	453.98	223.43	197.21	179.35	443.37	309.43	207.9
P-value	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.00)***
Breusch and Pagan Test	243.18	24.87	232.96	43.14	50.12	8.71	122.51	325.32
	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.966)	(0.00)***	(0.00)***
Hausman Test	45.12	9.00	33.35	36.1	287.25	23.1	349.71	38.1
	(0.00)***	(0.959)	(0.015)**	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.00)***

Note: ***Significant at 1% level, ** Significant at 5% level, and *Significant at 10% level. Numbers in parentheses are asymptotic t-values. ROA=the return on assets; ROE= return on equity; Tobin's Q= Market value of equity+ book value of debt/ book value of assets; MBVR Market value of equity/ Book value of equity (MBR); MBVE= market value of equity and book value of liabilities divided by book value of equity; PROF= (earnings before interest and tax + depreciation) /total assets; TDTA= total debt to total assets; Growth= Growth opportunities measured by growth of sales; Size1= log of assets; STDVCF =the standard deviation of cash flow for the last three years. TAX = total tax to earnings before interest and tax. Tangibility = the fixed assets to total assets; Dummy refers to the dummy variables for year. Leverage refers to TDTA or TDTE.

Table 9 presents the results for the estimated model and includes both industrial dummy variables to control for the industrial effect and the year's dummy variables. The significance of the capital structure increased. This indicates that the capital structure variable had an important impact on firm performance. Also, the R-squared value and the Wald Chi-square value increased for all models.

Table 9: Estimation results for panel data models including dummy variables for industrial sectors and years

	TDTA				TDTE			
	ROA	**Tobin's Q**	**MBVR**	**PROF**	**ROA**	**Tobin's Q**	**MBVR**	**PROF**
Constant	-0.4510	-21.8227	0.0316	-0.0633	-0.4109	-19.034	2.90084	-0.07
	(-5.34)***	(-2.21)**	(0.02)	(-0.48)	(-4.78)***	(-1.92)*	(2.21)**	(-0.53)
Leverage	-0.1557	-4.7855	-0.3845	-0.0295	-0.0028	0.0139	0.1412904	-.00034
	(-11.57)***	(-2.43)**	(-1.35)	(-1.17)	(-4.69)***	(0.1)	(9.65)***	(-2.69)***
Growth	0.0007	-0.0146	-0.0080	0.0007	0.0008	-0.0144	-0.010413	0.0007
	(2.5)**	(-0.3)	(-0.28)	(1.00)	(2.63)***	-(0.29)	(-0.38)	(1.01)
Size1	0.0695	2.1583	0.5403	0.0316	0.05646	1.567	0.1922272	0.031
	(7.47)***	(2.18)**	(2.6)***	(2.32)**	(6.01)***	(1.62)	(1.34)	(2.29)**
STDVCF	-0.0322	61.7618	-0.3554	-0.3523	-0.0432	60.399	-0.422815	-0.35
	(-2.26)**	(16.24)***	(-1.03)	(-10.11)***	(-2.88)***	(16.01)***	(-1.26)	(-10.3)
TAX	0.0072	-0.0586	-0.1028	0.0404	0.0126	0.2252	-0.079744	0.041
	(0.84)	(-0.04)	(-0.81)	(1.86)*	(1.39)	(0.15)	(-0.63)	(1.91)*
TANG	-0.0892	-1.1061	-0.6540	0.0046	-0.1195	-2.4027	-1.156071	-.00008
	(-5.18)***	(-0.47)	(-2.02)**	(0.15)	(-6.75)***	(-1.05)	(-4.29)***	(0.00)
Dummy for sector 1	0.0794	4.6534	-0.6172	-0.0381	0.0999	5.3451	-1.43761	-0.03
	(1.6)	(0.7)	(-0.59)	(-0.43)	(1.97)**	(0.81)	(-1.95)*	(-0.31)
Dummy for sector2	0.0943	4.9998	-0.8413	-0.0175	0.1065	5.4887	-1.388192	-0.01
	(1.86)*	(0.75)	(-0.79)	(-0.2)	(2.06)**	(0.82)	(-1.85)*	(-0.1)
Dummy for sector3	0.0583	3.9387	-1.0938	-0.0290	0.0826	4.8397	-1.389157	-0.02
	(1.18)	(0.6)	(-1.05)	(-0.33)	(1.63)*	(0.74)	(-1.9)*	(-0.23)
Dummy for sector4	0.0647	3.2610	-0.9095	-0.0654	0.0797	3.9657	-1.36537	-0.06
	(1.27)	(0.49)	(-0.84)	(-0.73)	(1.53)	(0.59)	(-1.81)*	(-0.63)
Dummy for sector5	0.0881	5.7091	-0.5188	-0.0360	0.0941	5.8729	-1.078213	-0.03
	(1.75)*	(0.86)	(-0.49)	(-0.41)	(1.83)*	(0.88)	(-1.45)	(-0.32)
Dummy for sector6	0.0501	5.2068	-0.9657	-0.0548	0.0643	5.6317	-1.499314	-0.05
	(0.96)	(0.77)	(-0.86)	(-0.61)	(1.21)	(0.83)	(-1.92)*	(-0.52)
Dummy for sector7	0.0469	5.6072	-1.2742	-0.0885	0.0561	5.4133	-2.00729	-0.08
	(0.92)	(0.84)	(-1.16)	(-0.99)	(1.08)	(0.8)	(-2.62)***	(-0.86)
Dummy for sector8	0.1379	5.1374	-0.2455	0.0205	0.1304	4.9781	-0.818309	0.027
	(2.39)**	(0.71)	(-0.2)	(0.21)	(2.22)**	(0.69)	(-0.97)	(0.28)
Dummy for sector9	0.0848	5.8218	-0.5297	-0.0191	0.0907	5.9944	-1.252956	-0.01
	(1.61)	(0.85)	(-0.47)	(-0.21)	(1.69)*	(0.87)	(-1.6)	(-0.12)
Dummy for sector10	0.0794	5.7103	-1.0825	-0.0380	0.0837	6.5437	-1.111573	-0.03
	(1.55)	(0.85)	(-1.00)	(-0.43)	(1.6)	(0.98)	(-1.47)	(-0.35)
Dummy for sector11	0.0866	2.7396	-1.5446	0.0106	0.1134	3.4611	-1.893292	0.02
	(1.67)*	(0.40)	(-1.40)	(0.12)	(2.15)**	(0.51)	(-2.46)**	(0.22)
Dummy for sector12	0.1060	4.0044	-1.7496	0.1040	0.1087	4.7195	-1.99385	0.105
	(2.04)**	(0.58)	(-1.58)	(1.15)	(2.05)**	(0.68)	(-2.55)**	(1.17)
Dummy for sector13	0.1165	5.5402	1.4052	0.0721	0.1059	5.6281	1.031838	0.09
	(2.09)**	(0.79)	(1.06)	(0.77)	(1.86)*	(0.8)	(1.18)	(0.96)
Dummy for sector14	0.0534	30.5985	-1.6414	-0.4730	0.0897	33.011	-1.901208	-0.46
	(0.87)	(3.46)***	(-1.18)	(-4.32)***	(1.43)	(3.75)***	(-1.94)*	(-4.24)***
Dummy for sector15	0.0302	2.6336	-1.0230	-0.0991	0.0533	3.2314	-1.675391	-0.09
	(0.59)	(0.39)	(-0.94)	(-1.11)	(1.02)	(0.48)	(-2.19)**	(-0.99)
Dummy for sector16	0.1237	5.0465	-0.8187	-0.0080	0.1622	6.4425	-0.82091	0.003
	(2.11)**	(0.7)	(-0.66)	(-0.08)	(2.72)***	(0.89)	(-0.96)	(0.03)
Dummy 1991	0.0579	3.2632	-0.8082	0.0480	0.0330	1.9558	-0.89499	0.046
	(4.4)***	(1.39)	(-3.85)***	(1.44)	(2.4)**	(0.85)	(-4.41)***	(1.4)
Dummy 1992	0.0664	3.8193	0.2205	0.0571	0.0468	2.7964	0.0644174	0.054
	(5.06)***	(1.63)	(1.07)	(1.71)*	(3.39)***	(1.21)	(0.32)	(1.65)*
Dummy 1993	0.0367	3.3279	-0.0373	0.0342	0.0178	2.437	-0.071963	0.029
	(2.82)***	(1.43)	(-0.19)	(1.03)	(1.3)	(1.06)	(-0.37)	(0.88)
Dummy 1994	0.0446	3.1876	-0.5959	0.0494	0.0353	2.6415	-0.616662	0.047
	(3.44)***	(1.38)	(-3.02)***	(1.49)	(2.57)***	(1.15)	(-3.17)***	(1.42)
Dummy 1995	0.0192	3.5081	-0.9481	0.0188	0.0123	3.0885	-0.937877	0.017
	(1.52)	(1.55)	(-4.84)***	(0.58)	(0.92)	(1.36)	(-4.85)***	(0.53)
Dummy 1996	-0.0067	2.9651	-1.2383	-0.0150	-0.0103	2.7944	-1.235144	-0.02
	(-0.55)	(1.35)	(-6.59)***	(-0.48)	(-0.79)	(1.27)	(-6.65)***	(-0.5)
Dummy 1997	0.0036	2.9170	-1.3469	0.0022	-0.0002	2.7011	-1.335147	0.001
	(0.31)	(1.35)	(-7.41)***	(0.07)	(-0.01)	(1.24)	(-7.41)***	(0.05)
Dummy 1998	-0.0061	2.6745	-1.4527	-0.0068	-0.0109	2.4226	-1.454708	-0.01
	(-0.55)	(1.28)	(-8.3)***	(-0.24)	(-0.92)	(1.15)	(-8.38)***	(-0.26)

Dummy 1999	-0.0114	3.0832	-1.4852	-0.0057	-0.0126	2.8824	-1.475156	-0.00
	(-1.05)	(1.47)	(-8.51)***	(-0.2)	(-1.09)	(1.38)	(-8.51)***	(-0.09)
Dummy 2000	-0.0286	2.4878	-1.2583	-0.0234	-0.029	2.2878	-1.33913	-0.02
	(-2.6)***	(1.22)	(-7.37)***	(-0.82)	(-2.49)**	(1.11)	(-7.87)***	(-0.72)
Dummy 2001	0.0812	-5.0741	0.1756	1.1567	0.12136	-4.357	0.3410539	1.166
	(1.1)	(-0.35)	(0.15)	(6.15)***	(1.55)	(-0.3)	(0.28)	(6.23)***
Dummy 2002	-0.0107	5.7696	-0.5800	-0.0805	-0.0145	5.594	-0.581091	-0.08
	(-0.99)	(2.88)***	(-3.54)***	(-2.85)***	(-1.28)	(2.78)***	(-3.54)***	(-2.89)***
R-square	0.314	0.3393	0.233	0.2305	0.2099	0.3352	0.3155	0.235
Wald Test	333.91	481.27	241.57	304.08	206.47	472.42	360.41	311.7
P-value	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.00)***
Breusch and Pagan Test	145.24	39.12	68.1	5.77	181.87	37.04	105.2	3.6
	(0.00)***	(0.00)***	(0.00)***	(0.016)**	(0.00)***	(0.00)***	(0.00)***	(0.058)*
Hausman Test	932.65	4.37	27.16	144.70	57.44	4.76	34.94	83.95
	(0.00)***	(0.999)	(0.076)*	(0.00)***	(0.00)***	(0.999)	(0.0096)***	(0.000)***

To summarise, the firm's capital structure is a significant determinant of corporate performance. Another important finding is that STDTA has a negative and significant impact on the performance measure ROA. The significance and negative effect of STDTA on a firm's performance ROA supports the argument that short-term debt decreases a firm's performance. The insignificance of the market performance measure P/E indicates that the Jordanian equity market is not efficient, so the best performance measure is the accounting performance measure ROA. Furthermore, including industrial and time dummy variables increased the robustness of the model. It may also indicate some sectors are more profitable than others. It also was found that a Jordanian firm's performance could be affected by the overall economy performance. The next section investigates the effect of capital structure on corporate failure.

5. CONCLUSIONS

This paper examines the impact which capital structure has had on corporate performance in Jordan in which we control the effect of industrial sectors, regional risk, such as the Gulf Crisis 1990-1991 and the outbreak of Intifadah in the West Bank in September 2000. This paper bridges the gap in the relevant literature as state and regional development varies from one country to another and this development could affect the validity of the theories as the environment changes.

There is no single study formulated in the Middle East that investigates the impact of capital structure on a firm's performance. This study tried to fill the gap in this field by investigating the effect of capital structure on corporate performance by taking Jordan as a case study. Furthermore, this paper employed different measures of capital structure such as short-term debt, long-term debt, and total debt to total assets in order to investigate the effect of the debt structure on corporate performance. Investigating the effect of capital structure on corporate performance using market and accounting measures could be valuable as it provides evidence about whether the stock market is efficient or not.

An unbalanced panel of 167 companies are studied in this paper, of which 47 firms defaulted due to severe financial distress problems resulting in insolvency. A firm's capital structure was found to have a significant and negative impact on the firm's performance measures in both the accounting and market measures. An interesting finding is that the STDTA has a positive and significant effect on the market performance measure (Tobin's Q), which could to some extent support Myers's (1977) argument that firms with high short-term debt to total assets have a high growth rate and high performance. The results also show that high performance is associated with a high tax rate. This indicates that profitable firms pay a high tax rate. Firm size was found to have a positive impact on a firm's performance, as large firms have

low bankruptcy costs. In other words, bankruptcy costs increases as firm size decreases and, hence, bankruptcy costs negatively affects a firm's performance.

Controlling for the effect of macroeconomic and regional factors, the results suggested that the Gulf Crisis 1990-1991 had a positive impact on the Jordanian firms' performance. Jordanian companies' performance as well as leverage increased during the Gulf Crisis. On the other hand, the outbreak of Intifadah in the West Bank in September 2000 negatively affected Jordanian corporate performance, as most of the Jordanian companies exported to the West Bank. The negative impact of Intifadah resulted in a fall of 20.5% in the market capitalisation of the ASE in 2000, which also shows that a Jordanian firm's performance is highly affected by the regional environment.

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