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Capital Structure and Corporate Performance: Empirical Study on the Public Jordanian Shareholdings Firms Listed in Amman Stock Market

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Abstract
The study investigates the effect of capital structure on the performance of the public Jordanian firms listed in Amman stock market. The study used multiple regression model represented by ordinary least squares (OLS) as a technique to examine what is the effect of capital structure on the performance by applying on 76 firms(53 industrial firms and 23 service corporation) for the period(2001-2006).The results of the study concluded that capital structure associated negatively and statistically with firm performance on the study sample generally. In addition, the study found out that there is no differences for the impact of the financial leverage between high financial leverage firms and low financial leverage firms on their performance. Finally , the study also showed that the effect of financial leverage on the basis of the growth that there is no difference between the financial leverage of high growth firms and low growth firms on the performance, which it was negatively and statistically.
Key words: capital structure , performance ,profitability ,debt, financial leverage, firm and Jordan

Introduction

The relationship between capital structure and firm performance is considering of argumentative topics in the literature of corporate finance and that sparked the financial economists whether to be financial or non financial firms. As is will known, that global economy is witnessing investments movements, especially in recent decades and this consistent with the Jordan economy which developed as a result of its openness on the outside world, and this in turn led to expansion the operations and activities of Jordanian firms, therefore it requires financial sources to finance these operations and activities.

It should be noted that there are multiple financing sources, where the firms can depend on it to finance their investments. Financing sources categorize into two sources, the internal financing which includes common stock issuance, preferred stocks, reserves and retained earnings. Another source called external financing which consists short and long term loans and bonds issuance. At this case ,firms must choose the best financing sources to reach the optimal capital structure to be in harmony with firms requirements to take suitable financing decision and then reflect positively on their performance.

Capital structure of Jordanian firms contain, as shown on the balance sheets of industrial and services firms, account payables , banking loans, short term loans and accruals as current liabilities and long term of notes payable and loans and bonds issuance as long term liabilities. With regard of internal financing implies owner equity that includes capital in paid(common stock),compulsory and voluntary reserves and retained earnings.

The study examines what is the effect of capital structure on firms performance? ,and in particular debt. To answer of this question , it will discuss some scenarios which relate with the nature of the impact of capital structure on firms performance. First scenario involves positive relation between capital structure and firm performance which indicates when the firms depend on debt as much as firms needs , it will lead to enhance their performance .It can explain that when the financial manager depends on debt as financing source more than owner equity. Financial manager prefers debt source more than equity refers to two reasons: the cost of debt is less than equity cost and the tax advantage of debt , which would therefore maximize the firm performance .

Second scenario designate, that there is an inverse correlation between capital structure and firm performance. Whenever, the firm depends on debt without employing it into profitable investments. Thus ,the cost of debt will exceed the return that firm will obtain it .Consequently , it will lead to increase the bankruptcy risks which effect inversely on firm performance.

Finally, third scenario is that, there is no relationship between capital structure and firm performance .Since this scenario supposes that cost of debt is relatively stable and the cost of equity is not constant. When the debt reaches to certain level , any additional borrowing will lead to inability of firm to meet its financial obligations. Therefore ; owners equity will be exposed to operating risks and they will require

additional compensation. This might proof that capital structure is not linked to the performance of the firm.

The study will try to contribute to provide further evidence to test the impact of capital structure on firm performance by answering the following questions:

- How does the capital structure effect on Jordanian firms performance generally?
- Is there a difference in performance between the high levered firms and low levered firms in regard to the impact of capital structure.
- Does the effect of performance have more impact on high growth firms or low growth firms or vice versa?

The rest of research in addition to first part will be organized as follows: Part II will contain the literature review theoretically and empirically. Part III will cover the sample and variables. Part IV will review the hypotheses and the econometric model of study. Part V will present the empirical analysis and final part will demonstrate the study conclusion.

2- Theoretical and empirical literature review

2-1-Theoritical literature review

After the research process around the title of article ,there are little studies take this subject ,whereas the most studies focus on the determinants of capital structure .The roots of capital structure theory refers to more than fifty decades since the seminal work which presented by Modigliani and Miller 1958(thereafter MM) .They proved, under restrictive assumptions (no taxes and transactions costs) that cost of capital does not affect on capital structure ,particularly debt then not effect on firm value where this theory called irrelevancy preposition. In other words, the value of levered firm equal the value of unlevered firm.

Latterly , Modigliani and Miller(1963) presented new proof that cost of capital affect on capital structure, and therefore affect on value of the firm with relaxing unrealistic assumptions that there are existing taxes, which indicate that borrowing give tax advantage, where the interest deducted from the tax and it will result tax shields ,which in turn reduce the cost of borrowing and then maximize the firm performance(Miller,1977) and this require from the firm to make trade off between the cost of debt from side and the benefits of using debt from another side.

Sequencly ,the researchers studied the relationship between capital structure and the value of the firm through appearing new theory called the agency theory which indicates to potential conflict between shareholders and managers from on the one hand and the potential conflict between shareholders and debtors form on the other hand. Potential conflict between shareholders and managers arises when the shareholders choose the manager as an agent of their selves to manage the firm in order to maximize their wealth's ,but the mangers concentrate on the high profitable and risky projects to achieve their interests at first that represented incentives and rewards, and after that concerning of shareholders benefits, all of these lead to maximize the firm value(Jensen and Meckling(1976),Harri and Raviv(1991), and Myer(2001)).

Many studies proved that growth opportunities play important role in determining the capital structure and therefore effect on firm performance. Myer(1977) discussed that the role of growth opportunity in effect of the nature and the composition of capital structure that high growth opportunities firms most likely will suffer from appearing the debt problem and this will lead to arise risks accompanying with debt of which the firm gives up the profitable investment opportunities. In addition, the firm will be relying on the equity sources more than debt sources to face that's risks and to finance expected growth opportunities , thus it will reflect positively on firm performance (Hovakimian,Opler and Titman,2001) .

Another viewpoint related with agency costs that the firm will expect to achieve new growth opportunity in the future. High growth firms will borrow loans and issuing new bonds comparing with low growth firms. If the firm wants to issue debt in the future ,the firm will expose of bankruptcy risk by reason of increasing the debt costs ,leading to reduce the firm performance (Ross(1977), Majumdar and Chhibber(1997)).

It can be look to bankruptcy risks from another viewpoint, which provide for that bankruptcy considers high cost for the managers , it may refer to their fears from losing control benefits of the firm and their reputation .Then , the debt creates for the managers an incentive to work hardly and actively in spite of the decrease the increments that may can make it, but this will encourage them to utilize the best invested opportunities and this will lead to reduce of bankruptcy(Grossman and Hart(1982) and therefore it will reduce debt cost and thus enhancing the firm performance.

2-2-Empirical literature review

This section discusses some scientific studies ,which examined the impact of capital structure on firm performance. This section will divide into three parts: first part presents some studies that indicates a positive relationship between capital structure and firm performance. Second part shows a negative correlation between capital structure and firm performance. Last part displays mixed results.

2-2-1 Positive relationship between capital structure and firm performance

Wippern (1966) investigated the relationship between financial leverage and firm value on some industries which marked on high degree in difference characteristics from where growth, cost and demand. The study used debt to equity ratio as financial leverage indicator and earnings to market value of common stock as performance indicator. Results revealed that leverage effect positively on firm value and this traditional evidence which said that shareholders wealth can enhance by using outside financing. In this manner , Holz(2002) found that capital structure (debt ratio) related positively with the firm performance , the result ascribes to the willing of firms managers to finance their projects by borrowing and then use theses money optimally to maximize the performance. Accordingly to this result, if the banks want to lend money , it shall study the feasibility of projects that want to finance its accurately before offer loans until that the firms can achieve required returns to meet their obligations.

On the same manner , Dessi and Robertson (2003) found that financial leverage affect positively on the expected performance, where they explained this result to that low growth firms attempt to depend on the borrowing for utilizing the expected growth opportunities and investing borrowing money at the profitable projects , therefore it will increase the firm performance .Margrates and Psillaki(2010) proved also that financial leverage (debt ratio) correlated positively and significantly with firm performance(added value, labor and capital).

2-1-2-Negative relationship between capital structure and firm performance

In the contrast to the above, most studies had proved that capital structure related negatively with firm performance .Majumdar and Chhibber(1997) and Ghosh(2007) reached that level debt(capital structure) associated inversely with firms performance. The result refers to the creditors who are using loans as disciplinary tool on the firm. This tool bases on the restrictions that impose by creditors on the firm as prevention the firm from distribute the earnings on the shareholders or impose restrictive conditions on the loans by increasing the interest rates or impose sufficient collaterals on loans , thus , these restrictions will lead firm to focus on how pay the debt burden without concerning in achieving earnings and reflect adversely on firm performance .Abor(2005) noted that various capital structure measure which represented short term debt , long term debt and total debt associated negatively and statistically with firm performance .The conclusion refers to that firms rely on borrowing extremely , it will not achieve tax shields and then it lead to increase borrowing cost of which the firm exposes to the bankruptcy risks and reduce the return.

Moreover, Rao,Hamed,Al-yahee and Syed(2007) reached that capital structure related inversely on financial performance on Oman firms. The relationship refers to high borrowing costs in Oman economy and to the weakness of the debt market activity in Oman. They suggested that tax savings as a result of debt using are not sufficient to meet the costs of debt and it would be the cost of debt greater than the rate of return. Krishnan and Moyer(1997) ,Gleason ,Mathur and Mathur(2000) ,Simerly and Li(2000) ,King and Santor(2008) and Onalapo and Kajola(2010) proved that capital structure also related negatively with firm performance.

2-1-3-Mixed results of capital structure and firm performance

Hurdle(1973) revealed that financial leverage effects negatively with profitability in accordance with two stage least squares(2SLS) and positively according to ordinary least squares(OLS).McConnell and Servaes(1995) and Agarwal and Zhao(2007) presented additional evidence on how the growth of the firm may affect on the relationship between capital structure and performance. High growth firms effect negatively between financial leverage and firm value, while low growth firms effect positively.

Weill(2007) investigated the effect of financial leverage on the firm performance in seven European countries. The study summarized that financial leverage related positively and significantly on firm performance in Spain and Italy, whereas negatively and significantly in Germany ,France ,Belgium and Norway ,but insignificantly in Portugal. Cheng,Liu and Chien(2010) used threshold regression model on 650 Chinese firms(2001-2006).The results revealed that debt ratio and firm value positively when the debt ratio between(53.97%-70.48%),on the contrary , relationship be negatively when the debt ratio more than 70.48%. Eventually, Li Meng ,Wang and Zhou(2008) proved that financial leverage related negatively with return on asset ,but it is positive relation with return on equity.

3-Sample and variables of study

3-1- Study sample

The society of study contains manufactured and services firms that listed in Amman bourse for the period(2001-2006).Financial data extracted from two main sources :annual financial reports that issued by the firms at end of each year and the public shareholding firms guide. The sample of study consists 76 firms(53 manufactured firms and 23 services firms) from the total of 129 firms as shown in table (1) with excluding financial firms because the characteristics differ than sample of study and unavailable firms data.

Table 1:Sectors category and the sample of firms

Sectors category	Total firms	Numbers of sample firms
Commercial services	13	5
Educational services	6	2
Healthy Services	3	1
Tourism and hotels	12	5
Media	3	2
Communications and technology	3	0
Transportation	10	5
Utility and energy	7	3
Chemical industries	11	8
Electrical industries	5	4
Engineering and construction industries	8	5
Food and beverage	12	10
Textiles and leathers	7	4
Mining and extraction	12	10
Pharmaceutical industries	7	3
Other industries	10	9
Total	129	76

3-2- Variables of study

3-2-1- Performance variables

The performance measure plays crucial role in managing of firms to identify the general position wherefrom the ability of the firm to use capital structure optimally that represented of debt to enhance its performance. The study will use profitability and firm value as dependent variables to measure the firm performance to examine the effect of capital structure and firm performance .Literature review used many measures to measure the profitability by using the indicators which express of performance such as return on equity, return on asset, earning to stock price and gross profit margin ratio.

- **Return on equity** as profitability measure which measure the return that shareholders can obtain its from utilize the capital structure efficiently by the firm management. Return on equity measured by dividing net income after tax to book value of owner equity(Onalapo and Kajola(2010) and Krishnan and Moyer(1997)).
- **Tobin q** :It express the firm value which measure by dividing the market value of owner equity plus the book value of total liabilities to the book value of total assets(Ghosh(2007),Agarawal and Zhao(2007) and King and Santor(2008)).

3-2-2- Independent variables

the study implies four independent variables to identify what is the effect of capital structure on firm performance that includes:

- **Financial leverage**: The variable considers the main variable to express the capital structure which measure by dividing the book value of total liabilities to the book value of total assets(King and Santor(2008),Ghosh(2007),Weill(2007) and Margrates and Psillaki(2010)).
- **Tangible assets**: It considers of control variable and measure by dividing the net fixed assets to total assets(Dessi and Robertson (2003),Weill(2007) and Margrates and Psillaki(2010)).
- **Firm size**: It is control variable which measure by natural logarithm of total assets(Onaolapo and Kajola(2010) and King and Santor(2008)).
- **Firm growth** :It is measure by find the difference rate in the book value of total assets.

4.Hypotheses and econometric model of study

4-1-Hypotheses of the study

First hypothesis :under stable environmental conditions, if the firm depends on financial leverage extremely , it will lead to enhance the firm performance.

Second hypothesis: cetres paribus, there are significant differences between the financial leverage of high levered firms and the financial leverage of low levered firms in effect on firm performance.

Third hypothesis: cetres paribus ,there are no significant differences between the financial leverage of high growth firms and the financial leverage of low growth firms in effect on firm performance.

4-2- Econometric model

The study tries to investigate the previous hypotheses by using ordinary least squares model to determine what is the effect of capital structure on firm performance .The study builds general multi-regression model as following:

$$Y_{i,t} = \alpha_i + \beta_i X_{i,t} + e_{i,t} \quad (1)$$

Where: $Y_{i,t}$:dependent variable for firm i in year t. α_i: constant coefficient for firm i. β_i: slope coefficient of independent variables of firm i , $X_{i,t}$: independent variables for firm i in year t, $e_{i,t}$: standard error of firm i in year t.

Based on previous model ,following two equations demonstrate the effect of capital structure on firm performance which implies two measures of performance: return equity and firm value.

$$ROE_{i,t} = \alpha_i + \beta_1 Lev_{i,t} + \beta_2 Tan_{i,t} + \beta_3 Siz_{i,t} + \beta_4 Gro_{i,t} + e_{i,} \quad (2)$$

$$Tobin\ q_{i,t} = \alpha_i + \beta_2 Lev_{i,t} + \beta_2 Tan_{i,t} + \beta_3 Siz_{i,t} + \beta_4 Gro_{i,t} + e_i \quad (3)$$

Where: $ROE_{i,t}$: return on equity for firm i in year t.$Tobin\ q_{i,t}$:firm value for firm i at year t ,$Lev_{i,t}$:financial leverage for firm i at year t .$Tan_{i,t}$:tangible assets for firm i at year t. $Siz_{i,t}$:size of the firm i at year t. $Gro_{i,t}$:growth of the firm i at year t.

5-Empirical analysis

5-1-Descriptive statistics

This section shows the descriptive statistics for the variables of the study that used in the analysis to identify the nature of data and the extent of its suitability for using. Where it is noted form table 2 that the average of financial leverage for sample of study 31% approximately and this percent considers moderate for the firms. As well as analysis indicates that the minimum percent of financial leverage is 1%,wheras the maximum value reached it is 92% and this percent is very high. This denotes that there is high variation in using financial leverage. With regard to return on equity , the average of return reached 6.1% and these percent is very low with comparing of high return which is 40.6%.it refers to some firms achieve large losses and this indicate to weakness of firm performance generally. Firm value represented by Tobin q which the average is 1.36 and also the results indicates to decline the firm performance with comparing of the maximum value which equal 7.18,while the standard deviation proves that there is high variation in firm value.

So, we see that the average of the financial leverage for the high levered firms which amounted to 45.6% is larger than average of financial leverage for the low levered firms(16.1%) and this refers to the importance of the debt in financing of invested operations for firms and also refers to that high levered firms balance nearly between debt and equity. On the contrast, low levered firms focuses on equity as main financing more than debt source. As regard of performance that average of return equity and Tobin q for both high and low levered firms is weakness relatively.

In addition , there is no large differences between average of leverage for each high and low growth firms ,which equal about 30% and 31% respectively. Average of return on equity for each of high and low growth firms is closed in the value and express to weak performance with in comparison with the maximum values for both. Weak performance may return to large of losses.

5-2-Regression analysis

Table (3) shows that financial leverage for the sample of study effects negatively and statistically at level less than 1% on return equity and less than 5% on Tobin q .it may attributed this result to that the creditors use the debt as disciplinary tool on the firms through imposing high interest rates on the loans ,preventing the firms to pay dividends for certain period , restricting of paying debt or any restrictions deemed creditors see it, all of theses expose the managers to pressure to mange the firm successfully and then reflects inversely on its performance.

Furthermore, the results also show that independent variables interprets 25.2% from the variations in dependent variable(return on equity) and F-value prove that model is significantly, whereas the ability explanation of independent variables are very weak in interpretation of Tobin q.

Table 2:Descriptive statistics

	Descriptive statistics of sample study					
	Leverage	Tangible assets	Size	Growth	ROE	Tobin q
Minimum	.01	.0015	6.07	-.6520	.443-	.37
Maximum	.922	.937	8.71	3.32	.406	7.18
Mean	.308	.4358	7.15	.1257	.061	1.36
Std.Dev.	.207	.2479	.5541	.3511	.091	.7173
Descriptive statistics of high levered firms						
	Leverage	Tangible assets	Size	Growth	ROE	Tobin q
Minimum	.0227	.0054	6.19	-.6520	-.44	.53
Maximum	.92	.93	8.71	3.32	.3186	7.18
Mean	.4561	.4065	7.3	.1257	.0463	1.324
Std.Dev.	.1840	.2412	.5836	.3511	.0897	.6588
Descriptive statistics of low levered firms						
	Leverage	Tangible assets	Size	Growth	ROE	Tobin q
Minimum	.007	0.0015	6.07	-.3657	-.3241	.3855
Maximum	.4336	.9016	8.41	.9635	.406	5.83
Mean	.1607	.3751	7.02	.0514	.0754	1.42
Std.Dev.	.0935	.2400	.4864	.1560	.0902	.7692
Descriptive statistics of high growth firms						
	Leverage	Tangible assets	Size	Growth	ROE	Tobin q
Minimum	.0167	.018	6.10	-.652	-.3241	.3855
Maximum	.883	.9375	8.71	1.24	.406	7.18
Mean	.2990	.4816	7.27	.096	.087	1.75
Std.Dev.	.1872	.2423	.5936	.2214	.0956	.8226
Descriptive statistics of low growth firms						
	Leverage	Tangible assets	Size	Growth	ROE	Tobin q
Minimum	.01	.0015	6.07	-.4763	-.4431	.3917
Maximum	.92	.9146	8.56	3.32	.2932	1.93
Mean	.3084	.3939	7.04	.0814	.0346	0.9971
Std.Dev.	.2239	.2450	.5125	.3173	.0825	.2657

Table 4 shows the results of regression analysis for financial leverage of high and low levered firms that financial leverage associated negatively and significantly at the significance level of less than 1% on return on equity and insignificantly on firm value. If the firm depends on low or high debt, it will effect inversely on firm performance. In other words, there were no substantial differences between high or low levered firms from where the effect of financial leverage on performance, then we reject second hypothesis.

Table (3):Regression results of sample of study

	ROE			Tobin q		
	β	S.E	t-value	β	S.E	t-value
α	-.244	.051	-4.74	-.043	S.E	-.09
Financial leverage	-.146*	.02	-7.21	-.559*	.46	-3.09
Tangible Assets	-.063*	.016	-4.02	.007	.181	.052
Size	.051*	.007	7.05	.218*	.140	3.32
Growth	.083*	.014	5.94	.237***	.064	1.9
R^2	25.2%			4%		
F	38.04			4.7		
No. observations	456			456		

,** and indicate significant at 1%,5% and 10%.**

And also, the table indicates that there is positive relation and statistically between size and growth firm on firm performance. Tangible assets correlated negative and significantly on firm performance. Regression analysis results show that independent variables for high levered firms has strong power explanation as R=29.3% and F=23 in explaining the performance compared with low levered firms. On the contrary ,the explanatory power of independent variables for both high and low levered firms have weakness and insignificance in explaining the firm value.

Table (4):Regression Analysis results base on high and low levered firms

	Return on equity					
	High levered firms			Low levered firms		
Parameters	β	S.E	t-value	β	S.E	t-value
α	-.062	.069	-.907	-.348***	.078	-4.45
Leverage	-.171*	.029	-5.90	-.039	.06	-0.658
Tangible Assets	-.106*	.022	-4.76	-.045**	.022	-2.081
Size	.032**	.009	3.41	.062*	.011	5.42
Growth	.057*	.015	3.81	.193*	.034	5.63
R^2	29.3%			28.8%		
F	22.99			22.40		
No. observations	228			228		
	Tobin q					
	High levered firms			Low levered firms		
Parameters	β	S.E	t-value	β	S.E	t-value
α	-.156	.588	0.295	.230	.778	0.295
Leverage	-.706*	.245	.127	.075	.593	.127
Tangible Assets	-.007	.189	0.082	0.018	.217	0.082
Size	.244*	.079	1.43	.163	.114	1.43
Growth	.215**	.126	1.55	.527	.34	1.55
R^2	7.1%			2.9%		
F	4.23			1.63		
No. observations	228			228		

,** and indicate significant at 1%,5% and 10%.**

And this apply to the relationship between financial leverage and firm performance base on the growth, as seen form table 5 that financial leverage related inversely with firm performance on the base growth and this result is similar to previous results. It can explain the result to desire of the firms to expand its activities and growth ,then it compels to financing sources ,especially relies on borrowing to achieve this purpose by reason of exaggerate on depending on loans, which it will lead to rise of bankruptcy costs , therefore to decline the tax shields that could be gained as a result of borrowing , which reflected negatively on firm performance, regardless of the growth case whether the growth high or low. It concludes that there are no substantial differences between high or low growth firms to effect the financial leverage on firm performance. In the light of previous result, we reject third hypothesis.

The results of regression analysis indicates that independent variable for low growth firms has explanatory and significance power(R^2=32.6% and F=26.9) in explaining return on equity comparing with low growth firms. On other hand , the independent variables does not have power in explaining of firm value.

Table(5): Regression analysis results base on growth firms

	Return on equity					
	High growth firms			Low growth firms		
Parameters	β	S.E	t-value	β	S.E	t-value
α	-.110	.069	-1.60	-.212	.081	-2.61
Leverage	-.183*	.032	-5.81	-.074*	.027	-2.712
Tangible Assets	-.123*	.023	-5.549	-.049**	.023	-2.18
Size	.042*	.01	4.27	.040*	.012	3.47
Growth	.102*	.025	4.16	.068*	.016	4.16
R^2	32.6%			18.5%		
F	26.94			12.66		
No. observations	228			228		
	Tobin q					
	High growth firms			Low growth firms		
Parameters	β	S.E	t-value	β	S.E	t-value
α	1.67	0.694	2.41	.764	.285	2.67
Leverage	-.475	.318	-1.50	0.005	.096	0.054
Tangible Assets	-.793*	.227	-3.50	.086	.08	1.070
Size	.080	.098	0.815	.027	.041	0.657
Growth	.165	.247	.667	.117**	.058	2.03
R^2	7.7%			2.6%		
F	4.68			1.48		
No. observations	174			228		

,** and indicate significant at 1%,5% and 10%.**

6 – Conclusion

Capital structure considers of debated topics that increasing the concerning of financial economists. The study investigated the effect of capital structure on Jordanian firms performance for period(2001-2006) by using ordinary least squares as regression technique, which the sample includes 76 firms, where the results reached to the following results:

- Financial leverage for the sample study effects negatively and statistically at level less than 1% on firm performance(return on equity) and less than 5% on firm value. Negative relationship refers to wish of firm to finance its activities through increasing borrowing operations and results of excess in borrowing , which lead to emerge of bankruptcy risks that decrease the tax shields and then to minimize the firm performance.
- The study found that there is no significant differences between high levered firms and low levered firms to effect of financial leverage on firm performance. The result also revealed negative and significant relationship.
- In addition to prior, the study that financial leverage related inversely and significantly on firm performance regardless of growth of firms.

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