

The Determinants of Leverage of Listed Companies

Khalid Alkhatib

Assistant Professor

Computer Information Systems Department
Jordan University of Science and Technology
Irbid, Jordan

Abstract

This aim of this paper is to empirically investigate the determinants of leverage of listed companies. The study sample included 121 listed companies on the Jordanian Stock Exchange extended from the period 2007 to 2010. The sample covered the industrial and services sectors while the financial sector was excluded from the study. For the data analysis, regression model was employed; the explanatory variables comprised of firm liquidity, size, growth rate, profit, and tangibility, whereas the independent variable was the leverage ratio. The results show that for both industrial and services sectors; there were no statistical significant relationship. When the two sectors were separated, the results for the industrial sector revealed that liquidity and tangibly have significant relationship with leverage, whereas the results for the services sector revealed that the growth rate, liquidity, and tangibility have significant relationship with leverage.

Keywords: Leverage, Capital Structure, Listed Companies, Jordan.

1. Introduction

This paper empirically investigates the determinants of leverage as part of capital structure in the period 2007 to 2010 of listed companies on the Jordanian stock exchange through explaining factors influencing leverage. The theory of capital structure is one of the most important financial themes in corporate finance and various studies use capital structure theory to highlight the significance of debt financing. Capital structure of a firm is defined by its leverage; that is a mix of debt and equity financing which is subject to different financial difficulties.

Leverage is viewed as a result of events that determines companies' source of financing to run the business. Modigliani and Miller (1958) were the pioneers of the theory assumed that a business's value is distinct from its debt and equity mix of financing but ignoring issues that play a positive role in determining the best capital structure such as corporate taxes. Consequently, Modigliani and Miller (1963) reaffirmed that corporate taxes are significant characteristic in of capital structure. Copeland and Weston (1983) stated that this depends on the contention that the weighted average cost of capital stays constant as leverage changes. Companies that possess high level of leverage in their capital structure are able to decrease their free cash flow. Companies through utilizing the additional leverage; the free cash flow as an alternative of being inadequately employed by the management given instantly to the debtors and is withdrawn from the company as interest expenses. Company's capital structure that includes a large amount of debt/equity tends to increases the risk of bankruptcy; that is when company's total debts equal to total assets (Khan, A. *et al.*, 2012). Free cash flow denotes the cash that a company is capable of generating after putting a side the cash required to preserve their assets. Free cash flow also permits a company to track investment prospects as they arise to improve shareholder wealth. Capital structure decisions rely on two major sets of theories namely, the trade-off theory and the pecking order theory.

The trade-off theory states that a firm selects how much debt finance and equity finance it needs to employ by evaluating the costs and benefits of each type of finance. Certainly such preference is not contemporary; it is rather familiar to researchers and managers (Butters 1949). In this theory, the management of the firm must assess the different types of costs and benefits of the optional leverage strategy and must aim at a level of debt to value, such level is depends on establishing a balance between debt tax shields and costs of bankruptcy (Myers (1984).

The right financing decision normally relies on the margin of financing that firms expect in the future; certain firms either have outflow (fund payments) or inflow of funds (raising funds) in which case it would be in debt and or equity structure. The theory also elucidates that firms commonly use mix of debt and equity financing.

The pecking order theory is when firms favor internal to external funding and if external funding is perused; if external funding is used then debt funding is used rather than equity Myers (1984). The theory also demonstrates that financing can be obtained from three different sources, the first source is internal funding which is the least expensive, the second sources is debt which is more expensive and finally is external equity sources which is the most expensive of all. Firms rather have their source of funds raised internally as their first choice, the second choice would be through raising debts from external sources, and the last choice would be through external equity. Ranked one of the most significant forms of cost, asymmetric information theory included in the work of Modigliani and Miller (1958) contends that the management has more inside information than inventors. Furthermore, Jensen and Meckling, 1976; Harris and Raviv, 1991) emphasized that a dispute may occur between equity holders and debt holders on the one hand and between equity holders and the management on the other. Consequently, creates agency cost. However, if the right type of capital structure is selected then there would likely be a decrease in agency costs resulted from such dispute. Furthermore, when share prices are over-valued, then the management is forced to raise funds through equity issues at discounted rates rather than internally funded or debt financing; Myers and Majluf (1984) also presumed that managers have an insider information advantage. Furthermore, according to the pecking order theory, large firms are more likely to have low asymmetric information making new equity issues more appealing to new interested investors.

The rest of the paper will be organized as follows; the next section will discuss variables determining leverage, and then section 3 represents the study methodology, data analysis, results, and discussion, finally the conclusion is presented section 4.

2. Determinants of leverage and variables

Leverage refers to the extent to which firms make use of their money borrowings (debts financing) to increase profitability and is measured by total liabilities to equity. Firms that borrow large sums of money during a business recession are more likely to default to pay off their debts as they mature; they will end up with high leverage and are more likely end up with a potential risk of bankruptcy. On the contrary, the lower the firm's borrowings, the lower the leverage, and the risk of bankruptcy will eventually be lower which signifies that business will continue operating.

This study examines the influence of the following five variables that were selected from previous literature on leverage; namely firm size, growth, profitability, liquidity, and tangibility.

2.1 Firm size

Size is measured by the natural logarithm of total assets. As stated in the trade-off theory; firms decide how much debt/equity financing it requires by weighing the costs and benefits of such decision. Large sized firms normally have more business diversification than small firms in terms of credit ratings, constant cash flow, and lower risk of bankruptcy. Furthermore large firms are capable of decreasing transaction costs of issuing long-term debt at a favorable low rate of interest. Consequently, since it is easier for large sized firms to raise funds from creditors, a positive sign is expected between firm size and leverage (Titman and Wessels, 1988; Agrawal & Nagarajan, 1990; Rajan & Zingales, 1995; Wald 1999; Buferna et al., 2005; Supanvanij, 2006; and Akhtar & Oliver, 2009, Liaqat. A., 2011; Qureshi et al, 2012; Bhaduri, 2002)

2.2 Growth

Growth is defined as the annual percentage growth in the firms' total assets between two successive years divided by the preceding year. A rise in growth rate is regarded as an indication of a firm's financial strength and may cause higher demands for raising equity funds from external sources. Firms with large volume of growth rate need to raise additional financial support to back up their capital expenditure strategies. Growth is also described as intangible assets that is rather difficult collateralize, consequently monitoring granted debts will also be difficult for creditors (Titman and Wessels, 1988; Rajan & Zingales, 1995; Gaud et al. 2005; and Akhtar & Oliver, 2009; Qureshi et al, 2012).

There were mixed results in terms of statistical relationship, various studies showed a positive relationship between firm growth and leverage (Baskin, 1989; Harriss and Raviv, 1991; Allen, 1993; Roden D.M. and Lewellen W.G., 1995; Ozkan, 2001; Nguyen T.D. and Neelakantan R. 2006; Alnajjar, B., 2011), while others showed negative relationship (Smith and Watts, 1992; Barclay & Smith, 2005; Buferna et al., 2005; Supanvanij, 2006; Akhtar & Oliver, 2009; Liaqat. A., 2011; Sheikh and Wang, 2011)

2.3 Profitability

Profitability is computed as the return on company's total assets. As it is suggested by the pecking-order theory, that highly profitable companies tend to reduce their external funding; which at the end signals to creditors that they have low bankruptcy risk (Titman & Wessels, 1988; Rajan & Zingales, 1995; Wald, 1999; Chen, 2003; Supanvanij, 2006; Kim & Berger, 2008; Akhtar & Oliver, 2009; Liaqat. A., 2011; Sheikh and Wang, 2011). In other cases, profitable firms can issue debt at low rates of interest since they are seen as less risky by the creditors; furthermore, profitable firms are able to generate large earnings use a lesser amount of debt capital than firms that make little profit (Titman and Wessels, 1988; Mazur, 2007; Rajan and Zingales, 1995; Abor, 2005). Additionally, profitable companies are inclined to decrease information asymmetry to creditor, investors and interested users thorough the use of profitability (Myers, 1984; Liaqat. A., 2011; Qureshi et al, 2012). Therefore, there is a relationship between leverage and profitability (John and Williams, 1985; Liaqat. A., 2011; (Tong and Green, 2005; Al-Najjar and Taylor, 2008; Mazur, 2007)

2.4 Liquidity

Liquidity is computed by dividing current assets by current liability. Liquidity represents the capital amount that is available for use as an investment and or expenditure. It also shows the ability of a firm to meet their current liabilities as and when they mature (Ross, 1977). Excessive amounts of current assets owned by a firm would perhaps increase the chances of internal funding resulting in a relation between leverage and liquidity (Myers, 1977, 1984; Amalendu Bhunia, 2012; Qureshi et al 2012). Furthermore, sufficient liquidity has an impact on the financial strength of a firm (Bei Z, Wijewardana W.P, 2012). Several studies found a statistical relationship between liquidity and leverage (Harris and Raviv; 1990; Al-Najjar; 2011; Al-Najjar and Taylor, 2008; Eriotis et al., 2007; Rajan and Zingales, 1995; Sheikh and Wang, 2011; Titman and Wessels, 1988; Qureshi et al 2012)

2.5 Tangibility

Tangibility is computed by dividing fixed assets by total assets. It is a fundamental element of determining the firm's leverage. Firms with little tangible assets generally have low leverage ratio and therefore would be difficult to collateralize such assets to raise additional funds accompanied with the risk of bankruptcy. On the contrary, firms with large volume tangible assets are more likely to collateralize their assets to raise additional funds with little risk due to the investments diversifications which at the end reduces the risk of bankruptcy (Jensen, 1976; Qureshi et al 2012; Rajan & Zingales (1995). Therefore, a positive sign is expected between leverage and tangibility of assets (Titman & Wessels, 1988; Rajan & Zingales, 1995; Wald, 1999; Chen, 2003; Supanvanij; 2006; Akhtar & Oliver, 2009; Liaqat. A., 2011; Qureshi et al 2012).

3. Methodology, data analysis, results, and discussion

The sample data were extracted from company annual reports of 121 companies from services and industrial sectors listed on the Jordanian Stock Exchange (JSE). Then, the following multiple regression model was performed:

$$\text{Leverage} = a + \beta_1 \text{Profitability} + \beta_2 \text{Tangibility} + \beta_3 \text{Growth} + \beta_4 \text{Size} + \beta_5 \text{Liquidity}$$

Table 1 displays the regression analysis results for the whole sample for both industrial and services sectors which reveal statistical insignificance relationship between leverage and the explanatory variables used in the study. This may be due to the different nature of business operations. However, when the two sectors were individually considered and analyzed, the results of the regression analysis where different and are individually discussed below. For services sector, the regression analysis results of the services sector are seen in table 2; which shows that there were statistical significance relationship between leverage and tangibility; this finding is consistent with the results of previous studies such as (Titman and Wessels, 1988; Rajan & Zingales, 1995; Wald, 1999; Supanvanij, 2006; Akhtar & Oliver, 2009; Liaqat. A., 2011).

Growth was also found to have statistical significance with leverage; this result is consistent with previous studies (Harriss and Raviv, 1991; Roden D.M. and Lewellen W.G., 1995 ;Ozkan, 2001; Alnajjar, B., 2011; Nguyen T.D.and Neelakantan R. 2006; Gill, A. and Mathur, N., 2011). Liquidity as well was found to have statistical significance relationship with leverage the result is consistent with previous studies (Harriss and Raviv, 1991; Alnajjar, B., 2011). For the rest of the variables, the results showed no significant relationship with leverage. As for the industrial sector, as seen in table 3, the results show that there were statistical significance relationship between leverage and two variables namely tangibility and liquidity. The result of tangibility is consistent with previous studies (Titman and Wessels, 1988; Rajan & Zingales, 1995; Wald, 1999; Supanvanij, 2006; Akhtar & Oliver, 2009; Liaqat. A., 2011). The result of liquidity is consistent with previous studies (Harriss and Raviv, 1991; Alnajjar, B., 2011). For the rest of the variables, the results showed no significant relationship with leverage.

4. Conclusion

This study extends earlier empirical work on leverage determinant. The study was set out to explain the impact of the explanatory variable used in the study (firm's liquidity, size, growth rate, profit, and tangibility) on leverage in Jordanian industrial and services companies listed on the Jordanian Stock Exchange. The study also adds value to a clearer knowledge of the financing conduct of companies used in the sample. While the results of the services sector suggests that the explanatory variables tangibility, growth, and liquidity have a positive impact on leverage, the results of the industrial sector insinuates that tangibility and liquidity variables have a positive impact on leverage. The results confirm that firm and economic variable are related and have an impact on leverage. The size of the firms is very important factor; it has a favorable position over smaller firms in terms of credit ratings. In addition, these results clearly describe the financing approach by listed companies and also assist decision makers to establish their capital structure in order to improve shareholders wealth. In light of the financial insecurity in Jordan and the Arab spring, financial decision makers and creditors ought to work out a financial mechanism to enables them to avoid more financial distress and improve financial security of listed companies. This in tern may attract more foreign investments and secure the financial environment in the country.

References

- Abor, J. (2005). The effect of capital structure on profitability: empirical analysis of listed firms in Ghana. *Journal of Risk Finance*, 6(5), 438-445.
- Agrawal, A., and Nagarajan, N. J. (1990). Corporate capital structure, agency costs and ownership control: the case of all-equity firms. *Journal of Finance*, 45, 1325-1331.
- Akhtar, S., & Oliver, B. (2009). Determinants of Capital Structure for Japanese Multinational and Domestic Corporations. *International Review of Finance*, 9, 1-26.
- Allen, D. E., (1993). The pecking order hypothesis: Australian evidence. *Applied Financial Economics*, 3, 101 - 112.
- Al-Najjar, B. (2011). The inter-relationship between capital structure and dividend policy: empirical evidence from Jordanian data. *International Review of Applied Economics*, 25 (2), 209-224.
- Al-Najjar, B., Taylor, P. (2008). The relationship between capital structure and ownership structure: new evidence from Jordanian panel data. *Managerial Finance*, 34 (12), 919-933.
- Amalendu Bhunia (2012). Leverage Impact on Firms Investment Decision: A Case Study of Indian Pharmaceutical Companies. *International Journal of Contemporary Business Studies*, 3, 1, 35-45.
- Barclay, M. J., & Smith, C. W. (2005). The Capital Structure Puzzle: The Evidence Revisited. *Journal of Applied Corporate Finance*, 17, 8-17.
- Baskin, J. (1989). An Empirical Investigation of the Pecking Order Hypothesis. *Financial Management*, 18, 1. 26-35.
- Bhaduri, S. (2002). Determinants of corporate borrowing: some evidence from the Indian corporate structure. *Journal of Economics and Finance*, 26, 200-215.
- Buferna, F., Bangassa, K., & Hodgkinson, L. (2005). Determinants of Capital Structure: Evidence from Libya. *Research Paper Series 8*, University of Liverpool.
- Butters, K. (1949). Federal Income Taxation and External Vs. Internal Financing. *The Journal of Finance*, 4, 3, 197–205.
- Chen, J.J. (2003). Determinants of Capital Structure of Chinese-Listed Companies. *Journal of Business Research*, 57, 1341-1351.
- Copeland, T.E. and J.F. Weston (1983). *Financial Theory and Corporate Policy*. Addison-Wesley Publishing Company Inc., Reading, Massachusetts.
- Eriotis N, Vasiliou D, Ventoura-Neokosmidi Z (2007). How firm characteristics affect capital structure: an empirical study. *Managerial Finance*, 33, 5, 321-331.

- Gaud P., Jani E., Hoesli M. & Bender A. (2005). The Capital Structure of Swiss Companies: An Empirical Analysis Using Dynamic Panel Data. *European Financial Management* 11, 1, 51-69.
- Gill, A., Mathur, N. (2011). Factors that Influence Financial Leverage of Canadian Firms. *Journal of Applied Finance & Banking*, 1, 2, 19-37.
- Harris, M. & Raviv, A. (1991). The Theory of Capital Structure. *Journal of Finance*. 46, 297-355.
- Jensen MC, Meckling WH (1976). Theory of the Firm: Managerial Behaviour. Agency Costs and Ownership Structure. *Journal of Financial Economics*, 3, 305-360.
- Jensen, M. (1986). Agency costs of free cash flow, corporate finance and takeovers. *American Economic Review*, 76, 2, 323-329.
- Jensen, M.C. and W.H. Meckling (1976). Theory of the firm: managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3, 305-360.
- John, K., Williams, J. (1985). Dividends, dilution, and taxes: A signaling equilibrium. *Journal of Finance*, 40, 1053-1070.
- Khan, A., Kaleem, A., Mian Sajid Nazir, M.S. (2012). Impact of Financial Leverage on Agency cost of Free Cash Flow: Evidence from the Manufacturing sector of Pakistan. *Journal of Basic and Applied Scientific Research*, 2, 7, 6694-6700.
- Kim, H., & Berger, P. D. (2008). A Comparison of Capital Structure Determinants: The United States and the Republic of Korea. *The Multinational Business Review*, 16, 79-100.
- Liaquat Ali, (2011). The Determinants of Leverage of the Listed-Textile Companies in India. *European Journal of Business and Management*, 3, 12, 2011.
- Liaquat Ali. (2011). The Determinants of Leverage of the Listed-Textile Companies in India. *European Journal of Business and Management*, 3, 12, 2011.
- Mazur K (2007). The Determinants of Capital Structure Choice: Evidence from Polish Companies. *Int. Adv. Econ. Res.*, 13, 4, 495-514.
- Modigliani, F. and Miller, M.H., (1963). Corporation income taxes and the cost of capital; A correction. *American Economic Review*, 53, 433-443.
- Modigliani, F., & Miller, M. H. (1958). The Cost of Capital, Corporate Finance and the Theory of Investment. *American Economic Review* 48, 261-297.
- Myers S. (1977). Determinants of corporate borrowing. *Journal of Financial Economics*, 9, 147-76.
- Myers, S. (1984). The Capital Structure Puzzle. *The Journal of Finance*, 39, 575-592.
- Myers, Stewart C. & Majluf, Nicholas S. (1984). Corporate Financing and Investment Decisions When Firms Have Information Investors Do Not Have. *Journal of Financial Economics*, 13, 187-222.
- Nguyen T.D. and Neelakantan R. (2006). Capital Structure in Small and Medium-sized Enterprises: The Case of Vietnam, *ASEAN Economic Bulletin*, 23, 2, 192-211.
- Ozkan, A. (2001). Determinants of Capital Structure and Adjustment to Long Run Target: Evidence from UK Company Panel Data. *Journal of Business Finance & Accounting*, 28, 175-198.
- Qureshi MA (2009). Does pecking order theory explain leverage behaviour in Pakistan? *Applied Financial Economy*, 19, 17, 1365-1370.
- Qureshi, M.A., Imdadullah, M., Ahsan, T. (2012). What determines leverage in Pakistan? A panel data analysis. *African Journal of Business Management*, 6, 3, 978-985.
- Qureshi1, M. A., Imdadullah, M., Ahsan, T. (2012). What determines leverage in Pakistan? A panel data analysis. *African Journal of Business Management*, 6, 3, 978-985.
- Rajan, R.G., & Zingales, L. (1995). What Do We Know about Capital Structure? Some Evidence from International Data. *Journal of Finance*, 50, 1421-1460.
- Roden, D.M. and Lewellen, W.G. (1995). Corporate capital structure decisions: evidence from leveraged buyouts. *Financial Management*, 24, 2, 76-87.
- Ross, S. (1977). The determination of financial structure: The incentive signaling approach. *Bell Journal of Economics*, 8, 23-40.
- Sheikh NA, Wang Z. (2011). Determinants of capital structure: An empirical study of firms in manufacturing industry of Pakistan. *Managerial Finance*, 37, 2, 117-133.
- Smith, C. W., & Watts, R. L. (1992). The Investment Opportunity Set and Corporate Financing, Dividend and Compensation Policies. *Journal of Financial Economics*, 32, 263-292.
- Supanvanij, J. (2006). Capital Structure: Asian Firms vs. Multinational Firms in Asia. *The Journal of American Academy of Business*, 10, 324-330.
- Titman, S., & Wessels, R. (1988). The Determinants of Capital Structure Choice. *The Journal of Finance*, 43, 1-19.
- Tong, G. Q., and Green, C. J. (2005). Pecking order or trade-off hypothesis? Evidence on the capital structure of Chinese companies. *Applied Economics*, 37, 2179-2189.
- Wald, J. K. (1999). How Firm Characteristics Affect Capital Structure: An International Comparison. *Journal of Financial Research* 22, 2, 161-187.
- Zhao Bei , Wijewardana, W. P. (2012). Financial leverage, firm growth and financial strength in the listed companies in Sri Lanka', *Procedia - Social and Behavioral Sciences* 40, 709-715.

**Table 1: Correlations Coefficients
All industry**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.336	.050		6.664	.000
Tangibility	.012	.100	.011	.116	.908
PR	-.002	.004	-.038	-.405	.686
Size	.008	.026	.027	.293	.770
Gr	2.224E-10	.000	.131	1.430	.156
LQ	.000	.000	-.130	-1.400	.164

Dependent Variable: Debt

**Table 2: Correlations Coefficients
Services Sector**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.434	.061		7.071	.000
Tangibility	-.283	.109	-.337	-2.607	.012
PR	9.503E-5	.003	.004	.028	.978
Size	.091	.100	.119	.908	.369
Gr	5.685E-10	.000	.366	2.984	.004
LQ	.000	.000	-.244	-1.974	.054

Dependent Variable: Debt

**Table 3: Correlations Coefficients
Industrial Sector**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.341	.072		4.751	.000
Tangibility	.336	.148	.246	2.275	.026
PR	-.050	.034	-.161	-1.484	.143
Size	-.007	.024	-.029	-.288	.774
Gr	-9.265E-11	.000	-.051	-.501	.618
LQ	-.057	.012	-.468	-4.569	.000

Dependent Variable: Debt