Study of the Relationship between Capital Structure Measures and Performance: Evidence from Iran

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Abstract

Financing decisions is one of the important areas in financial management to increase shareholder's wealth. To determine how managers achieve this object, it can say performance measurement of company. In this paper we have studied the issue of whether the capital-structure decision impacts firms' performance. For this reason, we used 3 definition of capital structure in scope of book value to market value and 5 measures were assumed for financial performance. In this paper, we applied the data of 117 corporates in Tehran Stock Exchange (TSE) in a 5-year time horizon (2002-2007).Results of our study demonstrated that capital structure influences financial performance. The significance of the influence of capital struture on performance respectively is belonged to measures of adjusted value, market value and book value.

Keywords: Capital structure, Financial performance, Market value, Book value, Adjusted value

1. Introduction

An efficient economic system calls for a dependable mechanism to allocate its resources and optimized leadership of land, labour and Capital. In a market economy, this allocation process consists largely of a set of private decisions, which are directed by a network of free markets and flexible prices. Important among these decisions are capital investments decisions that are vital at two levels: for the future operability of the individual firm making the investment, and for the economy of the nation as a whole. At the firm level, capital investment decisions have implications for many aspects of operations, and often exert a crucial impact on survival, profitability and growth. At the national level, the proper planning and allocation of capital investment are essential to an efficient utilisation of other resources, poorly placed investment reduces the productivity of labour and materials and sets a lower ceiling on the economy's potential output.

Much of the theory in corporate sector is based on the assumption that the goal of firm should be to maximize the wealth of its current shareholders. One of the major cornerstones of determining this goal is financial ratio. Financial ratios are commonly used to measure firm performance. Generally, corporations include them in their annual reports to stakeholders. Investment analysts provide them for investors who are considering the purchase of a firm's securities.

Financial ratios represent an attempt to standardize financial information to facilitate meaningful comparisons. It provides the basis for answering some very important questions concerning the financial well being of the firm.

Its objectives are to determine the firm's financial strengths and to identify its weaknesses.

1.1 Liquidity ratios

Liquidity refers to the firm's ability to meet maturing obligations and to convert assets into cash. It relates to the ease and quickness with which a firm can convert its non-cash assets into cash, as well as the size of the firm's investment in non-cash assets vis-a-vis its short term liabilities.

The asset should be converted into cash without a significant price concession.

The true test of liquidity is whether a company has the ability to pay its bills on time. This is obviously an important factor to the firm's creditors.

Liquidity ratios are financial ratios used to assess the ability of a firm to pay its bills on time. They indicate the firm's ability to meet its short-run obligations.

These ratios measure the firm's ability to fulfill its short-term commitments out of current or liquid assets and therefore focus on current assets and current liabilities.

1.2 Return on investment (ROI)

This ratio indicates the ability of the firm to earn a satisfactory return on all assets it employs. This ratio tells us how effective the firm is in terms of generating income, given its asset base. It determines the yield on the firm's assets by relating net income to total assets. It is therefore an important measure of the efficiency of management. This ratio is also called return on total assets. Total assets are used in an attempt to measure total investment.

The higher the ratio is the better, because this provides some indication of future growth prospects.

ROE is calculated by taking the net result over shareholders' equity for each specified year. ROE represents what return the company is making on the shareholders' funds invested in the company. ROE assesses leadership's ability to get the job done. A business that has a high return on equity is said to be one that is capable of generating cash internally. ROE, along with Return on Assets (ROA), is one of the all- time favourites and perhaps most widely used overall measure of corporate financial performance (Rappaport 1986, p. 31). This was confirmed by Monteiro (2006, p. 3) who stated that ROE is perhaps the most important ratio an investor should consider. The fact that ROE represents the end result of structured financial ratio analysis, also called Du Pont analysis (Stowe, Robinson, Pinto & McLeavy, 2002, p. 85; Correia, Flynn, Uliana & Wormald, 2003, p. 5-19; Firer, Ross, Westerfield & Jordan, 2004, p. 67) contributes towards its popularity among analysts, financial managers and shareholders alike.

1.3 Leverage ratios or gearing

These ratios deal with the amount of debt in the firm's capital structure and its ability to service (or meet) its legal obligations. It tells us the relative proportion of capital contribution by creditors and by owners. These ratios focus on the liabilities and stockholders' equity from the balance sheet and on the income statement and also whether the firm can afford the level of fixed charges associated with its use of non-own-supplied funds.

For emerging market countries, ownership structure plays a very important role incorporate finance (LaPorta et al., 1999), perhaps more so than in developed countries.

For example, Claessens et al. (2000) specifically examine corporate ownership for East Asian firms and find that owners exert significant control over the firms they own, which is not surprising given that managers and owners are often the same people. In addition, due to the relatively undeveloped market structure of emerging markets, the degree of information asymmetry among participants is relatively high, which allows influential manager-owners greater latitude to engage in and act upon their desires.

2. Problem discussion

Survival and growth needs resources but financing of these resources has limitation. Therefore, applying of them should be in the way that creates an appropriate share of value for providers and users of resources.

Providers of resources are related with different levels of risk, benefit and control consequently, their expected returns are not the same.

Using of debt makes tax saving. But because of on- time interest payments is a risk – taking way. On the other hand, lavishing stock holders eavity increases the value of expected returns of share holders so financing expenses will be high. Thus, when capital structure that means a merger of source of finance minimizes the average costs of capital structure and leads to good performance is considered optimized one.

3. Significance of the research

Performance measurement is the base of investing and financing decisions. Debtholders evaluate performance to decide about interest rate. Investors, on the other hand are interested in evaluating the performance to have knowledge of success of management in applying their capital.

To help investors to recognize the link between capital structure and financial performance and choosing appropriate measures to evaluale and analyze the companies' financial status is the purpose of this paper. Until, the prediction of companies' power in value-enhancing would be easier for individuals.

3. Literature review

Regarding this subject, the reviews of literature are sub-divided into several parts, which it is going to explain respectively.

3.1 Measures of leverage

There are various measures of leverage, which can be classified as accounting based measures, market-value measures and quasi-market value measures. When choosing a measure of leverage, it is useful to keep in mind that the theoretical framework for the relationship between leverage and performance is based on market values of leverage. Since market values of leverage may be difficult to obtain, accounting based measures are often applied as proxies. Rajan & Zingales (1995) discuss various accounting based measures of leverage and their informational content. They suggest that the choice of measure should be based on the objective of the analysis. For instance, the ratio of total liabilities to total assets can be considered as a proxy for what is left for shareholders after liquidation, but is not a good indication of the firm's risk of default in the near future. Also, since total liabilities include such balance sheet items as accounts payable, which are used for transactions purposes rather than for financing, it may overstate the amount of leverage.

This measure can be improved by subtracting accounts payable and other liabilities from total assets. There is still one issue of concern since the measure contains liabilities that are not related to financing, e.g., pension liabilities, thereby underestimating the size of leverage. The ratio of total debt to capital, where capital is defined as total debt plus equity, is assumed to solve this problem and can be seen as the best accounting based proxy for leverage (Rajan, Zingales, 1995).

3.2 Different theories about capital structure

Since Modigliani and Miller published their seminal paper in 1958, capital structure has generated great interest among financial researchers. They argued that in efficient markets the debt-equity choice is irrelevant to the value of the firm and benefits of using debts will componsate with decrease of companies stock. Prior to MM theory, conventional perspective believed that using financial levevage increases company's value. In this respect, there is an optimized capital structure that minimiizes capital costs.

In a subsequent paper, Modigliani and Miller (1963) eased the conditions and showed that under capital market imperfection where interest expenses are tax deductible, firm value will increase with higher financial leverage. Models besed on impact of tax, suggest that profitable companies should have more debts these firms have more need for tax management in corporaration's profit. However, increasing debt results in an increased probability of bankruptcy. Hence, the optimal capital structure represents a level of leverage that balances bankruptcy costs and benefits of debt finance.

3.3 Static trade – off theory

Jensen and Meckling (1976) suggest that the firm's optimal capital structure will involve the tradeoff among the effects of corporate and personal taxes, bankruptcy costs and agency costs, etc.

3.4 Agency costs theory

Agency costs rose from separation of ownership and control and conflicts of interest between categories of agents. One of the problems that cause conflict between managers and shareholders is free cashflows. Jensen (1986) and Willianson (1988) define debt as a disciplinary tool to ensure that managers give preference to wealth creation for the equity-holders. Thus, in the companies that have high cash flow and profitability , increasing of debts can be used as a tool of reducing the scope for managers until resources of company may not be waste as a result of their in dividual purposes.

The other conflicting problem is that managers may not receive all the benefits of their activities. This is seen when manager's share in ownership of company is low. When the manager's increase stock is high, this inefficiency decreases. Therefore, it is appropriate that by increasing debts instead of stock issuance prevent from decreasing of manager's share of owrership interest (Huang, Song, 2005).

Stulz (1990) like Jensen believes that debts payment decreases cash flows available for managers. But, on the other hand, he states that this decrease will decrease the opportunities of profitable investing.Thus, companies with less debt, have more opportunities for investment and in comparison with other active firms in industry, have more liquidity. Additional costs of debt include potential bankruptcy costs, and agency costs associated with the monitoring of investments by bondholders. Costs and benefits of alternate financial sources are "traded off" until the marginal cost of equity equals the marginal cost of debt, yielding the optimal capital structure, and maximizing the value of the firm. The alternative theory, discussed by Meyers (1984) and Fama and French (2002), describes a firm's debt position as the accumulated outcome of past investment and capital decisions. In this theory, commonly called the "Pecking Order" theory, firms with positive net present value investments will finance new investments first using internal funds, and in the absence of internal funds will finance them with safe debt, then risky debt, then with equity, but only if there is no

other alternative. Thus, financing investments using internally generated funds may be the cheapest source, and the firm's financial structure is the outcome of past cash flows and investment opportunities.

The conflict between benefits of share holders and creditors has consequevces like increase of interest rate by creditors, addition of supervision costs and decrease of investment. So, this conflict demonstrates that high leverage leads to poor performance (Jenson, 1976).

3.5 Choice – picking order theory of financing

Managers in comparison to investers have more information about operation. Myers and Majluf (1984) believe that this causes that pricing the stock with investors be understate. In this condition that there is asymmetric information, companies prefer financing by internal sources to stock issuance and where there is not adequate internal sources, they refer to borrowing. Consequently asymmetric information is the base of choice – picking order theory of financing. The main conclusion drawn from the asymmetric information theories is that there is a hierarchy of firm preferences with respect to the financing of their investments (Myers & Majluf, 1984). This hierarchy of preferences suggests that firms finance their investments first using internally available funds, followed by debt, and finally through external equity.

Dimitrov and Jain (2003) with operational performance of firms proposed another theory . They argued that if manager have access to private information about becoming worse in future operational performance they will be increase debt. Thus, increasing the leverage is a negative sign and demonstrates poor forward performance.

Rajan and Zingales (1995) argue that larger firms tend to disclose more information to outside investors than smaller ones. Overall, larger firms with less asymmetric information problems should tend to have more equity than debt and thus have lower leverage. However, larger firms are often more diversified and have more stable cash flow; the probability of bankruptcy for large firms is smaller compared with smaller ones.

The firm's optimal capital structure will involve the conflicting theoretical arguments.Recent findings of Titman and Wessels (1988), Harris and Ravive (1991) and Rujan and Zingales (1995) confirmed the results of Mayers that believed increase of leaverage will decrease profitability.

But, Janson, unlike Mayers, predicts a positive link between financial leverage and profitability in efficient market and if the market be inefficient, there will be a negative relationship beteen them. In 1988, Rajan and zingales confirmed this theory. Bradly (1984) demonstrated that the firms with less operational profits, also have less leverage.

Cai and Zhang (2005) by studing this concept, found that in corporates with high leverage, converse link between leverage changes and return on stock is stronger (Rajan, Zingales, 1995).

Wald (1999) believed that the link between profitability and debt-asset ratio is positive and signifiiant. Profitabiliy was definding in the form of earning before interest and tax (EBIT) (Rajan, Zingales, 1995).

4. Research methodology and hypotheses

The purpose of this paper is to demonstrate the impact of defining the main variables of capital structure and performance on emperimental results. Therefore, the following hypotheses were extracted:

1) There is a meaning ful link between capital structure and return on investment (ROI);

2) There is a meaningful link between capital structure and Return on equity (ROE);

3) There is a meaingful link between capital structure and return on stock (RET);

4) There is a meaingful link btween capital structure and earnings before tax to sale ratio (EBT / S); and

5) There is a meaningful link between capital stracture and operational profit to sale ratio (OPR/S).

The starting point of our study are all non-financial firms listed at the Tehran Stock Exchange The 117 respondent firms in Tehran Stock Exchange constituted the sample in our empirical test of the theoretical model. For these firms we collect data for the five-year period 2002-2007 from publicly available sources. Companies, for which performance data between 2002 and 2007 was incomplete due to mergers and acquisitions, were however excluded from this sample. Moreover, financial firms were excluded due to the peculiarity in terms of operations, structure of assets and liabilities that would hinder analysis and inter-company comparisons.

Internal secondary data was used in order to estimate the value of the dependent variable as well as the values of the independent explanatory variables. Archives, reports and documents are examples of internal secondary data In the case of missing information, complementary data was collected by using reports available in the library and on the Internet.

Data was processed by descriptive statistics containing Mean, S.D and inferential statistics containing Pearson Correlation, ANOVA test using Statistical Package for Social Sciences (SPSS).

4.1 Data analysis

After gathering necessary data, they were analyzed by Excell and the variables were calculated. Then the variables

entered in SPSS software and then corrlation between dependent and independent variables were measured by using Pearson correlation coefficient.

The difference between variables of capital structure is a result of the way of assesing equity in adjusted debt ratios, avarag price of selected firms at the end of the terms and avarage of shares in each of the studing terms has been used.

For computing the market value of leverage, we use market value and the number of issued stock at the end of each term.

To test the hypotheses, correlation matrix between capital structure and performance is used. Also to show the meaning fulness of the correlation between variables, instead of critical value of student's T test, significance level has been used when sigificance level is less than %5, H0 (null hypothesis) is rejected. In H0, it is assumed that there is not a link between two variables.

Table 1 represents the empirical results from correlation matrix between variables. It is obvious that almost all the correlations (except tow items) are meaningful in level of %1.

Insert Table 1

According to obtained results, Ajmv(adjusted market value), mv(market value) and Bv(book value) of capital structure respectively have the most correlation with finacial performance measures;

$$r_{\mathrm{Pr}, AjMV} > r_{\mathrm{Pr}, MV} > r_{\mathrm{Pr}, Bv}$$

4.2 Results

Tests on coefficient of correlation demonstrated that there is a meaningful link between 3 variables of capital structure and 5 variables of performance except the link between ruturn on stock and book value of capital structure that is not meaningful in significance level of %95. This correlation between return on stock and adjusted market value is %95 and among other variables is equal to %99.

Results from tests on correlations and regression revealed that except the link between ruturn on stock (hypothesis 3) in which the correlation between return on stock and market value of capital structure is statistically stronger, in the other correlations, adjusted value has the strongest relationship with performance measures.

The negative relationship is consistent with Myers' (1984) notion that in general firms prefer internal to external financing sources. Profits as internal sources reduce the dependency of firms on leverage.

Insert Table 2

Rajan and zingales (1995) found that if return on stock and investments are fixed in a short term, and the main way of external financing is debt, there is a negative correlation between performance and leverage.

5. Discussion and Conclusion

One of main factors subject to intense debate in capital structure studies is whether to use the market value or the book value of debt and equity as the correct measure of leverage. Those who favor the use of the book value measure present two strong arguments. First, the main cost of borrowing is the expected cost of financial distress in the event of bankruptcy. Financial distress affects the weighted average cost of capital and consequently the optimal leverage. In such a situation, the value of the distressed firm is closer to its book value. Once the debt has been issued, changes in the market value of that debt do not affect the interest tax shield cash savings. Furthermore, if bankruptcy occurs, the accurate measure of debt-holders' liability is the book value of debt and not the market value of debt. Second, previous studies have shown that managers think in terms of book rather than market values. Unlike market values, book values are more easily accessible, more accurately recorded and not subject to market volatility. On the other hand, those who prefer the market value to book value argue that the market value ultimately determines the real value of a firm. They suggest that it is possible for a firm to have a negative book value of equity while simultaneously enjoying a positive market value. This is possible because a negative book value reflects previous losses while a positive market value denotes the expected future cash flows of the firm. In practice, both measures of book and market values are often used.

Results of this study demonstrated that market value and adjustted value measures of capital structure in comparison with book value measures have stronger link with performance. This means market value should be taken more into consideration in evaluating capital structure.

Many measures of firm performance, such as a firm's profitability, are negatively correlated with financial leverage. This result can be interpreted in this way that high leverages companies woud have less profitability. In other words, dabt level is over than optimized level and in comparison to advantages of tax shield, incensement of financial distress costs has more significance. There are other evidences for this relationship as following: Informational asymmetry and high costs of extarnal resources and inefficiency of the market.

Total liabilities ratio (TL) is used as the main measure of leverage and all the others are employed for robustness checks. Why do we regard total liabilities ratio a more appropriate measure for capital structure? We argue that, firstly, when a firm wants to obtain more debt, the creditor will consider not only how much the firm's long-term debt is, but also how much the firm's current debt and total liabilities are. So the portion of other liabilities will affect the debt capacity of a firm. Second, current debt is a quite steady part of total assets.

The Reasons behind using of debts by Iranian companies may be constant interest rate in any level of debt and risk.

Totally, with respect to observed link between capital structure and performance, the conclusion is that company that has high profitability and good performance have less debt.

This results are consistent with the results of Mayers, Stalz, Rajan and Zingales.

On the method side, it would be desirable to investigate the determinants of capital structure over a longer period of time and over a number of economic cycles. Finally, the analysis could be improved by differentiating between types of debt such as long-term and short-term debt.

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Table 1. The results of correlations

OPR/S_{it}	EBT/S_{it}	RET_{it}	ROE_{it}	ROI_{it}	Variable
-0.204	-0.252	0.042*	0.184	-0.329	BV_{it}
-0.423	-0.536	-.0162	-0.37	-0.604	MV_{it}
-0.52	-0.649	-.105	-0.438	-0.695	$AjMV_{it}$

Correlation in significance level of %95 isn't meaningful (other results are meaningful)

Table 2. The results from tests on hypothesis

Hypotheses	Relationship between leverage	Result	α	Meaningful variables (respectively)
1	ROI_{it}	Confirmed	%5	BV_{it} ,3- MV_{it} , 2- $AjMV_{it}$ 1-
2	ROE_{it}	Confirmed	%5	BV_{it} ,3- MV_{it} , 2- $AjMV_{it}$ 1-
3	RET_{it}	Confirmed	%5	$AjMV_{it}$,2- MV_{it} 1-
4	EBT/S_{it}	Confirmed	%5	BV_{it} ,3- MV_{it} , 2- $AjMV_{it}$ 1-
5	OPR/S_{it}	Confirmed	%5	BV_{it} ,3- MV_{it} , 2- $AjMV_{it}$ 1-