Arabian Journal of Business and Management Review

Research Article   **Open Access**

Impact of Firm Specific Factors on Capital Structure based on Trade off Theory and Pecking Order Theory - An Empirical Study of the Tehran's Stock Market Companies

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Abstract

The purpose of this paper is to examine determinant of capital structure of Iranian listed companies based on trade off theory and pecking order theory of capital structure. There are many factors that may affect capital structure choice. However, this study focuses on four important characteristics of Iranian firms and tries to clarify their impact on capital structure. The dependent variable is firm's leverage ratio and independent variable consists of tangibility, profitability, growth and business risk. This study uses financial information of 133 Iranian listed companies on Tehran Stock Exchange for the period of 10 years from 2005 to 2014. The OLS regression model is used to determine relationship between dependent and independent variables.

Finding show that profitability is the most important determinant of capital structure for Iranian companies followed by tangibility, growth and business risk. Profitability and business risk are inversely correlated with debt ratio, while liquidity and growth are directly associated to debt ratio. Results of hypothesis testing based on relationship between independents and dependents variables are fully in line with pecking order theory, while it partially supports trade of theory in short, capital structure of Iranian firms is completely explained by pecking order theory of capital structure.

Keywords: Capital structure, Tehran stock exchange (TSE); Trade off theory (TOT); Pecking order theory (POT)

Introduction

Debt and equity choices are one of the major financial decisions for every company which may affect its value. Capital structure has been studied by many scholars during past five decades, which in turn generated some theories and various finding in this area of corporate financial. Definitely, Modigliani and Miler [1,2] theorem of capital structure had a significant and contribution on developing capital structure literatures. They proposed two approaches of capital structures under certain assumptions, based on Modigliani and Miler [1] it does not matter to employ either debt or equity financing under perfect market assumptions and so capital structure decision is irrelevance. While Modigliani and Miler [2] considerate corporate tax and proposed debt financing will increase firm's value.

Since then by the end of 1990, many researchers studied potential capital structure's determinant (in addition to taxes) and introduced new theories such as trade of theory and pecking order theory based on different models including agency cost model [3,4], product/input market interaction model and corporate control model [5,6]. They conclude that in addition to debt tax shield other factors including earning, uniqueness, free cash flow, growth, profitability, research and development, non-debt tax shield, fixed assets, bankruptcy and volatility may affect portion of debt and equity. The capital structure literature has been evolved by endeavour of researchers for empirically testing new theories of capital structure.

The importance of capital structure and firm's value are widely accepted by both scholars and financial managers since capital structure affect cost of capital or expected earnings.

However there is still debate about how companies raise fund. In recent years, the number of listed companies on Tehran stock exchange had increased and the issue of capital structure choice became important for both firm's owner and investors. As there is a lack of

study on capital structure of Iranian companies, this study tries to clarify film's capital structure in Iran and expand frontier of knowledge in this area. Furthermore, it provides some insights for financial and executive managers to become more aware of capital structure choice for their companies.

Majority of main capital structure findings is driven from developed countries such as France, Canada. United Kingdom, Japan, Germany, Italy and United States [7-12].

There are limited outstanding researches that use data from developing countries for instance Booth and Supa Tongkong [13], studied capital structure by employing data from Brazil, Jordan. India, South Korea, Pakistan [14], Malaysia, Mexico, Turkey, Zimbabwe and Thailand. Deesomsak, Paudyal and Pescetto utilized data from Asia Pacific Region; Tong and Green [15] analyzed data from China and Rao et al. [16] used data from Oman. Ayub Ali and Faruk Hossain [17] in Bangladesh.

There are mainly two financial resources namely internal and external resources, for any company everywhere in the world. The internal sources of fund are almost the same for all companies apart from geographical locations. while the availability of external fund depends on level of capital market development and structure of

banking system in each countries As for Iranian companies are concerned, the available financial resources for them consist of stock market, bond market and bank loan.

TSE is one of the fast growing stock market in Middle East region and its market capitalization growth has been steady over the years as it became 3,644,628 billion Rialsin 2014.

This study aims to firstly study the impact of each firm's factor on debt and equity choice and secondly this paper intends to determine which capital structure theory, either trade off or pecking order, better clarifies debt and equity choice of Iranian firms.

Trade off theory considered optimal capital structure based on balance between advantage and disadvantage of debt financing. In other words, the target capital structure is considered as a gearing ratio where benefits of debt compensate with financial distress cost arising from marginal debt. So, according to trade off theory, firms have own optimal capital structure that maximizes its value. Based on this theory, profitable, highly liquid firms should have higher amount of debt since a profitable company generates more available cash for management opportunities for using cash inefficiency and unnecessarily manners that increase agency cost between shareholders and managers.

Moreover, firm with more tangible assets should have higher level of debt, while companies with more growth and higher earnings volatility have lower amount of debt in their capital structure. Thus, there are five hypothesis based on trade off theory of capital structure in this study as follows:

Pecking order theory is based on information asymmetry between insider management and outsider investors which means managers have special knowledge regarding firm's performance activity and so on which matt not be available for outsiders This theory does not hold optimal capital structure and proposed firms should finance with internal over external fund and debt over equity whenever external financing is required. According to this theory, firms with more tangible assets have a higher amount of debt compared to rims with lower amount of tangible since tangible assets can he used as collateral and so increase accessibility to debt market Furthermore, firms with higher growth opportunity should have higher amount of debt as they need more cash for investment in new projects. On the other hand, profitable and highly liquid firm have lower amount of debt since they have more available cash which can be used as internal source of fund for satisfying firm's financial requirements, also firms with higher business risk should have lower amount of debt. Based on pecking order theory, there are four hypotheses in this study as follows (Table 1) [15]:

Methodology

The research approach is based on quantitative approach since the study deals with numbers in forms of financial ratio. Research methodology is based on OLS regression model the dependent variables is debt ratio and independent variables are tangibility, profitability, and growth and business risk. The leverage of a firm can be measured by many different variables in this study we used debt ratio (total debt

to total asset) as leverage measurement. The proxy of tangibility, fixed asset over total asset [17]. Profitability is proxies by return on assets. ROA represents the contribution of the firm's assets on profitability creation. Proxy of growth is the ratio of market value of assets (book value of assets plus market value of equity less book value of equity) to book value of assets [18]. As a proxy of business risk is coefficient of variation in earnings before interest and taxes (EBIT) over 10 years (2004-2013) [18].

The study mainly- uses secondary information, in forms of annual financial information of 133 non-financial Iranian companies listed on Tehran stock Exchange from 2005 to 2014 which consists of balance sheet and income statement available online at web site of 'Tehran stock exchange for company's announcements and financial information.

$$Y_{it} = \alpha + \beta_1 TAN_{it} + \beta_2 PRO_{it} + \beta_3 GRO_{it} + \beta_4 RSK_{it} + e$$

Results and Discussion

This study uses financial information of 133 non-financial companies from 27 different industries listed on Tehran stock exchange from 2005 to 2014. More than 50% of sampled firms belong to five industries including pharmaceuticals, chemical, metallic products, food and agriculture product and machinery and equipment.

There are four critical assumptions for testing validity of OLS regression [19] including test of normality, linearity, multicollinearity or independence of variable and heteroscedasticity or homogeneity of variance. In this study, all the assumptions were tested and their result proves validity of regression model.

The Chow test showed that the set of linear regression parameters is equal across groups so data can be pooled together (chow prob.<0.05). After running the Hausman test the probability factor of test appears to be 0. 0067 so fixed effects is ore probable and it is more reasonable to do with panel data.

The regression model is based on four independent variables including profitability, tangibility, business risk and growth.

In this model 64.6% variation of dependent variable is described by independent variables (Table 2). Also based on ANOVA Table 3 overall significance of this model can be fitted.

According to the regression model profitability and business risk have negative and tangibility and growth have positive correlation with debt ratio. In this model, all independent variable have significant impact on debt ratio. Profitability has the highest explanatory power (-0.855) and it is the most important determinant of debt ratio among independent variables. Liquidity is the second most influential factor on debt ratio, followed by tangibility as a third important explanatory variable. At the same time, growth and business risk have a low explanatory power and so can be considered as least important determinant of debt ratio in this regression model (Table 4).

According to the regression model there is a significant positive relation between tangibility and debt ratio. There for, it is consistent with both TOT and POT propositions, thus both trade of theory proposition and pecking order proposition are clarified. The regression results show that there is a significant inverse correlation among profitability and debt ratio. Thus the result is in line with POT proposition, since it predicted inverse relation between them. While it is contrary with TOT hypothesis proportion as it is predicted direct correlation among profitability and debt ratio. There is a direct correlation among growth and debt ratio based on regression result. Therefore, the result is contrary with TOT proposition since this theory explained inverse

Variable	Trade off theory	Pecking order theory
Profitability	Positive	Negative
Tangibility	Positive	Positive
Growth	Negative	Positive
Business risk	Negative	Negative

Table 1: Summary of predicted sign among independent variables and debt ratio.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.809[a]	0.655	0.646	0.16769

a. Dependent Variable

Table 2: R Square.

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	6.591	4	1.318	76.736	0.000[b]
Residual	8.554	989	0.028		
Total	15.145	993			

a. Dependent Variable: DEBT
b. Predictors: (Constant), RSK, TAN, PROF, GRW

Table 3: ANOVA[a].

Model	Unstandardized coefficients Coefficients		Standardized coefficients Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	0.532	0.024		32.418	0.000
TAN	0.088	0.032	0.103	2.730	0.004
PROF	-0.855	0.059	-0.549	-14.386	0.009
GRW	0.019	0.001	0.127	3.393	0.003
RSK	-0.026	0.005	-0.162	-4.817	0.005

a. Dependent Variable: DEBT
Debt ratio= 0.532+ 0.088 (TAN) – 0.855 (PROF) + 0.019 (GRW) – 0.026 (RSK)

Table 4: Coefficients[a].

Wald test			
Test Statistic	Value	df	prob
F-Statistics	1183.344	{7.488}	0.0000
Chi-Square	7525.61	8	0.0000

Table 5: Wald test.

association among growth and debt ratio. Meanwhile, the result is in line with POT proposition, because it predicts direct association among growth and debt ratio. Based on regression result, business risk and debt ratio negatively correlated. Hence, the result is in line with both TOT and POT propositions since they predicted reverse association among business risk and debt ratio.

The Wald test used to test the true value of the parameter based on the sample estimate we can see the chi-squared value generated by the Wald test, as well as the p-value associated with a chi-squared of 7525.61 with two degrees of freedom. The p-value is less than the generally used criterion of 0.05, so we are able to reject the null hypothesis, indicating that the coefficients are not simultaneously equal to zero. Because including statistically significant predictors should lead to better (Table 5).

Summary and Conclusions

This study had two main objectives in order to study capital structure of Iranian listed companies. First we intend to examine determinant of capital structure of Iranian listed companies with four independent factors including profitability, tangibility, growth and business risk and their impact on debt ratio. Secondly compare the regression results with two important theories of capital structure TOT and POT.

The result of the regression model shows that 64.6% of variation in debt ratio explained by five explanatory variables. As far as determinant of capital structure for Iranian company is concerned, profitability is a major firm's attribute which may affect debt and equity choice of Iranian firms since it has significant effect and higher explanatory power compared to other variables in regression model, followed by

tangibility which also has significance effect as third important factor. Despite of significant T statistics of business risk and growth, they have the lowest explanatory power among explanatory variable that may imply growth and business risk have no considerable impact on capital structure.

Profitability has a reverse impact on debt ratio which means that more profitable firms employ lower amount of debt than those firms who are less profitable or non-profitable since profitable firm generate higher amount of cash that can be used as internal source of financing by company. Moreover, business risk and debt are inversely associated that means companies whose business is more risky have lower amount of debt compare to stable companies.

On the other hand, tangibility has a direct effect on debt ratio which means company who has higher amount of tangible assets employ lager amount of debt compare to those who have lower amount of tangible assets. This may be explained by two things: firstly, the majority of Iranian company use bank loan when they need debt financing since there is no developed bond market in Iran and so bank plays a major role for financial needs of companies. Secondly, most banks require tangible assets in order to secure their loans and they may not accept intangible assets as collateral. Also growth and debt are directly associated that means company with higher amount of growth employ larger amount of debt compare to low growth companies.

According to regression results there is a significant inverse correlation among profitability and debt ratio. Thus the result is in line with POT proposition, since it predicted inverse relation between them. While it is contrary with TOT hypothesis proportion as it is predicted direct correlation among profitability and debt ratio. There is a direct correlation among growth and debt ratio based on regression result. Therefore, the result is contrary with TOT proposition since this theory explained inverse association among growth and debt ratio. Meanwhile, the result is in line with POT proposition, because it predicts direct association among growth and debt ratio.

Independent variable	Predicted sign in the study	TOT propositions	POT propositions
Tangibility	Positive	Accepted	Accepted
Profitability	negative	Rejected	Accepted
Growth	Positive	Rejected	Accepted
Business risk	negative	Accepted	Accepted

Table 6: Summary of results (TOT and POT propositions).

Based on regression result, business risk and debt ratio negatively correlated. Hence, the result is in line with both TOT and POT propositions since they predicted reverse association among business risk and debt ratio.

All in all, this study shows that profitability, tangibility are important factors that can affect capital structure of Iranian firms, while growth and business risk may not considered as important determinant of debt and equity choice. Furthermore, it can be concluded that Iranian firms capital structure can be explained by POT, which means they have tendency to use internal financial resources over external resources and when they need additional funds for either working capital or new projects, they tend to employ debt over equity (Table 6).

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