

Analyzing the Impact of Financial Managers' Perception of Macroeconomic Variables on Capital Structure of Firms Listed in Tehran Stock Exchange

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Abstract

The purpose of this study is to examine the effect of Perceived macroeconomic variables by financial managers on capital structure decisions of firms listed in Tehran Stock Exchange. A detailed questionnaire was employed to collect data about perception of macroeconomic variables, namely GDP, interest rate, inflation rate and exchange rate. A total of 100 questionnaire forms were filled by financial managers of selected firms among ten major industries. Result of regression analysis shows that there is no significant relationship between perceived macroeconomic variables and the way Iranian corporate arrange their capital structure, however, majority of financial managers express the significant effect of exchange rate, inflation rate and interest rate, in order of importance, on capital structure of firms.

Keywords: Macroeconomics, Financial Managers, Capital Structure, Debt Ratio, Tehran Stock Exchange

1. Introduction

One of the major issues has long been an intriguing one among financial managers and researchers in this area is the problem of optimal capital structure. Several theories have been created to explain the best mix of financing sources of a firm. The irrelevant capital structure of Modigliani and Miller (1958) states that the firm value is independent of firm capital structure and thus an optimal capital structure does not exist; built around the unrealistic assumption of perfect capital markets. A number of competing leverage theories have been proposed over the years, but the static tradeoff model and the pecking order model are two mainly demonstrated competing models of capital structure. The trade-off theory of corporate financing is based on the concept of target capital structure that balances various costs and benefits of debt and

equity (Modigliani and Miller, 1963; Hovakimian et al., 2004). On the other hand the pecking order theory suggests hierarchal capital choice decisions where the first source of financing is internally generated funds, next debt and then equity hinging on the funds requirements and other factors (Myers and Majluf, 1984). Despite vast efforts to examine these theories, there is no one best formula employed to make the optimal capital structure and a complete understanding of the factors that influence finance policies has yet to be emerged. The importance of the financial decisions of a firm has been illustrated by its main impact on the weighted average cost of capital (WACC) and firm value where a wrong decision in the selection process of financing may direct the firm to financial distress and eventually to bankruptcy. Theories of capital structure develop some help in understanding the financing behavior of firms as well as identify the potential factors that affect the capital structure. Numerous studies have been done to shed some light on the factors affecting capital structure policies. Based on the results of most carried out researches in this area, there are seven main internal elements seem to be effective on financing decisions of a firm in general view including: profitability, asset tangibility, firm size, non-debt tax shields, growth opportunities, earnings volatility, ownership structure (Cheng Lim, 2012). It has been observed that each of these variables has a negative or positive effect on debt ratio of companies; namely by using Pecking order theory suggesting that the relationship between profitability and leverage is negative, a firm with higher profitability tend to create more capital flow to enterprises and then the sufficient retained earnings internally generated could be utilized as internal finance. The result of this process would be reducing the amount of debt financing and constantly decreasing the leverage level. Moreover, Al-Ajmi et al. (2009) have noted that capital structure of Saudi companies is negatively impacted by liquidity. Karadeniz et al. (2009) mentioned that return on assets is related negatively to the debt ratio of Turkish lodging companies. The result of a study by Abor et al. (2009) indicates that internal variables such as firm's age and asset structure influence the capital structure of Ghanaian SMEs and short-term debt is found to be an important financing source for SMEs in Ghana. On the other hand, there are fewer; nevertheless, remarkable external variables investigated to be effective on capital structure of firms in developed and developing countries. The study by Ren Cheng et al. (2004) clears that the country factors are as important as firm characteristics in determining firm leverage. They point to the investor protection as a critical external element that plays an important role in the capital structure decisions of firms in forty five countries; so that firms in countries with better creditor protection have higher leverage, while firms in countries where shareholder rights are better protected employ more equity funds. In addition to, the precision of soft information received by outside investors is found to have a negative relationship with the amount of debt the firm issues, so that firms about which outside investors recover more favorable soft information issue less debt (Jiao, 2010). Capital markets are considered as important suppliers of funds for economic and industrial growth of the country which determine the conditions of money reachable for companies and other appliers to use. Financial market development is documented as a significant factor in corporate financing which its impact varies systematically both in terms of magnitude and direction with the maturities of the sources of financing whether short-term or long-term sources of financing (Bokpin, 2010). This is already clarified that macroeconomic conditions influence on credit risk and corresponding on firms' financing decisions (Hackbarth et al., 2006; Mahmud, 2003). When cash flows are affected by movements

in the economy, the firm will either have to issue less debt overall or create special features for the issue of the debt probably by way of variable interest rate. Indeed, if one determines optimal leverage by balancing the tax benefit of debt and bankruptcy costs, then both the benefit and the cost of debt should hinge on macroeconomic conditions. Macroeconomic variables are subsequently mentioned as considerable external factors seem to be affecting on capital structure of firms in different countries, despite of little attention have been paid to. It was noted that GNP per capita, which proxies for economic activities in the country, and interest rate, which is measured by prime lending rate and is a major decisive factor affecting demand for credit, significantly influence on the capital structure of companies (Mahmud, 2003; Joeveer, 2006; Ju et al., 2006; Henderson et al., 2006). The direction of impact will be different by the way of firm conditions, for example the growth in interest rate may lead firms to increase debt ratio because of its tax benefit or decrease it to reduce the bankruptcy risk. In the tax advantage-bankruptcy costs model, as nominal interest rates increase the tax advantage to debt rises, leading firms to choose a higher debt-value ratio, although, this trend will not continue so much because of bankruptcy risk. In some studies, inflation rate has also been proposed as an effective macroeconomic factor in determining the amount of debt issuance by firms (Bokpin, 2009). Rising in inflation rate may direct firm to choose short-term debt over equity, further, it could be argued that as inflation rate grows some flashy investment opportunities divert investors and shareholders into other economic areas and eventually firms inevitably employ debt over equity. However, this situation is expected to occur in special economic situations such as high possibility of predicting inflation in the future. In addition, fluctuations of exchange rate are attended to have a remarkable effect on capital structure policies fitting the kind of corporate activity (Allayannis et al., 2002; Broll et al., 2005). Considering the indispensable effect of profitability in determining capital structure choice, as local currency appreciates firm's cash flow rises (declines) in import (export) companies, so, based on pecking order theory, High (low) profitability of import (export) companies cause them to prefer internal (external) finance to external (internal) finance. Thus, if a firm's cash flow and value is related to exchange rate fluctuations, then the firm may decide to issue some of its debt in foreign currencies and also manifest in which currency its cash flow will be denominated.

Based on the significant effect of macroeconomics on corporate financing, the impact of four above-mentioned macroeconomic variables, namely GDP, interest rate, inflation rate and exchange rate on capital structure of firms listed in Tehran stock exchange is supposed to be analyzed in this study. Because of the main purpose of the paper built around the proved fact that there are different perceptions of a common thing or event among people in each area so that direct those to a special way of decision making, the questionnaire tool employed to collect data about different perception of macroeconomics among financial managers of the firms. Indeed, considering the impact of perceived variable, which predicts one's next behavior more accurately, instead of its real one seem to be more logical. Thus, investigating the impact of perceived macroeconomic variables by financial managers on capital structure of firms listed in Tehran stock exchange which has not been paid attention so far is the task of this paper.

The next part is literature review which explains about previous studies, third part gives information about data and methodology, the part four presents result of the study and in the last part the paper is discussed and concluded.

2. Literature Review

Analysis the relationship between macroeconomics as a critical external factor and corporate financing policies is not studied as much as analyzing the impact of specific characteristics of the firms in different countries. Nevertheless, there are some studies have focused on non-institutional elements like macroeconomic variables seem to be effective on determining capital structure. However, there is no previous study taken perceived macroeconomics into account as a considerable factor. A number of studies have investigated the impact of interest rate fluctuations on capital structure decisions of firms. The relation between leverage, interest rate sensitivity and firm value in the property-liability insurance industry was analyzed in a study by Staking et al. (1995). It was cleared that the market value of equity at first rises but then later declines as leverage increases, however, Interest rate risk had the opposite effect so that equity value first decreases with interest rate risk but then grows at high levels of interest rate risk. Omole et al. (1999) have also indicated a link between interest rates and the corporate financing strategies of quoted companies in Nigeria. Nejadmalayeri (2002) observed that interest rates can have effect on tax shields and bankruptcy costs, affecting the optimal capital structure (Joeveer, 2006; Ju et al., 2006; Henderson et al., 2006). By using a yield curve factor model, he tested how interest rates affect the debt–equity choice. Mahmud (2003) Found that the capital structure choice of a firm is not only affected by its own specific characteristics, but also by its surrounding environment such as general health of the economy and the amount of economic activities in the country determined by GDP. He examined the impact of GDP and interest rate as two macroeconomic variables on corporate financing in three Asian countries including Japan, Malaysia and Pakistan. He observed that growth in GDP per capita was significantly influencing growth in the capital structure of companies in Japan and Malaysia; For Pakistan this variable shows insignificant with all leverage ratios and the interest rate was a major definitive factor affecting demand for credit in all three countries. Bokpin (2010) argued that economy wide variables such as gross domestic product (GDP) per capita have significant impact of financing choices of firms. In a previous research by Bokpin (2009) the findings of the study illustrate a significantly negative relationship between gross domestic product (GDP) per capita and capital structure policies; Inflation rate on the other hand positively influences the choice of short-term debt over equity and expectations of increasing interest rate positively influences firms to replace long-term debt for short-term debt over equity. Allayannis et al. (2002) revealed the fact that fluctuations in exchange rate can affect on a firm’s choice toward financing, thus depreciating local currency may lead firms to reduce foreign currency debt and subsequently decrease the whole amount of liabilities if they would not be able to substitute it by a local currency debt. In the line with this study, Broll et al. (2005) has noted that exchange rate risk management of the multinational firm is indicated to have direct impacts on its international capital structure decision and on its currency of denomination decision.

3. Methodology

The purpose of the study is to analyze the impact of perceived macroeconomic variables by financial managers on capital structure of firms listed in Tehran stock exchange. A detailed questionnaire was employed to collect data about perception of macroeconomic variables. The questionnaire is consisting of two parts; part one seeks information about mentality of financial managers with four independent variables including: GDP, interest rate, inflation rate and exchange rate for two years (2010 and 2011), beside, they were asked about how much these variables can intervene in determining capital structure of the firms in their opinions. The next part manifests perception of managers about general financial situation of their firms by seven smart related questions. Likert five point scales were used as a basis of questions in both parts. The questionnaire reliability was measured by Cronbach's alpha test at 78%, indicating appropriate reliability and its validity was verified by some financial and economic experts, as well. A total of 100 questionnaire forms were filled by financial managers of selected firms among ten major industries (basic metals, chemical products, cement, car, oil products, building, nutrition products, tile, transportation and tire) during the period of 1st March 2012 until 2nd May 2012.

The study employed linear regression analysis due to investigate the relationship between perceived macroeconomic variables and capital structure of listed firms. Debt ratio and financial leverage both represent capital structure as dependant variable. Given that corporate financing is not only affected by macroeconomics, Two control variables namely company size and profitability were included to clarify the relationship between perceived macroeconomic variables, on the one hand, and debt ratio (or financial leverage) on the other hand. A simple regression equation is used in this paper given as:

$$DR_0 = \alpha + \beta_1 INT_0 + \beta_2 INT_1 + \beta_3 GDP_0 + \beta_4 GDP_1 + \beta_5 INF_0 + \beta_6 INF_1 + \beta_7 EXC_0 + \beta_8 EXC_1 + \beta_9 MVA_0 + \beta_{10} ROE_0$$

Where INT, INF, EXC and MVA respectively represent perceived interest rate, perceived inflation rate, perceived exchange rate and market value, further, subscript 0 and 1 respectively represent 2010 and 2011. DR is the dependable variable which is a measure of capital structure. The questionnaire provided data about macroeconomics and other needed data about debt ratio, financial leverage and control variables (market value which proxies company size and ROE which represents profitability) was obtained through related valid databases.

The study employed other analysis instruments such as T-tests to identify some complementary information about variables, as well.

4. Results

Regressing capital structure on the control variables and perceived macroeconomics in two models shows unconventional results. As mentioned before, two dependent variables (debt ratio and financial leverage) were used as proxies for capital structure in two similar regression models. Unexpectedly, there is no significant relationship between any of perceived macroeconomic variables whether in 2010 or 2011 and capital structure of listed firms in both models which is not in line with previous studies (Bokpin, 2009; Mahmud, 2003; Allayannis et al., 2002). As shown in Table1, control variables, namely company size ($\beta = -0.181$, $p\text{-value} < 0.05$) and profitability ($\beta = 0.341$, $p\text{-value} < 0.05$), are significant predictors of capital structure in the model in which debt ratio is dependent variable.

Table1. Regression analysis on perceived macroeconomic variables

Variables		INT		GDP		INF		EXC			
		I N T 0	I N T 1	G D P 0	G D P 1						
p - v a l u e		0 . 6 1 3	0 . 3 1 4	0 . 7 7 9	0 . 9 5 2						
	β	- 0 . 0 6 6	0 . 1 3 9	0 . 0 3 8	- 0 . 0 8 8						
p - v a l u e		0 . 7 8 6	0 . 9 2 0	0 . 1 4 4	0 . 7 1 7						
	β	0 . 0 3 9	0 . 0 1 5	- 0 . 0 5 2	0 . 0 5 4						

				1						
				7						

Note. Regression model with debt ratio (DR_0) as dependent variable includes: $R^2=0.14$, constant=73.721 and the one with financial leverage (FL_0) includes: $R^2= 0.028$, constant=8.762. * is significant at the 0.05 level.

One-sample T test was employed in order to estimate the level of macroeconomic variables in the country for two years (2010 and 2011) and how much these variables can affect capital structure of listed firms in Tehran stock exchange in the mind of their financial managers. Result impressively indicates an intensive ascending trend in three macroeconomic variables (interest rate, inflation rate and exchange rate); however, this trend is vice versa about GDP in the viewpoint of almost more than half of financial managers. They also state that macroeconomic variables such as exchange rate, inflation rate and interest rate have widespread effect on how they decide about capital structure arrangement of their firms, beside; GDP is mentioned as an almost affectless factor oppositely. Results of T-tests are presented in Table 2 below.

Table2. One-sample T tests analysis about perceived macroeconomic variables and their impacts

variables		mean	Std. Deviation	t	p-value
INT	INT ₀	3.16	0.615	2.602	0.011*
	INT ₁	3.84	0.631	13.308	0.000*
GDP	GDP ₀	1.93	0.742	- 14.420	0.000*
	GDP ₁	1.54	0.642	- 22.731	0.000*
INF	INF ₀	3.47	0.594	7.915	0.000*
	INF ₁	4.16	0.564	20.584	0.000*
EXC	EXC ₀	3.27	0.617	4.375	0.000*
	EXC ₁	4.07	0.640	16.727	0.000*
Impact of INT		3.4	0.752	5.318	0.000*
Impact of GDP		1.82	0.833	- 14.159	0.000*
Impact of INF		3.51	0.859	5.940	0.000*
Impact of EXC		3.92	0.720	12.773	0.000*

Note. * is significant at the 0.05 level.

One way ANOVA was also employed to test if there is any difference between perceptions of financial managers among ten selected industries in the sample about impact of each

macroeconomic variable. Results indicate the difference just about the impact of exchange rate ($p\text{-value} < 0.05$), thus, the perceived effect of this variable in determining capital structure seems to be more in three industries, namely oil products, basic metals and tire based on LSD analysis. Moreover, the impact of percentage of foreign currency debt in each firm on the perceived effect of exchange rate on capital structure by financial managers was analyzed. This kind of relationship is statically verified considering all firms in the sample.

As pointed before, there are seven questions embedding in part two of the questionnaire. Two critical questions (question4 and question5) explore how much firm could achieve to the purpose of minimum in risk (question4) and maximum in return (question5) in the viewpoint of financial managers. Testing the impact of this perception on debt ratio and financial leverage by means of a regression model shows that there is no significant relationship between mentality of financial managers about financial risk and return of firm’s activities and the way capital structure is arranged at the 0.05 confidence level. Table3 displays this result.

Table3. Regression analysis on question 4 and question 5

Dependent variables :	Question 4		Question 5		R ²	constant
	p-value	β	p-value	β		
Debt ratio (DR ₀)	0.064	-0.210	0.359	-0.104	0.057	86.759
Financial leverage (FL ₀)	0.219	0.142	0.389	-0.098	0.004	0.043

Five remained questions were analyzed by one-sample T tests, finally. Financial managers were asked to answer question1 and question3 which ascertain the extent of manager’s commitment to a specified debt ratio. Result indicates that majority of financial managers try not to fix debt ratio on a certain amount and change it whenever it needs ($p\text{-value} < 0.05$). Question2 presents tendency of financial managers to measure debt capacity of firms and result of testing shows there is high willingness of knowing how much debt can be issued by firm in financial managers ($p\text{-value} < 0.05$).

At the end of questionnaire two challenging questions presented to be answered; the first one, which its analysis was not significant at the 0.05 confidence level ($p\text{-value} > 0.05$), investigates how much financial managers think they have reached to an optimal capital structure and the last one (question7) asks about perception of financial managers of the amount of firm debt ratio at the time they were filling the questionnaire. Most of them express high level of debt issued by firms which is in line with the result of analysis real debt ratios obtaining through related databases.

5. Conclusions and Implications

This study has provided some information concerning the impact of perceived macroeconomic variables on financing decision process of Iranian firms. The sample consisted of 100 listed corporations selected among ten major industries in the Tehran Stock Exchange. In contrast with previous studies, a questionnaire was employed as a research instrument for collecting data about perception of macroeconomic variables and other complementary data about general financial position of firms in the viewpoint of their financial managers.

Unexpectedly, the results of the study could not support existing literature on the main purpose of the paper based on analysis the impact of macroeconomic variables on capital structure of firms, however, this study considers the effect of perception of independent variables seem to be more accurate predictors of dependent variable. Nevertheless, this conflict in results may be solved by changing in research procedures. By the way, there is no significant relationship between perceived macroeconomic variables and the way Iranian firms arrange their capital structure, although, majority of financial managers express the significant effect of exchange rate, inflation rate and interest rate, in order of importance, on capital structure of firms. They also state high speed of increasing in these three variables. The amount of GDP was estimated low and still expected to decline little by little over the years, further; its impact on corporate financing was specified negligible. Perceived effect of exchange rate variable, as the only variable which its effect was statically different among ten selected industries, in determining capital structure was identified to be more in oil products, basic metals and tire industries. It may be discussed by high sensitivity of cash flows of firms in these industries to the fluctuations of exchange rate. On the other hand, result indicates that there is a significant relationship between perceived effect of exchange rate on capital structure by financial managers and the impact of percentage of foreign currency debt considering all firms in the sample, thus, fluctuations of exchange rate may lead firms to moderate the amount of foreign currency debt issuance. Despite of these evidences provided by results, no relationship was found between both main variables (perceived macroeconomic variables and capital structure of firms) which can be implied that there are other factors extensively affecting capital structure decisions such as certain firm level factors or some other external factors not accounted for by macroeconomic variables. As results show, control variables namely company size and profitability considered as internal variables were significant predictors of corporate financing policies. This part of results confirms the findings of previous researches based on the critical role of firm level characteristics in explaining capital structure decisions of firms.

More than half of financial managers state high level of debt issued by their firms and they hint that there is no obligation to a specified debt ratio; however, they insistently pay attention to measuring the firm debt capacity. The study intended to explore the relationship between mentality of financial managers about financial risk and return of firm's activities and the way capital structure is arranged that was insignificant statically. The result of analysis about question7, which investigates how much financial managers think they have reached to an optimal capital structure, was not significant, too.

This study used limited data about both variables (macroeconomic variables and capital structure); to explore the relationship between them in a long-term, next studies would need to consider the impact of macroeconomic variables on capital structure of firms by using panel data covering a period of years same as most previous studies done in other countries. Except macroeconomic variables, there are some other external factors such as political risks, investor protection, soft information and etc., may affect capital structure decisions of firms specifically in the developing countries like Iran. Moreover, understanding about special features of listed firms like their bankruptcy status or identifying investors providing funds in Tehran Stock Exchange seems to be helpful in choosing the best variables affecting capital structure of firms for future studies.

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