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Investigating the Effect of Company Financial Leverage and Growth Opportunities on the Investment Decisions in the Companies Listed on Tehran Stock Exchange

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Abstract

This study investigated the effect of company financial leverage and growth opportunities on the investment decisions using information on Iranian companies listed on Tehran Stock Exchange. This paper aims to answer is whether financial leverage influences the investment decisions in Iranian context. By answering this question, the author attempts to add to the existing literature by bringing new evidence on the relationship between leverage and investment decisions of firms listed in Tehran Stock Exchange in Iran. For the study purpose, the 83 companies with the desired condition were selected for this purpose and panel data with fixed effects was used to test hypotheses. The results of this research show that companies with higher Financial Leverage adjust their investment decisions. The results of this study can be used by shareholders, managers and finance researchers.

1. Introduction

The global business environment has changed dramatically. This poses acute challenges to the decision makers, especially in respect of strategic decisions. The impact of this extreme business environment on strategic investment decisions has moved the Chief Financial Officers (CFOs) to the front lines in their companies, continuing pursuits of profitability and financial security. Only those CFOs and companies that can quickly adapt their practices to the present environment will survive well into the future. Comprehensive practices in making Strategic Investment decisions will always be essential to the long-term success of any business (Kannadhasan, 2011). This requires efficient and effective utilization of its resources. This involves the evaluation of the company's strengths and weakness in the light of the environmental threats and opportunities while allocating resources (Kannadhasan and Nandagopal, 2010). Anecdotal evidence suggests that in business worldwide, efficient allocation of capital is an important and challenging task for Contemporary Decision Makers (CDMs). As the

business environment becomes increasingly volatile and competitive, making good decisions becomes considerably more complex and consequential than ever before – a situation which enhances the importance of those who take strategic decisions (SDs) (Rentizelas and Tzziralis 2007).

While these studies are useful for providing broad insights into the field of decision-making, it is surprising that only a few researchers have investigated investment decision-making in complex business environments, or focused on the sub-field of Strategic Investment decisions (SIDs).

According to Northcott (1995), such work would be vital at two levels: for the future operation of the individual firm making the investment and for the functioning of the economy of the nation as a whole. At the national level, proper planning and allocation of capital investment are essential for an efficient utilization of other available resources. Poorly placed investment reduces the productivity of labor and materials and sets a lower ceiling on the economy's potential output. At the firm level, SIDs have implications for many aspects of operations, and often exert a crucial impact on survival, profitability and growth, since they involve the allocation of substantial financial, human and organizational resources (Sauner Leroy 2004). Therefore, SIDs has a long-term and wide ranging impact on the firm's performance, and they can be critical to the firm's success or failure (Brown and Solomon 1993). As mentioned above, SIDs need substantial amount of capital which results in a change in the capital structure of the firm. Changing the existing capital structure involves the consideration of the amount and forms of financing.

Debt is inevitable option at firm and country level, especially in the case of emerging economies (Abor and Biekpe 2007; Erol, 2004). It is well appreciated, if a company mixes its borrowed capital along with owner's capital, because such a capital structure helps increasing the shareholders return. It has been experienced by the business community that under the normal circumstances, employing debt along with equity (is known as Financial leverage) will yield higher Earnings per Share (EPS) and thereby the higher dividend declaring capacity which in turn has a positive impact on the value of the company. However, the use of debt is a double edged sword which may increase the profitability as well as the risk of a firm. In simple words, the leverage indicates the level of financial risk of a firm and at what level it magnifies the return/loss to the firm (Ross, Westerfield, and Jordan, 1998). It is essential that each company should find a judicious mix of debt and equity in the capital structure of a firm i.e. the optimum capital structure (Graham and Harvey, 2001) that provides a balance between costs and benefits (Myers, 1984). If not, the huge amount of debt may lead to financial distress. This is evident from the depression during the period of 1930 to 1940. The recent global crisis also indicates the evils of debt (Odit and Chittoo, 2011).

It is clear that deploying debt has positive as well as negative effects. All depends on the utilization of the funds.

Moreover, the interactions between management, shareholders, and debt holders will generate frictions which are due to agency problem. Agency problem may entail underinvestment or over investment incentives. According to Miller (1992), we should not “waste our limited worrying capacity on the second-order and largely self-correcting problems like financial leverage”. In contrast to this opinion, others argue that financial leverage reduces a firms' ability to finance its growth through liquidity effect as it requires fixed amount of money for debt service, leaving only a small amount with the firm. Therefore, the firm has to rely on only external funds to finance the new projects. Sometimes, the external funds are more expensive and it may lead to lower growth (Lang, Ofek, and Stulz, 1996). Numerous theoretical and empirical studies have challenged this point by arguing that financing considerations considerably complicate the investment relationship (Odit and Chittoo, 2011). For instance, highly levered firms are less likely to exploit valuable growth opportunities as compared to firms with low leverage levels (Myers, 1977). In extreme cases a firm's debt overhang does not permit it to raise funds for positive net present value (NPV) projects. This motivates author to do research on this issue. The central question that this paper aims to answer is whether financial leverage influences the investment decisions in Iranian context. By answering this question, the author attempts to add to the existing literature by bringing new evidence on the relationship between leverage and investment decisions of firms listed in Tehran Stock Exchange in Iran.

2. Relationship Between Financial Leverage and Investment Decisions

The theory of capital structure irrelevance developed by Modigliani and Miller (1958 & 1963) paved a path to the development of various theories. Although, Modigliani and Miller (1958) proposed the theory of irrelevance by arguing that investors do not give considerable attention to financial leverage under perfect market conditions since financial risk could be diversified away by the marginal investors. Further, Miller (1977) modified the theory by introducing the same level of personal as well as corporate taxes into the model. In 1980, Deangelo and Masulis extended Miller's work by examining the effect of tax shields other than interest payments on debts. In 1977, Ross research on the signaling role of debt. Another equilibrium theory of optimal capital structure is agency theory proposed by Jensen and Meckling (1976). Myers (1984) proposed pecking order theory i.e. consequence of asymmetric information. These theories motivated the researchers to do research on this domain. Numerous studies have investigated the relationship between financial leverage and investment decisions in different periods of time and different geographical contexts. However, the results are inconclusive.

As mentioned above, highly levered firms are less likely to exploit valuable growth opportunities as compared to firms with low leverage levels (Myers, 1977). This is due to the debt overhang which reduces the incentives of the shareholder–management coalition in control of the firm to invest in positive NPV investment opportunities. Shareholders believe that the benefits accruing from the investment opportunities do not reach them fully as bondholders are sharing the benefits at least partially (Myers 1977). Before proceeding further, it is essential to talk about over investment and underinvestment. Underinvestment theory posits that levered firms tend to decrease investment due to the cost of external capital and the possibility of default (Myers, 1977). When growth opportunities are high, management wants to fund the growth opportunities with debt. However, creditors might understand firms turning to debt as a signal to the firm's cash flows. An example for this situation is that the firm has a low future cash flow and a low future profitability (Stulz, 1990). Obviously the creditors increase the risk premium of debt, resulting in management giving up valuable investment opportunities. In other words, a firm has to invest less no matter the level of growth opportunities available for it (Lang et al, 1996). Theoretically, if debt creates potential underinvestment incentives, the consequence could be reduced by the firm by taking corrective measures and lowering its leverage by recognizing the growth opportunities sufficiently early (Aivazian & Callen, 1980).

Another agency problem is „over investment’ that has received attention over the years. It is argued that managers have propensity to expand the scale of business continually even by investing in the low growth opportunities. For example, if a firm has excess cash flows after funding all positive NPV projects, managers tend to invest in negative NPV projects. As a result of this, conflicts may arise between the managers and shareholders (Jensen, 1986; Stulz, 1990), because the aim of shareholders is maximizing firm value (Hillier et al. 2010). Taking poor projects in order to utilize the existing assets may also reduce the shareholders welfare in the company. This policy restrains the availability of cash flow and tightens the use of debt option. For instance, highly leveraged firms exhibit a greater sensitivity to fluctuations in cash flows and earnings as they have substantial debt service obligations. As a result of this, they have limited ability to raise additional funds and may feel extra pressure to maintain a positive cash flow (Cantor, 1990; Whited, 1992). In spite of this issue, leverage is considered to be a mechanism for overcoming the overinvestment problem by suggesting a negative relationship between debt and investment for firms with feeble growth opportunities. On the other hand, too much debt is also not considered to be good as it may lead to financial distress and agency problems (Aivazian, Ge, Qiu, 2005).

There is support for both the overinvestment and the underinvestment theories in the extant empirical literature. McConnell and Servaes (1995) examined the impact of leverage on growth. They found that for high growth firms

the relationship between corporate value and leverage is negative, whereas that for low growth firms it is positive. This result indicates that to maximize corporate value, it is preferable to keep leverage at a low level and to increase investment. In similar line, Lang et al (1996) found that there is a negative relationship between leverage and future growth at the firm level and for diversified firms, at the business segment level. Further, debt financing does not reduce the growth of firms that are known to have good investment opportunities. However, it is negatively related to growth for firms whose growth is not recognized by the capital market i.e. investors. These findings appear to be the most consistent with the view of overinvestment. Childs et al (2005) opined that financial flexibility encourages the choice of short-term debt and thereby dramatically reduces the agency costs of under-investment and over-investment theory. However, the reduction in the agency costs may not encourage the firm to increase leverage as the firm's initial debt level choice depends on the type of growth options available with them. Followers of MM theory are known as Neo-classical authors (Serrasqueiro et al 2008). They found that cash flows (sales) play an important role in determining the level of investment (Chirinko, 1993). For instance, if sales increase, companies increase their investment level. Numerous studies investigated the relationship between leverage and investment (Denis, and Denis, 1993; Lang et al, 1996; Goergen & Renneboog, 2001; Peyer and Shivdasani, 2001; Aivazian et al., 2005; Ahn, Denis, and Denis, 2006; Richardson, 2006; De Gryse & De Jong, 2006; De Jong & Van Dijk, 2007; Odit and Chitto, 2008; Pindado & De la Torre, 2009; Zhang, 2009; Tempel, 2011). The results of these studies are inconclusive. The inconclusive results motivate the author to undertake a study of the relationship between financial leverage and investment decisions in Indian pharmaceutical firms and the extent this relationship explained by the existing theories.

3. Methodology

Data: This study has adopted a quantitative, non-experimental research design in order to gain a broad understanding of the determinants of investment of firms listed in Tehran Stock Exchange. The study period was 7 years from FY 2007-01 to FY 2014-12.

Description of Variables: This study used five measures namely financial leverage (measured using two proxies), sales, cash flows, Tobin Q ratio, net investment to fixed assets ratio, net sales to fixed assets. These variables were used by McConnell and Servaes (1995); Lang et al (1996); Aivazian et al (2005); and Serrasqueiro, Mendes, and Nunes (2008). This study has adopted the same variables to test the theory of relevance and irrelevance of companies non-observable individual effects.

Analysis Tools: McConnell and Servaes (1995); Lang et al (1996); Aivazian et al (2005) carried out the analysis for identifying the determinants of investment decisions using Ordinary Least Squares (OLS) regressions. Aivazian et al

(2005) found that this method was not helpful in finding the relevance of companies' non-observable individual effects. They added that use of OLS method can lead to an underestimation of the impact of explanatory variables on investment decision because of the form of estimation and the failure to capture the company heterogeneity that is useful in measuring the individual companies' effects. Consequently, they suggested using a random or fixed effect panel model. Followed by them, Serrasqueiro *et al* (2008) and Odit and Chitto (2011) applied this model to examine the relationship between financial leverage and investments. Keeping this as a base, this study has attempted to test the theory of relevance and irrelevance by using static panel estimators. The model specification is similar to that of Aivazian *et al* (2005) and Serrasqueiro *et al* (2008) which is given below:

$$\begin{aligned} \frac{I}{K_{(t-1)}} = & a + \beta_1 \left(\frac{CF}{K_{(t-1)}} \right) + \beta_2 (F \cdot L_{(t-1)}) + \beta_3 (Q_{(t-1)}) \\ & + \beta_4 \frac{SAL_{(t-1)}}{K_{(t-1)}} + \beta_5 (ROA_{(t-1)}) \\ & + \beta_6 (LiqQ_{(t-1)}) + \beta_7 (Di_{(t-1)}) * F \cdot L \end{aligned}$$

The model proposed above is based on the assumption that the investment decisions depend on financial leverage, growth opportunities, and cash flows of only one year ago. This assumption is similar to the one made in the studies of Aivazian *et al.*, (2005), Odit & Chittoo (2011), and

Serrasqueiro *et al* (2008). On similar lines, this study investigates the influences of a year ago financial leverage, growth opportunities and cash flows on investment decisions.

4. The Research Hypotheses

According to existing theories and the conducted research (the research literature), two hypotheses are formulated as follows:

Hypothesis 1: there is a significant relationship between the financial leverage and investment decisions in companies listed on Tehran Stock Exchange.

Hypothesis 2: there is a significant relationship between the growth opportunities and investment decisions in companies listed on Tehran Stock Exchange.

The Systematic elimination method was used to determine the sample. Applying the above conditions, 83 companies were chosen for the study. According to the 7-year period of the study (2007 to 2013) a total of 581 companies were used in this study.

5. The Research Findings

At first, the descriptive statistics of the studied data is calculated to analyze the data. Table 1 shows the descriptive statistics which indicate the amount of descriptive parameters for each variable separately, and contains information about the maximum, minimum, average and median.

Table 1. Summary statistics for growth, leverage, and investment opportunities.

Measures	Mean	Median	max	min	SD	N
Net Investment/Net Fixed Assets _{t-1}	0.21	0.41	15.3	-0.934	0.84	581
(Total Liabilities/Total Assets) _{t-1}	8.04	2.57	385.32	0.39	26.15	581
Tobin Q t-1	1.48	1.22	10.2	0.57	0.83	581
(Net sales/Net Fixed Assets) _{t-1}	0.13	0.1	1.42	-0.34	0.14	581
Sale	6.53	3.86	128.21	128.21	10.58	581
Cash flows/ Net Fixed Assets _{t-1}	1.22	1.15	7.07	7.07	0.63	581

The main central index, which represents the equilibrium point and center of gravity, is the average. The average value for the Tobin's Q variable is equal to 1.48191 which indicates that most of the data are concentrated on this point. Median is another indicator that shows the status of the population. As can be seen, the median Tobin's Q variable is 1.221132, which shows that less than half of the data are less than this amount and half of them are greater. Also closeness of the average and median values for the Tobin's Q, return on assets and the current ratio variables indicates the proximity of these variables with normality.

Before estimating the model, the tests such as co-linearity test, normality test, and autocorrelation are conducted. Because relying only on the statistical results regardless of the assumptions of the model, is not credible enough. One of the common ways to test the co-linearity of the variable is that at each step, one of the independent variables should be eliminated from the regression equation. If in the new model, not many changes are observed in regression coefficients

values (after estimating the coefficients), indicates that the variables do not have co-linearity. In this study, this method is also applied and it was observed that the variables are not co-linear. The autocorrelation test is also performed using Durbin-Watson statistics and the normality is assessed based on the Jarque-Bera test.

Furthermore the Chow test was performed in order to determine the composite or panel pattern of regression. According to Chu - test results, as shown in Table 2 below, the H0 hypothesis about the composite (panel) pattern of the model (not panel model) will be rejected, so the model is tested using panel data, the Chu - test results is provided in the Table (2).

Table 2. Chu - test results.

Effect Test	Cross-Section F	df	P-value
Cross-Section F	1.534	80.260-	0066/0
Cross-Section Chi-Square	134.547	80	0001/0

In the next step, using the Hausman test it can be determined that for the final estimation of the model, the panel must be considered with the fixed effects or random effects? According to Hausman test results, as shown in Table (3), and given that the P-value is equal to 0.01, H_0 hypothesis about the absence of the fixed effects (existence of the random effects) is rejected; so the model is the panel model with the fixed effects.

Table 3. Hausman - test results.

Hausman Test	Chi-Sq	Chi-Sq. d.ssf	P-value
Cross-Section Random	11.68	7	0.0116

Next, the initial model is estimated by taking this approach, which is a panel with the fixed effects that its results are presented in Table (4).

Table 4. Regression Analysis of Research Model.

Variables	Coefficient	Std. Error	t-Statistic	P- value
Leverage	-0.019528	0.008619	-2.26561	0.0243
Liquidity	0.247333	0.117356	2.107537	0.036
ROA	-1.45587	1.273736	-1.14299	0.2541
Sale	0.070819	0.028847	2.455024	0.0147
Tobin Q t-1	0.579469	0.166737	3.475341	0.0006
Cash flows/ Net Fixed Assetst-1	-0.005284	0.036151	-0.14617	0.8839
R ²	0.345854			
Adjusted R ²	0.126966			
F-statistic	1.580053			
P - value (F-statistic)	0.00317			
Durbin-Watson stat	2.166167			

As mentioned above, the model was estimated using Panel method with the fixed effects. According to the results of data analysis that is presented in Table 4, the following implications are realized as the hypotheses testing results:

By comparing the t-statistics and the amount calculated in the table with respect to the obtained p-value, the H_0 hypothesis for the financial leverage variable is rejected and the first hypothesis is confirmed. So a significant relationship can be observed between the mentioned independent variables with investment decisions. The negative coefficient of the statistics indicates the inverse relationship of the financial leverage variable with the investment decisions. Briefly, the results show that financial leverage has the significant and negative impact on the investment decisions. Based on the theoretical principles presented in the second chapter, there is a negative relationship between leverage and investment decisions. The results of this study are consistent with the theoretical foundations of the research. This finding is similar to the finding of Aivazian et al. (2005); Kannadhasan (2014), Li J; S. C. (2010), Huijie, B. (2010), Moham, P; o, c. (2009), Aivazian et al (2005, but are not consistent with Muthsamy, F. J. (2011) (2011), Vidhan, K; Goyal, A; Lehn, B. (2002).

According to the critical values of the growth opportunity variable that is calculated by the Tobin's Q index, it is significant at 5% level and the H_0 hypothesis, implying the non-significance of the variable, is rejected and the second hypothesis is confirmed. The sign of the coefficient is positive which reflects the positive impact of the growth opportunities on the investment decisions. Based on the provided theoretical foundations, a positive relationship is expected between growth opportunities and investment decisions. The results are consistent with theory. The result of the research are also compatible with Aivazian et al. (2005), but they are not compatible with the results of Huijie, B. (2010).

By comparing the obtained value for the F statistic with the value calculated in the table and with respect to obtained

p-value for the regression ($p\text{-value} \leq 0.05$), H_0 is rejected and this shows that all regression coefficients are not zero at the same time. So there is a significant relationship between all the independent variables and the dependent variable at the same time.

By comparing the obtained Durbin-Watson statistic with its calculated value in the table, it was found that the model has not autocorrelation.

The obtained R² shows that the independent variables are able to account for 34% of correlation with the dependent variable, and therefore, there is an acceptable relationship between independent and dependent variables that can be used to forecast.

6. Conclusion

The results of this research show that companies with higher Financial Leverage adjust their investment decisions. Companies with higher growth opportunities invest more than the other companies. With regard to the role of investment, we recommend to the shareholders, managers, researchers and other interested people to pay more attention to Financial Leverage and growth opportunities, and consider them in their decision-making models.

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