Financial Leverage and Free Cash Flow Relationship in Financially Distressed and Non-Distressed Companies

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Abstract

In present study, we investigated the relationship between financial leverage and Agency costs of free cash flow in distressed and non-distressed companies. In this study based on article 141 of Iranian Commercial Code, companies sample has been divided into two categories; distressed and non-distressed. statistical population include all companies listed in Tehran Stock Exchange and based on sampling terms, 107 companies selected as sample and were investigated during 2007-2013. Eviews software was used for statistical analysis of regression model. Results show negative relationship between financial leverage and free cash flow. In other words, increasing debt level and financial leverage leads to decrease in Agency costs of free cash flow. Make and payment of debt policy as primary mechanism of governance can limit agency costs free cash flow. So, financial leverage of a company has an important role in decreasing controllable Agency costs of free cash flow. This result is consist with Agency costs of free cash flow theory; by increasing debt, company available cash and agency costs decreases. Also by comparing relationship between financial leverage and Agency costs of free cash flow in healthy and bankrupt companies, it is shown that the meaningful relationship between financial leverage and agency costs in distressed is less than non-distressed companies.
Key words: financial leverage, Agency costs of free cash flow, article 141 of Iranian Commercial Code, distressed and non-distressed companies.

Introduction

A retrospective analysis of the economic and financial crisis during 2007–2013 period highlights the important consequences of businesses' financial distress on stakeholders (i.e. financial creditors, managers, shareholders, investors, employees, government regulators and society in general). So, more than ever, the revision of financial distress prediction models and the development of models adapted to particular characteristics of countries have an important role in order to prevent and manage these situations [11].Jenson (1986) was one of the first people who explained and defined the free cash flow (FCF) theory and introduced it as a source of agency problems. In his opinion, FCFs are cashes obtained from operating activities after the deduction of cashes required for investment in projects with positive present value. Jenson and Sterberg's (1984) FCF theory suggests that companies having fundamental FCF tend to cause conflicts of interests between managers and shareholders since a high FCF is an incentive for managers to take opportunistic actions. In a situation where a company has a high amount of FCF, a manager can invest it in various opportunities but since reliable and high-yielding investment opportunities are limited, it is likely that the manager will make investments that have less return on investment (ROI) than the company's cost of capital. Here, the costs imposed on shareholders are so called FCF agency costs [5]. FCF along with low investment opportunities are introduced as agency problems, and in the case of their existence, managers create costs that decrease shareholders' wealth. To cover the impacts of investments that do not maximize shareholders' wealth, managers use accounting authorities that increase the reported profits. Since managers manage and manipulate the reported profit, this cause shareholders to take non-optimal investment decisions which consequently leads to conflicts of interests and agency costs. This condition increases in companies having high FCF. Therefore, analysis of mechanisms effective for limiting agency costs is important. Because on the one hand these mechanisms can balance the conflicts of interests between managers and shareholders and on the other hand limit managers' accessible resources [13]. Financial leverage is a company's interest to finance through creating debts, borrowing and increasing capital. Leverage ratios always intensify the means for determining a company's error and inability [14]. Therefore, financial managers in a company's capital structure are influential on the selection of managers' operating activities. By explaining agency costs which are created due to the unbalance of information between managers and shareholders, Jenson (1986) introduced one of the mechanisms for the reduction of this agency cost, as the reduction of FCF accessible by managers. Simerly and Li (2000) stated that financing through debt and commitment and timely repayment of its principal and interest will worry managers, and also, increase of finance through debt will decrease managers' interest in investment in risky projects with low yields, because the principal and interest on a debt are of the permanent obligations of a company and must be paid in due time; and if the company does not hold on to its obligations in due time, it will face bankruptcy and during bankruptcy, managers will face the risk of losing their job. Hence, they will choose to invest those FCFs in projects with positive net present value rather than wasting them on activities that only satisfy their own personal benefits. Another advantage of using debt in a company's capital structure is that since a cost must be paid, then it is tangible and clear and therefore managers will be more aware of this cost and will try to control it. As a result, they will automatically move towards increasing the wealth of shareholders

which in turn results in the creation of constraints on FCFs [8]. According to the theory of FCF, the use of debt for companies with low growth opportunities and high FCFs is more beneficial because it makes managers use the cashes and hence, limits the managers' access to FCFs for their personal purposes [16].Businesses constantly face challenges during their operating life-cycle and a group of them always ends up being known as successful entities due to their strong performance while the others end up being known as unsuccessful entities due to their poor performance. Companies that face financial deterioration due to their continuous poor performance will naturally do whatever they can to get out of that status and improve their financial conditions. If they fail to do so, their bankruptcy will be inevitable. One of the solutions for financially distressed companies is creation of debt and borrowing [3]. Financial distress is actually the end of a business's life, so the correct understanding and identification of the reasons that cause it, are important and necessary tasks for companies' financial management. Because granted financial managers are properly aware of the reasons and factors causing financial distress, they can, by the timely identification of financial crisis in their company, notify the management and offer their preventive solutions [7]. The present research aims to study whether financial leverage can be an effective mechanism for the reduction of FCFs' agency costs or not. In the past, some research has been done on this field which did not consider the existence of financial crisis in companies. Of the innovations of the present research is that it investigates the relationship between financial leverage and FCF costs in distresses and non-distressed companies.

Theoretical framework and research background
In the present research, article 141 of the Iranian Commercial Code is used to determine whether a company is financially distressed or not. In a part of the article 141 of the Iranian Commercial Code it is stated that: if in a corporation, due to the losses, at least half of capital is lost, the management board must immediately convene and extraordinary general meeting of the shareholders for consultancy and voting whether the corporate must be liquidated or survive. Therefore, if the accumulated loss to corporate capital ratio is more than 50%, the corporate will be assumed bankrupted otherwise it is healthy. Debt policy is a mechanism for the reduction of FCF agency problems. Several researchers have focused on the relationship between the debt level in capital structure and the agency costs of FCF. Some of these researchers are:Zhang and Li (2008) stated that any increase in leverage may decrease agency costs. They mentioned that an increase in debt will decrease agency costs but increase bankruptcy costs. Their research result is in agreement with the theory of FCF agency, in that an increase in debt will decrease FCF [17]. McKnight (2008) examined the relationship between corporate governance, capital structure and agency costs. In his research three factors have been used for measuring agency costs, which include sales to total assets ratio, FCF and growth prospect. The results showed that there's a negative and significant relationship between FCF and debt. Accordingly, an increase in debt will decrease free cash accessible to a company and also agency costs [12]. Zhang (2009) investigated the role of capital structure and management incentives in the control of FCF agency costs. The research results states that debt and executive manager can act as a substitute to decrease FCF agency costs. He mentioned that FCF agency problems in mature companies with low growth opportunity are higher and the use of debt as a control tool is beneficial. Thus there is a negative relationship between financial leverage and FCF [17].Byrd (2010) stated that there's a contradiction between managers' and shareholders' interests concerning the spending of FCF. His research results showed that there's a reverse relationship between financial leverage and agency costs. He also reported that in FCF theory, there are important pressures of capital structure and dividend policy for controlling FCF agency costs, and that companies lacking a leverage with FCF, have a higher agency cost compared to companies having a leverage [1]. Fatma (2011) investigated the effect of property structure and dividend policy in the decrease of the conflicts of interests between managers and shareholders in limiting FCF agency costs. The research results showed that debt policy is a fundamental mechanism in controlling FCF agency costs and the results also indicated that managerial property can be used to decrease FCF agency costs [4]. Talebnia et al. (2011) in a research titled the impact of financial distress on financial reporting in Tehran stock exchange discovered that financial distress, in the incubation period, cash deficit period and inability to pay financial and commercial debts, and also in the incomplete payment period, has a significant effect on financial reporting [16]. Dastgir et al. (2012) investigated earnings quality in financially distressed companies in the financial period of 2001 to 2009. The research results show that financially distressed companies incrementally manage their earnings three years before bankruptcy. This type of management was examined from two aspects, namely, manipulation of accruals and actual activities and it was discovered that financially distressed companies, manage their actual earnings more than healthy companies, while healthy companies mostly do this through accruals [3]. Khajavi et al. (2012) performed a comparative study on the quality of financial reporting of financially distressed and non-distressed companies accepted in Tehran stock exchange. The aforementioned research was performed according to Altman bankruptcy prediction model on 70 distressed and 70 non-distressed companies active in the stock exchange from 2002 to 2010. The research results, suggest earnings manipulation in financially distressed and non-distressed companies. Also the research results show that the quality of financial reporting is lower and less stable in financially distressed companies compared to non-distressed ones [7]. Pourali et al. (2012) investigated the relationship between financial leverage and degree of financial distress in 32 companies accepted in Tehran stock exchange from 2007 to 2011. They used Altman bankruptcy prediction model as the criterion of financial distress. Their research findings suggested a significant relationship between financial leverage and Altman's degree of financial distress [9]. Khan et al. (2012) investigated the impact of financial leverage on FCF agency costs in Pakistani production companies. In their research they used the two factors of debt to salary ratio of shareholders and long term debt ratio for measuring

financial leverage. The results showed that the financial leverage of the company has an important role in the decrease of controlled FCF agency costs [8]. Nazir and Satia (2013) investigated the relationship between financial leverage and FCF agency cost in 265 companies accepted in Karachi Stock Exchange (KSE) from 2004 to 2009. Their research result supported the hypotheses of agency and decreased agency costs due to increased debt. In other words, there was a negative and significant relationship between financial leverage and FCF agency cost [13]. Stagliano et al (2014), investigated whether free cash flow arguments or the internal capital market perspective better explains diversification decisions. Based on a unique panel of hand-collected data from listed and unlisted Italian firms for the 1980–2010 time periods, their results of generally reveal the predominant role of the internal capital market arguments [15].Chen et al (2015), investigated whether and how free cash flow and corporate governance characteristics affect firm level investments, using a sample of 865 Chinese listed firms. Consistent with the agency cost explanation, they find that firms' over-investment is more sensitive to current free cash flow and that over-investment is more pronounced in firms with positive free cash flows [2].

Research methodology

This research is of experimental type and considering that historical data have been used to test the hypothesis, it is categorized as a quasi-experimental research. Since in this research, the goal is to investigate the relationship between the variables, therefore the research method is of correlation type. For hypothesis testing, a multivariate regression model is used.

Research variables

In this research, FCF is as the representative of FCF agency cost, financial leverage and dependent variable; financial leverage in financially distressed companies and financial leverage in financially non-distressed companies are the research's independent variables; the control variables include company size, Tobin's Q (future growth opportunity) and return of assets. The measurement methods for the research variable are given in the table here:

Table 1: variable measurement

FCF agency cost	Operating profit before amortization of assets	FCF
Financial leverage	Debt to asset	**FL**
Company size	Asset logarithm	**SIZE**
Return of assets	Net profit to asset	**ROA**
Tobin's Q	(Value of stock exchange + debt) to assets	**Tobin's Q**
Financially distressed companies	Dummy variable of healthy companies	**DUM$_1$**
Financially non-distressed companies	Dummy variable of bankrupted companies	**DUM$_2$**

Bankruptcy risk criterion: if the ratio of accumulated losses to the capitals of the companies under study is more than 50%, the company will be assumed bankrupted, otherwise it will be assumed healthy. The dummy variable for bankrupted companies (financially distressed) equals 1, otherwise it is 2.

In this paper, for testing the research hypotheses, the model below has been used:

$$FCF_{i,t} = \beta_0 + \beta_1 FL_{i,t} + \beta_2 DUM_0 * D/E_{i,t} + \beta_3 DUM_1 * LTDR_{i,t} + \beta_4 SIZE + \beta_5 ROA + \beta_6 Q.TOBIN + e_{i,t}$$

The statistical population and sample

The research period is 2007 to 2013, and the population under study, are the companies accepted in Tehran stock exchange. Systematic elimination has been used to determine the sample. The statistical samples have been chosen based on the conditions below:

1. Companies that were accepted before 2005.
2. Companies whose financial period is in 21th March (Iranian fiscal year end).
3. Companies that did not trade during the period under study.
4. Financial institutions and banks are removed from the population for synchronization and uniformity.

By applying the above conditions, 107 companies were chosen as the samples.

Research findings

The table below shows the descriptive statistics of the research variables. In this part, descriptive statistics, various diffusion and central indices of each variable is given.

Table 2: Descriptive statistics of the research variables

	DUM0	DUM1	SIZE	LTDR	FL	D/E	FCF	ROA
Average	0.423	0.577	0.843	0.228	0.632	0.702	0.384	**0.1672**
Median	1.000	1.000	5.731	0.198	0.668	0.487	0.084	**0.135**
Standard deviation	0.495	0.495	0.714	0.358	0.212	0.705	0.2184	**0.146**
Min	0.0	0.0	4.54	-0.69	0.01	0.201	-0.61	**-0.1**
Max	1	1	8.28	1.87	0.97	3.96	0.67	**0.68**
No.	749	749	749	749	749	749	749	**749**

Following model was used to test hypothesizes:

$$FCF_{i,t} = \beta_0 + \beta_1 FL_{i,t} + \beta_2 DUM_0 * D/E_{i,t} + \beta_3 DUM_1 * LTDR_{i,t} + \beta_4 SIZE + \beta_5 ROA + \beta_6 Q.TOBIN + e_{i,t}$$

The hypothesis can be showed as below:

$$\begin{cases} H_0: \beta_i = 0 \\ H_1: \text{At least of the variable coefficients is non-zero} \end{cases}$$

The null hypothesis states that none of the regression model's independent variables are significant and the opposite hypothesis shows that at least one of the independent variables in the regression model is significant. In the following we will focus on the results of the estimation of the first hypothesis. The table below shows that the probability of the F Limmer test is 0.00 and below 0.05, therefore it can be said that the panel data method has a better efficiency compared to other econometric method. Like the two previous hypotheses, Hausman test states that there probability of the measured F equals 0.00, therefore Fixed Effects Model will be used.

Table 3: Regression model determination

	Test Statistics	Probability
F Limmer	37.89	0.000
Hausman Test	20.63	0.000

The results of the estimation of the first and second hypotheses are as follows.
A) As is observed in table 4, the probability of F statistic equals 0.000. Since this value is lower than the standard error level of 0.05, therefore the null hypothesis stating that the relationship between independent and dependent is significant is rejected; so it can be said that the estimated model is significant at 5% error level.
B) Given the significance level of independent variables (financial leverage, financial leverage in healthy and bankrupted companies) that is lower than (0.05), it can be said that the aforementioned variables have a significant relationship with a company's FCF. Also, due to the negativity of the coefficients of independent variables it can be concluded that there is a negative and significant relationship between financial leverage in all companies as well as financial leverage in healthy and bankrupted companies and FCF. By investigating the degree of significance and control variables' coefficients, we conclude that company size, profitability and future growth opportunity, have a positive and significant relationship with agency cost, this means that the degree of significance of the variables is less than 0.05% and their coefficient is positive.
C) "The coefficient of determination", is the rate of variation in a dependent variable (company's FCF) that is explained with regression. For H1, this value is 61.33.
D) The value of the statistic of Durbin-Watson equals 1.8679. Since this value is in the range of 1.5 to 2.5, therefore it shows the non-existence of autocorrelation in the model. This means that there is no relationship between the error terms in the observations of the companies.

Table 4: hypothesis test results

Dependent variable: free cash flow	T-test	Coefficients	Significance level	
Variables				
Constant	5.1746	0.1769	**0.000**	
FL	-7.8623	-0.1927	**0.000**	
DUM_1 *FL	-3.2367	-0.1147	**0.0031**	
DUM_2 *FL	-1.8410	-0.0973	**0.0002**	
SIZE	1.0944	0.0008	**0.000**	
ROA	9.2698	0.2415	**0.000**	
Q-Tobin	12.14224	0.3033	**0.000**	
Durbin-Watson	1.8679	F- Significance level	0.000	F-Test	**65.8612**
Adjusted coefficient of determination		0.6027	Coefficient of determination	**0.6133**

Considering the results of the statistical analysis, H1 stating that there is a significant relationship between the financial leverage in all the companies and FCF, is confirmed. Hence it can be said that there is a negative relationship between the independent and dependent variable; in other words, with a decrease in the independent variable, the FCF is increased and vice versa. But to test the second hypothesis, Wald Test is used. In other words, to investigate whether there is a significant difference between the relationship of financial leverage with FCF in healthy companies and this very relationship in financially distressed companies, we use the Wald test whose results are given in the table below.

Table 5: Wald test

Test	Value	degrees of freedom	Significance level
F-Test	10.682	1.274	0.0012
Chi-Square	10.682	1	0.0011
Null Hypothesis			

Normalized limitation	Value	Standard Error
$(\beta_2 - \beta_1 = 0)$	0.0176	0.0002

H0: Non-existence of a significant difference between the coefficients of the groups
H1: Existence of a significant difference between the groups' coefficients

Since the significance level of both of the tests (chi-square and F) is below 5%, the results of the Wald Test indicate that the null hypothesis stating that there is no difference between the two coefficients of financial leverage variables for healthy and bankrupted companies is rejected. This means that there is a significant difference between the coefficients of financial leverage variable in healthy companies compared to bankrupted companies. Given that the coefficient value of financial leverage for financially distressed companies (-0.0211) is lower than the ratio of financial leverage for financially non-distressed companies (-0.0079), it can be concluded that financial leverage has a higher impact on the FCF of financially non-distressed companies and in healthy companies, a decrease in the leverage has an increasing effect on the company's FCF. Therefore, H2 is confirmed that says the significant difference in the relationship between financial leverage has an effect on the FCF of financially distressed and non-distressed companies. This means that the relationship between the ratio of financial leverage and FCF in healthy companies has a significant difference with this very relationship in bankrupted companies. Also this relationship is stronger in healthy companies.

Conclusion

Given the tests performed, all the independent variables (financial leverage in all companies, financial leverage in healthy and bankrupted companies) have a significant relationship with the dependent variable being FCF. Also, due to the negativity of the coefficient of the independent variables, they have a negative and significant relationship with FCF; this means that with an increase in financial leverage, the company's agency cost decreases. Therefore, the first hypothesis of the research was confirmed. In other words, there is a reverse relationship between the debt ratio in all companies, financially distressed and non-distressed companies. The results of this hypothesis are similar to the results of foreign researches' results of McKnight (2008), Zhang & Li (2008), Khan et al. (2013) and Nazir and Satia (2013), and the domestic research of Soleimani and Esmaili (2013). [12,17,8,13].The results of the Wald test confirm the second hypothesis stating that there is a difference between the two coefficients of financial variables for financially distressed and non-distressed companies. This means that there is a significant difference between the coefficients of financial leverage variable in healthy companies compared to bankrupted companies. Given that the value of the coefficient of financial leverage is higher for healthy companies compared to financially non-distressed companies, it can be concluded that financial leverage has had a higher effect on the FCF of financially non-distressed companies, and in healthy companies, decreased debt has an increasing effect on the FCF of the company. Therefore, the second hypothesis stating that there is a significant difference financial leverage and FCF in financially distressed and non-distressed companies is confirmed; this means that the relationship between the ratio of financial leverage and FCF in financially non-distressed companies has a significant difference with this very relationship in distressed companies and this relationship is stronger in healthy companies. In sum, given the hypotheses tests, the results suggest a negative relationship between financial leverage and FCF. In other words, with an increase in debt and financial leverage, FCF agency cost decreases. Debt creation and payment can as a primary mechanism of governance limit FCF agency cost. Therefore, a company's financial leverage has an important role in decreasing the controlled FCF agency costs. Their research results are in agreement with the FCF agency theory. In alignment with increase in debt, free cash accessible for a company and agency costs decrease. Also, by comparing the relationship between financial leverage and FCF agency cost in healthy and bankrupted companies we conclude that the significant relationship between financial leverage and agency costs differs in financially distressed and non-distressed companies and this relationship is stronger in financially non-distressed companies.

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