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The Impact of the Global Financial Crisis on Corporate Financial Leverage and Capital Costs

¹Ali Ismailzadeh Moghari, ²Ghodratollah Barzegar and ³Ahmad Bargbid

¹ Department of Accounting, Eslamshahr Branch, Islamic Azad University, Eslamshahr, Iran.

² Department of Accounting, University of Mazandaran, Babolsar, Iran.

³ Department of Accounting, Eslamshahr Branch, Islamic Azad University, Eslamshahr, Iran

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ABSTRACT

The recent crisis in America, according to many experts, one of the greatest crises created in the economy after the 1930 crisis, can no longer be called America economic crisis. Some analysts have likened the disaster to a massive tsunami that has started from America and gradually spread to Europe and then to other parts of the world, and meantime, even the small portion economy and more importantly is not seen a sign of the checks and likeness of the situation. Therefore, this study has investigated the influence of factors such as financial leverage and cost of capital signs of financing to economic department, in 108 companies listed in Tehran Stock Exchange before and after effects of the global financial crisis during 2004-2010. The obtained results show that financial leverage and capital cost differ significantly before and after the global financial crisis in 2007, in companies listed in Tehran Stock Exchange.

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INTRODUCTION

Critical is an issue that all organizations more or less face it, according to the nature of their work. Occurring hazards, disasters and crises of economic, social, political, military, along with unforeseen events are the fact that human history have always been familiar with it (Safari & Ansari, 2012). Industrializing nations and developing satellite communications and data transfers broadly and enlarging social organizations always with a lot of successful technological and social, not only did not reduce the incidence of unexpected dangers, but in many cases also have increased (Taghavi *et al*, 2010). In other words, today's crisis institutionalized within the organization and the reality has become inseparable from the nature of the organizations, they, hence, have to raise the ability to cope and deal with various crises in itself, along with the increasing complexity of their production potential. Not a new phenomenon of the global financial crisis, an economic structure or set of the economies may be facing with financial crisis. The causes and roots of the financial crisis are to reshape the dimensions enforcing state of crisis (Nourozi and Medina 2013). The capital structure has been impacted by the financial crisis. The capital structure refers to how combining funds such as short-term and long-term debt and preferred and common stock. Capital structure includes two important components, the financial leverage and cost of capital (Yar Ahmadi, 2013). The leverage represents the fixed costs, a part which shows the company's risk tolerance, and financial leverage is one of levers' species which measures the sensitivity degree in earnings per share against the percentage change in earnings before interest and tax, financial leverage is an indicator of financial risk; the capital cost the other part of capital structure (Lemmon and Zander, 2008). The cost of capital is the minimum rate of return the company ought to acquire for providing the desired outcome being wanted by investors in the company (Irvani, 2009). Therefore, Ricardo Bebzouky and Arno Galindo (2013) found that a recent international crisis had no significant impact on group companies under the investigation, but on relevant firm's debt rate in the directions and orientations of each and specifically, they found that relationship has been not risen between leverage to access possibility, firm size and profitability enhancement, financial exclusions during the crisis. Chen and Roger (2010) concluded that controlling the economic impact of certain companies is lower than level of average debt ratio in companies listed in Taiwan's construction industry, during the period before the Asian financial crisis. Also, Aebi *et al* (2013) studied capital controls and the global financial crisis, given that capital controls in the three countries were examined in this paper: Brazil, South Korea and Taiwan. This preliminary analysis has uncovered evidence which ultimately controls were effective in Brazil, South Korea

Corresponding Author: Ahmad Bargbid, Department of Accounting, Eslamshahr Branch, Islamic Azad University, Eslamshahr, Iran

and Taiwan but much less effective in South Korea. Berger and others (2013), in the research entitled "How capital will affect banks' investment during the financial crisis" concluded that capital of performance get banks of all sizes to rise during banking crises and during normal times and crises in market, capitalization just helps small banks as evidenced in all aspects of performance. A number of researchers have shown that the relation of capital cost with financial leverage, operating leverage will vary from industry to industry, in Tehran Stock Exchange (Ansari and Safari, 2012). Banimahd and Asghari (2013) examined the effects of firm's leverage on the dividend policy of companies listed in Tehran Stock Exchange; and the findings show that there is no relationship between leverage ratio and dividend, but a positive significant relation of firm size and cash flow with the dividend. Finally, one of the most complex problems that have plagued financial managers is that the relationship between components in capital structure and the global financial crisis. This study aimed to examine changes to the components in capital structure including financial leverage, cost of capital before and after the financial crisis, and analyze their connection with the financial crisis.

2. Research Methodology:

2.1. The research method:

The method is of inductive-deductive kinds; first deductive reasoning has formulated the research hypotheses, and then identified the companies listed before 2003 in Tehran Stock Exchange; real data is extracted from financial statements and explanatory notes and financial reports of stock companies. As well, for the information analysis, at first the research data is extracted from existing documents and evidence and calculated relevant variables, then all the data were analyzed using computer via statistical software SPSS 19. In the present study, to analyze the data and test the hypotheses in order to evaluate the relationship between financial leverage and cost of capital for stock companies before and after the financial crisis, t-student test has been used for comparison of means. And this is proper to examine the effect of a qualitative variable (financial crisis) on the quantitative variables (financial leverage and cost of capital), 3 years before and after the financial crisis being compared (the year 2007 is assumed to be zero).

2.2. Research hypotheses:

- There are significant differences between financial leverage of companies listed in Iran Stock, before and after the recent financial crisis.
- There are significant differences between costs of capital of listed companies in Iran Stock, before and after the recent financial crisis.

2.3. The research statistical population and samples:

The statistical population is of all the companies listed in Tehran Stock Exchange. The prototype consists of companies that will be able to set the following conditions:

1. Listed among the years 2003 to 2010 in Tehran Stock Exchange.
 2. Fiscal year end is 20th March.
 3. Stock exchanges for the company is not stopped more than three months (except for the usual period for the holding of the General Assembly).
 4. Every year they have participated in at least 70 trading days.
 5. Within the realm of time to researching, the company has not changed its fiscal year.
 6. Not to other financial institutions (investment companies, brokerage companies, holding and leasing).
- Under the restrictions, 101 companies were selected as samples.

2.4. Operational definition of the research variables:

2.4.1. Capital structure:

Impact on the is examined, this means that 2007 as the base year and three years before and after the crisis will be examined, according to a base year of our analysis.

2.4.2. Financial Leverage:

The ratio of long- term debt book-value to book-value of total assets is used as an indicator of financial leverage.

$$\text{Financial leverage} = (\text{long-term debt book-value} / \text{book-value of total assets}).$$

2.4.3. Cost of Capital:

The cost of capital is the minimum rate of return that must be achieved to the desired output to be provided to investors in the company.

$$WACC = k_s W_s + k_e W_e + k_d W_d$$

w_d : cost of debt

k_d : coefficient of debt in the capital structure

w_e : the cost of common stock

k_e : common stock coefficient in the capital structure,

w_s : the cost of equity due to retained earnings,

k_s : coefficient of equity due to retained earnings

Given that there are not only preferred stock of companies in Tehran Stock Exchange, so the model without preferred stock calculates the capital cost offered in this estimate.

2.5. Methods of data analysis:

To analyze data, comparison test of means and t-test (paired samples) were used. Qualitative and quantitative variables were examined in this study from two different aspects. These variables will be tested, on the one hand, among different companies after the aforementioned restrictions and on other hand by the returns since 2003 to 2010. In the present study, all the data needed for impact of the recent global financial crisis on financial leverage and cost of capital has been collected to a library method.

3. The results:

3.1. Descriptive-statistics survey data:

Table 1: Descriptive statistics for variables in two groups of companies in different time periods.

Variables	Observations	Mean	Median	S.D	skewness	kurtosis	Minimum	Maximum
Financial leverage before	108	0.96	0.65	0.88	2.78	7.63	0.18	4.37
Financial leverage after	108	0.65	0.64	0.19	0.39	0.59	0.21	1.18
Capital cost before	108	2.03	1.52	1.62	0.94	0.03	-0.13	5.99
Capital cost after	108	0.1	0.1	0.07	-0.1	0.66	-0.09	0.28

According to Table 1, mean for companies financial leverage before financial crisis is more than after. This is true in capital cost, this is because capital cost before financial crisis is more than after. Based on standard deviation, dispersion value in capital cost before financial crisis is more than after. This demonstrates that before financial crisis there is a higher difference between financial leverage and capital cost than after, in most companies.

3.2. Normality:

H_0 : data has normal distribution, for dependent variable.

H_1 : data has no normal distribution, for dependent variable.

Table 2: Kolmogorov – Smirnov to examine being normal distribution in variables of both companies.

Variables	The number	Normal parameters		The maximum difference			Z-value Kolmogorov – Smirnov	Probability value
		Mean	S.D	B	Positive	Negative		
Financial leverage before	108	0.96	0.88	0.26	0.26	-0.21	2.63	0.000
Financial leverage after	108	0.65	0.19	0.08	0.08	-0.07	0.76	0.612
Capital cost before	108	2.03	1.62	0.14	0.14	-0.09	1.23	0.102
Capital cost after	108	0.1	0.7	0.1	0.05	-0.1	1.00	0.278

Values in significance level for the three variables are more than 0.05, a financial leverage after financial crisis and cost of capital before and after, that is, in 95% confidence level, the null hypothesis is not rejected, so the data distribution for the variables is normal. However, the probability value of financial leverage is less than 0.05, before, which it is not confirmed th adta to be normal. So to compare financial leverage before and after financial crisis and capital cost, it used Wilcoxon nonparametric test, the parametric test, respectively.

3.3. The First hypothesis test:

Ranks:

	Financial leverage before - Financial leverage after		
Negative Ranks	57 ^a	56.05	3195.00
Positive Ranks	44 ^b	44.45	1956.00
Ties	0 ^c		
Total	101		

^a Financial leverage before > Financial leverage after

- b. Financial leverage before < Financial leverage after
 c. Financial leverage before = Financial leverage after

Financial leverage before -Financial leverage after	
Z	-2.099 ^a
Asy mp. Sig (2-tailed)	0.36

- a. based on positive ranks
 b. Wilcoxon Signed Ranks tes

The value of test statistic is equal to -2.1; it is placed on the null hypothesis range of rejection. Therefore, the null hypothesis is rejected, i.e. median is not equal in financial leverage before and after the financial crisis, but the median value of financial leverage has significantly decreased after the financial crisis than before.

3.4. The second hypothesis test:

Table 3: value of standard deviation and mean of cost of capital before and after the financial crisis.

Pair	Mean	N	Std. Deviation
capital cost before	2.02680	101	1.615416
1 capital cost after	0.9953	101	0.071184

Table 4: Tests for equality of capital cost before and after the financial crisis to companies.

	Paired differences		t	df	Sig. (2-tailed)
	Mean	Std. Deviation			
Pair 1 capital cost before-after	1.927268	1.611520	12.019	100	0.000

The test statistic is equal to 12.02, it is placed on the null hypothesis rejection range, then the null hypothesis is rejected, the mean of cost of capital before and after the financial crisis, is not the same, but the mean of cost of capital after the financial crisis has significantly reduced than before.

Conclusions:

In this study, financial leverage and cost of capital of 108 companies listed in Tehran Stock Exchange were examined in two 3-year periods before the global financial crisis (2004, 2005, 2006) and after the global financial crisis (2008, 2009, 2010), for which 2007 as a base year or zero. This study stressed to analyze how changes in financial leverage and cost of capital of companies listed in Iran stock influenced by the recent global financial crisis. Descriptive statistics derived from assessment of variables in the two periods before and after suggest a significant change in the mean and the standard deviation too. Based on data analysis and hypotheses test in section of inferential statistic, it first was done to test the normality of data distribution; the analysis showed there exists a normal distribution of data on capital costs, parametric tests were performed using paired t-tests, but not data on the financial leverage and the Wilcoxon nonparametric test was used to test the hypotheses. The first hypothesis test based on the significance of financial leverage before the financial crisis represents the mean value of the test statistic equal to 2.1, based on which the hypothesis has been confirmed and show financial leverage of stock companies has significantly decreased after the financial crisis than before. Also, the second hypothesis with test statistic about 12 confirms it and suggests that capital cost in the stock companies in Iran has been decreased significantly in post the global financial crisis period, i.e. fiscal year 2007 to 2011, than pre-crisis period of 2004 to 2006.

According to the research results, it can present the following recommendations:

1. As regards, the financial leverage differed significantly in the years after the global financial crisis compared to the years before the crisis, so, investors are faced with greater risk after the financial crisis than before.
2. Given that the cost of capital did not differ significantly, in the years after the global financial crisis compared to the years before, so investors are faced with greater risk, after the financial crisis than before.

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