



The Analysis of the Effect of Projecting Financial Crisis on the Amount of the Stickiness of Costs in Companies Accepted by Securities Exchange

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Abstract: This research aims to analyze the increase in projecting financial crisis on the intensity of the stickiness of administrative, common, sale, costs and cost price. The results of this research are analyzed based on the information of 30 companies without and 30 companies with financial crisis accepted by Tehran Securities Exchange in a period of time from 2001 to 2011. To categorize the companies, article 141 of business law is used by default, and considering previous researches, Altman model is used to project financial crisis. According to the results of the research, cost price costs in healthy and bankrupt companies are sticky, and as the projection of financial crisis elevates, so does the intensity of stickiness; moreover, the intensity of increased stickiness with financial crisis projection in bankrupt companies is more compared to healthy ones. Administrative, common, and sale costs are sticky in bankrupt companies, and the intensity of this stickiness increases by the increase of financial crisis projection. However, as administrative, common, and sale costs of all the healthy companies are increasing over the period, they are not analyzable.

Keywords: Behavior Costs, Stickiness Costs, Administrative Costs, Common Costs, Sale Sosts, Cost Price, Financial Crisis

INTRODUCTION

Ever since 1950s, by the increase in the number of companies and firms and the creation of complexity in financial and commercial relationships, finance jobs changed dramatically. Governments' emphasis on economic growth itself has led to the increase in the number and expansion of companies and firms; besides, it has made the mentioned jobs more complex. Due to environmental changes and firms' increasing competition, profit accessibility has been limited, and the likelihood of bankruptcy has escalated. As a result, financial decision-making, compared to the past, has become more important and has made directors change their views into long-term ones and use new methods of controlling more accurately and widely by applying modern techniques¹. A concern of investors is differentiating successful from unsuccessful companies. Consequently, they are after methods by which they can project a company's bankruptcy and eliminate the risk of losing their principal and interest of the capital. The most important

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reason for companies' financial crisis is organizations' mismanagement. Mismanagement, costs, weak financial activities, ineffective selling activities, and high cost price can be an alarm for financial crisis and bankruptcy alone or in a combination. Today, businesses run in a variable and competitive environment. Quick and suitable reactions against the highly variable conditions of the market have an essential role in the position of the business. The director of the business is engaged in all aspects of the business's activities. Mukhut and Bhunia have defined the reason of the importance of financial crisis projection as follows: financial crisis in companies lead to some problems, which may decrease the efficiency and prevent one from maximizing company value and shares.

One of the basic hypotheses in management accounting reveals that costs changes has a direct relationship with the increase and decrease in activity levels. This theory has been studied by discussing the stickiness of costs by Anderson et al³ ., it means the increase amount in costs with an increase in the level of activities is more than the decrease amount in costs for the same decrease in the amount of activity level. A fundamental part of the projection of financial crisis is costs behavior projection. Consequently, there is a potential behavior between costs behavior and the analyzers' analysis of financial crisis projection.

In the present research, as financial crisis projection and costs behavior is increasingly becoming more and more important, it is tried to answer the question which is: regarding the increase in financial crisis projection, how is the intensity of the stickiness of administrative, common, sale costs and cost price?

Theoretical Basics and Research History

The most important issues related to financial management are investment and the trust in investment for natural and legal persons. In modern industrialized countries, a large number of researches have been carried out about investment decision process. An issue which can help the method of investment decision is the existence of tools and suitable models for organizations' financial valuation and conditions. One of these tools is bankruptcy projection models. Accountants must recognize the creators of bankruptcy well, as they are the ones who can inform the director before bankruptcy and provide preventive solutions². Indeed, costs are the indicators of resource spending and resources are prepared to do various activities. Because activities are done in line with producing merchandise and serving, resources are gained based on demand projections; that are why costs do not follow real demand³. Previous researches show that the decrease in the intensity of costs on the effect of reduced volume activity is less than the increase in the intensity of costs on the effect of increased volume activity. This cost behavior is called "sticky behavior". When directors face a decrease in sales, they might consider it to be temporary and expect sales to come back to its normal condition. As a result of this, some directors in periods of downward trends in sales do not drop necessary resources for doing the operative activity. This behavior is justifiable since maintaining resources brings about a reduction in costs in the long-term. This is the case because if resources

are cut in response to a decrease in sales, some costs for getting new resources are imposed on the company on condition that in later periods, sales elevate. Consequently, in order to reduce costs and increase the company's profit in the long-term, directors keep the resources⁴. Altman is the first person who presented multivariate bankruptcy projection patterns under the name "Z Pattern Rating". Using this method, he chose 5 financial ratios out of 22 to project bankruptcy. Analyzers and accountants believed that Z pattern rating is just practical for public institutions. In later studies, Altman succeeded to reform and adjust his pattern⁵. Springeit continued Altman's research and used audit analysis to choose suitable financial ratios. Springeit's pattern reached 92.5 % right projection⁶. Garrison and Ingram⁷ carried out a study based on the efficiency of Altman's Z model. The results of this research suggest that financial ratios and bankruptcy models are influenced by time variable, and as time passes, the models' coefficients must be revised⁸. The results of another research indicated that logistic regression shows a good performance in domestic samples and DEA in foreign samples⁹.

In common costs behavior model, costs are considered as fixed and variable based on the changes in activity levels. In this model, variable costs fluctuate relatively with changes in stimulating activity¹⁰. By default, the amount of change in costs only depends on the amount of change in activity level and not on changing route. Ingram et al., believes that costs are neither fixed nor variable. Moreover, the relationship between fixed and variable costs and activity level in the scope of the term is valid¹¹. Garrison and Noreen⁸ realized that trying to make a decision without complete knowledge of related costs and the quality of their changes based on activity may bring about a disaster. Noreen and Soderstrom² believe that costs increase more as the level of activity goes up as opposed to their decrease originating from the decrease in the level of activity. Anderson et al¹². tested the theory of costs stickiness. Specifying a model with SG&A cost, as a function of sales revenue, they understood that with average costs of 55% they increase in response to 1% increase in net revenue; however, with only 35% against 1% drop in revenues, they fall. They studied to observe if capital markets recognize the stickiness of costs. Analyzing Brazilian companies, Medeiros and Costa presented that the increase in research period will not cause a fall in costs stickiness, but they confirmed the inversion in the stickiness of costs in a period after sales decline period. The results of researches by Weiss¹³ suggests that in companies with more sticky costs, the accuracy of profit projection by analyzers is less, and in valuating companies' value apply the stickiness of costs. Banker et al⁹., understood in their research that if the effect of factors like successive changes is in line with sales and GDP growth on the stickiness of costs, it reveals the directors' optimism; the increase in costs is done slower. Regarding these issues, the following questions asked :

1. Are administrative, common, and sales costs sticky?

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2. Does the intensity of administrative, common, and sales costs of companies increase by financial crisis projection (decrease in Z)?

3. Is cost price sticky?

4. Does the intensity of cost price of companies increase by financial crisis projection (decrease in Z)?

MATEREAL AND METHODS

In this research, the used method is descriptive correlational. The studied statistical population was chosen from two groups of bankrupt companies, which were subject to article 141 of business law in a period of 2001 to 2011, in Securities Exchange. 30 companies were chosen randomly. Then for each of them a company was chosen randomly as a healthy couple. To select healthy companies two conditions were regarded: First, the bankrupt sample's financial information must be present in the studied period. Second, considering the amount of total assets, it must tally with the bankrupt sample (in the year financial crisis happened). Securities Exchange's site was used to gather information. As the research is among positive accounting theory, the companies' real financial statements' information is used. In order to analyze the relationship between the independent and dependent variables of the research, Logistic Regression Analysis and multivariable are used. In regression, the estimation of mathematical relationship and its analysis is aimed, in a way that unknown variable quantity could be determined using known variables. So as to process the statistical variables of the research, SPSS software is used, and some output is gained based on the hypothesis.

The Research's Variables

In this research, the financial crisis variable (Altman's Z) of the company is shown with 0 and 1 amounts.

The index of financial crisis (Altman's model):
 $Z' = 0/717x_1 + 0/847x_2 + 3/1x_3 + 0/42x_4 + 0/998x_5$

In which the variables are:

Z' = financial crisis in the company

X₁ = the ratio of working capital/total asset

X₂ = the ratio of retained earnings/total asset

X₃ = the ratio of earnings before interest tax/total asset

X₄ = the ratio of Book value of equity/book value of debt

X₅ = the ratio of sales/total asset

And

SGA_{i,t} = the administrative, common, and sales costs of i company in the t year

SCA_{i,t-1} = the administrative, common, and sales costs of i company in the t-1 year

Cost_{i,t} = the cost of goods sold in i company in the t year

Cost_{i,t-1} = the cost of goods sold in i company in the t-1 year

Sales_{i,t} = the sales of i company in the t year

Sales_{i,t-1} = the sales of i company in the t-1 year

D = Dummy variable, which in case of increase in sales in the t year compared to t-1 equals 0 and otherwise, equals 1.

Research Models

Considering the research questions, four models are used as follows:

Question1: Are administrative, common, and sales costs sticky? (Do administrative, common, and sales costs have stickiness as compared to revenue from sales?)

$$\text{Model 1: } \log\left(\frac{SGA_{i,t}}{SGA_{i,t-1}}\right) = \beta_0 + \beta_1 * \log\left(\frac{sales_{i,t}}{sales_{i,t-1}}\right) + \beta_2 * D * \log\left(\frac{sales_{i,t}}{sales_{i,t-1}}\right)$$

Since the value of D variable in the time of increased sales is zero, β_1 shows the percent increase in administrative, common, and sales costs as a result of 1% increase in revenue from sales. And as D variable equals one when there is a decrease in revenue from sales, the sum of $\beta_1 + \beta_2$ coefficients reveals percent decrease in administrative, common, and sales costs as a result of a percent decrease in revenue from sales. If administrative, common, and sales costs are sticky, costs percent increase in periods of increase in revenue must be more than costs percent decrease in periods of decrease in revenue, or $\beta_2 < 0$, $\beta_1 > 0$

Question 2: Does the amount of stickiness in administrative, common, and sales costs increase with the projection of financial crisis (decrease in Z)?

$$\text{Model 2: } \log\left(\frac{SGA_{i,t}}{SGA_{i,t-1}}\right) = \beta_0 + \beta_1 * \log\left(\frac{sales_{i,t}}{sales_{i,t-1}}\right) + \beta_2 * D * \log\left(\frac{sales_{i,t}}{sales_{i,t-1}}\right) + \beta_3 * D * Z' + \epsilon_i$$

$D * Z' + \epsilon_i$

In this model, too, β_1 shows the percent increase in administrative, common, and sales costs as a result of 1% increase in revenue from sales, and $\beta_1 + \beta_2 + \beta_3$ accounts for the percentage of decrease in administrative, common, and sales costs as a result of 1% decrease in revenue from sales. β_2 coefficient being negative is a sign of the stickiness of the costs, and also, β_3 coefficient being negative presents the increase in the stickiness of companies with financial crisis.

Question 3: Is cost price sticky? (Does cost price have stickiness compared with the changes in sales revenue?)

$$\text{Model 3: } \log\left(\frac{cost_{i,t}}{cost_{i,t-1}}\right) = \beta_0 + \beta_1 * \log\left(\frac{sales_{i,t}}{sales_{i,t-1}}\right) + \beta_2 * D * \log\left(\frac{sales_{i,t}}{sales_{i,t-1}}\right) + \epsilon_{i,t}$$

The way question 3 is analyzed is exactly the same as model 1.

Question 4: Does the amount of the stickiness of the cost price of companies increase by the projection of financial crisis (Z decrease)?

$$\text{Model 4: } \log\left(\frac{cost_{i,t}}{cost_{i,t-1}}\right) = \beta_0 + \beta_1 * \log\left(\frac{sales_{i,t}}{sales_{i,t-1}}\right) + \beta_2 * D * \log\left(\frac{sales_{i,t}}{sales_{i,t-1}}\right) + \beta_3 * D * Z' + \epsilon_{i,t}$$

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The way question 4 is analyzed is exactly the same as model 2.

RESULTS

Data Normality Test

Using Central Limit Theorem, when the number of samples is more than 30, the data has normal distribution .

Analysis and Testing Altman's Model

In this research, Logistic Regression Model is used, and finally, this model brings about two projections: bankruptcy or no bankruptcy. While the actual condition (bankruptcy or health) of the company, to put variables into the model Enter method is used.

Inter-test Based Method

Inter-test dose the analysis of the relationship between dependent and independent variables at on stage. This method is highly reliable, as the effect of all the dependent variables on independent ones is tested in one place. As it is observed, in Logistic Regression, healthy companies turn into CODE (1) and bankrupt companies into CODE (0).

Table 1.Scenarios of the expected pattern of Altman

	Observed		Predicted		Percentage Correct
	z		z		
			bankrupt companies	healthy companies	
Step 1	z	bankrupt companies	21	9	70
		healthy companies	0	30	100
		Overall Percentage			85

In table 2, Chi-squared test at the level of significance of 0.5 represents that independent variables have performed successfully in the explanation of changes in dependent variables, and in a simpler word, the correctness of the hypothesis is accepted.

Table 2. Omnibus Tests of Model Coefficients

		Chi-square	df	Sig
Step 1	Step	49.456	5	0
	Block	49.456	5	0
	Model	49.456	5	0

Table 3.Goodness statistics results on Altman's fitness model

Step	-2 Log likelihood	Cox and Snell R Square	Nagelkerke R ²
1	244.795	0.601	0.805

The above table reveals that in the above model, 5 variables have been able to explain between 60.1 to 80.5 percent of changes in the financial crisis (bankruptcy) of companies.

Table 4. Classification Tablea

	Observed		Predicted		Percentage Correct
	z		z		
			bankrupt companies	healthy companies	
Step 1	z	bankrupt companies	27	3	91.1
		healthy companies	2	28	95.7
	Overall Percentage				93.7

The results of table 4 suggests that classification has been right in 91.1% of bankrupt companies and 95.7% of healthy companies, and on the whole, 93.7% has been classified right based on classification test. Regarding the amount of the level of Significant Wald statistic, which is less than 0.05in all variables, it is concluded that all variables are able to project the changes in the dependent variable (the projection of bankruptcy or healthiness of companies).

Testing Research Questions

To analyze research questions in two groups of healthy and bankrupt companies, multiple regression test between the growth rate of companies’ costs, the rate of revenue from sales, the rate of revenue from sales ‘ dummy variable, and Altman ‘s Z are used. To analyze the lack of correlation in the model, Durbin-Watson statistic is used.

Table 5.Regression analysis

Model	company	F	Sig	Durbin-Watson
Model 1	healthy companies	0.6	0.55	2.861
	bankrupt companies	4.25	0.02	2.194
Model 2	healthy companies	0.54	0.65	2.863
	bankrupt companies	5.67	0.00	2.117
Model 3	healthy companies	10.8	0.00	1.869
	bankrupt companies	16.97	0.00	2.194
Model 4	healthy companies	16.19	0.00	1.676
	bankrupt companies	20.22	0.00	2.197

Table 6. Research Summary

Model	healthy companies				bankrupt companies			
	Adj R ²	R ²	R	p-value	Adj R ²	R ²	R	p-value
Model 1	-0.003	0.004	0.06	0.549	0.024	0.031	0.17	0.015
Model 2	-0.005	0.006	0.07	0.653	0.046	0.057	0.23	0.001
Model 3	0.068	0.075	0.27	0.00	0.106	0.113	0.33	0.00
Model 4	0.229	0.238	0.48	0.00	0.177	0.186	0.43	0.00

Test 1: Are administrative, common, and sales costs sticky?

The result of test 1 in healthy companies, Durbin-Watson statistic equals 2.86, shows correlation in the model; thus, no index is accepted for the above model.

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The results of test 1 in bankrupt companies show 0.176 and 2.12 for the correlation coefficient and Durbin-Watson statistic. As a result, the hypothesis of autocorrelation is rejected. The Significance level of the F test statistic, which is less than 0.05, confirms the existence of a meaningful relationship between variables. The results of tables 6 and 7 suggest that β_1 coefficient is not placed in significance level. β_2 coefficient equals -0.335; β_2 coefficient being negative and (P-Value=0.00) are signs of the sticky behavior of administrative, common, and sales costs in bankrupt companies. Model 1 in bankrupt companies:

$$\log \left[\frac{SGAti \cdot t}{SGAti \cdot t - 1} \right] = 0.048 - 0.335 * D * \log \left[\frac{Salesi \cdot t}{Salesi \cdot t - 1} \right] + \epsilon i \cdot t$$

Test 2: Do the stickiness of the administrative, common, and sales costs of companies increase by projecting financial crisis (Z decline)?

Regarding the results of table 5, the achieved Durbin-Watson index, the analysis of model 2 in healthy companies is not possible.

The results of test 2 in bankrupt companies include: The correlation coefficient, which equals 0.24, and Durbin-Watson statistic, which equals 2.12. Consequently, the hypothesis of autocorrelation between the variables is rejected. In addition, the level of F statistical significance, which is less than 0.05, proves a meaningful relationship between the variables. The results of tables 6 and 7 suggest that β_1 coefficient has not placed in significance level. β_2 coefficient equals -0.335, in which the negative β_2 coefficient and (P-Value=0.00) illustrate an increase in the stickiness intensity of the administrative, common, and sales costs. β_3 coefficient equals -0.046, in which the negative β_3 coefficient and (P-Value=0.004) represent an increase in the stickiness intensity of the administrative, common, and sales costs by projecting financial crisis in bankrupt companies.

The regression equation is as follows:

$$\log \left[\frac{SGAti \cdot t}{SGAti \cdot t - 1} \right] = 0.061 - 0.363 * D * \log \left[\frac{Salesi \cdot t}{Salesi \cdot t - 1} \right] - 0.046 * D * Z' + \epsilon i \cdot t$$

Test 3: Is cost price sticky? (Has cost price compared to changes in revenue from the sales stickiness?)

The results of test 3 in healthy companies include: The correlation coefficient, which equals 0.27, and Durbin-Watson statistic, which equals 1.87. Consequently, the hypothesis of autocorrelation between the variables is rejected. In addition, the level of F statistical significance, which is less than 0.05, proves the hypothesis of the linear relationship between two variables. The results of tables 6 and 7 suggest that β_1 coefficient increases the amount of changes in cost price by 25.7% for 1% increase in the revenue from sales, and $\beta_2 + \beta_1$, for 1% decrease in the revenue from sales, decreases by 11.3%. Thus, cost price in healthy companies is sticky. The regression equation is as follows:

$$\log \left[\frac{\text{COST}_{i,t}}{\text{COST}_{i,t-1}} \right] = 0.059 + 0.257 * \log \left[\frac{\text{Sales}_{i,t}}{\text{Sales}_{i,t-1}} \right] - 0.370 * D * \log \left[\frac{\text{Sales}_{i,t}}{\text{Sales}_{i,t-1}} \right] + \varepsilon_i$$

The results of test 3 in bankrupt companies include: The correlation coefficient, which equals 0.34, and Durbin-Watson statistic, which equals 2.27. Consequently, the hypothesis of autocorrelation between the variables is rejected. In addition, the level of F statistical significance, which is less than 0.05, proves the hypothesis of the linear relationship between two variables. The results of tables 6 and 7 suggest that β_1 coefficient increases the amount of changes in cost price by 38.7% for 1% increase in the revenue from sales, and $\beta_2 + \beta_1$, for 1% decrease in the revenue from sales, decreases by 9%. Thus, cost price in bankrupt companies is sticky. The regression equation is as follows:

$$\log \left[\frac{\text{COST}_{i,t}}{\text{COST}_{i,t-1}} \right] = 0.029 + 0.381 * \log \left[\frac{\text{Sales}_{i,t}}{\text{Sales}_{i,t-1}} \right] - 0.291 * D * \log \left[\frac{\text{Sales}_{i,t}}{\text{Sales}_{i,t-1}} \right] + \varepsilon_{i,t}$$

Test 4: Does the cost price stickiness of companies increase by financial crisis projection (Z decrease)?

The results of test 4 in healthy companies include: The correlation coefficient, which equals 0.49, and Durbin-Watson statistic, which equals 1.83. Consequently, the hypothesis of autocorrelation between the errors is rejected. In addition, the level of F statistical significance, which is less than 0.05, proves the hypothesis of the linear relationship between two variables. The results of tables 6 and 7 suggest that β_1 coefficient increases the amount of changes in cost price by 18.4% for 1% increase in the revenue from sales, and $\beta_3 + \beta_2 + \beta_1$, for 1% decrease in the revenue from sales, decreases by 9.1%. Thus, the amount of cost price in healthy companies increases by financial crisis projection. The regression equation is as follows:

$$\log \left[\frac{\text{COST}_{i,t}}{\text{COST}_{i,t-1}} \right] = 0.077 + 0.184 * \log \left[\frac{\text{Sales}_{i,t}}{\text{Sales}_{i,t-1}} \right] - 0.233 * D * \log \left[\frac{\text{Sales}_{i,t}}{\text{Sales}_{i,t-1}} \right] + 0.042 * D * Z + \varepsilon_{i,t}$$

The results of test 4 in bankrupt companies include: The correlation coefficient, which equals 0.43, and Durbin-Watson statistic, which equals 2.18. Consequently, the hypothesis of autocorrelation between the errors is rejected. In addition, the level of F statistical significance, which is less than 0.05, proves the hypothesis of the linear relationship between two variables. The results of tables 6 and 7 suggest that β_1 coefficient increases the amount of changes in cost price by 33.1% for 1% increase in the revenue from sales, and $\beta_3 + \beta_2 + \beta_1$, for 1% decrease in the revenue from sales, decreases by 5.7%. Thus, the amount of cost price stickiness in bankrupt companies increases by financial crisis projection. The regression equation is as follows:

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$$\log \left[\frac{\text{COST}_{i,t}}{\text{COST}_{i,t-1}} \right] = 0.046 + 0.331 * \log \left[\frac{\text{Sales}_{i,t}}{\text{Sales}_{i,t-1}} \right] - 0.327 * D * \log \left[\frac{\text{Sales}_{i,t}}{\text{Sales}_{i,t-1}} \right] - 0.061 * D * Z + \varepsilon_{i,t}$$

Table 7. Results

Model	company	Dependent variable	Independent variable	Beta	p	result
Model 1	healthy companies	log(SGAt _{i,t} /SGAt _{i,t-1})	log(sales _{i,t} /sales _{i,t-1})	0.304	0.536	Rejected
			D*log(sales _{i,t} /sales _{i,t-1})	-	0.329	Rejected
	bankrupt companies	log(SGAt _{i,t} /SGAt _{i,t-1})	log(sales _{i,t} /sales _{i,t-1})	0.107	0.206	Rejected
			D*log(sales _{i,t} /sales _{i,t-1})	-	0.006	confirmed
Model 2	healthy companies	log(SGAt _{i,t} /SGAt _{i,t-1})	log(sales _{i,t} /sales _{i,t-1})	0.352	0.25	Rejected
			D*log(sales _{i,t} /sales _{i,t-1})	-	0.257	Rejected
			D*Z	0.027	0.512	Rejected
	bankrupt companies	log(SGAt _{i,t} /SGAt _{i,t-1})	log(sales _{i,t} /sales _{i,t-1})	0.068	0.416	Rejected
			D*log(sales _{i,t} /sales _{i,t-1})	-	0.003	confirmed
			D*Z	-	0.004	confirmed
Model 3	healthy companies	log(cost _{i,t} /cost _{i,t-1})	log(sales _{i,t} /sales _{i,t-1})	0.257	0	confirmed
			D*log(sales _{i,t} /sales _{i,t-1})	-0.37	0	confirmed
	bankrupt companies	log(cost _{i,t} /cost _{i,t-1})	log(sales _{i,t} /sales _{i,t-1})	0.381	0	confirmed
			D*log(sales _{i,t} /sales _{i,t-1})	-	0.003	confirmed
Model 4	healthy companies	log(cost _{i,t} /cost _{i,t-1})	log(sales _{i,t} /sales _{i,t-1})	0.184	0.003	confirmed
			D*log(sales _{i,t} /sales _{i,t-1})	-	0.007	confirmed
			D*Z	-	0	confirmed
	bankrupt companies	log(cost _{i,t} /cost _{i,t-1})	log(sales _{i,t} /sales _{i,t-1})	0.331	0	confirmed
			D*log(sales _{i,t} /sales _{i,t-1})	-	0.001	confirmed
			D*Z	-	0	confirmed

DISCUSSION

According to previous studies, administrative, common, and sales costs are sticky. However, after categorizing the companies, the first question was rejected in healthy companies. This is because in 2001 to 2011 period, no drop in administrative, common, and sales costs was observed. Nevertheless, in bankrupt companies, administrative, common, and sales costs are sticky, and by projecting financial crisis, the stickiness intensity of costs escalates. Moreover, after proving the existence of cost price stickiness in healthy and bankrupt companies, it was concluded that cost price stickiness in bankrupt companies compared to that of healthy companies increases. And ultimately, it became

known that by projecting financial crisis, the intensity of cost price stickiness in bankrupt companies compared to that of healthy companies is more. As the projection of financial crisis is an index for directors, shareholders, and investors' decision making, the increasing effect of the stickiness of costs can be one of the signs of causing financial crisis in the future of the companies; in addition, directors are able to detect and control it by analyzing the intensity of the stickiness of costs, and by this method, increase the accuracy of financial crisis projection so as to prevent some part of mistakes in decision-making based on the future of companies.

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