

## Comparative Investigation of the amount of Systematic Risk in the different industries in Tehran Stock Exchange (TSE) in Tehran Stock Market (2004-2010)

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**Abstract:** In the financial literatures capital asset valuation model represent the relationship among systematic risk (Beta) with expected return on each share. One of the fundamental problem that portfolio managements and investors face with it in expected ratio measuring is the beta measurement accuracy for investors decision making in stock and exchange market so that they sure in achieve in expected return on their investment. Thus in this study systematic risk amount in various industries survey. Also statistical tests such as Tokey, Scheffe and has done for a sample that include industries monthly return between 2004-2010years. And finally the findings show meaningful deferent in amount of systematic risk in various industries.

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**Keywords:** Systematic Risk; Expected Return; Portfolio Management

### Introduction

TSE as the main investment institution in Iran couldn't play its role in production in Iran as many financial theorists believe. The investors in TSE try to achieve the highest return of their investment and consider also the investment risk and in case of accepting risk with the expected return, high investment is achieved. While the actual return of the investment with the expected return of the investors is different. Thus, stock buyers in stock market consider the risk and investment return both at the same time. Thus, the recognition of the risk and its characteristics is of great importance for the investors.

The present study is regarding one of the investment features in stock market and compared the systematic risk size in various industries listed in TSE.

Considering return and risk is one of the greatest issues being raised in investment. Because the investment return is a function of that risk and the higher the risk, the expected return is high. As the total risk of the company is including non-systematic risk is excluded, the identification of the systematic risk and its comparison in stock industries is of great importance for the investors, industries managers, financial institutions such as banks, government and other credit institutions.

The present study by effective investigation of the risk and the identification of their relation helps the beneficiaries of the company to detect the existing risk better and have a good relation for decision making. In CARM model, one was used for all the industries. The stability of beta is the main condition for implementation of pricing model of capital assets, if the beta is varied; the operational problems avoid the application of the mentioned model (Dastgir, 1986).

Beta size depends upon prediction period, the period in which beta is estimated and although there is no agreement about the period of optimized

estimation, the monthly data for a five or six period are the best selection (Gronold and Fraser).

### Research hypothesis

The size of systematic risk had significant difference in various industries listed in TSE.

### Research method

The current study was applied in terms of aim and based on the method was causative-comparative with semi-experimental design and the comparison of static groups. For data collection and theoretical issues, library method was applied. The study data were collected by organizational documents in TSE. The stock price of the companies, total price of the stock and other information were provided by the existing data in the quarterly, monthly and annual journals of TSE and other organizational documents.

The study scope is dedicated to financial management evaluating the systematic risk size in various industries of the companies listed in TSE during 2004-2010. The place scope of the study was TSE and the study population was the industries listed in TSE.

The time scope of the study in terms of data collection was 2004-2010.

The study population was all the active industries in the stock market from the beginning of Farvardin 2004 to the end of Esfand 2010.

Based on the limitation of the existing industries in TSE, all the industries were selected as sample. In the present study, the systematic risk variable of the industries was investigated and the type of variable and their extraction method from the raw data were mentioned in the following.

For classification of the raw data and converting them to study variables and presenting the Measures of central tendency and dispersion, descriptive analysis was applied. The descriptive analyses were done based on mean, SD, variance, skewness, kurtosis,

skewness and kurtosis coefficients. For data analysis of the test hypotheses, inference statistics was applied. To evaluate the conceptual model and hypothesis test, parametric tests of one-way variance analysis was used and to compare the mean of two independent population and non-parametric tests and the investigation of other findings in the study, the comparison of univariate mean and the comparison of the mean of some independent population was applied.

### Results and discussion

The statistical data of beta variable of 20 industries was extracted by monthly data and the period of 2004-2010 as 84 observations. The study variable was obtained by the formula of beta calculation from the raw data. Thus, the present study has 1980 observations being measured in ratio scale.

**Table 1: The descriptive measures of the sum of the beta of the studied industries in the sample**

Variables	N	Mean	SD	Variance	skewness	kurtosis	Skewness deviation	Kurtosis deviation	Significance level of KS test
The sum of industries	1680	0.498	1.336	1.786	0.280	12.499	4.688	4104.727	0.000

2) The description of “electronic devices industry” beta: the beta of “electronic devices industry” with the mean 0.158 and SD and variance 0.692 and 0.479, respectively had negative skewness and positive kurtosis. The deviation of skewness and kurtosis was bigger than absolute value 1.96. The negative skewness showed the observations far from central measures in the left side of the scale and positive kurtosis showed the distribution curve longer than normal distribution curve. The significance level of Kolmogrov-Smirnov test was less than 0.05 and it supported the normality rejection of the distribution of this variable.

3) The description of “technical and engineering industry” beta: the beta of “technical and engineering industry” with the mean 0.456 and SD and variance 1.706 and 2.912, respectively had negative skewness and positive kurtosis. The deviation of skewness was bigger than absolute value 1.96. The negative skewness showed the observations far from central measures in the left side of the scale and positive kurtosis showed the distribution curve longer than normal distribution curve. The significance level of Kolmogrov-Smirnov test was bigger than 0.05 and it supported the lack of normality rejection of the distribution of this variable.

4) The description of “oil product industry” beta: the beta of “oil product industry” with the mean 0.368 and SD and variance 1.110 and 1.231, respectively had negative skewness and positive kurtosis. The deviation of skewness and kurtosis was bigger than absolute value 1.96. The negative skewness showed the observations far from central

To describe the study variable in the population size, the mean, SD, variance, skewness, kurtosis were applied. The sum of the variables in the studied industries was investigated separately and 20 industries were divided.

1) The description of “sampled industries” beta: the beta of “sampled industries” with the mean 0.496 and SD and variance 1.336 and 1.786, respectively had positive skewness and kurtosis. The deviation of skewness and kurtosis was bigger than absolute value 1.96. The positive skewness showed the observations far from central measures in the right side of the scale and positive kurtosis showed the distribution curve longer than normal distribution curve. The significance level of Kolmogrov-Smirnov test was less than 0.05 and it supported the normality rejection of the distribution of this variable.

measures in the left side of the scale and positive kurtosis showed the distribution curve longer than normal distribution curve. The significance level of Kolmogrov-Smirnov test was less than 0.05 and it supported the normality rejection of the distribution of this variable.

5) The description of “main metals industry” beta: the beta of “oil product industry” with the mean 1.057 and SD and variance 1.899 and 3.606, respectively had negative skewness and positive kurtosis. The deviation of skewness and kurtosis was bigger than absolute value 1.96. The negative skewness showed the observations far from central measures in the left side of the scale and positive kurtosis showed the distribution curve longer than normal distribution curve. The significance level of Kolmogrov-Smirnov test was less than 0.05 and it supported the normality rejection of the distribution of this variable.

6) The description of “Transportation industry” beta: the beta of “Transportation industry” with the mean 0.932 and SD and variance 0.970 and 3.880, respectively had positive skewness and kurtosis. The deviation of skewness and kurtosis was bigger than absolute value 1.96. The positive skewness showed the observations far from central measures in the right side of the scale and positive kurtosis showed the distribution curve longer than normal distribution curve. The significance level of Kolmogrov-Smirnov test was less than 0.05 and it supported the normality rejection of the distribution of this variable.

7) The description of “non-metal mineral industry” beta: the beta of “non-metal mineral

industry” with the mean 0.248 and SD and variance 0.530 and 0.281, respectively had positive skewness and kurtosis. The deviation of skewness and kurtosis was bigger than absolute value 1.96. The positive skewness showed the observations far from central measures in the right side of the scale and positive kurtosis showed the distribution curve longer than normal distribution curve. The significance level of Kolmogrov-Smirnov test was bigger than 0.05 and it supported the lack of normality rejection of the distribution of this variable.

8) The description of “metal mineral industry” beta: the beta of “metal mineral industry” with the mean 1.271 and SD and variance 1.509 and 2.276, respectively had negative skewness and positive kurtosis. The deviation of skewness and kurtosis was bigger than absolute value 1.96. The negative skewness showed the observations far from central measures in the left side of the scale and positive kurtosis showed the distribution curve longer than normal distribution curve. The significance level of Kolmogrov-Smirnov test was bigger than 0.05 and it supported the lack of normality rejection of the distribution of this variable.

9) The description of “car industry” beta: the beta of “car industry” with the mean 0.985 and SD and variance 1.063 and 1.130, respectively had positive skewness and kurtosis. The deviation of skewness and kurtosis was bigger than absolute value 1.96. The positive skewness showed the observations far from central measures in the right side of the scale and positive kurtosis showed the distribution curve longer than normal distribution curve. The significance level of Kolmogrov-Smirnov test was less than 0.05 and it supported the normality rejection of the distribution of this variable.

10) The description of “Rubber industry” beta: the beta of “Rubber industry” with the mean 0.157 and SD and variance 1.477 and 2.180, respectively had negative skewness and positive kurtosis. The deviation of skewness was smaller than absolute value 1.96. The negative skewness showed the observations far from central measures in the left side of the scale and positive kurtosis showed the distribution curve longer than normal distribution curve. The significance level of Kolmogrov-Smirnov test was less than 0.05 and it supported the normality rejection of the distribution of this variable.

11) The description of “Metal materials industry” beta: the beta of “Metal materials industry” with the mean 0.431 and SD and variance 0.969 and 0.939, respectively had negative skewness and positive kurtosis. The deviation of skewness was smaller than absolute value 1.96. The negative skewness showed the observations far from central measures in the left

side of the scale and positive kurtosis showed the distribution curve longer than normal distribution curve. The significance level of Kolmogrov-Smirnov test was bigger than 0.05 and it supported the lack of normality rejection of the distribution of this variable.

12) The description of “paper materials industry” beta: the beta of “paper materials industry” with the mean 0.152 and SD and variance 1.541 and 2.374, respectively had negative skewness and positive kurtosis. The deviation of skewness was bigger than absolute value 1.96. The negative skewness showed the observations far from central measures in the left side of the scale and positive kurtosis showed the distribution curve longer than normal distribution curve. The significance level of Kolmogrov-Smirnov test was less than 0.05 and it supported the normality rejection of the distribution of this variable.

13) The description of “Wooden materials industry” beta: the beta of “Wooden materials industry” with the mean 0.044 and SD and variance 1.273 and 1.621, respectively had negative skewness and positive kurtosis. The deviation of skewness was bigger than absolute value 1.96. The negative skewness showed the observations far from central measures in the left side of the scale and positive kurtosis showed the distribution curve longer than normal distribution curve. The significance level of Kolmogrov-Smirnov test was less than 0.05 and it supported the normality rejection of the distribution of this variable.

14) The description of “financial industry” beta: the beta of “financial industry” with the mean 0.794 and SD and variance 0.835 and 0.698, respectively had positive skewness and kurtosis. The deviation of skewness was bigger than absolute value 1.96. The positive skewness showed the observations far from central measures in the right side of the scale and positive kurtosis showed the distribution curve longer than normal distribution curve. The significance level of Kolmogrov-Smirnov test was bigger than 0.05 and it supported the lack of normality rejection of the distribution of this variable.

15) The description of “textile industry” beta: the beta of “textile industry” with the mean 0.092 and SD and variance 0.761 and 0.580, respectively had positive skewness and kurtosis. The deviation of skewness was smaller than absolute value 1.96. The positive skewness showed the observations far from central measures in the right side of the scale and positive kurtosis showed the distribution curve longer than normal distribution curve. The significance level of Kolmogrov-Smirnov test was less than 0.05 and it supported the normality rejection of the distribution of this variable.

**Table 2: The descriptive measures by separated beta of sampled industries**

Variables	N	Mean	SD	Variance	skewness	kurtosis	Skewness deviation	Kurtosis deviation	Significance level of KS test
Electronic devices	84	0.158	0.692	0.479	-2.033	9.589	-7.742	18.453	.005
Technical and engineering	84	0.456	1.706	2.912	-0.348	2.454	-1.324	4.722	.197
Oil products	84	0.368	1.110	1.231	-0.698	6.820	-2.656	13.125	.014
Main metals	84	1.057	1.899	3.606	-2.028	12.046	-7.721	23.180	.018
Transportation	84	0.932	1.970	3.880	2.685	8.007	10.224	15.408	.000
Non-metal minerals	84	0.248	0.530	0.281	1.433	9.125	5.454	17.559	.061
metal minerals	84	1.271	1.509	2.276	-0.313	5.954	-1.192	11.457	.105
Car	84	0.985	1.063	1.130	1.132	0.717	4.310	1.379	.046
Rubber	84	0.157	1.477	2.180	-0.029	9.392	-0.111	18.073	.000
Metal materials	84	0.431	0.969	0.939	-0.418	5.777	-1.592	11.116	.060
Paper materials	84	0.152	1.541	2.374	-2.108	25.093	-8.028	48.287	.000
Wooden materials	84	0.044	1.273	1.621	-1.278	26.724	-4.867	51.426	.000
Financial	84	0.794	0.835	0.698	0.592	0.697	2.254	1.341	.706
Textile	84	0.092	0.761	0.580	0.469	14.440	1.785	27.788	.000
Machineries	84	0.0480	1.146	1.312	2.208	6.217	8.406	11.963	.001
Furniture	84	0.046	0.876	0.768	-5.501	38.041	-20.946	73.204	.000
Contracting	84	1.099	1.841	3.390	-0.397	5.452	-1.510	10.492	.016
Computer	84	0.166	1.030	1.062	-0.119	3.610	-0.455	6.947	.002
Chemical	84	0.906	1.319	1.740	3.047	13.272	11.599	25.541	.003
Food (except sugar)	84	0.180	0.600	0.360	1.514	7.658	5.762	14.737	.016

16) The description of “machineries industry” beta: the beta of “machineries industry” with the mean 0.480 and SD and variance 1.146 and 1.312, respectively had positive skewness and kurtosis. The deviation of skewness was bigger than absolute value 1.96. The positive skewness showed the observations far from central measures in the right side of the scale and positive kurtosis showed the distribution curve longer than normal distribution curve. The significance level of Kolmogrov-Smirnov test was less than 0.05 and it supported the normality rejection of the distribution of this variable.

17) The description of “furniture industry” beta: the beta of “furniture industry” with the mean -0.046 and SD and variance 0.876 and 0.768, respectively had negative skewness and positive kurtosis. The deviation of skewness was bigger than absolute value 1.96. The negative skewness showed the observations far from central measures in the left side of the scale and positive kurtosis showed the distribution curve longer than normal distribution curve. The significance level of Kolmogrov-Smirnov test was less than 0.05 and it supported the normality rejection of the distribution of this variable.

18) The description of “contractor industry” beta: the beta of “contractor industry” with the mean -1.099 and SD and variance 1.841 and 3.390, respectively had negative skewness and positive kurtosis. The deviation of skewness was smaller than absolute value 1.96. The negative skewness showed the observations far from central measures in the left side of the scale and positive kurtosis showed the distribution curve longer than normal distribution curve. The significance level of Kolmogrov-Smirnov test was less than 0.05 and it

supported the normality rejection of the distribution of this variable.

19) The description of “computer industry” beta: the beta of “computer industry” with the mean 0.166 and SD and variance 1.030 and 1.062, respectively had negative skewness and positive kurtosis. The deviation of skewness was smaller than absolute value 1.96. The negative skewness showed the observations far from central measures in the left side of the scale and positive kurtosis showed the distribution curve longer than normal distribution curve. The significance level of Kolmogrov-Smirnov test was less than 0.05 and it supported the normality rejection of the distribution of this variable.

20) The description of “chemical industry” beta: the beta of “chemical industry” with the mean 0.906 and SD and variance 1.319 and 1.740, respectively had positive skewness and kurtosis. The deviation of skewness was bigger than absolute value 1.96. The positive skewness showed the observations far from central measures in the right side of the scale and positive kurtosis showed the distribution curve longer than normal distribution curve. The significance level of Kolmogrov-Smirnov test was less than 0.05 and it supported the normality rejection of the distribution of this variable.

21) The description of “food industry (except sugar)” beta: the beta of “food industry (except sugar)” with the mean 0.180 and SD and variance 0.600 and 0.360, respectively had positive skewness and kurtosis. The deviation of skewness was bigger than absolute value 1.96. The positive skewness showed the observations far from central measures in the right side of the scale and positive kurtosis showed

the distribution curve longer than normal distribution curve. The significance level of Kolmogrov-Smirnov test was less than 0.05 and it supported the normality rejection of the distribution of this variable.

Based on the research purpose, the comparison of the mean among some independent population was the best method for hypothesis test. To use the mean comparison test among the 20 industries, one-way variance analysis test was applied. This test needs the justification of fundamental assumptions. The first assumption that is not ignored is the minimum distance of the measurement scale. The variable of the study can be justified. The other hypothesis is the normality of the distribution of study variables and beta variable distribution was not normal in most of the industries but the big sample size is ignored. The

$$\begin{cases} H_0 : MEAN_1 = MEAN_2 \dots = MEAN_{20} \\ H_1 : ALL MEANS NOT EQUAL \end{cases} \Rightarrow f_{(df:19;1660)} = 8.800, p = .000, p_{ob} < P_{CR}$$

other assumption is the equal variance that is ignored by the equal volume of the observations. To evaluate the distribution normality and homogeneity of variance, Kolmogrov-Smirnov was applied.

To compare the mean of systematic risk size among 20 industries, mean comparison test of some independent population, one-way variance analysis was used. To respond the study hypothesis, H<sub>0</sub>, H<sub>1</sub> were tests.

H<sub>0</sub>=The mean systematic risk was not significantly different among various industries.

H<sub>1</sub>= The mean systematic risk was not significantly different among various industries.

**Table 3: Descriptive measures of systematic risk variable of the study**

Variable	N (monthly observations)	Mean	SD	SD Error
Electronic devices	84	.1582	.69193	.07550
Technical and engineering	84	.4558	1.70643	.18619
Oil products	84	.3677	1.10956	.12106
Main metals	84	1.0565	1.89895	.20719
Transportation	84	.9324	1.96981	.21492
Non-metal minerals	84	.2485	.52982	.05781
metal minerals	84	1.2709	1.50856	.16460
Car	84	.9851	1.06289	.11597
Rubber	84	.1572	1.47661	.16111
Metal materials	84	.4309	.96880	.10571
Paper materials	84	.1518	1.54079	.16811
Wooden materials	84	.0437	1.27310	.13891
Financial	84	.7940	.83537	.09115
Textile	84	.0924	.76129	.08306
Machineries	84	.4798	1.14560	.12500
Furniture	84	-.0463	.87609	.09559
Contracting	84	1.0985	1.84114	.20089
Computer	84	.1664	1.03035	.11242
Chemical	84	.9064	1.31920	.14394
Food (except sugar)	84	.1797	.59966	.06543

Based on the test result, f calculated statistics with 8.800 was bigger than critical value and the significance level was less than 0.01. Thus, in addition to confidence interval 95%, at confidence interval 99%, there are required evidences to reject null hypothesis. Based on the results of H<sub>1</sub> hypothesis as the difference in systematic risk among 20 industries were accepted. This result showed that at least there is a significant difference among the compared industries. Thus, to compare two by two industries, Scheffe post test was applied. This post test is used because it is more efficient when the variables

distribution is not normal and inter-group variance is heterogeneous. In other words, in this condition, this post test is conservative. According to the results of Scheffe post test, the studied industries including 20 industries were classified into three groups. The results of the classification are shown in Table 4. By comparison of Scheffe post test, furniture industry has the lowest systematic risk. The systematic risk of this industry compared to three industries of main metals, contracting and metal minerals were significantly small. But it didn't have significant difference with other industries.

Metal minerals industry had the highest systematic risk. The systematic risk of the industry was significantly high compared to seven industries of wooden materials, textile, paper materials, rubber, electronic devices, computer, food and furniture and it didn't have significant difference with other industries.

According to the comparison of Scheffe post test, nine industries including non-metal minerals, oil products, metal materials, technical and engineering, machineries, financial, chemical, transportation and car didn't have significant difference and they didn't have significant difference with none of the other industries.

**Table 4: The results of hypothesis test based on one-way variance analysis**

Variable and group		The sum of squares	Degree of freedom	Mean of square	statistics F	Error level
Systematic risk	Inter-group	274.349	19	14.439	8.80	0.000
	Intragroup	2723.77	1660	1.641		
	Sum	2998.11	1679			

**Table 5: The results of Scheffe post test among 20 industries**

Industry	The number of observations	The classification based on 0.05 level		
		Group 1	Group 2	Group 3
Furniture	84	-.0463		
Wooden materials	84	.0437	.0437	
Textile	84	.0924	.0924	
Paper materials		.1518	.1518	
Rubber		.1572	.1572	
Electronic devices	84	.1582	.1582	
Computer	84	.1664	.1664	
Food (except sugar)	84	.1797	.1797	
Non-metal minerals	84	.2485	.2485	.2485
Oil products	84	.3677	.3677	.3677
Metal materials	84	.4309	.4309	.4309
Technical and engineering	84	.4558	.4558	.4558
Machineries	84	.4798	.4798	.4798
Financial	84	.7940	.7940	.7940
Chemical	84	.9064	.9064	.9064
Transportation	84	.9324	.9324	.9324
Car	84	.9851	.9851	.9851
Main metals	84		1.0565	1.0565
Contracting	84		1.0985	1.0985
metal minerals	84			1.2709
Significance level		0.101	.076	.112

The details of the two by two comparison results of the industries based on Scheffe post test are as:

1) The comparison of the electronic devices industry with other industries: The mean of this

industry is significantly smaller than metal minerals and it doesn't have significant difference with other industries.

**Table 6: The results of Tukey post test to compare electronic devices industry with other industries**

Industry (I)	Industry (J)	Industries difference (I-J)	Standard error	Significance level	Result
Electronic devices	Technical and engineering	-.29754	.19765	1.000	The difference is not significant
Electronic devices	Oil products	-.20950	.19765	1.000	The difference is not significant
Electronic devices	Main metals	-.89827	.19765	.358	The difference is not significant
Electronic devices	Transportation	-.77419	.19765	.700	The difference is not significant
Electronic devices	Non-metal minerals	-.09026	.19765	1.000	The difference is not significant
Electronic devices	metal minerals	-1.11268(*)	.19765	.035	It is smaller significantly
Electronic devices	Car	-.82690	.19765	.556	The difference is not significant
Electronic devices	Rubber	.00107	.19765	1.000	The difference is not significant
Electronic devices	Metal materials	-.27264	.19765	1.000	The difference is not significant
Electronic devices	Paper materials	.00640	.19765	1.000	The difference is not significant
Electronic devices	Wooden materials	.11457	.19765	1.000	The difference is not significant
Electronic devices	Financial	-.63572	.19765	.943	The difference is not significant
Electronic devices	Textile	.06587	.19765	1.000	The difference is not significant
Electronic devices	Machineries	-.32152	.19765	1.000	The difference is not significant
Electronic devices	Furniture	.20451	.19765	1.000	The difference is not significant
Electronic devices	Contracting	-.94027	.19765	.256	The difference is not significant
Electronic devices	Computer	-.00815	.19765	1.000	The difference is not significant
Electronic devices	Chemical	-.74814	.19765	.764	The difference is not significant
Electronic devices	Food (except sugar)	-.02143	.19765	1.000	The difference is not significant

2) The comparison of technical and engineering industry with other industries: The mean of this industry doesn't have significant difference with other industries.

**Table 7: The results of Tukey post test to compare the technical engineering industry with other industries**

Industry (I)	Industry (J)	Industries difference (I-J)	Standard error	Significance level	Result
Technical and engineering	Electronic devices	.29754	.19765	1.000	The difference is not significant
Technical and engineering	Oil products	.08805	.19765	1.000	The difference is not significant
Technical and engineering	Main metals	-.60073	.19765	.969	The difference is not significant
Technical and engineering	Transportation	-.47665	.19765	.998	The difference is not significant
Technical and engineering	Non-metal minerals	.20729	.19765	1.000	The difference is not significant
Technical and engineering	metal minerals	-.81514	.19765	.589	The difference is not significant
Technical and engineering	Car	-.52936	.19765	.993	The difference is not significant
Technical and engineering	Rubber	.29861	.19765	1.000	The difference is not significant
Technical and engineering	Metal materials	.02490	.19765	1.000	The difference is not significant
Technical and engineering	Paper materials	.30394	.19765	1.000	The difference is not significant
Technical and engineering	Wooden materials	.41212	.19765	1.000	The difference is not significant
Technical and engineering	Financial	-.33818	.19765	1.000	The difference is not significant
Technical and engineering	Textile	.36341	.19765	1.000	The difference is not significant
Technical and engineering	Machineries	-.02398	.19765	1.000	The difference is not significant
Technical and engineering	Furniture	.50205	.19765	.997	The difference is not significant
Technical and engineering	Contracting	-.64273	.19765	.937	The difference is not significant
Technical and engineering	Computer	.28939	.19765	1.000	The difference is not significant
Technical and engineering	Chemical	-.45060	.19765	.999	The difference is not significant
Technical and engineering	Food (except sugar)	.27611	.19765	1.000	The difference is not significant

3) The comparison of oil product industry with other industries: The mean of this industry doesn't have significant difference with other industries.

**Table 8: The results of Tukey post test to compare the oil product industry with other industries**

Industry (I)	Industry (J)	Industries difference (I-J)	Standard error	Significance level	Result
Oil products	Electronic devices	.20950	.19765	1.000	The difference is not significant
Oil products	Technical and engineering	-.08805	.19765	1.000	The difference is not significant
Oil products	Main metals	-.68878	.19765	.879	The difference is not significant
Oil products	Transportation	-.56470	.19765	.985	The difference is not significant
Oil products	Non-metal minerals	.11924	.19765	1.000	The difference is not significant
Oil products	metal minerals	-.90318	.19765	.345	The difference is not significant
Oil products	Car	-.61741	.19765	.958	The difference is not significant
Oil products	Rubber	.21056	.19765	1.000	The difference is not significant
Oil products	Metal materials	-.06315	.19765	1.000	The difference is not significant
Oil products	Paper materials	.21589	.19765	1.000	The difference is not significant
Oil products	Wooden materials	.32407	.19765	1.000	The difference is not significant
Oil products	Financial	-.42623	.19765	1.000	The difference is not significant
Oil products	Textile	.27537	.19765	1.000	The difference is not significant
Oil products	Machineries	-.11202	.19765	1.000	The difference is not significant
Oil products	Furniture	.41400	.19765	1.000	The difference is not significant
Oil products	Contracting	-.73077	.19765	.802	The difference is not significant
Oil products	Computer	.20135	.19765	1.000	The difference is not significant
Oil products	Chemical	-.53864	.19765	.991	The difference is not significant
Oil products	Food (except sugar)	.18806	.19765	1.000	The difference is not significant

4) The comparison of Main metals industry with other industries: The mean of this industry doesn't have significant difference with other industries.

**Table 9: The results of Tukey post test to compare the Main metals industry with other industries**

Industry (I)	Industry (J)	Industries difference (I-J)	Standard error	Significance level	Result
Main metals	Electronic devices	.89827	.19765	.358	The difference is not significant
Main metals	Technical and engineering	.60073	.19765	.969	The difference is not significant
Main metals	Oil products	.68878	.19765	.879	The difference is not significant
Main metals	Transportation	.12408	.19765	1.000	The difference is not significant
Main metals	Non-metal minerals	.80802	.19765	.609	The difference is not significant
Main metals	metal minerals	-.21441	.19765	1.000	The difference is not significant
Main metals	Car	.07137	.19765	1.000	The difference is not significant
Main metals	Rubber	.89934	.19765	.355	The difference is not significant
Main metals	Metal materials	.62563	.19765	.952	The difference is not significant
Main metals	Paper materials	.90467	.19765	.341	The difference is not significant

Main metals	Wooden materials	1.01285	.19765	.125	The difference is not significant
Main metals	Financial	.26255	.19765	1.000	The difference is not significant
Main metals	Textile	.96415	.19765	.206	The difference is not significant
Main metals	Machineries	.57675	.19765	.980	The difference is not significant
Main metals	Furniture	1.10278(*)	.19765	.040	The difference is not significant
Main metals	Contracting	-.04200	.19765	1.000	The difference is not significant
Main metals	Computer	.89012	.19765	.379	The difference is not significant
Main metals	Chemical	.15013	.19765	1.000	The difference is not significant
Main metals	Food (except sugar)	.87684	.19765	.415	The difference is not significant

5) The comparison of Transportation industry with other industries: The mean of this industry doesn't have significant difference with other industries.

**Table 10: The results of Tukey post test to compare the Transportation industry with other industries**

Industry (I)	Industry (J)	Industries difference (I-J)	Standard error	Significance level	Result
Transportation	Electronic devices	.77419	.19765	.700	The difference is not significant
Transportation	Technical and engineering	.47665	.19765	.998	The difference is not significant
Transportation	Oil products	.56470	.19765	.985	The difference is not significant
Transportation	Main metals	-.12408	.19765	1.000	The difference is not significant
Transportation	Non-metal minerals	.68394	.19765	.886	The difference is not significant
Transportation	metal minerals	-.33849	.19765	1.000	The difference is not significant
Transportation	Car	-.05271	.19765	1.000	The difference is not significant
Transportation	Rubber	.77526	.19765	.697	The difference is not significant
Transportation	Metal materials	.50155	.19765	.997	The difference is not significant
Transportation	Paper materials	.78059	.19765	.684	The difference is not significant
Transportation	Wooden materials	.88876	.19765	.383	The difference is not significant
Transportation	Financial	.13847	.19765	1.000	The difference is not significant
Transportation	Textile	.84006	.19765	.519	The difference is not significant
Transportation	Machineries	.45267	.19765	.999	The difference is not significant
Transportation	Furniture	.97870	.19765	.179	The difference is not significant
Transportation	Contracting	-.16608	.19765	1.000	The difference is not significant
Transportation	Computer	.76604	.19765	.721	The difference is not significant
Transportation	Chemical	.02605	.19765	1.000	The difference is not significant
Transportation	Food (except sugar)	.75276	.19765	.753	The difference is not significant

6) The comparison of Non-metal minerals industry with other industries: The mean of this industry doesn't have significant difference with other industries.

**Table 11: The results of Tukey post test to compare the Non-metal minerals industry with other industries**

Industry (I)	Industry (J)	Industries difference (I-J)	Standard error	Significance level	Result
Non-metal minerals	Electronic devices	.09026	.19765	1.000	The difference is not significant
Non-metal minerals	Technical and engineering	-.20729	.19765	1.000	The difference is not significant
Non-metal minerals	Oil products	-.11924	.19765	1.000	The difference is not significant
Non-metal minerals	Main metals	-.80802	.19765	.609	The difference is not significant
Non-metal minerals	Transportation	-.68394	.19765	.886	The difference is not significant
Non-metal minerals	Metal minerals	-1.02242	.19765	.112	The difference is not significant
Non-metal minerals	Car	-.73665	.19765	.789	The difference is not significant
Non-metal minerals	Rubber	.09132	.19765	1.000	The difference is not significant
Non-metal minerals	Metal materials	-.18239	.19765	1.000	The difference is not significant
Non-metal minerals	Paper materials	.09665	.19765	1.000	The difference is not significant
Non-metal minerals	Wooden materials	.20483	.19765	1.000	The difference is not significant
Non-metal minerals	Financial	-.54547	.19765	.990	The difference is not significant
Non-metal minerals	Textile	.15613	.19765	1.000	The difference is not significant
Non-metal minerals	Machineries	-.23126	.19765	1.000	The difference is not significant
Non-metal minerals	Furniture	.29476	.19765	1.000	The difference is not significant
Non-metal minerals	Contracting	-.85001	.19765	.490	The difference is not significant
Non-metal minerals	Computer	.08211	.19765	1.000	The difference is not significant
Non-metal minerals	Chemical	-.65788	.19765	.920	The difference is not significant
Non-metal minerals	Food (except sugar)	.06882	.19765	1.000	The difference is not significant

7) The comparison of metal minerals industry with other industries: The mean of this industry was significantly higher than rubber, textile, computer, furniture and food except sugar and it didn't have significant difference with other industries.



**Table 12: The results of Tukey post test to compare the metal minerals industry with other industries**

Industry (I)	Industry (J)	Industries difference (I-J)	Standard error	Significance level	Result
Metal minerals	Electronic devices	1.11268(*)	.19765	.035	The difference is not significant
Metal minerals	Technical and engineering	.81514	.19765	.589	The difference is not significant
Metal minerals	Oil products	.90318	.19765	.345	The difference is not significant
Metal minerals	Main metals	.21441	.19765	1.000	The difference is not significant
Metal minerals	Transportation	.33849	.19765	1.000	The difference is not significant
Metal minerals	Non-metal minerals	1.02242	.19765	.112	The difference is not significant
Metal minerals	Car	.28577	.19765	1.000	The difference is not significant
Metal minerals	Rubber	1.11375(*)	.19765	.035	It is bigger significantly
Metal minerals	Metal materials	.84003	.19765	.519	The difference is not significant
Metal minerals	Paper materials	1.11907(*)	.19765	.032	The difference is not significant
Metal minerals	Wooden materials	1.22725(*)	.19765	.005	The difference is not significant
Metal minerals	Financial	.47696	.19765	.998	The difference is not significant
Metal minerals	Textile	1.17855(*)	.19765	.013	It is bigger significantly
Metal minerals	Machineries	.79116	.19765	.655	The difference is not significant
Metal minerals	Furniture	1.31719(*)	.19765	.001	It is bigger significantly
Metal minerals	Contracting	.17241	.19765	1.000	The difference is not significant
Metal minerals	Computer	1.10453(*)	.19765	.039	It is bigger significantly
Metal minerals	Chemical	.36454	.19765	1.000	The difference is not significant
Metal minerals	Food (except sugar)	1.09125(*)	.19765	.047	It is bigger significantly

8) The comparison of car industry with other industries: The mean of this industry didn't have significant difference with other industries.

**Table 13: The results of Tukey post test to compare the car industry with other industries**

Industry (I)	Industry (J)	Industries difference (I-J)	Standard error	Significance level	Result
Car	Electronic devices	.82690	.19765	.556	The difference is not significant
Car	Technical and engineering	.52936	.19765	.993	The difference is not significant
Car	Oil products	.61741	.19765	.958	The difference is not significant
Car	Main metals	-.07137	.19765	1.000	The difference is not significant
Car	Transportation	.05271	.19765	1.000	The difference is not significant
Car	Non-metal minerals	.73665	.19765	.789	The difference is not significant
Car	Metal minerals	-.28577	.19765	1.000	The difference is not significant
Car	Rubber	.82797	.19765	.553	The difference is not significant
Car	Metal materials	.55426	.19765	.988	The difference is not significant
Car	Paper materials	.83330	.19765	.538	The difference is not significant
Car	Wooden materials	.94148	.19765	.253	The difference is not significant
Car	Financial	.19118	.19765	1.000	The difference is not significant
Car	Textile	.89278	.19765	.372	The difference is not significant
Car	Machineries	.50539	.19765	.996	The difference is not significant
Car	Furniture	1.03141	.19765	.101	The difference is not significant
Car	Contracting	-.11337	.19765	1.000	The difference is not significant
Car	Computer	.81875	.19765	.579	The difference is not significant
Car	Chemical	.07876	.19765	1.000	The difference is not significant
Car	Food (except sugar)	.80547	.19765	.616	The difference is not significant

9) The comparison of rubber industry with other industries: The mean of this industry didn't have significant difference with other industries.

**Table 14: The results of Tukey post test to compare the rubber industry with other industries**

Industry (I)	Industry (J)	Industries difference (I-J)	Standard error	Significance level	Result
Rubber	Electronic devices	-.00107	.19765	1.000	The difference is not significant
Rubber	Technical and engineering	-.29861	.19765	1.000	The difference is not significant
Rubber	Oil products	-.21056	.19765	1.000	The difference is not significant
Rubber	Main metals	-.89934	.19765	.355	The difference is not significant
Rubber	Transportation	-.77526	.19765	.697	The difference is not significant
Rubber	Non-metal minerals	-.09132	.19765	1.000	The difference is not significant
Rubber	Metal minerals	-1.11375(*)	.19765	.035	The difference is not significant
Rubber	Car	-.82797	.19765	.553	The difference is not significant
Rubber	Metal materials	-.27371	.19765	1.000	The difference is not significant
Rubber	Paper materials	.00533	.19765	1.000	The difference is not significant
Rubber	Wooden materials	.11351	.19765	1.000	The difference is not significant
Rubber	Financial	-.63679	.19765	.942	The difference is not significant
Rubber	Textile	.06481	.19765	1.000	The difference is not significant
Rubber	Machineries	-.32259	.19765	1.000	The difference is not significant
Rubber	Furniture	.20344	.19765	1.000	The difference is not significant
Rubber	Contracting	-.94134	.19765	.253	The difference is not significant
Rubber	Computer	-.00922	.19765	1.000	The difference is not significant
Rubber	Chemical	-.74921	.19765	.761	The difference is not significant
Rubber	Food (except sugar)	-.02250	.19765	1.000	The difference is not significant

10) The comparison of metal materials industry with other industries: The mean of this industry didn't have significant difference with other industries.

**Table 15: The results of Tukey post test to compare the metal materials industry with other industries**

Industry (I)	Industry (J)	Industries difference (I-J)	Standard error	Significance level	Result
Metal materials	Electronic devices	.27264	.19765	1.000	The difference is not significant
Metal materials	Technical and engineering	-.02490	.19765	1.000	The difference is not significant
Metal materials	Oil products	.06315	.19765	1.000	The difference is not significant
Metal materials	Main metals	-.62563	.19765	.952	The difference is not significant
Metal materials	Transportation	-.50155	.19765	.997	The difference is not significant
Metal materials	Non-metal minerals	.18239	.19765	1.000	The difference is not significant
Metal materials	Metal minerals	-.84003	.19765	.519	The difference is not significant
Metal materials	Car	-.55426	.19765	.988	The difference is not significant
Metal materials	Rubber	.27371	.19765	1.000	The difference is not significant
Metal materials	Paper materials	.27904	.19765	1.000	The difference is not significant
Metal materials	Wooden materials	.38722	.19765	1.000	The difference is not significant
Metal materials	Financial	-.36308	.19765	1.000	The difference is not significant
Metal materials	Textile	.33852	.19765	1.000	The difference is not significant
Metal materials	Machineries	-.04887	.19765	1.000	The difference is not significant
Metal materials	Furniture	.47715	.19765	.998	The difference is not significant
Metal materials	Contracting	-.66763	.19765	.909	The difference is not significant
Metal materials	Computer	.26449	.19765	1.000	The difference is not significant
Metal materials	Chemical	-.47550	.19765	.998	The difference is not significant
Metal materials	Food (except sugar)	.25121	.19765	1.000	The difference is not significant

11) The comparison of paper materials industry with other industries: The mean of this industry was significantly smaller than metal minerals and it didn't have significant difference with other industries.

**Table 16: The results of Tukey post test to compare the paper materials industry with other industries**

Industry (I)	Industry (J)	Industries difference (I-J)	Standard error	Significance level	Result
Paper materials	Electronic devices	-.00640	.19765	1.000	The difference is not significant
Paper materials	Technical and engineering	-.30394	.19765	1.000	The difference is not significant
Paper materials	Oil products	-.21589	.19765	1.000	The difference is not significant
Paper materials	Main metals	-.90467	.19765	.341	The difference is not significant
Paper materials	Transportation	-.78059	.19765	.684	The difference is not significant
Paper materials	Non-metal minerals	-.09665	.19765	1.000	The difference is not significant
Paper materials	Metal minerals	-1.11907(*)	.19765	.032	It is significantly small
Paper materials	Car	-.83330	.19765	.538	The difference is not significant
Paper materials	Rubber	-.00533	.19765	1.000	The difference is not significant
Paper materials	Paper materials	-.27904	.19765	1.000	The difference is not significant
Paper materials	Wooden materials	.10818	.19765	1.000	The difference is not significant
Paper materials	Financial	-.64212	.19765	.937	The difference is not significant
Paper materials	Textile	.05948	.19765	1.000	The difference is not significant
Paper materials	Machineries	-.32791	.19765	1.000	The difference is not significant
Paper materials	Furniture	.19811	.19765	1.000	The difference is not significant
Paper materials	Contracting	-.94666	.19765	.242	The difference is not significant
Paper materials	Computer	-.01454	.19765	1.000	The difference is not significant
Paper materials	Chemical	-.75454	.19765	.749	The difference is not significant
Paper materials	Food (except sugar)	-.02783	.19765	1.000	The difference is not significant

12) The comparison of wooden materials industry with other industries: The mean of this industry was significantly smaller than metal minerals and it didn't have significant difference with other industries.

**Table 17: The results of Tukey post test to compare the wooden materials industry with other industries**

Industry (I)	Industry (J)	Industries difference (I-J)	Standard error	Significance level	Result
Wooden materials	Electronic devices	-.11457	.19765	1.000	The difference is not significant
Wooden materials	Technical and engineering	-.41212	.19765	1.000	The difference is not significant
Wooden materials	Oil products	-.32407	.19765	1.000	The difference is not significant
Wooden materials	Main metals	-1.01285	.19765	.125	The difference is not significant
Wooden materials	Transportation	-.88876	.19765	.383	The difference is not significant
Wooden materials	Non-metal minerals	-.20483	.19765	1.000	The difference is not significant
Wooden materials	Metal minerals	-1.22725(*)	.19765	.005	It is significantly smaller
Wooden materials	Car	-.94148	.19765	.253	The difference is not significant
Wooden materials	Rubber	-.11351	.19765	1.000	The difference is not significant
Wooden materials	Metal materials	-.38722	.19765	1.000	The difference is not significant
Wooden materials	Paper materials	-.10818	.19765	1.000	The difference is not significant
Wooden materials	Financial	-.75029	.19765	.759	The difference is not significant

Wooden materials	Textile	-.04870	.19765	1.000	The difference is not significant
Wooden materials	Machineries	-.43609	.19765	1.000	The difference is not significant
Wooden materials	Furniture	.08993	.19765	1.000	The difference is not significant
Wooden materials	Contracting	-1.05484	.19765	.076	The difference is not significant
Wooden materials	Computer	-.12272	.19765	1.000	The difference is not significant
Wooden materials	Chemical	-.86271	.19765	.454	The difference is not significant
Wooden materials	Food (except sugar)	-.13601	.19765	1.000	The difference is not significant

13)The comparison of financial industry with other industries: The mean of this industry didn't have significant difference with other industries.

**Table 18: The results of Tukey post test to compare the financial industry with other industries**

Industry (I)	Industry (J)	Industries difference (I-J)	Standard error	Significance level	Result
Financial	Electronic devices	.63572	.19765	.943	The difference is not significant
Financial	Technical and engineering	.33818	.19765	1.000	The difference is not significant
Financial	Oil products	.42623	.19765	1.000	The difference is not significant
Financial	Main metals	-.26255	.19765	1.000	The difference is not significant
Financial	Transportation	-.13847	.19765	1.000	The difference is not significant
Financial	Non-metal minerals	.54547	.19765	.990	The difference is not significant
Financial	Metal minerals	-.47696	.19765	.998	The difference is not significant
Financial	Car	-.19118	.19765	1.000	The difference is not significant
Financial	Rubber	.63679	.19765	.942	The difference is not significant
Financial	Metal materials	.36308	.19765	1.000	The difference is not significant
Financial	Paper materials	.64212	.19765	.937	The difference is not significant
Financial	Wooden materials	.75029	.19765	.759	The difference is not significant
Financial	Textile	.70159	.19765	.858	The difference is not significant
Financial	Machineries	.31420	.19765	1.000	The difference is not significant
Financial	Furniture	.84023	.19765	.518	The difference is not significant
Financial	Contracting	-.30455	.19765	1.000	The difference is not significant
Financial	Computer	.62757	.19765	.950	The difference is not significant
Financial	Chemical	-.11242	.19765	1.000	The difference is not significant
Financial	Food (except sugar)	.61429	.19765	.960	The difference is not significant

14)The comparison of textile industry with other industries: The mean of this industry was significantly smaller than metal minerals and didn't have significant difference with other industries.

**Table 19: The results of Tukey post test to compare the textile industry with other industries**

Industry (I)	Industry (J)	Industries difference (I-J)	Standard error	Significance level	Result
Textile	Electronic devices	-.06587	.19765	1.000	The difference is not significant
Textile	Technical and engineering	-.36341	.19765	1.000	The difference is not significant
Textile	Oil products	-.27537	.19765	1.000	The difference is not significant
Textile	Main metals	-.96415	.19765	.206	The difference is not significant
Textile	Transportation	-.84006	.19765	.519	The difference is not significant
Textile	Non-metal minerals	-.15613	.19765	1.000	The difference is not significant
Textile	Metal minerals	-1.17855(*)	.19765	.013	It is significantly smaller
Textile	Car	-.89278	.19765	.372	The difference is not significant
Textile	Rubber	-.06481	.19765	1.000	The difference is not significant
Textile	Metal materials	-.33852	.19765	1.000	The difference is not significant
Textile	Paper materials	-.05948	.19765	1.000	The difference is not significant
Textile	Wooden materials	.04870	.19765	1.000	The difference is not significant
Textile	Financial	-.70159	.19765	.858	The difference is not significant
Textile	Machineries	-.38739	.19765	1.000	The difference is not significant
Textile	Furniture	.13863	.19765	1.000	The difference is not significant
Textile	Contracting	-1.00614	.19765	.135	The difference is not significant
Textile	Computer	-.07402	.19765	1.000	The difference is not significant
Textile	Chemical	-.81401	.19765	.593	The difference is not significant
Textile	Food (except sugar)	-.08731	.19765	1.000	The difference is not significant

15)The comparison of Machineries industry with other industries: The mean of this industry didn't have significant difference with other industries.

**Table 20: The results of Tukey post test to compare the Machineries industry with other industries**

Industry (I)	Industry (J)	Industries difference (I-J)	Standard error	Significance level	Result
Machineries	Electronic devices	.32152	.19765	1.000	The difference is not significant
Machineries	Technical and engineering	.02398	.19765	1.000	The difference is not significant
Machineries	Oil products	.11202	.19765	1.000	The difference is not significant
Machineries	Main metals	-.57675	.19765	.980	The difference is not significant
Machineries	Transportation	-.45267	.19765	.999	The difference is not significant
Machineries	Non-metal minerals	.23126	.19765	1.000	The difference is not significant
Machineries	Metal minerals	-.79116	.19765	.655	The difference is not significant
Machineries	Car	-.50539	.19765	.996	The difference is not significant
Machineries	Rubber	.32259	.19765	1.000	The difference is not significant
Machineries	Metal materials	.04887	.19765	1.000	The difference is not significant
Machineries	Paper materials	.32791	.19765	1.000	The difference is not significant
Machineries	Wooden materials	.43609	.19765	1.000	The difference is not significant
Machineries	Financial	-.31420	.19765	1.000	The difference is not significant
Machineries	Textile	.38739	.19765	1.000	The difference is not significant
Machineries	Furniture	.52602	.19765	.994	The difference is not significant
Machineries	Contracting	-.61875	.19765	.957	The difference is not significant
Machineries	Computer	.31337	.19765	1.000	The difference is not significant
Machineries	Chemical	-.42662	.19765	1.000	The difference is not significant
Machineries	Food (except sugar)	.30008	.19765	1.000	The difference is not significant

16) The comparison of furniture industry with other industries: The mean of this industry was significantly smaller than metal minerals, contracting and main metals and it didn't have significant difference with other industries.

**Table 21: The results of Tukey post test to compare the furniture industry with other industries**

Industry (I)	Industry (J)	Industries difference (I-J)	Standard error	Significance level	Result
Furniture	Electronic devices	-.20451	.19765	1.000	The difference is not significant
Furniture	Technical and engineering	-.50205	.19765	.997	The difference is not significant
Furniture	Oil products	-.41400	.19765	1.000	The difference is not significant
Furniture	Main metals	-1.10278(*)	.19765	.040	It is significantly smaller
Furniture	Transportation	-.97870	.19765	.179	The difference is not significant
Furniture	Non-metal minerals	-.29476	.19765	1.000	The difference is not significant
Furniture	Metal minerals	-1.31719(*)	.19765	.001	It is significantly smaller
Furniture	Car	-1.03141	.19765	.101	The difference is not significant
Furniture	Rubber	-.20344	.19765	1.000	The difference is not significant
Furniture	Metal materials	-.47715	.19765	.998	The difference is not significant
Furniture	Paper materials	-.19811	.19765	1.000	The difference is not significant
Furniture	Wooden materials	-.08993	.19765	1.000	The difference is not significant
Furniture	Financial	-.84023	.19765	.518	The difference is not significant
Furniture	Textile	-.13863	.19765	1.000	The difference is not significant
Furniture	Machineries	-.52602	.19765	.994	The difference is not significant
Furniture	Contracting	-1.14478(*)	.19765	.022	It is significantly smaller.
Furniture	Computer	-.21266	.19765	1.000	The difference is not significant
Furniture	Chemical	-.95265	.19765	.229	The difference is not significant
Furniture	Food (except sugar)	-.22594	.19765	1.000	The difference is not significant

17) The comparison of contracting industry with other industries: The mean of this industry was significantly bigger than furniture and it didn't have significant difference with other industries.

**Table 22: The results of Tukey post test to compare the contracting industry with other industries**

Industry (I)	Industry (J)	Industries difference (I-J)	Standard error	Significance level	Result
Contracting	Electronic devices	.94027	.19765	.256	The difference is not significant
Contracting	Technical and engineering	.64273	.19765	.937	The difference is not significant
Contracting	Oil products	.73077	.19765	.802	The difference is not significant
Contracting	Main metals	.04200	.19765	1.000	The difference is not significant
Contracting	Transportation	.16608	.19765	1.000	The difference is not significant
Contracting	Non-metal minerals	.85001	.19765	.490	The difference is not significant
Contracting	Metal minerals	-.17241	.19765	1.000	The difference is not significant
Contracting	Car	.11337	.19765	1.000	The difference is not significant
Contracting	Rubber	.94134	.19765	.253	The difference is not significant
Contracting	Metal materials	.66763	.19765	.909	The difference is not significant
Contracting	Paper materials	.94666	.19765	.242	The difference is not significant
Contracting	Wooden materials	1.05484	.19765	.076	The difference is not significant
Contracting	Financial	.30455	.19765	1.000	The difference is not significant
Contracting	Textile	1.00614	.19765	.135	The difference is not significant
Contracting	Machineries	.61875	.19765	.957	The difference is not significant
Contracting	Furniture	1.14478(*)	.19765	.022	It is significantly bigger
Contracting	Computer	.93212	.19765	.274	The difference is not significant
Contracting	Chemical	.19213	.19765	1.000	The difference is not significant
Contracting	Food (except sugar)	.91884	.19765	.306	The difference is not significant

18) The comparison of computer industry with other industries: The mean of this industry was significantly smaller than metal minerals and it didn't have significant difference with other industries.

**Table 23: The results of Tukey post test to compare the computer industry with other industries**

Industry (I)	Industry (J)	Industries difference (I-J)	Standard error	Significance level	Result
Computer	Electronic devices	.00815	.19765	1.000	The difference is not significant
Computer	Technical and engineering	-.28939	.19765	1.000	The difference is not significant
Computer	Oil products	-.20135	.19765	1.000	The difference is not significant
Computer	Main metals	-.89012	.19765	.379	The difference is not significant
Computer	Transportation	-.76604	.19765	.721	The difference is not significant
Computer	Non-metal minerals	-.08211	.19765	1.000	The difference is not significant
Computer	Metal minerals	-1.10453(*)	.19765	.039	It is significantly smaller
Computer	Car	-.81875	.19765	.579	The difference is not significant
Computer	Rubber	.00922	.19765	1.000	The difference is not significant
Computer	Metal materials	-.26449	.19765	1.000	The difference is not significant
Computer	Paper materials	.01454	.19765	1.000	The difference is not significant
Computer	Wooden materials	.12272	.19765	1.000	The difference is not significant
Computer	Financial	-.62757	.19765	.950	The difference is not significant
Computer	Textile	.07402	.19765	1.000	The difference is not significant
Computer	Machineries	-.31337	.19765	1.000	The difference is not significant
Computer	Furniture	.21266	.19765	1.000	The difference is not significant
Computer	Contracting	-.93212	.19765	.274	The difference is not significant
Computer	Chemical	-.73999	.19765	.782	The difference is not significant
Computer	Food (except sugar)	-.01328	.19765	1.000	The difference is not significant

19) The comparison of chemical industry with other industries: The mean of this industry was significantly smaller than metal minerals and it didn't have significant difference with other industries.

**Table 24: The results of Tukey post test to compare the chemical industry with other industries**

Industry (I)	Industry (J)	Industries difference (I-J)	Standard error	Significance level	Result
Chemical	Electronic devices	.74814	.19765	.764	The difference is not significant
Chemical	Technical and engineering	.45060	.19765	.999	The difference is not significant
Chemical	Oil products	.53864	.19765	.991	The difference is not significant
Chemical	Main metals	-.15013	.19765	1.000	The difference is not significant
Chemical	Transportation	-.02605	.19765	1.000	The difference is not significant
Chemical	Non-metal minerals	.65788	.19765	.920	The difference is not significant
Chemical	Metal minerals	-.36454	.19765	1.000	The difference is not significant
Chemical	Car	-.07876	.19765	1.000	The difference is not significant
Chemical	Rubber	.74921	.19765	.761	The difference is not significant
Chemical	Metal materials	.47550	.19765	.998	The difference is not significant
Chemical	Paper materials	.75454	.19765	.749	The difference is not significant
Chemical	Wooden materials	.86271	.19765	.454	The difference is not significant
Chemical	Financial	.11242	.19765	1.000	The difference is not significant
Chemical	Textile	.81401	.19765	.593	The difference is not significant
Chemical	Machineries	.42662	.19765	1.000	The difference is not significant
Chemical	Furniture	.95265	.19765	.229	The difference is not significant
Chemical	Contracting	-.19213	.19765	1.000	The difference is not significant
Chemical	Computer	.73999	.19765	.782	The difference is not significant
Chemical	Food (except sugar)	.72671	.19765	.810	The difference is not significant

20) The comparison of Food (except sugar) industry with other industries: The mean of this industry didn't have significant difference with other industries.

**Table 25: The results of Tukey post test to compare the Food (except sugar) industry with other industries**

Industry (I)	Industry (J)	Industries difference (I-J)	Standard error	Significance level	Result
Food (except sugar)	Electronic devices	.02143	.19765	1.000	The difference is not significant
Food (except sugar)	Technical and engineering	-.27611	.19765	1.000	The difference is not significant
Food (except sugar)	Oil products	-.18806	.19765	1.000	The difference is not significant
Food (except sugar)	Main metals	-.87684	.19765	.415	The difference is not significant
Food (except sugar)	Transportation	-.75276	.19765	.753	The difference is not significant
Food (except sugar)	Non-metal minerals	-.06882	.19765	1.000	The difference is not significant
Food (except sugar)	Metal minerals	-1.09125(*)	.19765	.047	It is significantly smaller
Food (except sugar)	Car	-.80547	.19765	.616	The difference is not significant
Food (except sugar)	Rubber	.02250	.19765	1.000	The difference is not significant
Food (except sugar)	Metal materials	-.25121	.19765	1.000	The difference is not significant
Food (except sugar)	Paper materials	.02783	.19765	1.000	The difference is not significant
Food (except sugar)	Wooden materials	.13601	.19765	1.000	The difference is not significant

Food (except sugar)	Financial	-.61429	.19765	.960	The difference is not significant
Food (except sugar)	Textile	.08731	.19765	1.000	The difference is not significant
Food (except sugar)	Machineries	-.30008	.19765	1.000	The difference is not significant
Food (except sugar)	Furniture	.22594	.19765	1.000	The difference is not significant
Food (except sugar)	Contracting	-.91884	.19765	.306	The difference is not significant
Food (except sugar)	Computer	.01328	.19765	1.000	The difference is not significant
Food (except sugar)	Chemical	-.72671	.19765	.810	The difference is not significant

For two by two comparisons of the industries, Tukey post test was applied. Based on the results of the post test, the compared industries were in six groups.

1) Furniture industries and wooden materials significantly were smaller than financial, chemical, transportation, car, main metals, contracting and metal industries and they didn't have significant difference with textile, paper materials, electronic devices, computer, food except sugar, non-metal minerals, oil products, metal materials, technical and engineering and machineries.

2) Textile, paper materials, rubber, electronic devices, computer and food except sugar industries significantly were smaller than chemical, transportation, car, main metals, contracting and metal minerals industries and they didn't have significant difference with non-metal minerals, oil products, metal materials, technical and engineering, machineries and financial industries.

3) Non-metal minerals industry significantly was smaller than car, main metals and metal minerals industries and didn't have significant difference with

non-metal minerals, oil products, metal materials, technical and engineering, machineries, financial, chemical and transportation.

4) Oil product industry is significantly smaller than contracting and metal minerals and it didn't have significant difference with metal materials, technical and engineering, machineries, financial, chemical and transportation.

5) Metal materials, technical and engineering and machineries industries were significantly smaller than metal minerals industry and they didn't have significant difference with financial, chemical, transportation, car, main metals and contracting industries.

6) Metal minerals industry significantly was higher than furniture, wooden materials, textile, paper materials, rubber, electronic devices, computer, food except sugar, non-metal minerals, oil products, metal materials, technical and engineering and machineries industries and it didn't have significant difference with financial, chemical, transportation, car, main metals and contracting industries.

**Table 26: The results of the comparison after Tukey test among 20 industries**

Industry	N	The classification based on 0.05 level					
		Group 1	Group 2	Group 3	Group 4	Group 5	Group 6
Furniture	84	-.0463					
Wooden materials	84	.0437					
Textile	84	.0924	.0924				
Paper materials	84	.1518	.1518				
Rubber	84	.1572	.1572				
Electronic devices	84	.1582	.1582				
Computer	84	.1664	.1664				
Food (except sugar)	84	.1797	.1797				
Non-metal minerals	84	.2485	.2485	.2485			
Oil products	84	.3677	.3677	.3677	.3677		
Metal materials	84	.4309	.4309	.4309	.4309	.4309	
Technical and engineering	84	.4558	.4558	.4558	.4558	.4558	
Machineries	84	.4798	.4798	.4798	.4798	.4798	
Financial	84		.7940	.7940	.7940	.7940	.7940
Chemical	84			.9064	.9064	.9064	.9064
Transportation	84			.9324	.9324	.9324	.9324
Car	84				.9851	.9851	.9851
Main metals	84				1.0565	1.0565	1.0565
Contracting	84					1.0985	1.0985
metal minerals	84						1.2709
Significance level		.458	.050	.066	.062	.085	.651

## Conclusion

In this study, based on theoretical and conceptual bases, it is assumed that the mean systematic risk of the companies listed in Iran stock market in various

industries with each other had significant difference. To review this issue, the systematic risk of 7 years (2004-2010) of 20 industries was extracted annually and was compared.

The results supported the significant difference of the mean of systematic risk among 20 industries and the details of the results were as following: The mean of electronic devices industry was significantly smaller than metal minerals and it didn't have significant difference with other industries. The mean of technical and engineering industry didn't have significant difference with other industries. The mean of oil product industry didn't have significant difference with other industries. The mean of main metals industry didn't have significant difference with other industries. The mean of transportation industry didn't have significant difference with other industries. The mean of non-metal minerals industry didn't have significant difference with other industries. The mean of metal minerals industry significantly was bigger than rubber, textile, computer, furniture and food except sugar industries and it didn't have significant difference with other industries. The mean of car industry didn't have significant difference with other industries. The mean of rubber industry didn't have significant difference with other industries. The mean of metal materials industry didn't have significant difference with other industries. The mean of paper materials industry significantly was smaller than metal minerals and it didn't have significant difference with other industries. The mean of wooden materials industry was significantly smaller than metal minerals and it didn't have significant difference with other industries. The mean of financial industry didn't have significant difference with other industries. The mean of textile industry was significantly smaller than metal minerals and it didn't have significant difference with other industries. The mean of machineries industry didn't have significant difference with other industries. The mean of furniture industry was significantly smaller than metal minerals, contracting and main metals and it didn't have significant difference with other industries. The mean of contracting industry was significantly bigger than furniture and it didn't have significant difference with other industries. The mean of computer industry was significantly smaller than metal minerals and it didn't have significant difference with other industries. The mean of chemical industry didn't have significant difference with other industries. The mean of food except sugar industry didn't have significant difference with other industries.

The effect of the type of industry on systematic risk of the commercial units is justified based on various conditions of each of the industries. Furniture industry had the lowest systematic risk and metal minerals industry had the highest systematic risk. This condition seems logical based on the conditions of market and government and parliament policies. The security in furniture industry arising from government policy based on limitation on import shows the low risk of this industry. The global crisis and economical stagnation at international level and reduction of price and products export of metal minerals industry can be the major reasons of high systematic risk in this industry.

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