Measuring the Amount of Influencing Factors on Block Premium in Each of the Active Industries in Iran's Capital Market[1]

Vahideh Mousavi Kakhki[2], Mehdi Farazmand[3], Mohammad Yaghoubi[4]

INTRODUCTION
OBJECTIVE

The aim of this research is to provide a model for determining the block share price across various industries in Iran's capital market. While previous studies have identified the factors affecting the block premium, they have not estimated the impact coefficients of these factors-whether positive or negative-across different industries. This research seeks to estimate the impact coefficient of each identified variable on the block premium, based on the findings of past studies, and to examine how the influence of each variable on the block premium differs among industries. Ultimately, this study aims to present a model for determining the block share price in the active sectors of the Tehran Stock Exchange.

METHODOLOGY

The study population consists of companies listed on the Tehran Stock Exchange and the Iran Fara Bourse, covering stock block transactions from 2011 to 2020. The relationships between the research variables were analyzed using EViews and multivariate regression analysis. Based on the model outputs, the research hypotheses were tested, and the impact coefficients on the block premium were estimated. To further examine the differences in the impact of variables on the block premium across different industries and to enhance the accuracy of the findings, the variables were also analyzed using Python. The hypotheses were tested using the model presented in Equation 1:

Equation 1:

$$
\begin{aligned}
stock\ block\ premium \\
= C + \beta_1 \ln Marketcap + \beta_2\ Block\ size + \beta_3\ \ln Cash \\
+ \beta_4 \ln Asset + \beta_5 \ln Revenue + \beta_6\ Debet\ ratio \\
+ \beta_7\ \ln Profit + \beta_8\ D_1 + \beta_9\ D_2 + \beta_{10}\ D_3 + \beta_{11}\ D_4 + \beta_{12}\ D_5 \\
+ \beta_{13}\ D_6 + \beta_{14}\ D_7 + \beta_{15}\ D_8 + \beta_{16}\ D_9 + \beta_{17}\ D_{10} + \beta_{18}\ D_{11} \\
+ \beta_{19}\ D_{12} + \beta_{20}
\end{aligned}
$$

NOTATION

- β: The coefficient that needs to be estimated.
- D: Industries examined in the research.

The goal of the model is to measure the impact of each explanatory variable on block premium and its variation across the examined industries.

FINDINGS

Based on the coefficients obtained from the model and their significance levels, the results indicate a direct relationship between block premium and the variables of block size, cash, assets, and company revenue. Conversely, there is an inverse relationship between block premium and the variables of profit, debt ratio, and company size. Consequently, investors in the block trading market pay special attention to these variables and incorporate them into their decision-making processes. Comparing the significant coefficients reveals that the variables of block size, revenue, assets, and company cash have the highest direct relationships with block premium, in that order. Similarly, the variables of company size, profit, and debt ratio exhibit the highest inverse relationships with block premium, respectively.

Table 1. The results of the hypotheses test in Eviews

Variable	Abbreviation	Coefficient (β)	t-statistic	Significance Level (prob)
Company Size	Market cap	-0/1311	-10/0662	
				0.000
Block Size	Block size	0/4098	9/3819	0/000
Cash	Cash	0/0223	5/9197	0/000
Assets	Asset	0/0525	5/6149	0/000
Revenue	Revenue	0/1119	15/6806	0/000
Debt Ratio	Debt ratio	-0/0107	-8/7442	0/000
Profit	Profit	-0/0402	-6/6442	0/000
Metal Ore Extraction	D1	0/3728	0/3034	0/7621
Oil, Gas Extraction and Related Services	D2	0/9920	0/0350	0/9721
Mass Construction, Real Estate	D3	0/1186	13/049	0/000
Banks and Credit Institutions	D4	-0/0602	-2/4164	0/0171
Insurance and Pension Funds	D5	-0/2288	-10/4023	0/000
Automobile Manufacturing	D6	-0/2182	-10/6660	0/000
Metal Products Manufacturing	D7	-0/1293	-15/5691	0/000
Other Non-Metallic Mineral Products	D8	-0/1457	-15/2579	0/000
Investment	D9	0/1233	0/7893	0/4314
Multi-Industry Companies	D10	0/0907	6/3122	0/000
Electricity, Gas, Steam Supply	D11	0/8994	0/1342	0/8934
Petroleum Products, Coke, Nuclear Fuel	D12	-0/2992	-15/2791	0/000
Basic Metals	D13	-0/2380	-11/5070	0/000
Intercept (Chemical）	C	-0/9513	-8/3154	0/000
F-statistic		9296		
Overall Model Significance Level		0,00		
Durbin-Watson Statistic (D.W)		2/07		
R-squared		0/95		
Adjusted R-squared (Adj. R²)		0/94		

In the following analysis, nonlinear models were employed to examine the data using Python software. The data were analyzed based on the type of industry for all the industries under study. To enhance the model's performance, only industries with more than 10 data points were selected. For this purpose, we utilized Jupyter Notebook and the PyCaret library, which is designed for implementing automated machine learning models. Ultimately, we aimed to address how the impact of each explanatory variable on block premium varies across the different industries under study.

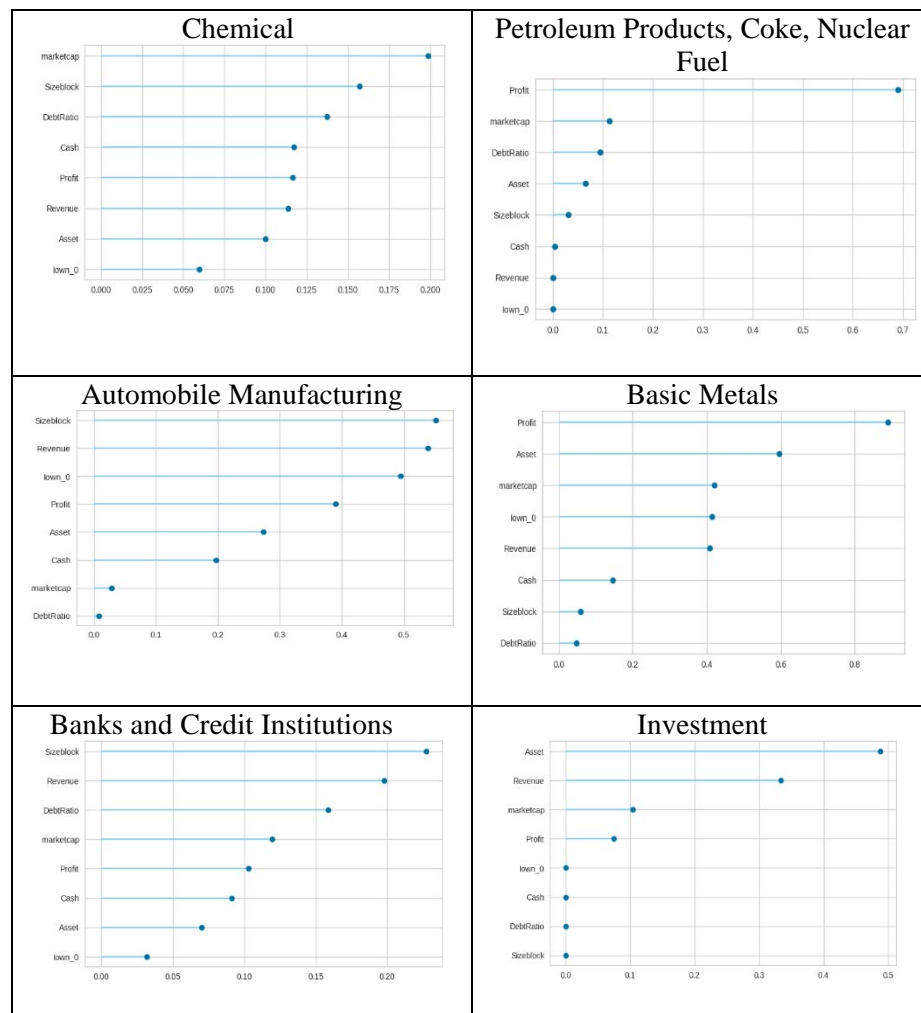The output from the various models is presented in Chart 1.

Chart 1. The output of the models

After running the model, the results showing the differences in the impact of explanatory variables on block premium across the various industries are presented in Table 2.

Table 2. The final results of running the model in Python

Sherholder type	Assets	Cash	Debt Ratio	Block Size	Revenue	Company Size	Profit	Industry
0	8	0	10	3	0	11	69	Petroleum Products, Coke, Nuclear Fuel
6	10	12	13.5	15.5	11	20	12	Chemical
42	60	18	7	8	40.5	42	90	Basic Metals
49.5	38	20	1	57	55	3	39	Automobile Manufacturing
0	49	0	0	0	33	10	8	Investment
3	6.5	9	16	28	19.8	12	10.5	Banks and Credit Institutions

Based on the research findings, in the industries of petroleum products, coke and nuclear fuel, basic metals, chemicals, investment, banks and credit institutions, and automotive manufacturing, block investors pay particular attention to profit, company size, asset amount, and block size. The findings suggest that while investors in each industry focus on company performance and block size, the importance of each variable varies across different sectors. From another perspective, the results of the model can be analyzed by each variable, revealing that profit, company size, and assets hold significant importance in the basic metals industry. In the automotive manufacturing industry, revenue, block size, cash, and type of shareholder are significant, whereas the debt ratio is crucial in the banking and credit institutions industry.

CONCLUSION

This research assessed the impact of various factors on block premiums in different industries active in Iran's capital market. Notably, the innovative aspects of this research include the consideration of both positive and negative block premiums, the measurement of the impact of identified factors, and the exploration of differences in the impact of each factor across various industries using econometric and machine learning methods. Based on the results, it is recommended that block investors prioritize the variables outlined in this research according to

the type of industry when valuing stock blocks. By doing so, they can predict block premiums more accurately.

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