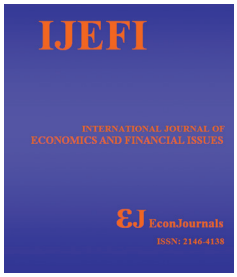

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Relationship between Brand Value, Firm Size and Stock Price Performance: 2nd Generation Panel Data Analysis on Turkish Retail Sector and Sport Clubs

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ABSTRACT

In this study, the effect of brand value and asset size on stock price performance is analyzed through using 2nd generation panel data analysis methods. For this purpose, data of 7 listed companies that operate in the retail and sports sectors whose shares have been traded on the Borsa Istanbul during the 2012-2018 period were used. The existence of cross-sectional dependency among the firms was analyzed by LM_{BC} test. Based on the findings of this test, the existence of cross-sectional dependence among these firms was determined. Stationarity of the series was examined by HK panel unit root test and it was decided that all series were stationary in the first difference. Homogeneity of slope coefficients was examined by Delta test and it was decided that slope coefficients to be estimated in this study were homogeneous. The existence of cointegration relationship between the series was examined by *ECM* cointegration test. According to the results of the cointegration test, it was decided that there is a cointegration relationship between the series in the econometric model. The coefficients included in the econometric model were determined by using OLS_{Adj} method. According to the results of the model, when the brand value of the firms in the sample increased by 1%, the prices of stocks responded to this by increasing by 2.21%. Similarly, when the asset size of these firms increased by 1%, stock prices increased by an average of 3.21%. Therefore, it can be concluded that asset size has more effect on stock price performance than brand value.

Keywords: Stock Price Performance, Brand Value, Asset Size, 2nd Generation Panel Data Analysis
JEL Classifications: E44, H32, L25

1. INTRODUCTION

The stock price performance of the firms is important both for the investors who are trading in the secondary market to generate high returns in the medium and long term, and it is vital for the company to make a positive contribution to the awareness of the firm, to decrease the cost of capital thanks to the sustainable high market value and to generate higher issue revenue from the issuances to be realized in the primary market. Many factors may affect stock price performance. Both macroeconomic and microeconomic factors have a remarkable impact on stock prices. General economic conjuncture, sectoral trends are the types of the macroeconomic factors while the firm's financial performance, managerial ability, brand and market value of the firms are examples for the microeconomic factors.

In the literature, there are many studies related to factors affecting stock price performance. The aim of this study is to question the results of previous studies conducted in the literature and reveal new perspectives. In this study, microeconomic factors which are considered as having an impact on stock prices are used as independent variables. Microeconomic factors are described as asset size and brand value of the firms. According to the results of the analysis, the effect of both factors on stock prices was found to be positive and the results were statistically significant. In the next stages of the study, in order to obtain more comprehensive

results, macro factors that are regarded as having an effect on stock price will be included in the analysis.

2. LITERATURE REVIEW

Ertuğrul (2008) examined the relationship between firm value and stock value. He considered the relationship within the framework of Marx's price-value theory and found out that there was a positive relationship between firm value and stock price performance. He argued that stock prices will be high when firm value is high. As a result, he stated that the market value of the companies should be determined correctly in order not to make systematic mistakes in this subject.

Karaca and Başçı (2011) analyzed the relationship between financial performance and stock price performance. For this purpose, they analyzed the stock price performances of 14 companies in Borsa Istanbul's (BIST)-30 index and the financial ratios of these firms using the data of 2001-2009 periods. According to the analysis results; they found out that net profit margin, basic operating profit margin, asset turnover rate and equity turnover rate positively affected the prices of stocks.

Mousavi and Saidi (2012) examined the relationship between asset size and stock price performance of firms whose shares are traded on Iran's Tehran Stock Exchange in the 2001-2011 periods. They conducted econometric analysis and showed that there was a positive and statistically significant relationship between firm size and stock returns.

Kaya and Öztürk (2015) investigated the effects of firms' financial performance on stock price performance. They used asset profitability, net profit margin and main operating profitability indicators as financial performance criteria. For this purpose, the data of 17 companies operating in the Food, Drink and Tobacco Sector whose shares are traded on BIST were used for the period 2003-2013. They analyzed the relationship between financial performance and stock price with panel cointegration and panel causality tests. According to the results of the cointegration test, they found that there is a cointegration relationship between the return on assets and stock prices. In addition, a one-way causality relationship was determined from the return on assets to stock prices and net profit margin to the stock price. Also bidirectional causality was detected between stock prices and net profit margin.

Duy and Phouc (2016) examined the relationship between firm size and stock returns by using multiple regression analysis method, using data from 160 companies operating in Vietnam for the period 2009-2014, and found a negative relationship between firm size and stock returns.

Kandil et al., (2017) investigated the effects of corporate reputation on stock returns of the firms. For this purpose, data of the 16 companies included in the Most Admired Companies list in Turkey published by Capital Magazine for 2008-2014 was used. In the study, the relationship was analyzed through the Fama French Three Factor Model and it was determined that corporate reputation positively affected the financial performance of the firms.

In the literature, there was no many studies that used the Brand Value as independent variable. Therefore, we believe that this study will make an important contribution to the literature.

3. DATA AND SAMPLE STRUCTURE

In this study, the effects of the brand value (BV, TL) and Asset Size (AS, Million) indicators of listed firms whose shares are traded on Borsa İstanbul on the stock price performance (SP, TL) for the 2012-2018 period were investigated. 3 retail companies (BİM, Migros, Carrefour) and 4 sports clubs (Fenerbahçe, Galatasaray, Beşiktaş and Trabzonspor) were included in the sample. BV data were obtained from The 100 Best Brand Research Report published by BrandFinance corp and AS data were collected from independent audit reports published in www.kap.org.tr. Brand Value data is in US Dollars, but other data is in TL. Therefore Brand Value data were converted to Turkish Lira via average of the selling and buying prices obtained from Central Bank of the Republic of Turkey Electronic Data Dissemination System (EDDS, 2019). Year-end closing prices of stocks were taken as the price performance data and logarithmic conversion was applied to all series. Thus, as a result of the analyzes, the risk of heteroscedasticity problem was reduced and interpretation of the findings became much easier. Descriptive statistics of the data set are presented in Table 1 and the correlation matrix in Table 2.

It is seen that the data in Table 1 are distributed around their averages, in other words, there are no major differences between the minimum and maximum level values. Standard deviations of the series are not high and the number of observations is sufficient.

According to the data in Table 2, it is seen that there is a strong and positive relationship between brand value and stock prices. Similarly, there is a similar relationship between asset size and stock prices, but the degree of relationship is seen to be relatively weaker.

Table 1: Descriptive statistics of the data set

	LnSP	*LnBV*	*LnAS*
Average	1.899793	6.095736	7.19223
Median	1.719189	5.860159	7.150611
Max.	4.465908	8.236437	9.295128
Min.	0.131028	3.919318	4.650589
Standard deviation	1.316826	1.179788	1.245836
Skewness	0.307217	0.229254	−0.08872
Kurtosis	1.719919	2.06057	1.966972
Jarque-Bera	3.780258	2.048924	2.05993
Probability value	0.151052	0.35899	0.35702
Total	85.49069	274.3081	323.6504
Sum of squares of standard deviations	76.29737	61.24357	68.29269
Number of observations	49	49	49

Table 2: Correlation matrix

	LnSP	*LnBV*	*LnAS*
LnSP	1	0.80115	0.687097
LnBV	0.80115	1	0.855995
LnAS	0.687097	0.855995	1

4. METHODOLOGY AND MODEL CONSTRUCTION

In this study, studies of Ertuğrul (2008), Karaca and Başçı (2011), Mousavi and Saidi (2012), Kaya and Öztürk (2015), Duy and Phouc (2016), Kandil et al., (2017) were followed and the following econometric model was established:

$$LnSP_{it} = \beta_{0i} + \beta_{1i} LnBV_{it} + \beta_{2i} LnAS_{it} + \varepsilon_{it} \quad (1)$$

Here,

$LnSP_{it}$; represents the natural logarithm of the stock prices of the firm i at time t

$LnBV_{it}$; represents the natural logarithm of the brand value of the firm i at time t

$LnAS_{it}$; represents the natural logarithm of the asset size of the firm i at time t

ε_{it}; shows a series of error terms eliminated from econometric problems.

Since the increase in brand value and asset size is expected to affect the stock price performance of the firms positively, we predict that β_{1i} and β_{2i} will be higher then 0 as $\beta_{1i}>0$ and $\beta_{2i}>0$.

The existence of the cross-sectional dependence among the firms forming the panel was tested through the deviated corrected LM_{BC} test developed by Baltagi et al. (2012). Whether the slope coefficients in the econometric model are homogeneous throughout the panel was examined by Δ test developed by Pesaran and Yamagata (2008). Stability of the series was analyzed by Hadri and Kurozumi (2012) panel unit root test. The existence of cointegration relationship between the series was examined by *ECM* cointegration test developed by Westerlund (2007a). The coefficients in the econometric model were obtained by using OLS_{Adj} method developed by Westerlund (2007b).

5. EMPIRICAL RESULTS

5.1. Cross-sectional Dependency Test

Since the companies covered in the analysis are companies that operate in the same country and same sector and all are publicly held company which shares are traded on the stock exchange, it is thought that there is a high probability for the existence of cross-sectional dependence among the data of these firms. In other words, a shock occurred in one of these firms is likely to affect others. Therefore, in the first stage of the study, this situation should be tested and if the cross-sectional dependence can be detected among the companies, then the 2nd Generation Panel Data Analysis methods that take into account the cross-sectional dependence should be used. In this study, the existence of horizontal cross-sectional dependence among the firms was tested through the bias-corrected LM (LM_{BC}) developed by Baltagi et al., (2012).

Test statistic used in this test:

$$LM_{BC} = \sqrt{\frac{1}{N(N-1)} \sum_{i=1}^{N-1} \sum_{j=i+1}^{N} (T_i \hat{\rho}_{ij}^2 - 1)} - \frac{1}{2(T-1)} \quad (2)$$

Hypotheses of this test:

H_0: $Cov(\varepsilon_{it}, \varepsilon_{jt})=0$ There is no cross-sectional dependence on the panel

H_1: $Cov(\varepsilon_{it}, \varepsilon_{jt})\neq 0$ There is cross-sectional dependence on the panel.

In this study, LM_{BC} cross-sectional dependence test was performed and the results obtained are presented in Table 3.

According to the findings represented in Table 3, there is a cross-sectional dependence among the firms included in this study. In other words, an important economic shock observed in one of these firms can affect the others. Therefore, it is necessary to use 2nd Generation Panel Data Analysis methods which take this situation into consideration in the following stages of the study.

5.2. Panel Unit Root Test

In the study, the stationarity of the series was examined by Hadri and Kurozumi (2012) (HK) panel unit root test which is one of the 2nd Generation Panel Data Analysis methods. This test panel can take into account the horizontal cross-sectional dependence between companies. Hadri and Kurozumi (2012) developed two different test statistics as Z_A^{SPC} and Z_A^{LA}.

$$Z_A^{SPC} = \frac{1}{\hat{\rho}_{iSPC}^2 T^2} \sum_{t=1}^{T} \left(S_{it}^w\right)^2 \quad (3)$$

$$Z_A^{LA} = \frac{1}{\hat{\rho}_{iLA}^2 T^2} \sum_{t=1}^{T} \left(S_{it}^w\right)^2 \quad (4)$$

Hypotheses of this test:

H_0: The Series is stationary

H_1: The Series is not stationary.

The critical values (probability values) required to test these hypotheses can be generated by the bootstrap loop. In the study HK panel unit root test was performed and the results obtained are presented in Table 4.

As seen in Table 4, *LnHSP* and *LnBV* series are stationary according to Z_A^{SPC}, they are not found as stationary according to Z_A^{LA} test. However, all series are stable in the first difference. Therefore, it was decided that all series are I (1).

5.3. Homogeneity Test

Whether the slope coefficients ($\beta_{1i} ve \beta_{2i}$) in the equation (1) are homogeneous in the whole panel can be examined by Delta (Δ) test developed by Pesaran and Yamagata (2008). Pesaran and Yamagata (2008) developed two different test statistics here:

Table 3: Cross-sectional dependency test results

	LM_{BC} test statistics	LM_{BC} test probability value
LnSP	1.06	0.28
LnBV	3.94***	0.00
LnAS	11.38***	0.00

***indicates the presence of cross-sectional dependence among firms at a significance level of 1% in the relevant series

Table 4: HK panel unit root test results

	Original values		First differences	
	Z_A^{SPC}	Z_A^{LA}	Z_A^{SPC}	Z_A^{LA}
LnSP	0.6362*** (0.2623)	29.1052 (0.00)	−1.0995*** (0.8642)	−0.9928*** (0.8396)
LnBV	−2.2672*** (0.9883)	28.3535 (0.00)	−0.0761*** (0.5303)	−0.5615*** (0.7128)
LnAS	14.8537 (0.0000)	35.1062 (0.0000)	−1.1858*** (0.8821)	−0.2519*** (0.5994)

The critical values in parentheses are obtained with 1000 iterations in the bootstrap. *** indicates that the series is stationary at 1% significance level

$$\hat{\Delta} = \sqrt{N}\left(\frac{N^{-1}\overline{S} - k}{2k}\right) \quad (5)$$

$$\hat{\Delta}_{adj} = \sqrt{N}\left(\frac{N^{-1}\overline{S} - k}{v(T,k)}\right) \quad (6)$$

$\hat{\Delta}$ test in large samples and $\hat{\Delta}_{adj}$ test in relatively small ones can produce more efficient results (Pesaran and Yamagata, 2008. p. 72-3).

Hypotheses of this test:
H_0: $\beta_i=\beta$ The slope coefficients are homogeneous
H_1: $\beta_i\neq\beta$ The slope coefficients are not homogeneous.

In this study, Delta (Δ) tests developed by Pesaran and Yamagata (2008) are performed and the results are presented in Table 5.

According to the results in Table 5, the slope coefficients to be estimated in this study are homogeneous. Based on these findings, it can be stated that comments for the overall panel are valid.

5.4. Panel Cointegration Test

Since the series are not stationary at the original level values, it is necessary to test the existence of cointegration relationship between the series in the model before proceeding to the regression analysis. In this study, the existence of the cointegration relationship between the series was examined by cointegration test based on Error Correction Model (ECM) developed by Westerlund (2007a). This test is one of the 2nd Generation Panel Data Analysis methods that can take into account the existence of cross-sectional dependence among the firms in the panel. Westerlund (2007a: 717) developed two different test statistics in this test:

$$G_\tau = \frac{1}{N}\sum_{i=1}^{N}\frac{\hat{\alpha}_i}{SE(\hat{\alpha}_i)} \quad (7)$$

$$G_\alpha = \frac{1}{N}\sum_{i=1}^{N}\frac{T\hat{\alpha}_i}{SE(1)} \quad (8)$$

Hypotheses of this test:
H_0:There is no cointegration between series
H_1:There is cointegration between series.

The critical values (probability values) required to test these hypotheses can be generated by the bootstrap loop. In this study, the existence of cointegration relationship between the series was tested with Westerlund (2007a) method and the results obtained are presented in Table 6.

Table 5: Homogeneity Test Results

	Test Statistics	Probability Value
$\hat{\Delta}$	1.323*	0.093
$\hat{\Delta}_{adj}$	1.871**	0.031

* ve**; eğim katsayılarının sırasıyla %10 ve %5 anlamlılık düzeyinde homojen olduğunu göstermektedir

Table 6: Cointegration test results

	Test statistics	Probability value
$G_{\hat{o}}$	−5.239***	0.000
$G_{\acute{a}}$	−9.329***	0.000

The critical values in parentheses are obtained with 1000 iterations in the bootstrap. *** indicates that there is cointegration in the relevant series at the % 1 significance level

Table 7: Panel regression analysis results

	Coefficient	t-statistic
LnBV	2.21***	2.87
LnAS	3.21**	2.15

t statistic table values are 1.64, 1.96 ve 2.58 for the 10%, 5% and% 1 significance levels rescpectively. *** and ** indicate that the relevant coefficient is reliable at 1% and 5% significance level, respectively

According to the results in Table 6, there is a cointegration relationship between the series. In this case, spurious regression problem will not be encountered in panel regression analyzes with original level values of these series. In other words, the findings will be reliable.

5.5. Panel Regression Analysis

The coefficients in the model were estimated by using Bias Adjusted OLS Estimator (OLS_{Adj}) method developed by Westerlund (2007b) by correcting the deviation of Cup-Fm method developed by Bai and Kao (2006). This method considers the cross-sectional dependence over the common factors in the series and takes into account the internality. It is a robust estimation method to autocorrelation and heteroscedasticity. The coefficients in the models were estimated by using Westerlund (2007b) OLS_{Adj} method and the obtained results are presented in Table 7.

According to the findings shown in Table 7 positive and statistically significant relationship was observed between stock prices and brand value and asset size of the sample firms for the 2012-2018 period. When the brand value of firms increased by 1%, stocks increased by 2.21% on average. Similarly, when firms' total

asset size increased by 1%, stock prices increased by an average of 3.21%. These results show that the brand values of firms are important determinants of stock prices.

6. CONCLUSIONS AND RECOMMENDATIONS

In this study, the effects of the brand value and asset size on stock price performance of the firms were investigated. Our sample is based on two sectors retail and sport respectively. In retail sector 3 firms and in sport sector 4 firms are included in the sample. All of the sampling companies are publicly traded. All companies whose brand value data can be accessed for the period 2012-2018 are included in the sample. In the study, 2nd Generation Panel Data Analysis Methods were used. The existence of cross-sectional dependence among the firms constituting the panel was tested with the bias-corrected LM (LM_{BC}) developed by Baltagi et al. (2012) and it was decided that there was a cross-sectional dependence among the firms included in the study. Therefore, it was necessary to conduct 2nd Generation Panel Data Analysis Methods.

In the study, the stationarity of the series was examined by Hadri and Kurozumi (2012) panel unit root test, which is one of the 2nd Generation Panel Data Analysis methods, and it was decided that all series were stationary in their first differences in other words all series are I(1). Whether the slope coefficients ($\beta_{1i} ve \beta_{2i}$) in the equation (1) are homogeneous in the whole panel was examined by Delta (Δ) test developed by Pesaran and Yamagata (2008). According to results of this test it was determined that the slope coefficients to be estimated in this study are homogeneous. Based on this finding, it is available to conclude that comments for the overall panel will be valid.

The existence of the cointegration relationship between the series was investigated by Westerlund (2007a) *ECM* cointegration test. According to the results of the test, in the econometric model, the existence of cointegration relationship between the series was determined. Therefore, it was decided that the panel regression analysis to be performed with the original level values of these series would not be confronted with spurious regression problem and the results of the regression analysis would be reliable.

The coefficients in the econometric model were determined by Westerlund (2007b) OLS_{Adj} method. According to the results of the analysis, the stock prices of the firms in the sample increased by 2.21% on average when the brand value of the firms increased by 1% and by 3.21% on average when the asset size increased by 1%.

These findings can be considered as very important in terms of indicating that brand value and asset size indicators are important determinants of stock price performance. The results obtained are consistent with our expectations and findings of Mousavi and Saidi (2012) study. The positive relationship determined between asset size and stock returns in this study is the opposite finding to Duy and Phouc (2016) in the literature.

Based on the findings of this study, it can be stated that the stock price performances of the firms are significantly affected by the brand values and asset sizes of the firms. Therefore, it can be expressed that individual and institutional investors, who are in the process of creating portfolio and making adjustments in their portfolios, should also pay attention to these characteristics of firms. On the other hand, it can be concluded that it will be beneficial for companies that want to have sustainable high stock price performance in domestic or international capital markets foreign stock exchanges, paying special attention to brand value subject.

Based on result of this study, Turkish firms included in the sample should change their management structure from family-owned business towards professional approach, should establish long-term mission and vision plans efficiently and work with professional managers about this aim. For this purpose, performing offerings both in local and international capital markets, taking actions to reduce cost of capital and regarding institutionalization process crucial are required steps for the companies.

This situation is also expected to increase tax and social security premium revenues of the governments. For this reason, it will be beneficial both for the companies and for the macro economy to provide free support and training services to the companies that tend to act like local and family business, about accessing external financial resources and gaining a corporate and professional identity. Today, despite the presence of thousands of companies in Turkey, the numbers of listed companies traded stock exchange in as of June 2019 are only 514. It is thought that increasing this number will benefit both the firms and the national economy.

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