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Relationship between the BIST Food and Beverage Index and the Stock Values of Coca-Cola İçecek Company

Nigar HUSEYNLI *(https://orcid.org/0000-0001-7817-6485), Azerbaijan State University of Economics, Azerbaijan; nigar.f.huseynli@gmail.com*

Bahman HUSEYNLI *(https://orcid.org/0000-0001-8139-3712), Azerbaijan State University of Economics, Azerbaijan Public Employment Service, Azerbaijan; bahmanhuseynli@gmail.com*

BIST Yiyecek İçecek Endeksi ile Coca-Cola İçecek Anonim Şirketinin Hisse Senedi Değerleri Arasındaki İlişki

Abstract

The study aims to examine the relationship between BIST Food and Beverage Index and Coca-Cola İçecek stock values in Turkey. The Granger method was used to measure the variables in the study, including daily data from the 12th of September 2012 to the 12th of September 2022. The results revealed a one-sided relationship between the BIST Food and Beverage Index and the stock values of Coca-Cola İçecek company. In other words, the increase or decrease in the value of the stocks of this company affects the BIST Food and Beverage Index values.

Keywords : Food and Beverage Index, Stock Values, Brand Performance, Coca-Cola İçecek Company, BIST.

JEL Classification Codes : L66, O16, C58, D53.

Öz

Çalışma, Türkiye'de BİST Gıda ve İçecek Endeksi ile Coca-Cola İçecek şirketinin hisse senedi değerleri arasındaki ilişkiyi incelemeyi amaçlamaktadır. 12 Eylül 2012'den 12 Eylül 2022'ye kadar olan günlük verileri içeren çalışmada değişkenleri ölçmek için Granger yöntemi kullanılmıştır. Çalışmanın sonucunda, BİST Yiyecek İçecek Endeksi ile Coca-Cola İçecek şirketinin hisse senedi değerleri arasında tek yönlü bir ilişki olduğu görülmüştür. Yani bu şirketin hisse senetlerinin değerindeki artış veya azalış BİST Yiyecek İçecek Endeksi değerlerini etkilemektedir.

Anahtar Sözcükler : Yiyecek ve İçecek Endeksi, Hisse Senedi Değerleri, Marka Performansı, Coca-Cola Şirketi, BİST.

1. Introduction

The primary purpose of businesses is to maximise the value of the firm. Valuable companies and brands offer value not only to their shareholders but also to their countries and customers. In international capital markets, valuable brands are evaluated based on different characteristics. Among these, there are also sectoral and country-based evaluations.

It will not be rational for investors to buy a company's stock that is not recognised in foreign exchange, and it will not be a preferred method for companies that want to go public. For this reason, the stock issue by a company known in the market by issuing goods or services by registering on the stock exchange gives confidence to investors (Aksoy & Dayı, 2019). The depth and complexity of financial markets are increasing, and the interaction of markets with each other increases in parallel with rapid technological developments (Guliyeva, 2016). The primary purpose of financial management is to increase the welfare of business owners by maximising profitability. Profitability is a fundamental concept for companies in investment decisions, financing decisions and performance measurement. Before investing, companies must decide whether the investment will be financed with debt or equity (Dizgil, 2019). The ability of enterprises to continue their existence, to be profitable, efficient, and competitive with their competitors is closely related to the performance of the enterprises. One of the most basic indicators of business performance is financial performance (Uygurtürk & Yılkan, 2020).

The positive relationship between ownership concentration and firm profitability revealed by Berle and Means (1932) has been discussed and researched in academic circles over the following years. In a study by Şahin, Konak and Karaca (2017), an Event Study was conducted by analysing companies' stocks in the BIST Food, Beverage, and BIST Tourism Indices. As a result of the study, it was observed that the companies listed in the BIST Food and Beverage Index generally reacted negatively to the event, while the companies included in the BIST Tourism Index exhibited positive AR values in the post-event period. In a study conducted by Gümüş and Yıldırım (2022), the financial situation of the companies in the food and beverage and tobacco sector in BIST Istanbul between the years 2016-2020 was compared with the combined ratio analysis method for the asset profitability and equity efficiency of the enterprises and commented on the company that manages it.

The enterprises' primary objective is to maximise their partners' present wealth, in other words, to maximise the firm's value. Financially, the value of a firm is related to the relationship between the number of stocks owned by that firm and the market price of these stocks. There are studies of interest. In the literature with shares by Ko, Lee and Yun (1997), Bahmani-Oskooee and Sohrabian (1992), Dale and Jithendranathan (2001), Alaganar and Bhar (2002), Parlakkaya and Kahraman (2017), Aktaş and Avşar (2021).

Investors use multiple sources of information to maximise their returns on the financial instruments they invest in. One of them is the sector indices in the markets and the

ranking of the companies in these indices. Now businesses desire to have valuable brands. Because a valuable brand means a solid and profitable brand. In the literature, there are studies on the relationship between stock value and brand return. Sayılgan and Süslü (2011), Ayaydın and Dağlı (2012), Kaderli and Başkaya (2012), İbicioğlu (2012), Şendoğdu (2014), Sarı (2014), Sevinç (2014), Kaya and Öztürk (2015), Belen and an example of this is the work done by Karamelikli (2016).

Along with these, this study aims to examine the stock values of Coca-Cola İçecek, a valuable brand with the BIST Food and Beverage Index in Turkey, because fluctuations and instability in food prices can closely affect the financial performance of businesses operating in the food sector (Yılmaz, 2022). In the literature, Haniffa and Hudaib (2006), Almajali and Alamro (2012), Konak and Kendirli (2015), Kaya and Öztürk (2015), Kaya and Coşkun (2016), Cengiz and Püskül (2016), about BIST Food and Beverage Index, Durmuskaya (2016), Dizgil (2019), Özçelik and Avcı Öztürk (2019), Bardi (2020), Levent (2020), Uygurtürk and Yılkan (2020), Amber, Karademir and Evci (2021), Şahin and Alaybeyoğlu (2021) There are studies by Dallı and Uğur (2022) and Yılmaz (2022). In this study, based on the daily data of the 2012-2022 periods, the relationship between the BIST Food and Beverage Index in Turkey and the stock values of Coca-Cola İçecek has been examined.

2. Theoretical Background

2.1. Stock

Since stock prices are extremely sensitive to economic and political developments, they are affected by movements in both exchange rates and other macroeconomic factors (Bahmani-Oskooee & Sohrabian, 1992). Ko, Lee, and Yun (1997) tested the effect of being listed on a foreign stock exchange on the company's value, stock price and trading volume by using the data of 24 Japanese companies traded on American stock exchanges in the GARCH model. Registering in the American stock exchanges had a positive effect on the value of the company, but it was found that there was no statistically abnormal return.

Dale and Jithendranathan (2001) determined that the returns of stocks traded in national and foreign stock markets exhibit a parallel performance. Alaganar and Bhar (2002) examined the effect of information flow and transaction volume on stock value under external shocks. It has been determined that there is a one-way relationship between the stock price and the stock market index, from the American to the Australian stock markets.

In a study conducted by Parlakkaya and Kahraman (2017), the degree of disclosure of stock prices with companies was determined with the data set of 77 companies in the ISE-100 index between 2012 and 2015. Aktaş and Avşar (2021) examined the relationship between the images and stock performances of sports clubs traded in BIST.

2.2. Food and Beverage

In a study by Haniffa and Hudaib (2006), the factors affecting the profitability of companies operating in Malaysia between 1996-2000 were investigated. The relationship between the financial structure leverage ratio and profitability was examined. As a result of the study, they determined that leverage ratio has a negative effect on firm profitability. In a study by Almajali and Alamro (2012), the factors affecting the financial performance of 25 insurance companies whose shares are traded on the Jordanian stock exchange were examined, and multiple linear regression analysis was performed using the data set of 2002-2007. As a result of the study, it has been revealed that these variables positively affect firm profitability.

Konak and Kendirli's (2015) study examined the relationship between the shareholding structures and firm performances of companies traded in the BIST Food and Beverage Index during 2007-2012. As a result of the study, when the RAO and ROE performance criteria were considered, although there was a statistically significant and negative relationship between the ownership structure and the Tobins' q criterion, the result was not statistically significant. A study by Kaya and Öztürk (2015) analysed the relationship between the accounting profits of companies operating in the BIST Food, Beverage, and Tobacco Industry between 2000-2013 and their stock prices.

In a study by Kaya and Coşkun (2016), the efficiency of 17 businesses in the Food, Beverage and Tobacco sector was measured using five input and two output variables. As a result of the study, while two firms were active in the whole period, no firm was found inactive in the entire period. In their research, Cengiz and Püskül (2016) tried determining the profitability ratios related to stock returns. As a result of the study, it was determined that the increase in the return on equity and the gross sales margin caused a rise in the stock returns, and the increase in the operating profit margin caused a decrease in the stock prices and revealed the relationship between profitability and stock returns. In a study conducted by Durmuskaya (2016), the relationship between air temperatures and Borsa Istanbul Food and Beverage Index was tried to be revealed by using the daily average air temperature data and the every day closing prices of the Borsa Istanbul Food and Beverage Index between August 2013 and November 2015 throughout Turkey.

In a study conducted by Özçelik and Avcı Öztürk (2019), based on 3-year data of 22 companies operating in the BIST Food and Beverage Index between 2015-2017, 3 input and four output variables were selected, and analyses were made with CCR and BCC models, which are data envelopment analysis models has been completed. Dizgil's (2019) Panel data analysis was conducted using the 2009-2017 financial table data of 21 companies whose shares are traded in the BIST Food and Beverage Index. As a result of the study, it was determined that the variables of return on equity, Net working capital, short-term debt ratio, long-term debt ratio and average collection period of receivables in model1 and model2 significantly affect the economic profitability ratio and return on assets ratio.

In a study by Uygurtürk and Yılkan (2020), the cash flow-oriented financial performances of businesses traded in the food and beverage sector in Borsa Istanbul during the 2013-2017 period were measured with TOPSIS and ARAS methods. In a study by Bardi (2020), company activities were determined by data envelopment analysis (DEA) of 22 companies within the scope of the Food and Beverage Index registered in BIST. Data mining techniques selected important internal variables or variables affecting company activities.

In a study conducted by Levent (2020), the performance of the Borsa İstanbul Food and Beverage Index (XGIDA) and the companies in this index was examined using comparative analysis and trend analysis methods with Borsa İstanbul reference indices. It was found that 11 companies were active in 2014, 9 companies in 2015, 17 in 2016, 7 in 2017 and 11 in 2018. As a result of the trend analysis, it was determined that the XGIDA index performed better than other indices during the research period. However, it was found that there were significant value losses in all indices, including the XGIDA index, in the first phase of the epidemic.

In a study conducted by Kehribar, Karademir and Evci (2021), the financial performance of the companies in the Borsa Istanbul Food and Beverage (XGIDA) index during the pandemic period was evaluated. As a result of the study, it was determined that the most critical criterion, according to the entropy method, was Cash Ratio, and the least important measure was the Return on Assets Ratio. A study by Şahin and Alaybeyoğlu (2021) examined the relationship between oil and food prices and the industrial sector and food sector stock price indices traded in Borsa Istanbul using the Johansen cointegration and Vector Error Correction Model (VECM).

In a study by Dallı and Uğur (2022), the weak form of the BIST Food and Beverage Index was analysed by considering the monthly closing prices for November 2019-September 2021. In a study by Yılmaz (2022), the asymmetrical relationship between the BIST Food and Beverage Index and the exchange rate in Turkey was analysed using monthly data for 2005:M1-2021:M10.

2.3. Studies Between Stock and Brand Performance

It is increasingly recognised that stock returns have a predictable component (Porta, 1996). The value of a business is generally perceived as the ability of the business to generate cash flows in the future. Parties interested in business value estimate future cash flows using information obtained from financial statements, newspapers, business press releases and other available information sources. However, various parties make financial forecasts, including shareholders, investors and credit institutions (Martikainen & Puttonen, 1993).

Brands are the most valuable assets of businesses. Brand image is consumers' thoughts about the brand and is one of the factors affecting their purchasing intentions (Huseynli-Mammadova, 2022). The fact that a brand is considered with a positive image by consumers affects the value of this brand. On the other hand, this value affects the purchase

of business shares by the shareholders and, therefore, the valuation of the company's stocks. This is precisely what finance and marketing have in common regarding business management.

Sayılgan and Süslü (2011) examined the effect of macroeconomic factors on stock returns in developing countries with balanced panel data analysis. Ayaydın and Dağlı (2012) determined the macroeconomic variables that affected the return of stocks in emerging markets and analysed the relationship between stock returns and these variables. As a result of the study, stock returns in emerging markets samples were positively affected by the S&P 500 index: exchange rate, the 1997-1998 East Asian Crisis and the 2008 Global Financial Crisis.

Kaderli and Başkaya (2012) demonstrated the effect of dividend distribution announcements in publicly traded companies on the rate of return of the relevant company using the event study method. İbicioğlu (2012) examined the effect of foreign residents' stock investments in BIST on sectoral indices.

Using a linear regression model, Şendoğdu (2014) determined the correlation between customer satisfaction and loyalty. In Sarı's (2014) study, regression models were applied to the net and gross returns of BIST100 A category stocks. In a study by Sevinç (2014), using Arbitrage Pricing Model for Turkey, macroeconomic variables (BIST-100 index, M2 money supply, current account balance, exchange rate basket, inflation rate, deposit interest rate, gold prices, export-import coverage ratio, examined the relationship between industrial production index and capacity utilisation rate) and stock returns. As a result of the study, it has been determined that the effects of these variables on stock returns (BIST-30) are significant, and Arbitrage Pricing Model can select stock returns.

Equities provide capital gains and dividend income to investors. For this reason, firm profits are an important factor affecting the investment decisions of stock investors and the stock price (Kaya & Öztürk, 2015). Belen and Karamelikli's (2016) study examined the relationship between Turkey's stock returns and exchange rates. As a result of the study, it has been revealed that there is cointegration between the BIST 100 Index and the US dollar exchange rate in Turkey by using the ARDL cointegration approach.

3. Methodology

3.1. Purpose

As a result of increasing capital flows between international financial markets, it is important to determine whether there is a relationship between stock markets and brand values in these markets. From this point of view, this study aims to measure the relationship between the BIST Food and Beverage Index in Turkey and the stock values of Coca-Cola İçecek. This brand has said its word in the beverage industry.

3.2. Data Set

This study measures the relationship between BIST food and beverage index and Coca-Cola İçecek stock. The analysis was made with the data obtained from the website of <ivesting.com.> Values based daily show their effect on getting more robust results. The data covers the period from 12th September 2012 to 12th September 2022. The Granger method was chosen to measure causality. Before proceeding to Granger analysis, tests such as ADF and VAR model were also applied.

Studies have been conducted in the literature on analysing companies in BIST on a sectoral basis (Aydemir et al., 2012; Kaya & Öztürk, 2015). In this context, the selected indices and sectors differ regarding the number of companies and the periods in which the study's data set was created.

3.3. Analysis

The study's primary purpose is to measure the relationship between the stock values of the Coca-Cola İçecek company operating in Turkey and the BIST Food and Beverage Index values from the 12th of September 2012 to the 12th of September 2022 periods. The data set used in the analysis was collected daily. The currency used in the study is the US dollar. A series of assumption tests were also performed before the research in the Granger method analysis.

The Granger causality test, developed by Granger (1964, 1969) and produced by Hamilton (1994), was used to determine the direction of causality among the variables. In Granger causality, the direction of the relationship between two variables, such as X and Y, is investigated. Suppose the current value of Y can be better predicted by the importance of the past period rather than the present value of the variable X. Granger causality from the variable X to the variable Y can be mentioned (Charemza & Deadman, 1993). Equations (1) and (2) are applied to determine the direction of causality:

$$Y_t = \sum_{i=1}^{n} \alpha_i Y_{t-i} + \sum_{i=1}^{n} \beta_i X_{t-i} + \mu_{1t} \quad (1)$$

$$X_t = \sum_{i=1}^{n} \alpha_i X_{t-i} + \sum_{i=1}^{n} \beta_i Y_{T-\text{i}} + \mu_{2t} \quad (2)$$

"EViews 10" analysis program was used to implement the analysis part of the study. The daily price movements regarding the data set used in the study and the change in this data set are given in the figures and tables below.

Figure: 1
10-year Dynamics of The Stock Index Prices of Coca-Cola İçecek Company

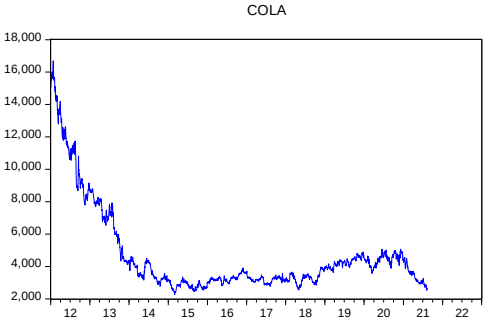
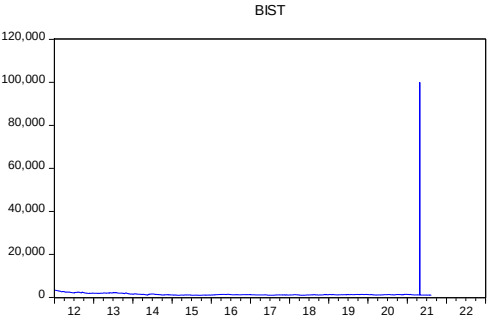


Figure: 2
10-year Dynamics of The BIST Food Beverage Index Values



4. Analyses and Results

When working with time series, one of the different types of analysis, attention should be paid to the integration degrees of the variables to be used. The degree of integration of the secondary variables is important for the research. Extended Dickey-Fuller (ADF) unit root tests are the most widely accepted method for measuring degrees of integration. In this study, Dickey-Fuller (ADF) method was used to measure the integrated degrees of the data. According to the stationarity test results, it was determined that both variables were stationary in order of level. The fact that the T statistics values are less than the critical test values and, at the same time, the probability values are less than 0.05 indicate that the data is stationary. In this case, the H_1 hypothesis is accepted for this test.

Table: 1
Level Values of Series

		BIST Food and Beverage Index		Coca-Cola İçecek Stock Price	
		t-statistics	Possibility	t-statistics	Possibility
ADF Testing Statistics		-48.05374	0.0001	-4.384519	0.0003
Test Critical Values	%1	-3.432764		-3.432765	
	%5	-2.862492		-2.862493	
	%10	-2.567322		-2.567322	

As a result of a series of tests applied to the data set, it was determined that the data were stationary in the same order. Then, the VAR model was established for the data set. With the help of Akaike (AIC), LL, LR, FBE, SC and HQ information criteria, appropriate lag numbers were determined for this data set. Table 2 shows the results of the appropriate delay numbers. Which line has the higher number of stars; the appropriate delay length is at that level. As can be seen from the table, the appropriate lag length was determined as one in this study.

Table: 2
Appropriate Delay Length

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-45763.30	NA	2.73e+13	36.61224	36.61690	36.61393
1	-37896.17	15715.38	5.05e+10*	30.32174*	30.33572*	30.32681*
2	-37895.72	0.893199	5.07e+10	30.32458	30.34788	30.33304
3	-37895.25	0.945349	5.08e+10	30.32740	30.36001	30.33924
4	-37887.25	15.94315	5.07e+10	30.32420	30.36613	30.33942
5	-37887.11	0.286342	5.08e+10	30.32728	30.37854	30.34589
6	-37886.15	1.907949	5.09e+10	30.32972	30.39029	30.35171
7	-37880.76	10.71568*	5.09e+10	30.32861	30.39849	30.35398
8	-37879.89	1.719257	5.10e+10	30.33111	30.41032	30.35987

** Indicates the appropriate lag length for the relevant test.*

Before proceeding to the Granger method, the last step for analysis, a series of assumption tests were conducted. The causality results regarding the BIST food and food index and the stock index prices of the Coca-Cola İçecek company are shown in Table 3.

Table: 3
Granger Causality Test

Hypotheses	F-value	Probability Value (p)	Decision at a 5% significance level
BIST Food Beverage index is the reason for the stock index value of The Coca-Cola İçecek company	0.223215	0.8944	is rejected
The stock index value of the Coca-Cola İçecek company is the reason for The BIST Food Beverage index value.	90.60723	0.0000	acceptable

In addition to the Granger causality analysis, it was determined that the correlation between the variables was approximately 20% due to the correlation test.

Table: 4
The Result of The Correlation Test

	Stock Value	Price
Stock Value	1	0.197
Price	0.197	1

In the study, the relationship between the BIST Food and Beverage Index and the stock values of Coca-Cola İçecek company, which operates in this sector and has a significant share in the beverage sector, has been analysed. Daily data for the period 2012:M9 and 2022:M9 were used in the study. The Granger method was chosen for analysis. According to the results of the Granger analysis, a unilateral causality relationship was found between these variables. According to the results of the study, the stock values of the Coca-Cola İçecek company are the Granger cause of the BIST Food and Beverage Index. In other words, this company's stock value change affects the BIST Food and Beverage Index values.

5. Discussion and Conclusion

The food and beverage industry has been a source of economic development worldwide. The food and beverage industry is a sector that provides the dynamism of economic development with its backward and forward connections. The food and beverage sector is a sub-sector of the manufacturing industry. For these reasons, the food and beverage sector has become indispensable in almost every country. They are important for the market structure of the countries in which they are located.

In this study, using the time series, the relationship between the BIST Food and Beverage Index and the stock values of the Coca-Cola İçecek company, which is important in this sector for Turkey, was measured in 10 years in line with daily data. The study's primary purpose is to determine whether there is a relationship between these variables. In this context, the BIST Food and Beverage Index and the stock values of Coca-Cola İçecek company were analysed. In the analysis made by applying the Granger method, it was found that there is a one-sided causality relationship between the data.

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