

# Analysis of Micro and Macro Factors Affecting Stock Returns: An Application on BIST Manufacturing Sector

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## Abstract

This study analyses the micro and macro factors affecting the stock returns of manufacturing companies listed on BIST in Turkiye. While examining micro factors, the effects of variables such as operating cash flow, profitability and liquidity on stock returns are analysed. As a result of the findings of the study, it was determined that cash flow from operations and indebtedness ratios have a negative effect on stock returns, while current ratio and gross profit margin have a positive effect. In macro factors, variables such as exchange rate, interest rates, inflation expectation and finally industrial capacity ratios were used. As a result of the findings, consumer price index and interest rates have a negative effect on stock returns, while inflation expectation and exchange rate have a positive effect.

**Keywords:** Stock Returns, Macro and Micro Factors, Borsa Istanbul (BIST), Regression Analysis

## Introduction

Recently, especially with the development of technology, the world economy has experienced a significant growth. The manufacturing sector, which is also recognised as an important component of the world economy, has made the greatest contribution to this ever-growing economy in terms of volume. Enterprises in the manufacturing sector have become important for national economies. Because the enterprises in the manufacturing sector have directly contributed to the national economy in terms of production by processing a raw material or a semi-finished product. However, a negative situation in the manufacturing sector may cause the economy of countries to shrink. This shrinkage may cause countries to enter an economic crisis. Countries offer various supportive incentives, especially taxes, for enterprises operating in the manufacturing sector. Enterprises operating in the manufacturing sector help us to have information about the country's economy. Manufacturing sector is an important economic component for Turkey as well as for other countries. Stocks are an important source

of funding for businesses. Businesses grow by investing and finance their investments through debt and equity sources. As an important source of equity, shares also provide important information about the value of businesses. The market value of a stock is the price at which it is bought and sold in capital markets. Therefore, the higher the value of a stock, the stronger the business is perceived to be in its sector. From this perspective, the factors affecting stock prices are of great importance. In this study, the micro and macro factors affecting the stock returns of the enterprises in the manufacturing sector, which is important for the Turkish economy, are analysed and the effects of the variables created by making use of the literature on the stock price are examined. This research provides a strong foundation for future studies. The data set and analysis methods used can be adapted and developed for different sectors, time periods, or new economic indicators. This will contribute to academic literature and enable the development of more accurate investment strategies in capital markets. This approach will contribute to strengthening economic stability and investor confidence by enabling better forecasting of market risks and timely evaluation of opportunities. At the same time, it aims to contribute to the literature by gaining a unique position in its field in terms of examining micro and macro factors together, and to guide future studies in this area. Based on the findings of this study, sound investment decisions can be made.

- **Micro Factors:** Optimising cash flows and debt ratios from business activities can increase shareholder returns.
- **Macro Factors:** It is recommended that companies develop policies sensitive to macroeconomic indicators such as exchange rates and inflation expectations in order to benefit from their positive effects.
- **Financial Performance:** Business efficiency can be increased by focusing on factors that have a positive impact, such as the current ratio and gross profit margin.
- **Industrial Capacity:** Increasing industrial capacity utilisation rates can have a positive impact on stock returns.
- **Risk Management:** Strategic risk management practices should be developed to protect against the negative effects of interest rates.

In this study, in the second part of the study, the theoretical background of stock pricing models is mentioned and in the third part, studies and findings on macro and micro factors affecting stock prices are presented. Then, in the application section, analyses on macro and micro factors affecting stock prices are evaluated separately. The study is expected to contribute to the literature in this respect.

### *Stock Pricing Models*

Stock pricing model, investors and financial analysts take into account some issues when choosing investment instruments. These considerations are known as the company's internal information and macroeconomic indicators. Each model tries to predict the future price movements of securities based on different assumptions and methodology. At this stage of the research, basic stock pricing models will be discussed.

### *Financial Asset Pricing Model*

The Capital Asset Pricing Model (CAPM) is considered to be a model that helps investors to estimate risky assets and accordingly helps investors in the decision-making process. CAPM is used to determine the expected return of an asset. And this expectation targets a return

proportional to the risk. It is based on the assumption that return should be obtained according to the ratio of risk. The CAPM was independently developed by Treynor (1961), Sharpe (1964), Linther (1965) and Mossin (1966), taking into account Markowitz's diversification and modern portfolio theory. In other words, Markowitz's previous work in this field was analysed and CAPM was introduced as a result of this analysis (Black, 1972, p. 1-2).

#### *Arbitrage Pricing Model*

Unlike the financial asset pricing model, the arbitrage pricing model (Arbitrage Pricing Theory, APT) takes into account many risk factors that may occur in the market instead of considering a single market risk. Arbitrage pricing model was developed by economist Stephen A. Ross in 1976. This theory developed by Ross suggests that there are various risk factors in the economy that cannot be eliminated. Since the arbitrage pricing model takes into account many factor models used in the pricing of securities and takes into account different sources of risk, it determines the expected return of securities according to the risk factor that may occur (Iqbal & Haider, 2005, p. 124-127).

#### *Fama-French Three Factor Model*

For many years in the finance literature, researchers have investigated the changes in security returns. Along with these researches, many models have been put forward. And among these models, the most preferred one is the financial assets pricing model (CAPM), also known as the single factor model, which measures the change in returns, market risk, also known as market beta, as well as the systematic risk of the market. With these studies, researchers have emphasised the importance of the explanatory power of the variation in stock returns. For this reason, various researchers such as Banz (1981), Basu (1983), Rosenberg, Reid and Lanstein (1985), DeBondt and Thaler (1985), and Bhandari (1988) have suggested that the financial asset pricing model is not strong and alternative asset pricing models have been proposed to improve it. Later on, researchers developed new alternative asset pricing models since they found the CAPM inadequate. These models aim to provide a more realistic and detailed asset valuation by taking into account factors independent of market risk. However, several models have been developed to strengthen the CAPM. These models are known as the arbitrage pricing model of Ross (1976) and the three-factor asset pricing model (FF3F) developed by Fama and French (1993). These models were later tested by researchers in many developed and developing country markets and proved that these models outperformed the CAPM (Aras, Çam, Zavıız, & Keskin, 2018, p. 186-187). With the inadequacy of CAMP, multifactor models that include firm- and sector-specific characteristics have been created. Fama and French examined the relationship between variables such as firm size, book value market capitalisation (BV/MC) financial leverage ratio price earnings ratio and stocks with the portfolios they have created with their studies. As a result of this relationship, it was revealed that firm size (market capitalisation), book value (BV) and market capitalisation (MC) ratio are important variables affecting the return (Çoşkun & Çınar, p.235-236). In more understandable terms, the Fama and French three-factor model is accepted as a model used to explain asset pricing and portfolio returns. This model was developed by Nobel laureates Eugene Fama and Kenneth French in 1992. The Fama and French model uses three main fundamental components to predict the future return of an asset.

- 1- Market risk, this factor is the same as the market risk recognised as the only factor in the CAPM. In general terms, this factor measures the sensitivity to general market movements.
  - 2- Firm size (Small minus big, SMB), this factor suggests that small firms outperform large firms in the long run. In other words, it is derived from observations that firms with small market capitalisation generate higher returns than firms with large market capitalisation.
- The 3-Value factor (Value premium-High minus low, HML) is based on the findings that firms with low market capitalisation outperform firms with high market capitalisation. Known as the BV/MC ratio, it is recognised as the ratio of a firm's book value to its market capitalisation. They state that firms with a high BV/MC ratio perform better than firms with a low BV/MC ratio (Kaya & Güngör, 2017, p. 223-224).

The mathematical expression of the model is given below.

$$E(R_i) - R_f = \beta_{im}[E(R_m) - R_f] + \beta_{is}E(SMB) + \beta_{ih}E(HML)$$

$E(R_i) - R_f$ : It is known as the expected return of the portfolio or asset analysed over the risk-free interest rate. In other words, this shows how much more the investor's expectation from the portfolio is compared to a risk-free investment.

$E(R_m) - R_f$ : This is the expected return of the market portfolio above the risk-free interest rate. This difference expresses how much return the general market is expected to provide compared to the risk-free investment.

SMB: It shows the return difference between the stocks with small market capitalisation and the stocks with large market capitalisation.

HML: It shows the return difference between the stocks with high BV/MC (Market capitalisation / Book value) ratio and the stocks with low MC/BV ratio.

$\beta_{im}$ : It expresses the sensitivity of the portfolio to the excess returns of the market, i.e. market risk. This coefficient determines how sensitive the portfolio is to market movements.

$\beta_{is}$ : This coefficient expresses the sensitivity of the portfolio to SMB (the difference in returns between small and large firms) returns.

$\beta_{ih}$ : It expresses the sensitivity of the portfolio to HML (the difference between high and low MV/BV ratios) returns (Çömlekçi & Sondemir, 2020, p.204).

#### *Fama-French Five-Factor Model*

The Fama-French five-factor model is a model developed by Fama-French in 2015, which adds two additional factors to the three-factor model in explaining asset pricing. By further extending the return differentials, they added profitability and investment factors in addition to the market, size and factors in the three-factor model.

- 1- Market risk (Market Risk Premium- $R_m - R_f$ ): As in the three-factor model, market risk represents the difference between the risk-free interest rate and the return of the market portfolio. It measures the sensitivity of this portfolio to movements in the market.
- 2- Company size (SMB: Small Minus Big) indicates that small companies perform better than large companies. In other words, it is based on the observation that small companies generally provide better returns than large companies.
- 3- Value Premium (Value Premium-HML: High Minus Low): It indicates that stocks with a high MC/BV (book value/market value) ratio can provide higher returns than stocks with a low MC/BV ratio.

- 4- Profitability Premium (Profitability Premium- RMW: Robust Minus Weak): This factor expresses the return difference between profitable companies and companies with low profitability. In other words, it shows that companies with high profitability provide higher returns than companies with low profitability.
- 5- Investment Premium (CMA: Conservative Minus Aggressive) is concerned with the investment activities of companies. It suggests that companies that follow more conservative investment strategies, i.e. companies that invest less, generally provide higher returns than companies that invest more, i.e. companies that follow an aggressive growth strategy (Büyükoğlu, 2023, p.2-5).

The formula accepted as the mathematical expression of the model is given below.

$$R_{it}-R_{ft}=a_i+b_i(R_{Mt}-R_{ft})+s_iSMB_t+h_i+HML_t+r_iRMW_t+c_iCMA_t+e_{it}.$$

- $R_{it}$ : It is considered as the expected return of the portfolio or asset.

- $R_{ft}$ : Although it is accepted as the risk-free rate of return, it is generally accepted as government bonds and treasury bills.

- $R_{Mt}$ : It means the return of the market portfolio.

- $SMB_t$ : It is accepted as company size (small-large).

- $HML_t$ : It is considered as value factor (high-low MC/BV).

- $RMW_t$ : Profitability factor (high-low profitability).

- $CMA_t$ : Investment factor (conservative-aggressive investment).

- $e_{it}$ : It is considered as the error term (Paliienko, Naumenkova & Mishchenko, 2020, p.144-145).

## Literature Review

Stock markets are affected by many factors. Economic, political and social dynamics are among these factors. For this reason, it can be said that the stock market is an economic indicator and reflects the expectations for the future. There are some basic factors affecting the stock market. These factors can be categorised as macroeconomic, internal and other factors. Macroeconomic factors affect firms directly or indirectly when there is a possible movement in the economy since firms are in the economic environment (Şenol, Koç & Şenol, 2018, p.120-123).

### *Literature on Macroeconomic Factors*

The relationship between stock prices and exchange rates can be explained by two different theories: One is the traditional approach and the other is the portfolio approach. According to the traditional approach, in case of an increase in the exchange rate, there is a change in share prices. According to this approach, the depreciation of foreign currency leads to a decrease in share prices (İşcan, 2010, p.240). According to the portfolio approach, a favourable atmosphere in the market and investors' positive expectations for the future have a downward effect on the exchange rate, while positively affecting the value of the national currency. And according to this approach, in the event of a decline in share prices, reducing interest rates by reducing the demand for money results in a loss of wealth for domestic investors. For this reason, there is a negative relationship between exchange rate and share price (Elmas& Esen, 2011, p.155). In fact, there is no consensus in the literature on the exact effect of inflation on share prices. Because there are negative results as well as positive results in the studies conducted. When there is an increase in stock prices and the increase is caused by inflation, the investor expects a real return. For this reason, the risks of stocks increase

(Ulaş, 2010, p.76). While an increase in interest rates decreases stock prices, a decrease in interest rates increases stock prices. However, the extent of this relationship differs among securities (Tezcan, 2009, p.29-30). It is the totality of goods and services produced in a country in a certain period. In case of an increase in the income of a country in the real economy, there may be an increase in the disposable income of individuals. This increase in income also increases the demand for goods and services. Due to this increase in demand, it has a positive effect on the profits of companies. Increasing profits of companies increase the prices of stocks (Bukulu, 2016, p.31). Alper and Kara (2017) found that macroeconomic factors, especially changes in the exchange rate, have a strong impact on stock returns as a result of the findings of their study conducted between the periods 2003-2017. At the same time, macroeconomic factors such as gold prices, foreign trade balance and finally industrial production are found to be effective on stock returns. Rapach (2001), as a result of a study conducted for 16 industrialised OECD countries between the periods 1957-2000, found that according to the impulse-response analysis of the long-term relationship between stock prices and inflation, a possible increase in inflation does not lead to a significant decrease in real stock prices. Bu sonuca göre, enflasyon ile hisse senedi fiyatları arasında sınırlı bir ilişki bulunmaktadır. Sadeghzadeh and Elmas (2018) analysed the stock returns of 130 companies in BIST with Türkiye and 25 macroeconomic variables and 4 dummy variables between 2000-2017 periods. As a result of these studies, it was revealed that factors such as economic growth, industrial production index, inflation, money supply, gold prices and exchange rates affect stock returns in different ways in long and short periods. Seyhan and Akbulut (2023) analysed the macroeconomic factors affecting the cash dividend distribution of firms operating in the manufacturing sector in the BIST industrial index for the periods between 2010 and 2020. According to the findings of the study, economic growth and inflation were found to have a positive effect on cash dividends. The exchange rate, on the other hand, has a negative effect. İlhan and Bayır (2021), in their study covering the periods between 2011 and 2021, investigated the effects of CDS premiums, bond yields, exchange rates, total loans and also the effects of the pandemic on the BIST Industrial and BIST financial indices in Türkiye. ARDL and bounds test were used in the study. In the light of the findings, CDS premium and bond yields were found to have a negative effect on both indices. While the exchange rate has a negative effect on the BIST manufacturing index in the short term, it has a positive effect on both indices in the long term. Finally, while both sectors were negatively affected in the short term at the beginning of the pandemic, it had a significant positive effect on the BIST industrial index in the long term.

#### *Literature on Microeconomic Factors*

Microeconomic factors, which are expressed as intra-enterprise factors, are actually directly related to the enterprise and are realised under the control of the enterprises themselves and are different for each enterprise.

In the study conducted by Demirhan (2022), financial statement data taken from the sector balance sheets of the Central Bank of the Republic of Turkey were used and these data cover the years 2009-2020. The objective of this study is to determine the main area factors in the manufacturing and service sectors and for this purpose, four different models are tested using dynamic panel data analysis and system GMM estimator. Return on assets, gross profit margin, operating profit margin and net profit margin models are used as dependent variables. In addition, in order to identify macroeconomic data, financial ratios related to

liquidity, asset management and capital structure, Producer Price Index and Gross National Product were added to the models as independent variables. According to the results obtained in this study, there is a positive relationship between liquidity and profitability in the manufacturing sector. While the acid-test ratio showed a positive relationship, the turnover ratios analysed in the manufacturing sector showed a negative relationship with return on assets and net profit margin. There is a positive relationship with the profitability ratios, also known as interest earning ratios, which are considered as financial structure in the manufacturing sector, but this can also be expressed as a weak relationship.

In the study conducted on 112 companies traded on the BIST and operating in the manufacturing sector, Işık et al. (2017) revealed a positive relationship between firm size and profitability according to the GMM analysis results they used. In this study, in order to reveal whether the relationship is curvilinear or not, they also added the second and third order states of the firm size variable to this model. However, it was found that the relationship was not curvilinear. At the same time, when financial risk, firm risk and finally firm age were statistically evaluated, no meaningful result could be reached. Finally, while the liquidity ratio, which is also referred to as the control variable included in the model and evaluated, affects the liquidity ratio positively, the growth opportunities are found to be in a negative direction. Şişman, Çömlekçi and Şahin (2017) tried to reveal the share prices of companies traded in the BIST technology index covering the period between 2009 and 2015 by using the multiple linear regression method. The results of these studies show that financial ratios such as earnings per share ratio, dividend payout ratio, return on assets ratio, leverage ratio, price/earnings ratio, net profit growth rate, equity growth rate-trading ratio and finally market capitalisation / book value ratio are determined as financial ratios affecting stock prices in the technology sector.

Büyükşalvarcı (2010) analysed the data of 83 companies traded on the ISE and operating in the manufacturing sector in 2009. As a result of this analysis, stock returns, which are dependent variables, were used in two different methods. The first one is the buy and hold return method and the other one is the cumulative return method. In this study, 1 linear and 9 non-linear models were used. And the result obtained in this study is that there is a large non-linear relationship between stock returns and financial ratios. In this study by Kalaycı and Karataş (2005), financial ratios such as profitability, activity, financial leverage, liquidity and stock market performance were used as a result of examining the sub-sector of the manufacturing industry and considering the 1996-1997 periods and using the company's 6-month financial statements. According to the results obtained in this study, it is concluded that the stock returns of the related sectors are explained by stock market, profitability and productivity ratios.

## **Application**

### ***Evaluation on Micro Factors Affecting Share Returns of Manufacturing Enterprises***

#### ***Data Set and Hypotheses of the Research***

In this section, the business-specific factors affecting the stock return rates of 169 enterprises operating in the manufacturing sector traded in BIST and whose data were fully available in the target years are analysed. Firstly, the analysed enterprises and the dependent and independent variables used in the study will be presented and then the hypotheses formed for the research will be stated. In the study, the data of the enterprises operating in the

manufacturing sector for the years 2011-2023 were obtained from the FINNET database and the enterprises whose data were accessed continuously for all years were subjected to analysis. Eleven variables were used in the study and ten of them were determined as independent variables. In the decision of the dependent and independent variables used in the study, the literature was utilised. In the selection of variables used in the study, attention was paid to the use of liquidity, profitability, financial position and operating efficiency ratios of the enterprises, and the financial ratios that are most widely used in the literature and generally considered to have high impact power were included. At the same time, cash flow is a very important indicator for enterprises. In this respect, variables showing the cash flow status of enterprises are also included. The codes and formula of the dependent and independent variables used in the study are as shown in Table 2.

Table 2

*Dependent and Independent Variables*

Variables	Code	Formula
<b>Dependent</b>		
Stock Return Rate	SRR	$(Pt+1-Pt)/Pt$
<b>Independent</b>		
Cash Flow from Operations	CFO	Cash Flow from Operations/Equity
Total Cash Flow	TCF	Total Cash Flow/Equity
Current Ratio	CR	Current Assets/Short Term Liabilities
Gross Profit Margin	GPM	Gross Profit/Sales
Operating Profit Margin	OPM	Operating Profit/Sales
Debt Ratio	TDTA	Toplam Debt/Toplam Assets
Long-Term Debt Ratio	LTDR	Long-Term Debt /Total Debt
Accounts Receivable Collection Period	ARP	$365/\text{Accounts Receivable Turnover}$
Stock Holding Period	SHP	$365/\text{Stock Turnover}$
Earnings Per Share	EPS	Net Profit/Number of Shares

In the study, two cash flow variables, one liquidity ratio, three profitability ratios, two financial position ratios, two operating efficiency ratios were used and the power of each area to affect the rate of return of the company's shares was evaluated. The hypotheses of the study were formed as follows.

## Research Hypotheses:

H<sub>0a</sub>: Operating Cash Flow Does Not Affect Stock Return

H<sub>0b</sub>: Total Cash Flow Does Not Affect Stock Return Ratio

H<sub>0c</sub>: Current Ratio Does Not Affect Stock Return Ratio

H<sub>0d</sub>: Gross Profit Margin Does Not Affect Stock Return Ratio

H<sub>0e</sub>: Operating Profit Margin Does Not Affect Stock Return Ratio

H<sub>0f</sub>: Debt Ratio Does Not Affect Stock Return Ratio

H<sub>0g</sub>: Long-Term Debt Ratio Does Not Affect Stock Return Ratio

H<sub>0h</sub>: Receivables Collection Period Does Not Affect Stock Return Ratio

H<sub>0i</sub>: Inventory Holding Period Does Not Affect Stock Return Ratio

H<sub>0j</sub>: Earnings per Share Does Not Affect Stock Return Ratio

While it is stated that the independent variables used in the study do not affect the dependent variable stock return rate with the null hypothesis, it is aimed to reach the finding

that the independent variable(s) affect the stock return rate in case the null hypothesis is rejected. In the next stage of the research, the model equation and research method will be explained.

### *Methodology of the Study*

The effect of micro factors on stock returns is evaluated and panel regression analysis is applied for this purpose. The tests required for the application of panel regression analysis are given. Panel regression analysis is an important analysis technique that helps to evaluate whether and to what extent the dependent variables are affected by independent variables in panel data, that is, for both horizontal cross-section and time series. There are 169 horizontal cross-section data and 13 time values in the study. Therefore, panel regression analysis was applied to determine the relationship. Before applying panel regression analysis, the stationarity of the variables should be tested. The findings obtained with non-stationary series will give misleading results and the findings obtained may be misleading. Unit root tests are performed for stationarity tests. However, unit root tests also vary according to whether there is horizontal cross-section dependence and homogeneity. In cases where there is horizontal cross-section dependence, second generation unit root tests are used, while in cases where there is no horizontal cross-section dependence, first generation unit root tests are applied. After the unit root tests and stationarity test, which are decided according to horizontal cross-section dependence, the variables will be subjected to panel regression analysis in cases where differencing is required according to the level at which stationarity is achieved. Model selection is a very important point in panel regression analysis. Therefore, model suitability should be evaluated with tests such as Best Likelihood and Hausman and model results should be interpreted accordingly. At the same time, the model run at the last stage should also meet the assumptions. In the findings obtained from the study, it would be the right approach to interpret the findings obtained at the point of meeting all of the assumptions of the regression. The equation of the research model is as stated in equation (1).

$$SRR = a + b_1 * CFO + b_2 * TCF + b_3 * CR + b_4 * GPM + b_5 * OPM + b_6 * TDTA + b_7 * LTDR + b_8 * ARP + b_9 * SHP + b_{10} * EPS \quad (1)$$

### **Findings**

#### *Evaluations Regarding the Data*

Descriptive statistics of the variables used in the study are given and the findings are presented in Table 3.

Table 3

*Descriptive Statistics of Variables*

Statistics /Variables	CFO	TCF	CR	GP M	OPM	TDT A	LTDR	ARP	SHP	EPS	SRR
Mean	0.22	1.23	1.88	10.19	4.64	0.85	32.26	85.97	170.20	73.65	2.54
Median	0.21	0.87	1.39	9.37	3.08	0.79	26.68	77.30	78.79	0.60	1.33
Maximum	0.80	35.06	43.86	84.19	571.48	7.85	100.00	370.86	578.30	122.90	124.97
Minimum	0.00	0.00	0.00	-52.17	-119.33	0.00	0.10	0.00	0.00	-284.70	0.00
Std. Deviation	0.17	1.65	2.02	10.23	16.49	0.56	25.28	65.48	324.63	26.76	8.55
Observation	2197	2197	2197	2197	2197	2197	2197	2197	2197	2197	2197

As stated before, profitability, productivity, cash flow, liquidity and financial position ratios variables were used in the study. Descriptive values of the ratios of 169 manufacturing industry enterprises analysed for the research period 2011-2023 are presented in Table 3. When Table 3 is evaluated, it is seen with the standard deviation value that the cash flow status of the enterprises in general does not show a significant variation on the basis of years and enterprises. While the average cash flow from operations of the enterprises is 22%, it is seen that the highest observation value is 80% and the enterprise with the lowest observation value could not generate any cash from its operations in a certain period. Failure to generate cash flow from operations, which is of vital importance for enterprises, will probably put the enterprise in a difficult situation. However, when a general evaluation is made, the average operating cash generation power of the 169 enterprises analysed is not far from the highest observation value and it can be interpreted that the enterprises may have similar cash generation power to each other in this respect. When the CR variable, which shows the ability of enterprises to pay debts in the short term, is evaluated, it is seen that the average value is 1.88. Although this situation tells us that enterprises will meet their short-term liabilities with their current assets at a ratio of 1.88, this ratio is expected to be at the level of 2 in theory. However, considering the periodical conjuncture and the cash working conditions of the enterprises, it is seen that the average figure is at reasonable levels. While CR, which is an indicator of liquidity status in enterprises, has the highest level of 43.8 debt solvency in the periods in question, it is also seen with the findings obtained that there are enterprises / enterprises with zero debt solvency. When the GPM, i.e. the ratio of profit generated from sales, which is an important indicator for enterprises, is evaluated, it is seen that on average they can generate a profit of approximately 10% of their sales revenues, while it is also determined with the minimum level indicator that there are enterprises with negative gross profit margin. While the average value of OPM, which is another important profitability indicator, i.e. the profit rate created by the enterprises from their activities, is 4.64%, it is thought that the difference between it and the gross profit margin may be due to operating expenses. While it is expected that operating expenses are high in industrial enterprises, operating leverage also increases due to high fixed expenses. However, high operating leverage also enables enterprises to create higher profitability by turning this risk into a positive one. When evaluated from these perspectives, the profitability value is low, but one of the reasons for this is the idea that the range between the enterprises is high. When the

maximum and minimum values are analysed, the height of the range can also be seen. It is seen that the average value of the indebtedness ratio (TDTA), which is an important financial status indicator for enterprises, that is, the weight of the debt used by enterprises in their total liabilities, is 85% and there is a high indebtedness ratio. However, although the high indebtedness ratios of the enterprises are risky due to the leverage effect, it also means that they can provide extra benefits if the risk is converted into positive. Although 50% debt and 50% equity financing is generally considered appropriate in enterprises, it is also known that using debt is advantageous for enterprises, especially in inflationary periods. It is seen that the average value of LTDR, which shows the long-term debt utilisation in enterprises, is 32.26%. While it is seen that this ratio is below the level of 50%, it can be stated that while it can be said that the long-term resource utilisation rates of the enterprises are reasonable if they are considered to be used in the financing of long-term investments, it can also be stated that it will cause a bottleneck if it is used in short-term asset financing. However, it has been concluded that the enterprises' use of short-term debt is high for the analysis periods in terms of a significant average. It is considered that if short-term debt is used in the financing of long-term investments, enterprises may be in a difficult situation. An important productivity indicator of enterprises is the collection period of their receivables (ARP). The shorter this period is in enterprises, the less liquidity shortage they will experience. It is seen that the average value of ARP in the analysed enterprises is approximately 86 days in a year. It is seen that the result obtained is reasonable when the average 3-month periods of forward merchandise sales transactions in Turkey are evaluated. Similarly, an important productivity indicator for enterprises is Waiting Time in Stock (SHP). While it is seen that the average annual SBS value is 170 in the analysed enterprises, it is seen that this period is more than a 6-month period. However, it is seen that the enterprises follow a fluctuating course in terms of the SHP variable when the maximum and minimum values are analysed. At the same time, the high standard deviation shows that the enterprises have a fluctuating stock waiting period during the analysis periods. Earnings per Share (EPS) variable is also an important variable for enterprises to find investors and create resources for themselves. While this variable has a high average value of 73.65% for publicly traded companies operating in the manufacturing sector, it is seen that it fluctuates due to the presence of negative observations. The average of the Share Return Ratios was calculated at an average level of 2.54% for the enterprises.

#### *Horizontal Cross-Section Dependence and Homogeneity Test Results*

Before the stationarity tests of the variables analysed in the study, horizontal cross-section dependence tests were performed. According to the results obtained from the Breusch-Pagan LM, Paseran scaled LM, Bias-corrected scaled LM and Paseran CD tests for horizontal cross-section dependence, the H<sub>0</sub> hypothesis was rejected and it was concluded that there was horizontal cross-section dependence ( $p < 0.05$ ). The results are presented in

Table 4.

H<sub>0</sub>: There is no horizontal cross-section dependence.

H<sub>1</sub>: There is horizontal cross-section dependence.

Table 4

*Cross-Section Dependence Test Results*

Variables	Test value	Probability
CFO		
Breusch-Pagan LM	313567.23	0.0000
Pesaran scaled LM	102.27896	0.0000
Bias-corrected scaled LM	97.23098	0.0000
Pesaran CD	41.76580	0.0000
TCF		
Breusch-Pagan LM	33404.81	0.0000
Pesaran scaled LM	113.9994	0.0000
Bias-corrected scaled LM	106.9577	0.0000
Pesaran CD	59.94262	0.0000
CR		
Breusch-Pagan LM	35772.92	0.0000
Pesaran scaled LM	128.0535	0.0000
Bias-corrected scaled LM	121.0118	0.0000
Pesaran CD	5.041734	0.0000
GPM		
Breusch-Pagan LM	33404.81	0.0000
Pesaran scaled LM	113.9994	0.0000
Bias-corrected scaled LM	106.9577	0.0000
Pesaran CD	59.94262	0.0000
OPM		
Breusch-Pagan LM	30585.44	0.0000
Pesaran scaled LM	97.26713	0.0000
Bias-corrected scaled LM	90.22547	0.0000
Pesaran CD	39.53183	0.0000
TDTA		
Breusch-Pagan LM	32655.17	0.0000
Pesaran scaled LM	109.5504	0.0000
Bias-corrected scaled LM	102.5088	0.0000
Pesaran CD	14.77241	0.0000
LTDR		
Breusch-Pagan LM	29218.62	0.0000
Pesaran scaled LM	89.15538	0.0000
Bias-corrected scaled LM	82.11371	0.0000
Pesaran CD	15.83376	0.0000
ARP		
Breusch-Pagan LM	28134.56	0.0000
Pesaran scaled LM	92.89675	0.0000
Bias-corrected scaled LM	87.12578	0.0000
Pesaran CD	16.23450	0.0000
SHP		
Breusch-Pagan LM	32161.96	0.0000
Pesaran scaled LM	106.6234	0.0000
Bias-corrected scaled LM	99.58169	0.0000
Pesaran CD	25.23286	0.0000
EPS		
Breusch-Pagan LM	22441.87	0.0000
Pesaran scaled LM	48.93713	0.0000
Bias-corrected scaled LM	41.89547	0.0000
Pesaran CD	17.44678	0.0000
SRR		
Breusch-Pagan LM	23124.12	0.0000
Pesaran scaled LM	88.15345	0.0000
Bias-corrected scaled LM	86.28352	0.0000
Pesaran CD	13.89273	0.0000

Following the horizontal cross-section dependence test applied to the variables, Hasio (1986) homogeneity test was applied for the Stock Return Ratio - SRR variable. The results obtained are presented in Table 5.

Table 5

*Homogeneity Test Results*

Variable-SRR	Test value	Probability
H1	3692.674	0.000000
H2	4602.810	0.000000
H3	2.446579	1.34E-19

*Unit Root Test Results-CADF*

According to the results of the horizontal cross-section dependence test, it is concluded that there is horizontal cross-section dependence in all variables. Therefore, CADF (Paseran and Paseran, 2009) test, which is one of the second generation unit root tests, was applied and the results obtained are presented in Table 6.

Table 6

*CADF Test Results*

Variables	Level	First Dif.
CFO	-2.123	-6.368**
TCF	-1.980	-4.123*
CR	-3.124	-7.365**
GPM	-0.890	-4.012*
OPM	-2.189	-9.064**
TDTA	-1.980	-5.209**
LTDR	-2.023	-7.450**
ARP	-3.675	-4.062*
SHP	-0.782	-4.167*
EPS	-1.653	-8.245**
SRR	-2.781	-9.456**

Table critical value for 5%: -3.99 and for 1%: -4.97, \*\* significant at 1% and 5%, \* significant at 5%, Model lag length with constant+trend is set as SIC '1'.

When Table 6 is analysed, it is seen that all variables contain unit root at level, but it is concluded that all variables are stationary at first difference (critical value < Difference 1 value).

*Panel Regression Analysis Results*

There are three methods for panel regression analysis. These methods are pooled fixed effects and random effects models. Tests should be conducted to determine which model will give the best results and is the most appropriate for the study data, and the method to be used should be decided as a result of the tests. The hypotheses used in test selection are as follows.

## Chow Test

H<sub>0</sub>: Pooled model is appropriate

H<sub>1</sub>: Fixed effects model is appropriate

Breusch-Pagan Test hypothesis:

- H<sub>0</sub>: Pooled model is appropriate
- H<sub>1</sub>: Random effects model is appropriate
- Hausman test
- H<sub>0</sub>: Random effects model is appropriate
- H<sub>1</sub>: Fixed effects model is appropriate

All tests were applied for model estimation selection and the model to be used in the study was decided. The results obtained are presented in Table 7.

Table 7  
Chow Test

Name of test	Test statistics	Test value	Probability	Decision
Chow	Chisquare	384.182004	0.000	H <sub>0</sub> reject
Hausman	Chiaquare	25.028946	0.005	H <sub>0</sub> reject

As seen in Table 7, the Chow test was used to test which of the pooled and fixed effects models is more appropriate and the Fixed Effects Model was found to be appropriate. Then, the Hausman test was used to choose between Fixed and Random Effects Models and it was concluded that the Fixed Effects Model was more appropriate.

After deciding on the model to be used in the research, the model was run and the results obtained are given in Table 8.

Table 8  
Panel Regression Analysis Test Results

Dependent Variable: SRR				
Method: Fixed Effect				
Term :2011-2023				
Cross Section: 169				
Observation: 2014				
Variables	Coefficient	Standart Error	T value	Probability
Constant	3.966	1.004	3.950	0.0001
CFO	-6.714	2.036	-3.297	<b>0.0010**</b>
TCF	-1.044	0.566	-2.843	<b>0.0453*</b>
CR	4.694	2.465	10.489	<b>0.0136*</b>
GPM	0.048	0.027	2.766	<b>0.0375*</b>
OPM	-0.008	0.012	-0.680	0.4966
TDTA	-1.304	0.671	-2.943	<b>0.0421*</b>
LTDR	-0.019	0.011	-1.604	0.1087
ARP	0.015	0.004	3.231	<b>0.0013**</b>
SHP	-6.45E-05	5.72E-05	-1.126	0.2600
EPS	8.92E-07	6.89E-05	0.012	0.9897
R <sup>2</sup> : %69 ; F value 2.3947 p (F)= 0.000; Durbin Watson value: 2.03; p ( Jarque -Bera): 0.346; p (Breush-Pagan-LM) :0.812 ; p (Green Heteroskedasticity Test) : 0.190				

According to the results of the fixed effects model applied in the research, it can be said that the findings obtained will not be misleading and the findings obtained from the model will not be misleading since it is seen that all assumptions are met. According to the findings obtained, the model equation is formed as follows.

$$SRR_{it} = 3.966 - 6.714 * CFO_{it} - 1.044 * TCF_{it} + 4.694 * CR_{it} + 0.048 * GPM_{it} - 1.304 * TDTA_{it} + 0.015 * ARP_{it} + \epsilon_{it}$$

Before proceeding to the equation interpretation of the model, the significance of the model as a whole should be tested. The F test is used to test the significance of the model and according to the F test probability value, it is concluded that the model is significant as a whole ( $0.000 < 0.05$ ).

When the model equation is evaluated, it is seen that the HGO dependent variable is affected by the CFO (Cash Flow from Operations Ratio) variable at the highest and negative level, followed by the CR (Current Ratio) variable in a positive way. It is seen that if the company increases the Cash Generated from Operations Ratio by 1%, the Share Return ratio will decrease by 6%. In addition, there is a negative relationship between the TCF variable and SRR. A 1% increase in the Total Cash Ratio of the enterprise will decrease the Share Return ratio by 1.044%. The indebtedness ratio of the enterprise (TDTA) also has a negative effect on SRR. Gross Profit Margin (GPM) and Accounts Receivable Collection Period (ARP) variables have a positive effect on SRR. In the model, the variables stated in the equation are statistically significant at 5% level of significance and it is concluded that they affect SRR. The variables that are not statistically significant are OPM, SHP, EPS and LTDR.

While it is seen that the explanatory power of the variables found significant in the model is 69% for the dependent variable, the explanatory power can be said to be medium level. It is thought that the unexplained part may be due to other micro or macro factors that are not included in the model. We mentioned that the assumptions must be met for the results obtained from the model to be meaningful, and the tests in Table 14 show that the assumptions of normality ( $0.346 > 0.05$ ), co-variance ( $0.190 > 0.05$ ) and non-autocorrelation ( $0.812 > 0.05$ ) are met. According to the results of the analyses, hypotheses  $H_{0a}$ ,  $H_{0b}$ ,  $H_{0c}$ ,  $H_{0d}$ ,  $H_{0f}$  and  $H_{0h}$  are rejected.

### **Evaluation on Macro Factors Affecting Share Returns of Manufacturing Enterprises**

#### *Data Set and Hypotheses*

At this stage of the research, micro factors affecting stock returns are emphasised. In the determination of macro factors, macroeconomic factors from the literature and macroeconomic factors that are considered to be important for manufacturing enterprises are included. Stock return rate was used as the dependent variable in the study, but since the evaluation of macroeconomic factors for all enterprises would not be appropriate for the data structure of the study, BIST Industrial Index returns were used. In the study, monthly data from 2011 to 2023 were evaluated as the analysis period. It was considered that the observations to be taken on a yearly basis would not be sufficient and the results of the analysis would be meaningless, and monthly data of all variables were used for the analysis period. Stock return rates were obtained from investing.com, while macroeconomic variables were obtained from the EVDS system. One dependent variable and nine independent variables were used in the study. The variables used in the study are presented in Table 9.

Table 9

*Variables Included in the Model*

Variables	Abbreviations	Explanations
<b>Dependent Variables</b>		
BIST Industrial Index Rate of Return	IRR	Pt+1-Pt)/Pt
<b>Independent Variables</b>		
Exchange Rate	ER	Exchange Rate Bid Price
Inflation Expectation	INE	3-Month Inflation Expectation
House Price Index	HPI	House Price Index-Level
Log Gold Price	LGP	Log Republican Gold Sales Price
Deposit Interest Rate	DIR	1-Month Average Deposit Interest Rate
Industrial Capacity Utilisation Rate	ICUR	Capacity Utilisation Rate of All Manufacturing Industry Firms
Consumer Confidence Index	CCI	Consumer Confidence Index-Level
Total Industrial Index	TII	Consumer Industrial Index Price-Level
Consumer Price Index	CPI	Inflation Rate - Not Seasonally Adjusted

After stating the variables used in the study, the hypotheses formulated in order to evaluate the relationship between macroeconomic factors and index return rates are given.

**Hypotheses of the Study:**

H<sub>1</sub>: Exchange Rate Affects Index Rate of Return

H<sub>2</sub>: Inflation Expectation Affects Index Rate of Return

H<sub>3</sub>: Housing Price Index Affects Index Rate of Return

H<sub>4</sub>: Log Gold Prices Affects Index Rate of Return

H<sub>5</sub>: Deposit Interest Rate Affects Index Rate of Return

H<sub>6</sub>: Industrial Capacity Utilisation Rate Affects Index Rate of Return

H<sub>7</sub>: Consumer Confidence Index Affects Index Return Ratio

H<sub>8</sub>: Consumer Industrial Index Affects Index Return Ratio

H<sub>9</sub>: Consumer Price Index Affects Index Return Ratio

The hypotheses used in the research are that macroeconomic variables affect BIST Industrial Index return rates. If the hypotheses are accepted, the view that independent variables explain the dependent variables will be accepted. The model equation of the study is as stated in Equation 2.

$$IRR = a + b_1 * ER + b_2 * INE + b_3 * HPI + b_4 * LGP + b_5 * DIR + b_6 * ICUR + b_7 * CCI + b_8 * TII + b_9 * CPI \dots \dots \dots (2)$$

**Methodology of the Study**

In the study, whether a dependent variable is affected by nine independent variables and their impact levels are evaluated. The values of the BIST Industrial Index return rates, which are considered as the dependent variable in the study, have been taken over the years. Similarly, time series were also created for macroeconomic variables. From these perspectives, it is considered that the study is a time series and it is appropriate to determine the relationship with Multiple Regression Analysis. Since the variables are time series, unit

root tests were performed first, but horizontal cross-section dependence test was not required. Augmented Dickey Fuller- ADF and Phillips Perron- PP unit root tests were applied in the research. After determining whether the series are stationary or not, Multiple Regression Analysis was applied to the stationarised variables and assumption tests were performed. At the same time, short-term relationships were also detected by Granger Causality Analysis in order to observe short-term relationships and to ensure that all variables in the series are stationary at the same level.

## Findings

### *Evaluations Regarding the Data*

The descriptive statistics of the variables analysed in the study are as shown in Table 10.

Tablo 10

### *Descriptive Statistics of Macroeconomic Variables and Index Return Ratios*

Variables/ Statistics	IRR	ER	INE	HPI	LGP	DIR	ICUR	CCI	TII	CPI
Mean	2.850	6.422	1.109	19.863	3.155	1.0432	76.352	85.880	80.860	4.603
Median	2.150	3.655	0.740	10.285	2.990	1.010	76.800	88.705	80.260	3.1050
Maximum	27.820	29.020	4.860	122.430	4.140	2.430	79.900	97.370	109.250	18.590
Minimum	-19.92	1.520	-0.11	4.900	2.670	0.090	61.600	63.410	56.920	1.830
Stn. Deviation	7.244	6.525	1.007	26.412	0.414	0.579	2.385	7.569	15.390	3.673
Observation	156	156	156	156	156	156	156	156	156	156

When the return rates of the BIST Industrial Index, which is evaluated as the dependent variable in the research, are evaluated on a monthly average, it is seen that there is a return level of 2.85%. In the period when the maximum return was achieved, the highest rate of return was 27.820% and the minimum rate of return was -19.92%. It is observed that the standard deviation, which shows the change in the rates of return over the months, is not very high, but there is still volatility. It was observed that the average exchange rate bid value was 6.42 during the analysed periods and the highest value observed was 29.020, especially after the significant increase in the exchange rate in recent years. While the lowest exchange rate purchase value during the analysis period was 1.520, it is observed that the volatility level is at an average level. For the INE variable, which evaluates the three-month inflation expectations of investors, the average value is 1.109 and the highest average value is 4.86%, which is considered to be a very optimistic value. While the monthly average value of the house price index is 19.863, the highest variability is observed in the house price index. For the LGP variable, where the logarithm of the purchase price of Republican gold is taken, the average value is 3.155 and the highest observed value is 4.140, which is quite close to the average, and it is concluded that the level of volatility in gold prices is quite low. For the interest rate, another important macroeconomic indicator, one-month deposit interest rates were evaluated and it was observed that the average deposit interest rate was 1.043%. While the highest interest rate and the average value are close to each other like gold prices, the volatility level is also low. When the CCI variable, which evaluates investors' confidence in the economic system, is analysed, it is seen that the average confidence is approximately 86% and the lowest confidence is 63.5%. It is found that the change in the confidence index has an average level of variability. It is observed that the Total Industrial Index value is 80.260 on

average and has a high volatility. The consumer price index variable, which is not seasonally adjusted, is 4.603% on average on a monthly basis, while the highest observation value is 18.590% and the lowest value is 1.830%, and it is concluded that there is a variability below average.

#### Unit Root Test Results

In order to obtain meaningful relationship results from the time series used in the research, the variables must first be stationary. For this purpose, ADF and PP tests, which are the first generation stationarity tests without structural breaks, were applied to the variables and the results obtained are given in Table 11. In order to obtain significant relationship results from the time series used in the research, the variables must first be stationary. For this purpose, ADF and PP tests, which are the first generation stationarity tests without structural breaks, were applied to the variables and the results obtained are presented in Table 11.

Table 11

#### Results of Unit Root Tests

Variables		ADF		PP	
		<i>t value</i>	<i>Probability</i>	<i>t value</i>	<i>Probability</i>
IRR	<i>Level</i>	1.0585	<b>0.0912</b>	2.7937	<b>0.8913</b>
	<i>First Difference</i>	-9.3583	<b>0.0000**</b>	-54.9533	<b>0.0000**</b>
ER	<i>Level</i>	2.5776	<b>1.0000</b>	3.5453	<b>1.0000</b>
	<i>First Difference</i>	-8.6250	<b>0.0000**</b>	-6.9541	<b>0.0000**</b>
INE	<i>Level</i>	-0.7005	<b>0.9706</b>	-2.5469	<b>0.3054</b>
	<i>First Difference</i>	-4.1257	<b>0.0020**</b>	-21.7890	<b>0.0000**</b>
HPI	<i>Level</i>	-1.4689	<b>0.8358</b>	7.1178	<b>1.0000</b>
	<i>First Difference</i>	-5.1984	<b>0.0030**</b>	-3.9808	<b>0.0000**</b>
LGP	<i>Level</i>	-0.3743	<b>0.9877</b>	-0.1042	<b>0.9944</b>
	<i>First Difference</i>	-9.9655	<b>0.0000**</b>	-9.7728	<b>0.0000**</b>
DIR	<i>Level</i>	-1.8698	<b>0.6653</b>	-1.6203	<b>0.7807</b>
	<i>First Difference</i>	-9.0653	<b>0.0000**</b>	-9.0058	<b>0.0000</b>
ICUR	<i>Level</i>	1.8033	<b>0.0789</b>	2.1144	<b>0.0741*</b>
	<i>First Difference</i>	-11.4058	<b>0.0000**</b>	-13.5225	<b>0.0000**</b>
CCI	<i>Level</i>	1.0415	<b>0.0931</b>	-0.9884	<b>0.0810</b>
	<i>First Difference</i>	-12.6121	<b>0.0000**</b>	-17.7782	<b>0.0000**</b>
TII	<i>Level</i>	1.5574	<b>0.0717</b>	2.4976	<b>0.0911</b>
	<i>First Difference</i>	-14.2684	<b>0.0000**</b>	-21.6234	<b>0.0000**</b>
CPI	<i>Level</i>	5.0092	<b>1.0000</b>	8.3533	<b>1.0000</b>
	<i>First Difference</i>	-9.0451	<b>0.0000**</b>	-4.9439	<b>0.0004**</b>

\*\* Significance at 5% and 1% level of significance, Model with trend and constant.

According to the unit root test results of the variables used in the study, all of the variables were found to be non-stationary at the level, but it was concluded that all variables became stationary in the first difference. Before starting the analysis, the variables will be differenced and then multiple regression analysis will be applied with the differenced variables. Whether there are time-dependent changes in the model and structural breaks within the analysis period and the stationarity of the variables with structural breaks are also determined. For this purpose, the Zivot Andrew test, which is one of the tests that take into

account a single structural break, was performed and the results obtained are presented in Table 12.

Table 12

*Unit Root Test Results with Structural Break*

Variables	Zivot Andrew-ZA test		
	t-value	Probability	Date of break
IRR	-7.9755	0.0035	2022:01
ER	-4.9172	0.0483	2020:12
INE	-5.5899	0.0000	2021:12
HPI	-5.0239	0.0483	2021:06
LGP	-6.6723	0.0023	2017:05
DIR	-6.8579	0.0000	2019:08
ICUR	-5.8028	0.0089	2020:03
CCI	-5.4180	0.0041	2018:08
TII	-5.8691	0.0017	2020:07
CPI	-5.4721	0.0489	2021:04
%1	-5.57		
%5	-5.08		
%10	-4.82		

When Table 12 is analysed, it is seen that the ZA critical values are greater than the critical value in absolute value than the t level values for 5% significance level and the H<sub>0</sub> hypothesis is rejected. It is concluded that the variables are stationary with structural break. While it is observed that the structural break periods are generally in 2020-2021, it is observed that these years are the pandemic period and both the manufacturing sector and macroeconomic factors are significantly affected.

H<sub>0</sub>: The series is non-stationary with structural breaks.

H<sub>1</sub>: The series is stationary with structural breaks.

**Results of Multiple Regression Analysis**

Following the stationarity tests in the study, first level differences of the variables were taken and then multiple regression analysis was applied. The results of the multiple regression analysis are as shown in Table 19.

Tablo 13

*Regression Analysis Results*

Dependent Variable: IRR				
Term:2011:01-2023:12				
Observation: 155				
Variables	Coefficient	Standart Error	T value	Probability
Constant	4.604	1.098	0.285	0.0475
ER	3.227	1.293	1.722	<b>0.0372*</b>
INE	1.906	0.762	1.081	<b>0.0281*</b>
HPI	0.150	0.328	0.459	0.6468
LGP	8.197	9.931	0.825	0.4105
DIR	-3.456	0.222	-2.105	<b>0.0270*</b>
ICUR	-0.300	0.361	-2.083	<b>0.0038**</b>
CCI	0.147	0.195	0.752	0.4527
TII	-0.143	0.162	-0.886	0.3766
CPI	-6.644	1.313	-2.703	<b>0.0406*</b>
R <sup>2</sup> : %61 ; F value: 3.6783 p (F)= 0.000; Durbin Watson value: 1.980; p ( Jarque -Bera): 0.363; p (Breush-Pagan-LM) : 0.1485; p (Green Heteroskedasticity Test) : 0.270				

\*\* Significance at 1% level of significance, \* Significance at 5% level of significance

According to the results of the regression analysis, which tests whether the dependent variable is explained by the independent variables and the significance of the relationships, it is seen that the IRR variable is explained by Exchange rate-ER, Inflation Expectation Rate- INE, Deposit Interest Rate-DIR, Industrial Sector Capacity Utilisation Rate-ICUR and Consumer Price Index- CPI. When the variables are analysed, it is seen that the variable with the highest impact power is CPI and the relationship between them is negative. It is also observed that another variable with a high level of influence is DIR and it is concluded that this effect is negative and significant. While it is seen that the ER variable has a significant and positive effect on IRR, it is seen that INE and ICUR, respectively, when the effect level is ranked from largest to smallest. There is a positive and significant relationship between IRR and INE and ICUR ratios. In order to accept the significance of the results obtained, the holistic significance of the model should also be tested. It is seen that the p (F) value indicating that the model is holistically significant is significant at 5% level of significance ( $0.00 < 0.05$ ). While the R<sup>2</sup> value, which shows the explanatory power of the dependent variable by the independent variables, is 61%, the unexplained part is thought to be due to other variables not included in the model. At the same time, in order for the results obtained from the model to be meaningful and reflect the reality, regression analysis assumptions must be met. It is also seen that all of the assumptions of regression analysis are met. The model equation can be formed as follows.

$$IRR = 4.604 + 3.227*ER + 1.906*INE - 3.456*DIR - 0.300*ICUR - 6.644*CPI$$

According to the findings obtained from the research, hypotheses H<sub>1</sub>, H<sub>2</sub>, H<sub>5</sub>, H<sub>6</sub> and H<sub>9</sub> are accepted.

**Conclusion**

With the developing and changing market conditions, people's demand for investment instruments has also increased. Thanks to the developing and changing markets, a growth situation has emerged in terms of production in the economy with the active transformation of savings into investment. In order to utilise their savings effectively, people have started to search for investment instruments, and by choosing the relevant investment instrument(s)

correctly, they have targeted a satisfactory income. In order to achieve this high satisfactory income target, investors have started to analyse the factors affecting stock return rates. Financiers and economists who have previously worked in this field have contributed to the science of finance by revealing different results. Financiers and economists, by analysing the previous studies of investors in this field, have chosen the factors affecting the stock return rates through these studies and preferred stocks. The aim of this study is to contribute to the previous studies in this field and to present findings that may guide future studies in this field.

This study analyses the factors affecting the stock returns of firms listed on BIST in Turkey and actively operating in the manufacturing sector. The effects of macro and micro factors on stock price return ratios are analysed. The results obtained in the study are explained in two categories. Firstly, it is tried to explain the factors that are specific to the evaluated enterprises, i.e. micro factors, affecting stock returns by using panel regression analysis. While examining the micro factors specific to the enterprise, the data of 169 companies operating in the manufacturing sector and traded on the BIST in the periods 2011 and 2023 were analysed using the data obtained from the FINNET database. As a result of this analysis, it is concluded that cash flow from operations, total cash flow and indebtedness ratios have a negative result in terms of adding value to stocks. At the same time, current ratio, gross profit margin and receivable collection period were found to have a positive effect. Secondly, in macro factors, 169 companies operating in the manufacturing sector were analysed for the period between 2011 and 2023. Macro factors are considered as a set of events that occur outside the enterprise and develop depending on the events in the economic environment. And the results obtained on macro factors are given as follows.

It is concluded that the exchange rate has a positive effect on the value added to the stock of firms operating in the BIST manufacturing sector. A possible increase in the foreign exchange rate increases the export revenues of the firms operating in the manufacturing sector, as well as an increase in profit margins. This has a positive effect on the index. It is concluded that inflation expectation has a positive effect on the stocks operating in the manufacturing sector in terms of adding value. A negative relationship was found between stock return and deposit interest rate. As a result of the increase in deposit interest rates, investors tend to prefer deposit interest rates that they perceive as less risky. This will negatively affect stock returns. There is a positive relationship between stock returns and industrial capacity utilisation rate. In simple terms, industrial capacity utilisation rate shows how much of the production capacity of the enterprise is utilised. In periods when this capacity is high, it is expected to reflect positively on the index.

The consumer price index is found to have a negative effect on stock returns. High inflation may cause a decline in demand as it reduces purchasing power. This creates a negative effect on the index. Previous studies in this field have reached different results. It has been found that the consumer price index has a partial effect on stock return rates. In some other studies, the effect of the consumer price index on stock return rates differs in the long and short term. Moreover, another study revealed a limited relationship between these two variables. In this study, it is concluded that the exchange rate has a positive effect on stock return rates. However, different studies have found that exchange rate has a negative effect on stock return rates. According to the results of this study, it is concluded that both micro and macro factors have a significant effect on the stock returns of enterprises operating

in the manufacturing sector. As a result of these analyses, important inferences can be made for investors and managers in the enterprises.

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