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Research Article

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The effect of inflation on activity ratios: evidence from Borsa İstanbul

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Abstract The financial ratios of enterprises are affected by both micro and macro factors. Macroeconomic changes in the current economy affect the financial performance of the firms. Inflation is one of the most crucial variables in any economy today. The financial ratios calculated and projected by the enterprise in the ordinary course of activity are eroded by the effect of inflation. In order to give these ratios their lost significance, managers need to know the extent of the erosion created by inflation in financial ratios. In this study, it was investigated how inflation ratios affect the activity rates of enterprises. Thus, it provides managers with foresight about how inflation may affect activity ratios. In the study, the data of the companies included in the Borsa Istanbul Trade Index (XTCRT) between 2011 and 2021 were examined by panel data analysis. The findings reveal that the inflation ratio has a significant negative effect on the receivables turnover and debt turnover ratios in the long run.

Keywords Activity ratio · Inflation · Financial management

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1. Introduction

Inflation is one of the macroeconomic indicators that has generally negatively affected the dynamics of the economy (Nas, Caner, & Ünal, 2024). Inflation, characterized by its dynamic structure, is affected by the relationship between money, demand, wages and prices. For many economists, the definition of inflation rests on similar foundational principles. According to Keynesian theory, inflation, under conditions of full employment, is the excess in the total demand compared to the total supply, the increase in the general level of prices, and the depreciation of money (Aydoğan, 2004).

Based on this definition, inflation is a continuous increase in the general level of prices, but this rate of increase changes periodically. Fluctuations in inflation ratios, deeply affect the markets where the supply and demand sides of the definition meet, and the firms operating in these markets (Iqbal & Usmani, 2009; Sayyadi Tooranloo, Azizi, & Sayyahpoor, 2020). The interpretation of each accounting entry resulting from the activities of the enterprises without considering the inflation data of the period will cause the firm stakeholders to make erroneous decisions (Özkan, 2005).

Inflation in Türkiye has negatively affected market participants and managers for a long time. As an example of the negative effects of inflation, the deterioration of the firm's structure, an increase in the financial obligations to be paid, the increased risks due to uncertainty, the deviations in the long-term plans, the fact that the financial statements do not reflect the facts, and the decrease in the purchasing power can be given (Altinşik, 2004, pp. 5-7). Although reductions in inflation ratios have been observed throughout history, the issue remains unresolved. Despite numerous efforts by policy makers to avoid the negative effects of inflation, the Turkish economy is struggling with high inflation today (Nas et al., 2024).

During inflationary periods, the financial records of enterprises may not accurately reflect their economic performance due to the distortive effects of rising prices (Acar & Tugay, 2005; Appiah & Acheampong, 2019). To address this issue, inflation adjustments are applied to financial records (Yenisu, 2022). Inflation negatively affects the activities of firms in many ways, and it also causes difficulties for managers in making decisions and determining company policies (Tarkom & Ujah, 2023). The past financial data of the enterprise should be cleared from current inflation and its future plans should be determined according to the estimated inflation (Appiah & Acheampong, 2019; Bambe, Combes, Kaba, & Minea, 2024). The uncertainty of the inflation ratio makes it impossible for firms to take precautions against adverse situations that may occur in the future (Binder, Ozturk, & Sheng, 2025).

Activity ratios measure how effectively firms utilize their economic assets to generate revenue and support operational efficiency. These ratios are derived from the relationship between various assets and the sales level of the enterprise (Türko, 2002, p. 110). Inflation affects both the value of the company's assets and its sales (Curtis, Garin, & Mehkari, 2017). The effective use of assets by enterprises varies depending on inflation levels (Nelson, Potter, & Wilde, 2000). For company managers, understanding how activity rates —frequently used as decision-making tools—are influenced by inflation is crucial. This knowledge plays a significant role in shaping stock management and lending policies.

The ratios obtained in the financial position statement and income statement showing the assets and resources of the enterprise are highly affected by price movements (Bouras, Bustamante, Guo, & Short, 2023). Inflation requires revised perspectives in the calculation and interpretation of the financial ratios of the enterprise (Akdoğan, 2004, p. 3-4). The financial ratios calculated and predicted by the enterprise in the ordinary course of activity are eroded by the effect of inflation (Kumar, 2020). To restore the reliability of

these ratios, managers must understand the extent to which inflation distorts financial ratios and affects their interpretive value.

From this point of view, in this study, it has been investigated how firms keep up with the changes in inflation and what measures can be taken to protect them from inflation. In inflationary countries, investigating how inflation affects firm activities, revealing what kind of measures firms should take to protect themselves from inflation is a vital issue for the continuity of firms. When the relevant literature is examined, it has been observed that the relationship between inflation and many financial ratios of enterprises has been investigated. Despite their significance in policy development and implementation, studies specifically examining activity ratios remain scarce. Activity ratios are key indicators for managers and investors, providing insights into how effectively a company utilizes its assets. Activity ratios are especially valuable in terms of reflecting the effects of changes in the market on the firm. For this reason, this study examines changes in activity ratios to provide a clearer understanding of inflation's effects. Thus, the effect of inflation on firms will be handled more comprehensively.

The study proceeds with the conceptual framework and literature review followed by the analysis and findings, and then the results and recommendations are listed.

2. Conceptual framework and literature review

Activity ratios focus on the relationship between balance sheet items and sales from income statement components, and reveal the return rates of assets. Activity ratios clarify situations such as whether customers comply with payment policies, whether the investment capacity is utilized to the required extent, and the appropriateness of the investment made in stocks (Berk, 2017, p. 103).

Activity ratios are key indicators for firms in terms asset management. When the actual and planned sales are considered, the activity ratios play an active role in deciding the adequacy of the assets held. Each asset that firms hold in excess brings with it the problem of providing the funds needed for the asset. Excessive use of funds increases capital costs, negatively impacting the profitability of firms by increasing financial expenses and reducing net returns. Firms have to establish a balance between multiple assets for their financial sustainability. Activity ratios help managers in establishing this balance (Brigham and Houston, 2016, p. 102).

Activity ratios, commonly referred to as asset turnover rates, measure the efficiency of asset utilization. Turnover rates measure the number of sales generated by each asset held. The most commonly used turnover rates are receivables turnover, inventory turnover, debt turnover, and asset turnover (Ceylan and Korkmaz, 2012, p. 61).

The receivable turnover rate shows how many times receivables are collected in a year. The increase in the receivables turnover rate increases the liquidity of the enterprise. However, applying a strict policy while determining the receivables policy may adversely affect the sales of the firm. For this reason, managers need to continue their activities with an optimum receivable turnover rate. A decline in the receivables turnover rate means that the company cannot create an effective receivable policy. Additionally, a low receivables turnover rate may be an indicator that the firm will have difficulty in collecting its receivables (Aydın, 2015, p. 93).

$$\text{Credit Turnover} = \text{Sales} \,/\, \text{Receivables}$$

The receivable turnover rate is obtained by dividing the sum of credit sales in a certain period by the total trade receivables. A common challenge in calculating the receivable turnover rate is the problem of not being able to calculate the credit sales exactly. In such cases, firms may use it to calculate the ratio of their total sales in that period instead of the total sales on credit (Ceylan and Korkmaz, 2012, p. 63).

$$\text{Inventory Turnover} = \text{Cost of Goods Sold} \;/\; \text{Inventories}$$

Activity ratios are calculated to evaluate resource utilization efficiency by dividing the sales amount by specific balance sheet items, such as inventory, receivables, or total assets. While calculating the inventory turnover ratio, the cost of a sales items is used to represent the same unit, instead of total sales. Thus, both the numerator and the denominator used in the ratio are written in terms of cost. The inventory turnover rate, like receivables turnover, contributes to the interpretation of the current ratio. A low stock turnover rate indicates that unnecessary stocks are in the firm. This may indicate that there are old or outdated stocks in the portfolio of the enterprise. Firms with a high inventory turnover can have a solid financial infrastructure even if it continues to operate at a relatively low current ratio (Bolak, 2010, p. 39).

$$\text{Debt Turnover} = \text{Overdraft Purchases} \;/\; \text{Trade Payables}$$

The debt turnover rate shows how many times debts are paid in a year. It is calculated by dividing the credit purchases in a certain period by the average trade payables. An increase in debt turnover of enterprises shows that they can pay their debts in a shorter time. Fast payment of debts shows that a company has a healthy financial structure. The high turnover rate of debts also shows that the company follows an effective credit policy. Firms with low debt repayment periods may also have low credibility in the market. Especially in shallow markets, the debt payment habits of enterprises cannot be hidden. As a result, firms with a longer payment period than the average debt payment period available in the sector may have difficulties in finding funds (Yurttadur, 2019, p. 121).

$$\text{Asset Turnover} = \text{Sales} \;/\; \text{Total Assets}$$

Asset turnover is an important firm activity ratio used especially in credit analysis. It is calculated by dividing net sales by total assets. The ratio is a measure of how efficiently the company's assets are being used. It shows the income generated from the assets. The higher the asset turnover rate, the more efficiently a company utilizes its operating capacity. Additionally, the asset turnover rate reflects the contribution of fixed assets to generating sales. Firms with a higher proportion of fixed assets generally exhibit a lower asset turnover rate, as these assets require significant investment and may not directly impact short-term sales. Conversely, specific circumstances may result in a high active turnover rate. In summary, asset turnover is a key criterion for determining the profitability of enterprises (Ceylan and Korkmaz, 2012, p. 68).

2.1. Literature Review

Simon, Sawandi, and Abdul-Hamid (2019) investigated the effects of inflation ratios on working capital ratios and firm performance in a crisis environment. The study analyzed panel data from 675 companies listed on the Nigerian Stock Exchange between 2007 and 2015. Return on assets and return on equity were considered dependent variables, while the receivable collection period, inventory depletion period, cash conversion cycle, and inflation rate were treated as independent variables. The findings revealed that the effect of working capital ratios on firm performance during the inflation period decreased. According to the study, nflation significantly impacts the relationship between working capital and firm performance. The researchers have suggested that firms prepare their working capital to adapt to contingencies in order to improve their performance.

Jokar, Daneshi and Moghadam (2019) examined the effects of inflation and optimal working capital level on firm performance. The data of 90 companies on the Tehran Stock Exchange between 2008 and 2017 were used in their research. The researchers identified a nonlinear relationship between inflation and firm performance. The study revealed that, as inflation increases, financial performance increases, but after a point, the increase in inflation affects the performance of firms negatively. In the study, the same relationship was found between working capital and firm performance.

Naumoski and Juhasz (2018) investigated the effect of inflation and the operating cycle of the enterprise on the cash assets of the enterprise. The data of 868 companies from 11 countries in Southeast Europe, including Türkiye between 2006 and 2015 were examined. The findings determined that inflation has a strong effect on the decision to hold cash assets. There is a non-linear relationship between inflation and cash holding. The researchers have observed that the increase in input prices that will occur with the increase in inflation and the stock investments made to eliminate the risk of future inflation lead to a reduction in an enterprise's cash holdings.

Çelik, Bilen, and Bilen (2016) investigated to what extent the net working capital of enterprises is affected by macroeconomic indicators. The net working capital of the sector was determined using the data for the period 1996-2014. To determine the effect, net working capital was modeled with producer price index, exchange rate, and interest rate. The findings revealed that increases in inflation and exchange rates deplete net working capital. Additionally, the study determined that the interest rate has no effect on the net working capital.

Soukhakian and Khodakarami (2019) investigated the effects of working capital on firm performance, focusing on the roles of inflation and gross domestic product on firms. Panel data analysis was applied to the data of 111 companies operating in the manufacturing sector in Iran between the years 2010-2016. The findings revealed that the cash conversion period is negatively related to the return on assets. The researchers stated that macroeconomic indicators do not alleviate the relationship between working capital and firm performance.

Mills (1996) examined the relationship between cost of capital, product prices, and working capital. Mills mentioned that working capital is critically important in his study and found that the higher net working capital amplifies the impact of inflation on capital expenditures.

Begum (1991) proposed an inflation model for Bangladesh in his study. The study highlighted that since bank credit is the main source of working capital in developing economies, reducing the money supply will increase working capital costs. The findings revealed that this policy will indirectly reflect on prices and rather than reduce inflation, it will increase it again instead.

Riordan and Riordan (2009) investigated the effects of inflation on firms' financial ratios. The researchers observed that even small inflation will cause effective changes on firms' financial ratios. Financial ratios were examined through a sample firm from the construction industry. Due to the lack of stock amount in the company's balance sheet in the study, the cash values of the company showed itself more heavily over the current ratio. The researchers concluded that the company will experience a loss of purchasing power in an inflationary environment.

Kanter, Abar and Öndeş (2021) investigated the effect of inflation on the financial ratios of the enterprise in their study. The study utilized panel data analysis on the data of 19 companies in the textile, clothing

and leather sectors, listed on Borsa Istanbul between 2013-2018. The findings indicated that, inflation has no effect on the current asset ratio of the enterprise, and there is no significant effect on liquidity ratios.

The literature generally includes studies related to inflation and other macroeconomic variables and various financial ratios of enterprises. However, no direct study has been found that correlates activity rates with inflation. Thus, the results obtained from this study will fill the gap in the literature. Moreover, the determination of the effect of inflation on the efficiency of the enterprises and the reflections of the changes in the market to the firm in a practical way have an important place for a companiy's decision makers. The subject of the study is relevant and timely, especially in terms of increasing the ability of firms operating in high inflation economies to adapt to conditions.

3. Data and analysis

The study outlines the dataset, methodology, variables, and hypotheses in detail.

3.1. Data

The study analyzed data from companies listed in the Borsa Istanbul Trade Index (XTCRT) between 2011 and 2021. The analyzed sector is one of the sectors that products are delivered to final consumers in the best possible way through distribution channels and is directly linked to consumer inflation. Therefore, XTCRT companies were selected for analysis in this study. There are 20 companies in the XTCRT index at the time of analysis. However, the data of 6 companies could not be reached during the analysis period. For this reason, analysis was carried out on companies whose data could be accessed continuously between the Q4 2011 to Q3 2021. In the study, quarterly balance sheets of 14 companies were analyzed over 40 periods.

3.2. Method

Combining the data of units such as more than one country, firm, and individual over time is called panel data (Tatoğlu, 2020). Given the presence of multiple units and time-series data, a panel data set was created, and the data set was analyzed by panel data analysis. Various methods can be applied in the use of panel data analysis. In general, these methods assume that long-run relationships and series used in cointegration analyses are stationary at the same level (Pesaran, Shin, & Smith, 2001). If the variables used in the analysis are stationary at different levels, using these models gives erroneous results. As a result of the unit root tests of the variables used in the study, it was concluded that the variables were not stationary at the same level and the details were shared in the later parts of the study. For this reason, the Autoregressive Distributed Lag-ARDL Model was chosen as the suitable model for the study. The ARDL Model can be used in the analysis of long-term relationships, ignoring whether the series are stationary or first-order stationary (Pesaran et al., 2001, Abar, 2020).

3.3. Variables used in analysis

The study investigated the impact of inflation on the operating ratios of enterprises. Therefore, Receivable Turnover (RT), Inventory Turnover (IT), Debt Turnover (DT), and Asset Turnover (AT) were used as independent variables in the analysis. The data of the firms used in the study were obtained from the Public Disclosure Platform.

Since the effect of inflation was investigated in the study, the inflation ratio was used as an independent variable. Inflation can be calculated in various ways: the amount of increase compared to the previous

month, the amount of increase proportional to the same month of the previous year or the amount of increase proportional to the first month of the year, for example. The study used a seasonally adjusted inflation rate variable, based on the increase in the general level of prices compared to the previous period. Given that the periods span three months, the quarterly inflation rates were derived from the TUIK and TCMB databases by taking the average of the quarterly inflation basket.

Firms are affected by the macroeconomic indicators of their respective economy. Inflation is one of these macroeconomic factors. In addition to investigating the effect of inflation ratio (INF) in the study, other macroeconomic data that may influence the dependent variables were included in the study. To minimize potential model errors, additional variables were included. Therefore, as an independent variable to the study; Interest Rate (IR) and US Dollar Exchange Rate (DER) were also included. The IR variable was created by considering the weighted Turkish Lira interest ratio applied to commercial loans opened by banks in the TCMB database. The data of these macroeconomic indicators are taken from the TCMB database by calculating their periodic averages (https://evds2.tcmb.gov.tr/, 2022). The IR and DER variables were selected as control variables based on their use in prior studies by Özer et al. (2011), Kaya et al. (2013), Sevinç (2014), Yılmaz et al. (1997), Koyuncu (2010), and Fattah and Kocabıyık (2020).

3.4. Model and hypotheses

Given the presence of four distinct dependent variables in the study, four different models were established. The established panel data models and corresponding hypotheses established are given below.

Model 1: $RT_{it} = \alpha_{it} + \beta_1 INF_{1it} + \beta_2 IR_{2it} + \beta_3 DER_{3it} + u_{it}$

i: 1,....,14; t: 2011 Ç4,....,2021Ç3

The hypotheses related to Model 1 are as follows:

H_1: The inflation rate affects the receivables turnover rate of enterprises.

H_2: The interest rate affects the receivables turnover rate of enterprises.

H_3: The dollar exchange rate affects the receivables turnover rate of enterprises.

Model 2: $IT_{it} = \alpha_{it} + \beta_1 INF_{1it} + \beta_2 IR_{2it} + \beta_3 DER_{3it} + u_{it}$

i: 1,....,14; t: 2011 Ç4,....,2021Ç3

The hypotheses related to Model 2 are as follows:

H_4: The inflation ratio affects the inventory turnover rate of the enterprises.

H_5: The interest rate affects the inventory turnover rate of the enterprises.

H_6: The dollar exchange rate affects the inventory turnover of the enterprises.

Model 3: $DT_{it} = \alpha_{it} + \beta_1 INF_{1it} + \beta_2 IR_{2it} + \beta_3 DER_{3it} + u_{it}$

i: 1,....,14; t: 2011 Ç4,....,2021Ç3

The hypotheses related to Model 3 are as follows:

H_7: The inflation ratio affects the debt turnover of enterprises.

H_8: The interest rate affects the debt turnover of enterprises.

H_9: The dollar exchange rate affects the debt turnover of enterprises.

Model 4: $AT_{it} = \alpha_{it} + \beta_1 INF_{1it} + \beta_2 IR_{2it} + \beta_3 DER_{3it} + u_{it}$

i: 1,....,14; t: 2011 Ç4,....,2021Ç3

The hypotheses related to Model 4 are as follows:

H_{10}: The inflation ratio affects the asset turnover rate of the enterprises.

H_{11}: The interest rate affects the asset turnover rate of the enterprises.

H_{12}: The dollar exchange rate affects the asset turnover rate of the enterprises.

4. Results

Descriptive statistics of the data used in the study are presented in Table 1.

Table 1

Descriptive Statistics

Variable	Medium	Median	Maximum	Minimum	Std. Dev.	Std. Err.	Distortion	Kurtosis	Number of Observations
RT	33,23	11,68	1614,58	0	80,06	3,38	14,11	272,67	560
IT	38,56	6,79	662,60	0	102,25	4,32	4,23	18,59	560
DT	7,33	3,93	245,40	0	14,33	0,61	9,75	141,38	560
AT	1,96	1,77	6,01	0	1,48	0,06	0,56	−0,32	560
INF	0,05	0,04	0,13	0	0,04	0,001	0,92	−0,18	560
IR	16,06	14,76	30,56	9,78	4,80	0,20	1,37	1,52	560
DER	3,93	3,12	8,53	1,78	2,07	3,76	0,78	−0,67	560

A Thousand Turkish Lira*

When Table 1 is examined, the average receivables turnover (RT) average value of the enterprises in the study is 33.23. Based on the RT ratio, it has been determined that the average debt collection period of the enterprises inclued in this study comprises around 10 days. When the minimum, maximum and median RT ratios of the firms in the analysis are examined, it can be said that the firms make most of their sales in cash or short-term basis. When the inventory turnover (IT) of the enterprises is examined, it is determined that the average value is 38.56. The average debt turnover (DT) value of the enterprises is 7.33.

4.1. Panel unit root tests

Panel unit root tests are divided into two types in terms of considering the cross-section dependency. The determination of the unit root test to be used depends on the result of the correlation between the units in the data. If there is a correlation between units in the data, and if there is no second generation, first generation panel unit root tests can be applied (Tatoğlu, 2018). Pesaran (2004) CD test was applied to determine the correlation between the units of the panel data in the study, and the results are presented in Table 2.

Table 2

Inter-Unit Correlation Test Results

Variables	CD Test	P Value	Correlation
RT	0,46	0,648	0,008
IT	−1,84	0,066	−0,030
DT	2,41	0,016	0,040

Variables	CD Test	P Value	Correlation
AT	-0,03	0,973	-0,001

When the test results calculated in Table 2 are examined, the null hypothesis, which assumes that there is no inter-unit correlation, was rejected for the DT variable and accepted for the other variables. According to the results, due to the presence of inter-unit correlation in the DT variable, first generation panel unit root tests will be applied, while second-generation tests will be used for the other variables. Since the independent variables in the study are time series, unit root test will be applied to the independent variables. Then, the macroeconomic data selected as the independent variable was transformed into panel data.

In the study, LLC Test developed by Levin, Lin and Chu (2002) was applied to investigate the unit roots of RT, IT and AT variables. The LLC Test was preferred in the study as it is a test that maintains its validity in cases where the unit size is between 10 and 250 and the time dimension is between 25 and 250 (Tatoğlu, 2018).

Table 3

LLC Test Results

Variables	P Value
RT	0,665
IT	0,012
AT	0,004

When the LLC Test results in Table 3 were examined, it was determined that the IT and AT variables were stationary. The RT variable, on the other hand, was found to be stationary at level.

Due to the presence of inter-unit correlation, the Extended Cross-Section Im, Pesaran, and Shin (CIPS) Panel Unit Root Test, proposed by Pesaran (2007), was applied. This test is among the panel unit root tests that account for inter-unit correlation, was specifically applied to the DT variable. The test results are presented in Table 4.

Table 4

CIPS Test Results

Variable	CIPS Statistics	Critical Values		
		%10	%5	%1
DT	-3,263	-2,14	-2,25	-2,44

Table 4 shows the results of the CIPS Test. The series is considered stationary when the CIPS Statistics given above are greater than the critical values in absolute degrees. When the results were examined, it was determined that the DT variable was stationary at 1% significance level.

Non-stationary variables in time series indicate that there is a unit root. If the series is not stationary, the effect of the shock on the variable is permanent. In the study, the stationarity of the time series was tested with Generalized Dickey-Fuller (ADF) and Philips-Perron (PP) tests, and the results are presented in Table 5. Before applying the tests on the variables, the graphs were examined and their constant and trend conditions were checked, and the tests were applied according to these results. The Schwarz Information Criteria was used as a delay criterion in the tests.

Table 5
ADF and PP Test Results

Variables	ADF Test Statistics	PP Test Statistics
INF	-4,822***	-4,770***
IR	-2,442	-2,088
DER	-1,392	-0,906

***, 1% significance level

When the results in Table 5 are examined, it has been determined that the INF variable is stationary at the 1% significance level according to the ADF and PP test results. IR and DER variables contain unit root. When the difference of non-stationary series is taken, they become stationary.

4.2. Model selection and prediction results

In many methods used in panel data analysis, there is an assumption that long-term relationships and series are stationary at the same level for cointegration analysis (Pesaran et al., 2001). If the variables in the models are stationary at different levels, using these models causes erroneous results. The Autoregressive Distributed Lag-ARDL Model, on the other hand, can be used in the analysis of long-term relationships regardless of whether the series are stationary or first-level stationary (Abar, 2020, Pesaran et al., 2001).

As a result of the stability tests performed in the study, it was determined that the variables IT, AT, DT and INF were stationary. RT, IR and DER variables were found to be stationary at the first level. Since the stability levels of the variables are different from each other, the Panel ARDL model was used to examine the long-term relationships.

In ARDL model estimation, two basic methods are used: the mean group (MG) and the pooled group (PMG) (Pesaran, 2006, Erdem, Guloglu, & Nazlioglu, 2010). Hausman (1978) Test is applied to decide which method will be suitable for the established model. The results of the applied test are presented in Table 6.

Table 6
Hausman Test Results

Models	Chi-Square	P Value
Model 1	3,18	0,3643
Model 2	1,77	0,6213
Model 3	2,76	0,4299
Model 4	1,08	0,8982

When the Hausman test results in Table 6 are examined, the null hypothesis of the test cannot be rejected because the calculated p values are greater than the 5% significance level. Consequently, the PMG estimator is suitable for the models. The ARDL method results for the models are given below.

Table 7
ARDL Method Results for Model 1

Variables	Long Term Equation			
	Coefficient	Std. Error	t-Statistics	P Value
INF	-3,026	1,159	-2,610	0,009
IR	0,002	0,005	0,456	0,649

Variables	Long Term Equation			
	Coefficient	**Std. Error**	**t-Statistics**	**P Value**
DER	0,201	0,016	12,416	0,000
Variables	**Short Term Equation**			
	Coefficient	**Std. Error**	**t-Statistics**	**P Value**
EC	−0,201	0,090	−2,227	0,026
D(RT(-1))	0,348	0,093	3,736	0,002
D(INF)	120,363	119,379	1,008	0,313
D(IR)	0,849	0,867	0,979	0,328
D(DER)	6,595	6,875	0,959	0,338
C	4,236	2,020	2,096	0,036

The general results obtained for all units in Model 1 are presented in Table 7. According to the results obtained, Error Correction Term (EC) is between 0 and −1. This finding shows that EC is significant and the EC system is functioning as expected. In the established model, it is seen that approximately 20% of the effect caused by external shocks is eliminated by the error correction system within a period. There is a long-term relationship between the dependent variable in Model 1 and the independent variables of INF and DER. The coefficients of the INF and DER variables are significant at the 1% significance level according to the p value found. No long-term significant relationship was found between the IR variable and the dependent variable in the model. A one-unit increase in the INF variable negatively affects RT by −3,026 units. A one-unit increase in the DER variable, on the other hand, affects the RT variable by 0.201 units positively. When the short-term relationship equation in the results was examined, it was determined that the coefficients of all independent variables were insignificant.

Table 8

ARDL Method Results for Model 2

Variables	Long Term Equation			
	Coefficient	**Std. Error**	**t-Statistics**	**P Value**
INF	−469,122	279,857	−1,677	0,0943
IR	1,714	0,935	1,833	0,067
DER	5,038	3,267	1,542	0,123
Variables	**Short Term Equation**			
	Coefficient	**Std. Error**	**t-Statistics**	**P Value**
EC	−0,051	0,043	−1,168	0,243
D(IT(-1))	0,317	0,072	4,416	0,000
D(INF)	32,690	18,694	1,749	0,081
D(IR)	0,124	0,279	0,443	0,657
D(DER)	−2,353	3,466	−0,679	0,497
C	1,044	1,778	0,588	0,557

When the ARDL estimation result for the variables in Model 2 is examined, it is concluded that the long and short term effects of the independent variables on the dependent variable are not significant.

Table 9
ARDL Method Results for Model 3

Variables	Long-Term Equation			
	Coefficient	**Std. Error**	**t-Statistics**	**P Value**
INF	−3,121	1,108	−2,815	0,005
IR	0,007	0,003	2,240	0,025
DER	0,053	0,014	3,718	0,000
Variables	**Short Term Equation**			
	Coefficient	**Std. Error**	**t-Statistics**	**P Value**
EC	−0,535	0,132	−4,055	0,000
D(DT(-1))	−0,038	0,081	−0,473	0,637
D(INF)	15,162	8,342	1,817	0,070
D(INF(-1))	35,210	34,230	1,008	0,314
D(IR)	0,061	0,159	0,384	0,701
D(IR(-1))	−0,126	0,163	−0,773	0,440
D(DER)	−2,005	2,669	−0,751	0,452
D(DER(-1))	−3,011	3,842	−0,784	0,433
C	4,910	2,506	1,959	0,051

The general results obtained for all units in Model 3 are presented in Table 9. According to the results obtained, the EC coefficient is between 0 and −1. This result shows that EC is significant and EC system is functioning effectively. In the model, approximately 53% of the effect caused by external shocks is eliminated by the error correction system within a period. There is a long-term relationship between the dependent variable in Model 3 and all independent variables. The coefficients of the INF, IR and DER variables are significant at the 5% significance level. A one-unit increase in the INF variable negatively affects DT by −3,121 units according to the p value found. A one-unit increase in the IR variable affects the DT variable by 0.007 units positively. A one-unit increase in the DER variable, on the other hand, affects the DT variable by 0.053 units positively. When the short-term relationship equation in the results was examined the coefficients of all independent variables were insignificant.

Table 10
ARDL Method Results for Model 4

Variables	Long-Term Equation			
	Coefficient	**Std. Error**	**t-Statistics**	**P Value**
INF	−0,655	1,453	0,451	0,652
IR	0,029	0,006	4,795	0,000
DER	−0,448	0,022	−1,997	0,046
Variables	**Short-Term Equation**			
	Coefficient	**Std. Error**	**t-Statistics**	**P Value**
EC	−0,226	0,078	−2,910	0,004
D(AT(-1))	−0,093	0,049	−1,883	0,060
D(INF)	1,551	0,761	2,039	0,042
D(IR)	−0,005	0,008	−0,639	0,523

Variables	Long-Term Equation			
	Coefficient	**Std. Error**	**t-Statistics**	**P Value**
D(DER)	−0,040	0,046	−0,878	0,380
C	0,271	0,092	2,923	0,003

The general results obtained for all units in Model 4 are presented in Table 10. According to the results obtained, the EC coefficient is between 0 and −1. This finding demonstrates that EC is significant and EC system is working. In the established model approximately 22% of the effect caused by external shocks is eliminated by the error correction system within one period. A significant relationship could not be established between the dependent variable in Model 4 and the INF variable in the long-term equation. The coefficients of the IR and DER variables are significant at the 5% significance level. A one-unit increase in the IR variable positively affects the AT variable by 0.029 units. Conversely, a one-unit increase in the DER variable negatively affects the ACCV variable by −0.448 units. When the short-term relationship equation in the results was examined, it was determined that the coefficient of the independent variables INF variable was significant at the 5% significance level according to the p value found. In the short term, a one-unit change in the INF variable positively affects the AT variable by 1.51 units.

5. Conclusion

This study examines the effects of inflation, interest rate and exchange rate on firms' operating ratios. A total of twelve hypotheses were established and tested using ARDL methodology. For model 1, hypotheses H_1 and H_3 are accepted indicating a significant long-run relationship between inflation, exchange rate, and Receivable Turnover ratio. However, H_2 hypothesis is rejected. There is no significant long-run relationship between exchange rate and Receivable Turnover ratio.

In Model 2, no significant relationship was found between Inventory Turnover ratio and inflation, interest rate and exchange rate. As a result, hypotheses H_4, H_5 and H_6 are rejected.

In Model 3, the relationship between Debt Turnover ratio and inflation, interest rate and exchange rate is analysed. According to the results of the analyses, it is determined that all independent variables have significant effects on Debt Turnover ratio. Consequently, hypotheses H_7, H_8 and H_9 are accepted.

For Model 4, hypotheses H_{11} and H_{12} are accepted confirming significant effects of interest rate and exchange rate on Asset Turnover ratio. However, hypothesis $H_{10,\ which}$ relates to the effect of inflation, is rejected.

6. Discussion

The financial ratios of enterprises are influenced by both micro and macro factors. Micro factors are also called internal factors, originate within the firm. Macroeconomic effects, refer to the impact of change in the current economy on a firm’s financial performance. Inflation is one of the most significant changes in Turkish economy today. High inflation ratios adversely affect a firm’s financial decisions, and the failure to accurately assess these effects leads to deviations in managerial decision-making.

This study examined the effect of inflation rates on firm activity rates, and emphasized the importance of identifying factors influencing enterprise decision-making. In order to determine the effect, panel data

analysis was condeucted on 14 companies listed in the XTCRT index with complete and accessible data. The time dimension of the study was determined between the 4th quarter of 2011 and the 3rd quarter of 2021.

When the results obtained were examined, it was determined that inflation had a significant and negative effect on the RT ratio. A one-unit increase in the inflation rate creates a 3,026-unit decrease in the RT rate. The decrease in RT ratio creates negative effects for firms. The decrease in the RT ratio shows that there are problems in the receivable policies of the enterprise. This suggests that firms are experiencing difficulties in collecting their receivables at the observed rate of decline.

Firms are required to fulfill their debts within the determined terms. In this respect, firms are loyal to their debts and maturities. However, this change in the receivables policy with inflation puts the debt repayment capabilities of the enterprises into difficulty. When this result is examined, the debt payment period in the market is extended. Firms prefer to use their assets in different areas with the effect of inflation and other macroeconomic variables. The loosening of the credit policy of the enterprises due to the market conditions is due to the inflation deteriorating the debt-credit balance.

When the skewness values of the data from the examined period were analyzed, it was observed that debt payment periods were extended. In these cases, firms relying on foreign financing may be more adversely affected. A decrease in receivables turnover may lead to a cash crunch, leaves firms in a difficult situation in paying their debts. The additional financial costs arising from the failure to pay the debts on time will cause the financial balance of the firm to deteriorate. Enterprises that continue their capital-intensive activities may be affected in the form of a decrease in their return on equity. Considering two situations, capital-intensive managed enterprises will be less affected by the impact of inflation on credit policies.

When the impact of rising inflation on the DT rate is examined, it has been determined that inflation has a negative effect on the DT rate. A one-unit increase in the inflation rate negatively affects the DT rate of 3,121. At first glance, this ratio coincides with the result of the prolongation of debt payment periods in the market, which is derived from the decrease in the RT ratio. Furthermore, considering the components of the DT ratio, the negative effect caused by inflation is due to the increase in borrowings of the enterprises.

According to the results of the DT ratio obtained in the study, it can be said that firms have increased their use of foreign resources in order to protect themselves from the effects of inflation. Assuming that rising inflation negatively affects the DT ratio, a decrease in the DT ratio would require either an increase in total debts or a reduction in credit purchases. During inflationary periods, since selling firms tend to sell goods on less credit, buyers must increase their total debt in order to reduce DT. According to the results of the analysis, considering that there are foreign source and vendor loans in short and long-term resources, we have reached the conclusion that the enterprise has increased its foreign resources, since there has been no increase in vendor loans. The question here is why the firm is doing this kind of manoeuvre. Why is it increasing its foreign resource? In response to this, we can say that firms increase the use of foreign resources in their own country's currency in order to protect themselves from the negative effects of inflation. Firms have resorted to borrowing due to lack of capital and seeing it as a profit opportunity. This is driven by declining working capital, resulting from inflation-induced price increases outpacing the growth in firms' sales volumes. Firms continue their activities with more funds than the previous day in an economy with high inflation. Eventually, this results in the insufficiency of the working capital of the enterprises.

On the other hand, the primary factor driving firms to borrow money during periods of inflation is the negative real interest rate in the market, which creates a perceived profit potential. A market interest rate below the inflation rate encourages the actors in the market to borrow and debt turnover rates increase.

As a matter of fact, it was determined that the IR variable added as a control variable in the study had a positive and significant effect on the DT variable.

Firms must maintain the balance of receivables and debts to sustain their operations. Although this balance cannot be achieved in the short term due to periodic shocks, the balance of receivables and debt is of vital importance for firms in the long run. The study's findings consistently demonstrate the negative effect of inflation on receivables and debt turnover rates. Accordingly, the study concludes that firms provide the balance of receivables and debts in the long term.

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