ARAŞTIRMA MAKALESİ / RESEARCH ARTICLE

THE EFFECT OF INFLATION ON FIRM PROFITABILITY: AN APPLICATION IN RETAIL SECTOR OF BORSA ISTANBUL

ENFLASYONUN FİRMA KÂRLILIĞINA ETKİSİ: BORSA İSTANBUL PERAKENDE SEKTÖRÜNDE BİR UYGULAMA

Assist. Prof. Dr. Faruk DAYI[1]

ABSTRACT

The cost of sales increases together with an increase in inflation. The firms that aims to reach a profit target, reflect the cost increases on prices. Increases in prices may be higher than those in costs. Increasing prices lead to inflation. The firms in Turkey experienced a sudden increase in the exchange rates in the period of July-September 2018, and used this depreciation as an excuse for increasing their prices. However, even those firms that were slightly affected by the increase in the exchange rates did so. The aim of the study is to determine the effect of inflation due to the increase in the exchange rates on firm profitability. The study sample consists of ten retail trade firms traded at the Borsa Istanbul equity market. Earnings, cost of sales, gross profit, operating profit and net profit data for Q2-Q3 of 2017 and 2018 are used. A paired sample t-test is conducted to determine the variables' change between 2017 and 2018 periods. The findings indicate that the variables do not change significantly from 2017 to 2018. Variables are also analyzed by using percentage method. The results show that the supermarket firms' profits are higher than the increases in their costs.

Keywords: Inflation, Cost, Profit, Retail Sector, Financial Analysis.

JEL Classification Codes: E31, D20, D24, L81.

ÖZ

Enflasyonun artmasıyla birlikte satışların maliyeti de artmaktadır. Hedeflenen kâra ulaşmak isteyen firmalar maliyetlerindeki artışı, ürünlerin satış fiyatına yansıtmaktadır. Fiyatlardaki artış ürünlerin maliyetlerindeki artıştan daha fazla olabilmektedir. Ürün ve hizmetlerin satış fiyatını olması gerekenden daha fazla artıran firmalar, enflasyonun da daha fazla artmasına neden olmaktadır. Türkiye'de 2018 yılı Temmuz-Eylül döneminde yaşanan döviz kurundaki ani yükselişi gerekçe gösteren bazı firmalar satış fiyatlarını artırmıştır. Döviz kurundaki yükselişten pek etkilenmeyen firmalar da birçok ürün ve hizmetin fiyatını yüksek oranda artırmıştır. Bu çalışmanın amacı döviz kurundaki yükseliş sonucunda artan enflasyonun firmaların kârlılıkları üzerine etkisini değerlendirmektir. Fiyatlardaki artışın tüketicileri yakından ilgilendirdiği Borsa İstanbul'da işlem gören perakende ticaret sektöründeki 10 firma araştırmaya dâhil edilmiştir. Firmaların 2017 ve 2018 2Ç-3Ç dönemlerine ait hasılat, satışların maliyeti, brüt kâr, faaliyet kârı ve net kâr verileri kullanılmıştır. Değişkenlerin 2017 ve 2018 dönemleri arasındaki değişim, bağımlı örneklem t-testinin kullanılmasıyla incelenmiştir. Bulgular, değişkenlerde 2017'den 2018'e anlamlı bir farklılığın yaşanmadığına işaret etmektedir. Ayrıca değişkenler yüzde yöntemiyle analiz edilmiştir. Analiz sonucunda süpermarket firmalarının maliyetlerdeki artıştan daha yüksek oranda kâr ettikleri tespit edilmiştir.

[1] Kastamonu University, Faculty of Economics and Administrative Sciences, Department of Business Administration, fdayi@kastamonu.edu.tr

Anahtar Kelimeler: Enflasyon, Maliyet, Kâr, Perakende Sektörü, Finansal Analiz.

JEL Sınıflandırma Kodları: E31, D20, D24, L81.

1. INTRODUCTION

Inflation is a serious problem that deteriorates the macroeconomic stability of Turkey. A continuing rise in prices causes inflation (Ünsal, 2007: 96). Inflation reduces the purchasing power of money, and therefore, fewer goods and services become available for the same amount of money. Uncontrolled inflation reduces the real purchasing power of consumers. When there is a decrease in demand, sellers have difficulty selling their products. Trade is negatively affected when there is no exchange between the buyers and the sellers. For economic growth, factors that cause inflation should be examined and taken into consideration.

There is a strong, and generally, a two-stage relationship between exchange rate and inflation (Özatay, 2011: 131). In the first stage, an increase in the exchange rate leads to an increase in import costs. Producers pass on increasing import costs to prices. Increases in prices affect consumers negatively (Alacahan, 2011: 50). Menon (1996) defines the effect of exchange rate on prices as the change in import and export prices due to a one-unit change in a national currency.

The rising inflation in 2018 caused by the increased costs due to the increase in the exchange rate in Turkey should be examined. Figure 1 shows the monthly Consumer Price Index (CPI) and Producer Price Index (PPI) values for the 2017-2018 period.
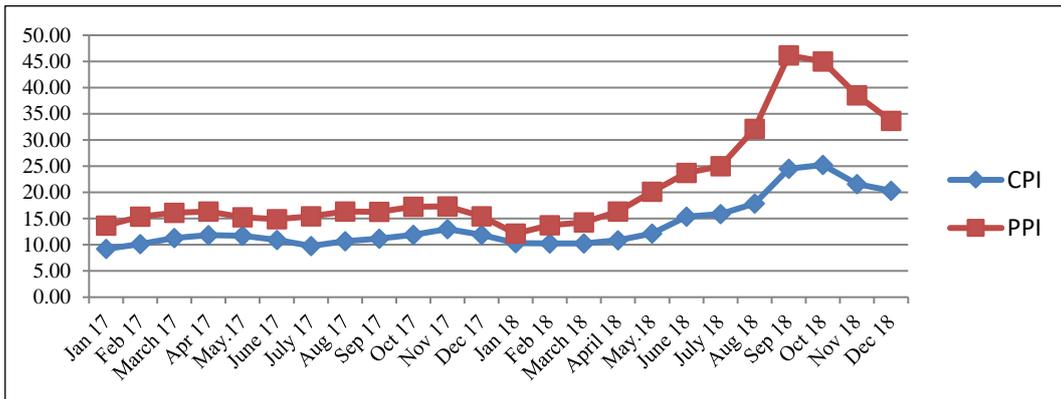

Figure 1. CPI and PPI for 2017-2018 in Turkey

Source: (Central Bank Republic Turkey, 2019).

Figure 2 shows the first and the last day of month United States Dollar and Euro values for the 2017-2018 period.
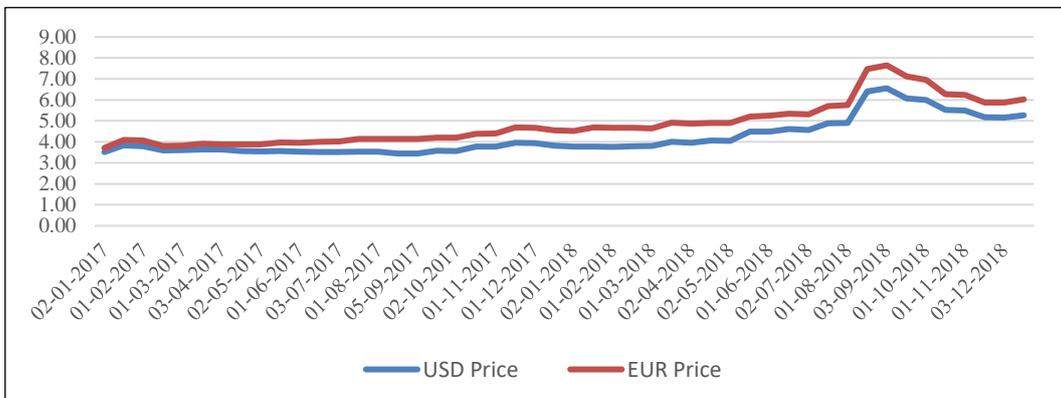

Figure 2: USD and EUR Currency Price for 2017-2018 in Turkey

Source: (CBRT, 2019).

Inflation (CPI-PPI) started to rise in April 2018 (Figure 1). The increasing trend in the exchange rates began in April 2018. There was a sharp increase in the exchange rate at the beginning of August 2018 (Figure 2). Turkish lira sharply lost its value against dollar because US President Trump authorized sanctions and more tariffs on Turkey. The sudden and drastic increase in the exchange rates had a direct impact on the costs of imported inputs. Due to the rises in the exchange rates, many firms significantly increased the prices of their products and services. Therefore, there was a sudden and rapid rise in inflation in September 2018. The White House removed the sanctions on Turkey in October 2018, and the Turkish Government implemented new monetary and fiscal policies, which resulted in a fall in the exchange rates and inflation.

The increase in the exchange rate led to an increase in interest rates, which resulted in an increase in borrowing costs. Cash sales were preferred over forward sales. The rise in prices of imported goods negatively affected firms' financial status. Not only rise in the exchange rate but also inflation increased the interest rates, which resulted in an increase in loan utilization fees (Pabuçcu and Ayan, 2017: 41-42). The increase in capital costs slowed down the growth of the firms (Ulusoy, 2008: 228). In some sectors, investments were suspended or ongoing investments came to a halt. The retail sector was mostly affected by price increases. Customers tended to meet only their essential needs. Some firms either changed the packaging of their products or reduced their weight to prevent customers from perceiving the price increases. The government inspected those firms and fined those that stockpiled. However, the inspections hit the supermarket firms the worst. Since the supermarket firms that increased prices did not sell directly, it was the supermarket firms that the inspections hit the worst. The retail firms, which wished to stave off the crisis, priced their products and maintained a certain profit margin without losing their consumers, whose purchasing power had been greatly curtailed inflation adversely affects the financial position of firms and reduces their value (Feldstein, 1978: 839). The short-term increase in the exchange rates lowered the value of the retail firms traded on the stock exchange.

The aim of this study was to determine the effect of inflation on the profitability of the firms which increased the prices of their products and services. In this study it was to analyze the change in their profitability due to the sudden and drastic increase in the exchange rate in Turkey in 2018. It was tried to determine whether firms increased prices the reason of exchange rate. Therefore, it was researched unfair firm profits. The study is expected to contribute significantly to literature.

2. CONCENPT OF INFLATION

Inflation is a dynamic concept that emerged for the first time in Europe at the beginning of the sixteenth century. Inflation depends on the interaction of various factors (Aydoğan, 2004:92). Inflation is defined as a situation in which total demand is greater than total supply. Money, supply, demand and external factors affect inflation (Özcan, 2013: 35), which decreases the purchasing power of the currency and the real return. Controlling inflation is, therefore, crucial for economic stability.

There are different types of inflation, such as demand-pull inflation, cost inflation and price inflation as well as creeping inflation, chronic inflation and hyperinflation. Demand-pull inflation is defined as an increase in prices as a result of an increase in demand for those goods or services. It is also defined as a rise in prices when the total demand is higher than the total supply. Aside from an increase in prices, when the demand for labor is greater than the supply of labor, the price of labor rises. It is also the case for money supply and demand. An increase in money supply increases the welfare level and leads to more consumption, resulting in an increase in prices while there is no change in production rate (Meral, 2005: 310-312).

Cost inflation arises from an increase in input prices, regardless of demand for goods. An increase in prices of cost factors such as raw materials and energy increases the cost of production. Prices rise when the cost increase is passed on to them, uncontrolled raw material costs lead to constant price increases. When consumers do not want to buy expensive products, sellers cannot make sales. The retail and wholesale sectors suffer economic losses when consumers do not make purchases other than to meet their essential needs.

Inflation reduces real wealth. Wealth holders should, therefore, save more to restore their wealth to its previous level, which reduces interest rates and provides money flow from portfolio investments to real capital (Berber and Altan, 2004: 2-3). Inflation hinders economic growth as well (Karaca, 2011: 247). A continuous rise in inflation may cause uncertainty in inflation (Artan, 2008: 114). However, social consensus reduces inflation, and therefore,

individuals, businesses and the government should make compromises and collaborate to combat inflation (Karaçor, 1999: 76-79). Stabilization policies based on freely floating exchange rate and inflation-targeting based on full autonomy should be implemented to fight inflation in Turkey (Şahinoğlu et al., 2010: 29).

Turkey has been combatting inflation for a long time. It kept the currency undervalued in the 1980s and implemented an export-oriented growth model and therefore experienced approximately 6.5% of economic growth between 1983 and 1987. Inflation tends to increase with economic growth (Oktayer, 2010: 434). Something similar occurred in August 2018. The Turkish Lira was depreciated and devalued, which led to an increase in prices due to costs, resulting in inflation. The increase in the exchange rate increased export rates. Inflation was expected to reduce firm profitability, however, it may actually led to an increase in it. This suggested that some firms might have increased the prices of their products more than required by the cost increase.

3. LITERATURE REVIEW

Polat and Peker (2016) examined the effect of macroeconomic factors on the performance of automotive firms. They used a multiple regression model to analyze the 1993-2012 macroeconomic data of 11 firms. They reported that there was a moderate and negative correlation between earnings and CPI and PPI.

Akel and İltaş (2016) investigated the macroeconomic determinants of working capital. In order to develop a model consisting of macroeconomic variables, they used the 2003-2013 financial statement data of firms traded in different sectors on the Borsa Istanbul. They performed a panel data analysis using a model of firm-specific variables and macroeconomic indicators (gross domestic product, industrial production index, CPI, exchange rate, interest rate and money supply). They reported that macroeconomic variables had an effect on working capital and profitability, and therefore, they recommended that those variables should be taken into consideration for liquidity and profitability.

Erdaş (2015) examined the effect of macroeconomic and working capital factors on firm profitability. They used multiple regression to analyze the 2008-2014 macroeconomic indicators and financial statement data of eight tourism firms traded on the Borsa Istanbul. The results indicated no significant relationship between inflation rate and net profit margin.

Lee (2014) examined the effect of firm-specific and macroeconomic factors on Taiwan insurance firms' profitability and reported no significant relationship between profitability and inflation.

Bhutta and Hasan (2013) investigated the effect of food inflation on the profitability of Pakistani food firms and performed a multiple regression analysis to analyze 2002-2006 financial statement and macroeconomic data. They concluded that there was a positive, albeit insignificant, correlation between firm size, food inflation and firm profitability.

Lu et al. (2008) used 1978-2006 data to determine the effect of nine indicators on Chinese firms' profitability. They found that inflation had an effect on their profitability but that they continued to make a profit even after inflation adjustment.

Akalın and Dilek (2007) examined the factors that firms should take into consideration when making decisions under uncertainty. They concluded that the government should provide economic stability to ensure that firms are not affected negatively by macroeconomic indicators such as inflation and deflation.

McDonald (1999) analyzed the 1984-1993 macroeconomic data and financial statement of Australian manufacturers to determine the factors affecting their profitability. They reported that salaries were adjusted for inflation, which was therefore negatively correlated with firm profitability.

Lee and Rask (1976) used 1960-1976 data of American agricultural firms to examine the relationship between their profitability and inflation. They concluded that firms should take their working capital into consideration when budgeting their capital, that is, when making investments. They also reported a correlation between firm profitability, inflation and economic growth.

Marcus (1969) used regression analysis to analyze the data of 118 firms operating in different sectors in order to determine whether there was a correlation between firm size and profitability. They concluded that there was a significant correlation between profitability, product prices and cost increase in most firms.

4. DATA AND METHODOLOGY

The aim of this study was to examine the effect of the rapid and sudden increase in the exchange rate in 2018 on Turkish firms' costs and net profit. The study sample consisted of retail trade firms traded on the Borsa Istanbul. The firms included in the study were those most preferred by consumers and retail trade firms are directly contacting consumers This study compared the 2017 data of the firms to determine whether they passed on the increase in the exchange rate to prices and to analyze the correlation between the increase in the exchange rate and firm costs and net profit. Table 1 shows the studied firms (KAP, 2019).

Table 1. Retail Firms Traded on the Borsa Istanbul

No	Name and Commercial Title	Data Source
1.	ADESE Shopping Mall Trade Inc.	(ADESE, 2019)
2.	BIM United Stores Inc.	(BIM, 2019)
3.	BIMEKS Information Technology and Foreign Trade Inc.	(BIMEKS, 2019)
4.	BIZIM Wholesale Stores Inc.	(BIZIM, 2019)
5.	CARREFOURSA Carrefour Sabancı Trade Center Inc.	(CARREFOURSA, 2019)
6.	MAVI Clothing Industry and Trade Inc.	(MAVI, 2019)
7.	MEPET Metro Petroleum and Plants Industry Trade Inc.	(MEPET, 2019)
8.	MIGROS Trade Inc.	(MIGROS, 2019)
9.	MILPA Commercial and Industrial Products Marketing Industry and Trade Inc.	(MILPA, 2019)
10.	SOK Grocery Stores Inc.	(SOK, 2019)
11.	TEKNOSA Domestic and Foreign Trade Inc.	(TEKNOSA, 2019)
12.	VAKKO Textile and Clothing Industry Enterprises Inc.	(VAKKO, 2019)

SOK Grocery Stores Inc. and MILPA Commercial and Industrial Products Marketing Industry and Trade Inc. was excluded from analysis because of missing data. Table 2 shows the variables, codes, frequency levels and data source.

Table 2. Variables and Data Sets

Variables	Abbreviation	Frequency Level	Data Source
Earnings	Earnings	Q2 and Q3	Consolidated Financial Statements
Cost of sales	Cos	Q2 and Q3	Consolidated Financial Statements
Gross profit	Gprofit	Q2 and Q3	Consolidated Financial Statements
Operating profit	Oprofit	Q2 and Q3	Consolidated Financial Statements
Net profit	Nprofit	Q2 and Q3	Consolidated Financial Statements

Changes in percent in the 2018 and 2017 years were calculated and used for analysis.

5. RESULTS AND DISCUSSION

Pearson correlation test was used to determine the correlation levels between variables over the two years. Paired sample t- test was employed to identify whether each of the variables changed significantly from 2017 to 2018. Then, by using percentage changes, the profitability of retail sector and specifically, the supermarket sector was investigated and discussed.

5.1. Correlation Test Results

A correlation test was used to determine the correlation level between the variables in the model. The variables change together, and therefore, are expected to be highly correlated. Changes in percent for Q2 between Q3 and 2017 and 2018 were used in the correlation test. Table 3 shows the correlation test results.

Table 3. Correlation Test Results

		earnings1	earnings2	cos1	cos2	gprofit1	gprofit2
Earnings1	Pearson Correlation	1	.996**	.997**	.997**	.938**	.914**
	Sig. (2-tailed)		.000	.000	.000	.000	.000
	N	10	10	10	10	10	10
Earnings2	Pearson Correlation	.996**	1	.991**	.997**	.940**	.918**
	Sig. (2-tailed)	.000		.000	.000	.000	.000
	N	10	10	10	10	10	10

Note: Earnings1, Cos1 and Gprofit1 represent the variables in 2017. Earnings2, Cos2 and Gprofit2 represent the variables in 2018.

Earnings of 2017 and 2018 are compared with the cost of sales and profit accounts to understand whether they show similar changes. Under normal circumstances, it is expected that there will be a high correlation between earnings, cost of sales and gross profit, because gross profit is calculated by deducting the costs from sales. However, the correlation structure can change, if the balances between earnings, cost of sales and gross profit disappear due to increasing the sales prices more than the increase in the cost of sales. Earnings 1 and 2 were highly correlated with cost of sales and gross profit in both years. Apparently, the correlation structure has not changed over the two years.

5.2. Paired Sample t-Test Results

A paired sample t-test is used to examine whether the variables were significantly different from each other in 2017 and 2018. The null hypothesis is that the mean difference between the paired variables are zero. Table 4 shows the paired samples test results.

Table 4. Paired Samples Test Results

		Paired Differences							
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
					Lower	Upper			
Pair 1	earnings1 -earnings2	-1.13765	3.24947	1.02757	-3.46218	1.18688	-1.107	9	.297
Pair 2	cos1 - cos2	-.91195	3.38090	1.06913	-3.33049	1.50660	-.853	9	.416
Pair 3	gprofit1 - gprofit2	3.19063	12.45926	3.93997	-5.72219	12.10345	.810	9	.439
Pair 4	oprofit1 - oprofit2	43.24193	94.07899	29.75039	-24.05813	110.54198	1.453	9	.180
Pair 5	nprofit1 - nprofit2	3.93245	95.41255	30.17210	-64.32158	72.18647	.130	9	.899

Note: Earnings1, cos1, gprofit1, oprofit1 and nprofit 1 represent the variables in 2017. Earnings2, cos2, gprofit2, oprofit2 and nprofit 2 represent the variables in 2018.

The results show that the null hypotheses are not rejected for the all paired variables. Although the gross profit, operating profit and net profit were higher in 2017, and earnings and cost of sales were higher in 2018, the differences between 2017 and 2018 were not significantly different from zero. The findings of paired sample t-test support the findings of Pearson correlation test. These results indicate that, in general, the firms did not increase the prices of their products more than their costs and did not make more profits.

5.3. Profitability of Retail Firms

The data of the ten firms were used to determine their profitability. Changes in percent in the variables in four different periods were calculated. First, the financial statement data for Q2-2017 and Q2-2018 were compared. Second, the financial statement data for Q3-2017 and Q3-2018 were compared. Third, financial statement data for

Q2- and Q3- of 2017 were compared. Lastly, the financial statement data for Q2- and Q3- of 2018 were compared. Changes in percent were calculated and averaged. Table 5 shows the mean changes in percent.

Table 5. Changes in Variables (%)

Variables	Q2 2017-Q2 2018	Q3 2017-Q3 2018	Q2-Q3 2017	Q2-Q3 2018
Earnings	9.79	10.93	57.41	58.97
Cost of sales	9.13	10.04	60.47	60.54
Gross profit	14.11	10.92	85.33	76.97
Operating profit	30.67	-12.57	90.37	13.61
Net profit	-58.25	-62.18	53.62	88.73

The findings for Q2-2017 and Q2-2018 showed that the firms' cost of sales, earnings, gross profit and operating profit increased by 9.13%, 9.79%, 14.1%, and 30.67%, respectively. An increase in gross profit compared to the previous year may be due to an increase in prices or a decrease in costs. A higher increase in operating profit than in gross profit means that operating expenses are reduced. The net profit showed a negative change of 58.25% because some firms made a great loss.

The comparison between Q3-2017 and Q3-2018 data showed that the firms' earnings, cost of sales and gross profit increased by 10.93%, 10.04% and 10.92%, respectively, while their operating profit decreased by 12.57% due to high operating expenses. Reasons for the increase in operating expenses should be examined. The drop in net profit between Q3-2017 and Q3-2018 was 62.18%, which was more than that in the Q2 2018- Q2 2018.

The comparison between Q2-2017 and Q3-2017 data showed that the firms' earnings, cost of sales and gross profit increased by 57.41%, 60.47% and 85.33%, respectively, in the 3-month period. It is interesting that the cost of sales increased more than the earnings, and gross profit increased although it was expected to decrease. The data of the firms were averaged, and since, those of some of the firms changed considerably can be the reason for the difference in the percentages. Operating profit increased by 90.37%. The higher increase in operating profit than in gross profit may be due to the decrease in operating expenses. Net profit increased by 53.62% in the same period.

The comparison between Q2-2018 and Q3-2018 data showed that the firms' earnings, cost of sales and gross profit increased by 58.97%, 60.54% and 76.97%, respectively. However, the increase in Q3 was lower than in Q2. Operating profit and net profit increased by 13.61% and 88.73%, respectively. The increase in the firms' earnings, cost of sales and net profit suggests that they have additional sources of revenues.

On 2 July 2018, one US dollar and one Euro was worth 4,6225 and 5,3804 TRY, respectively. August 2018 witnessed sharp fluctuations, resulting in the Turkish lira losing further value against the US dollar and Euro. One US dollar was exchanged for 7 Turkish liras while one Euro was exchanged for more than 8 Turkish liras. In the June, July and August, the Turkish lira lost value against the US dollar and Euro by 29.59% and 29.18%, respectively. The increase in the dollar and Euro exchange rates in the same period of the previous year was 0.61% and 4.32%, respectively. Table 6 shows the annual percentage changes in the variables between 2017 and 2018.

Table 6. Changes in Variables for 2017 and 2018 (%)

Variables	2017	2018
Earnings	57.41	58.97
Cost of sales	60.47	60.54
Gross profit	85.33	76.97
Operating profit	90.37	13.61
Net profit	53.62	88.73
US dollar	0.61	29.59
CPI	1.32	9.15
PPI	0.83	22.44

The firms' earnings and cost of sales increased by 1.56% and 0.07%, respectively whereas the firms' gross profit and operating profit decreased by 8.36% and 76.76%, respectively. Rising costs are expected to reduce gross profit. The increase in their operating expenses reduced their operating profit. Their additional sources of income increased their net profit by 35.11%. The Turkish lira lost value against the US dollar by 28% annually. CPI and PPI rose sharply. Although their earnings, cost of sales and net profit were expected to increase together, their net profit increased by 35.11% in 2018 compared to 2017. As their operating profit declined, their net profit increase can be due to their additional sources of income. It is thought that the increase in the exchange rate increased the firms' exchange profits. Therefore, firms' net profit is increased.

5.4. Profitability of Supermarket Firms in Retail Sector

Consumers meet most of their essential needs from supermarkets, and price increases directly affect them. We, therefore, believe that supermarket firms should be evaluated separately. The calculations in the previous section were repeated for BIM, BIZIM, CARREFOURSA and MIGROS which are supermarkets traded on Borsa Istanbul. Table 7 shows the results.

Table 7. Changes in Statements of Supermarket Firms between 2017 and 2018 (%)

Variables	Q2 2017- Q2 2018	Q3 2017-2018 Q3	2017 Q2-Q3	2018 Q2-Q3
Earnings	21.25	23.70	56.15	59.29
Cost of sales	19.91	22.41	55.46	58.69
Gross profit	34.75	35.82	60.70	62.46
Operating profit	55.11	14.84	96.70	85.02
Net profit	-169.10	-157.12	27.59	82.13

Between Q2 and Q3 of 2018, the supermarket firms' sales and cost of sales increased by 59.29% and 58.69%, respectively, which were higher than in the same period of the previous year. The increase in the number of supermarkets and other factors may be directly related to the increase in their earnings. Gross profit increased by 2% compared to the previous year. This suggests that the supermarket firms increased their prices more than their costs. They also raised the prices of their products in stock, which allowed them to make a profit from products whose costs did not increase. The increase in operating profit was 96.70% between Q2-2017 and Q3-2017, and was 85.02% between Q2-2018 and Q3-2018. While net profit increased by 27.59% between Q2 and Q3 of 2018, it increased by 82.13% between Q2 and Q3 of 2018, which may be due to the increase in the firms' additional revenues.

The Q2 financial statement data was extracted from the Q3 financial statement data of 2018 Table 8 shows the results.

Table 8. Changes in Supermarket Firms in Q3 (%)

Firms	Earnings	Cost of Sales	Gross Profit	Operating Profit	Net Profit
BIM	35.09	32.85	45.78	61.75	60.23
BIZIM	35.62	32.43	67.49	-2060.85	-717.90
CARREFOURSA	17.50	19.25	12.54	-18.47	22.69
MIGROS	24.40	23.34	27.23	5.48	845.70
Mean	**28.15**	**26.97**	**38.26**	**-503.02**	**52.68**

Unlike the previous analyses, in this analysis it is calculated the difference between the firms' Q2 and Q3 financial statements and presented their quarterly (July, August and September) financial performance to control the increase in the exchange rate in the Q3 of 2018. The operating profit and net profit of BIZIM decreased significantly. The net profit of MIGROS increased by 845%. The high rate of change in the accounts of these two firms caused the mean to be high or low. The earnings of BIM and BIZIM increased more than the cost of their sales. The gross, operating and net profit of BIM increased while only the gross profit of BIZIM increased and its operating profit and net profit decreased dramatically. CARREFOURSA had higher costs than sales, and therefore, its gross profit rate fell. Although its operating profit decreased, its net profit increased compared to the previous

period. The sales of MIGROS were 1.06% higher than its cost of sales. Its net profit increased significantly, as previously stated. Table 9 shows the closing market prices of the supermarkets to determine the effect of their financial performance on the prices of their stocks.

Table 9. Stock Prices of Supermarket Firms (Turkish Lira)

Firms	29.12.2017	01.08.2018	03.09.2018	01.10.2018	31.12.2018
BIM	38.90	34.70	36.75	40.65	43.17
BIZIM	7.70	6.35	5.64	6.28	6.80
CARREFOURSA	5.58	4.26	3.82	3.89	3.48
MIGROS	27.56	19.16	13.63	15.79	14.92

The 31.12.2017 and 31.12.2018 stock prices show that all but BIM lost value. Price drops in BIST-100 index may affect stock prices. The supermarket firms performed well in 2018, however, it did not have an impact on the prices of their stocks. Many factors, such as the low Istanbul Stock Exchange Index, high interest rates, high inflation and withdrawal of foreign investors may have lowered the prices of their stocks.

6. CONCLUSION

Net profit is affected by many factors such as sales returns and discounts, cost of sales, general administrative expenses, marketing and sales expenses, R&D and foreign exchange expenses as well as tax liabilities, public offering costs in the capital market, and financing expenses. A higher increase in earnings than costs only increases gross profit.

The sudden and high increases in prices in August 2018 directly affected the Turkish economy. Many firms increased the prices of their products and services by around 50% due to the increase in the exchange rate. The firms were expected to lower prices after the decrease in the exchange rate, however, they did not do that. Although sellers stated that they increased their sales prices due to the increase in purchase prices, some of them increased the sales prices of many products whose production costs were not directly related to the foreign currency. The rise in sales prices caused inflation, which had a negative impact on the economy.

This study investigated whether there was a statistically significant difference between Q2 and Q3 of 2017 and Q2 and Q3 of 2018 data on earnings, cost of sales, gross profit, operating profit and net profit. Paired sample t-test results indicated that there were no statistically significant differences for each of the variables between Q2 and Q3 of 2017 and Q2 and Q3 of 2018. Also, the Pearson correlation results showed that the correlation dynamic between earnings, cost of sales and gross profit remained identical in 2017 and 2018.

The difference between Q2 and Q3 of 2018 and Q2 and Q3 of 2017 data of supermarket firms were compared. Their gross profit and net profit increased by 1.76% and 55%, respectively. Q3-2017 and Q3-2018 data showed that the net income and net profit of BIM increased by 35% and 60%, respectively. The earnings and net profit of MIGROS increased by 24% and 845%, respectively. The earnings and net profit of CARREFOURSA net profit decreased by 717%. Overall, the earnings of the four supermarket firms increased by 28% and their gross profit changed by 32.68%. The supermarket firms used their purchase prices as an excuse to increase their prices more than their costs. This indicates that they achieved higher gross profits than the increase in sales costs. It is determined that supermarket firms make more profit. Foreign currency gains might have led to a higher increase in net profit than in gross profit as well. In the future studies, analyzing the relationship between price, cost and profit with macroeconomic indicators is expected to contribute to the literature.

REFERENCES

Adese. (2019). *Yatırımcı ilişkileri.* Access address: http://www.adese.com.tr/yatirimci-iliskileri, (1 February 2019).

Akalın, G. and Dilek, S. (2007). Belirsizlik altında firma kararlarının incelenmesi. *Marmara Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi,* XXIII (2), 45-61.

Akel, V. and İltaş, Y. (2016). İşletme sermayesinin makroekonomik belirleyicileri: BIST'te sektörler arası bir karşılaştırma. *Eskişehir Osmangazi Üniversitesi İktisadi ve İdari Bilimler Dergisi,* 11(3), 39-70.

Alacahan, N. D. (2011). Enflasyon, döviz kuru ilişkisi ve yansıma: Türkiye. *Sosyal Bilimler Dergisi,* 1, 49-56.

Artan, S. (2008). Türkiye'de enflasyon, enflasyon belirsizliği ve büyüme. *Uluslararası İktisadi ve İdari İncelemeler Dergisi,* 1(1), 113-138.

Aydoğan, E. (2004). 1980'den günümüze Türkiye'de enflasyon serüveni. *Yönetim ve Ekonomi*, 11(1), 91-110.

Berber, M. and Artan, S. (2004*). Enflasyon ve ekonomik büyüme ilişkisi: Türkiye örneği* (Working Paper, No. 2004/21). Ankara: Turkish Economic Association.

Bhutta, N. T. and Hasan, A. (2013). Impact of firm specific factors on profitability of firms in food sector. *Open Journal of Accounting,* 2, 19-25.

Bim. (2019). *Yatırımcı ilişkileri.* Access address: https://www.bim.com.tr/Categories/105/yatirimci-iliskileri.aspx, (1 February 2019).

Bimeks. (2019). *The relationship between.* Access address: https://www.kap.org.tr/tr/sirket-bilgileri/ozet/1520-bimeks-bilgi-islem-ve-dis-ticaret-a-s, (1 February 2019).

Bizim. (2019). *Yatırımcı ilişkileri.* Access address: https://www.biziminvestorrelations.com/default.aspx, (1 February 2019).

Carrefoursa. (2019), *Yatırımcı ilişkileri*. Access address: https://yatirimciiliskileri.carrefoursa.com/tr-TR, (1 February 2019).

Central Bank Republic Turkey. (2019*). Central Bank of the Republic of Turkey electronic data delivery system.* Access address: https://www.tcmb.gov.tr/wps/wcm/connect/TR/TCMB+TR/Main+Menu/Istatistikler/Enflasyon+Verileri/Uretici+Fiyatlari, (1 February 2019).

Erdaş, M. L. (2015). Firma kârlılığı üzerinde çalışma sermayesi yönetiminin ve makroekonomik faktörlerin etkisi: Borsa İstanbul endeksi turizm sektöründe faaliyet gösteren firmalar üzerine bir uygulama. *Uluslararası Sosyal Araştırmalar Dergisi*, 8(41), 1.220-1.229.

Feldstein, M. (1978). Inflation and the stock market. *The American Economic Review,* 70(5), 839-847.

KAP. (2019). *Public disclosure platform companies list according to sectors.* Access address: https://www.kap.org.tr/tr/Sektorler, (1 February 2019).

Karaca, O. (2011). Türkiye'de enflasyon-büyüme ilişkisi: Zaman serisi analizi. *Doğuş Üniversitesi Dergisi*, 4(2), 247-255.

Karaçor, Z. (1999). Türkiye'de enflasyonla mücadelede toplumsal uzlaşmanın etkinliği. *Süleyman Demirel Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, 4(Güz), 75-80.

Lee, W.F. and Rask, N. (1976). Inflation and crop profitability: how much can farmers pay for land?. *American Journal of Agricultural Economics,* 58(5), 984-990.

Lee, C. Y. (2014). The Effects of firm specific factors and macroeconomics on profitability of property-liability insurance industry in Taiwan. *Asian Economic and Financial Review,* 4(5), 681-691.

Lu, F., Song, G., Tang, J., Zhao, H. and Liu, L. (2008). Profitability of China's industrial firms (1978–2006). *China Economic Journal*, 1(1), 1-31.

Marcus, M. (1969). Profitability and size of firm: Some further evidence. *The Review of Economics and Statisctics*, 51(1), 105-107.

Mavi. (2019). *Yatırımcı ilişkileri*. Access address: http://www.mavicompany.com/tr/menu/yatirimci-iliskileri, (1 February 2019).

McDonald, J. T. (1999). The determinants of firm profitability in Australian manufacturing. *The Economic Record,* 75(229), 115-126.

Mepet. (2019). *Yatırımcı ilişkileri*. Access address: http://www.mepet.com.tr/yatirimci-iliskileri/finansal-ve-operasyonel-veriler, (1 February 2019).

Menon, J. (1996). The degree and determinants of exchange rate pass-through: Market structure, non-tariff barriers and multinational corporations. *The Economic Journal,* 106(435), 434-444.

Meral, P. S. (2005). Enflasyon ve enflasyonun okuma alışkanlığına etkisi. *Erciyes Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 19(2), 309-324.

Migros. (2019). *Yatırımcı ilişkileri*. Access address: https://www.migroskurumsal.com/Foreks.aspx?IcerikID=35, (1 February 2019).

Oktayer, A. (2010). Türkiye'de bütçe açığı, para arzı ve enflasyon ilişkisi. *Maliye Dergisi*, 158, (Ocak-Haziran), 431-447.

Özatay, F. (2011). *Parasal İktisat: Kuram ve Politika (İkinci Baskı)*. Ankara: Efil Yayınevi.

Özcan, B. (2013). Gelişmekte olan ekonomilerde enflasyonun belirleyenleri: Dinamik panel veri analizi. *Cumhuriyet Üniversitesi İktisadi ve İdari Bilimler Dergisi,* 15(1), 33-53.

Pabuçcu, H. and Ayan, T. (2017). The Development of an alternative method for the sovereign credit rating system based on adaptive neuro-fuzzy inference system. *American Journal of Operations Research*, 7(1), 41-55.

Polat, Ç. and Peker, K. Ö. (2016). Makroekonomik değişkenlerin firma performansına etkileri: Türkiye otomotiv sektörü kapsamında analizi. *Eskişehir Osmangazi Üniversitesi Sosyal Bilimler Dergisi,* 17(1), 21-40.

Şahinoğlu, T., Özden, K., Başar, S. ve Aksu, H. (2010). Türkiye'de enflasyonun oluşumu: ARDL yaklaşımı. *Sosyoekonomi*, 1, 27-46.

Teknosa. (2019). *Yatırımcı ilişkileri*. Access address: http://yatirimci.teknosa.com/mali-tablolar-ve-dipnotlar, (1 February 2019).

Ulusoy, T. (2008). Systematic risk and firm financial structure evidence from Istanbul Stock Exchange. *The Business Review Cambridge,* 11(2), 226-231.

Ünsal, E. M. (2007). *Makro İktisat (7.Baskı):*Ankara: İmaj Yayınevi.

Vakko. (2019). *Yatırımcı ilişkileri*. Access address: https://www.vakko.com/Content/Html/yatirimci-iliskileri.htm, (1 February 2019).