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Capital Structure and Firm Performance: Evidence from Turkish Manufacturing Firms

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Abstract: One of a company's most crucial financial management decisions is its capital structure, which, when adopted correctly and successfully, can almost ensure its objectives are met. Capital structure affects the cost of capital and is important in enhancing a company's operational performance. The capital structure decision is a cornerstone of corporate financial management, influencing both short-term performance and long-term viability. To find the best debt-to-equity ratio for sustainable growth and shareholder value, businesses must carefully consider their industry dynamics, business climate, and financial objectives. Given the importance of this issue, this study's main goal is to look into how capital structure decisions affect the financial performance of Turkish firms in the food, textile, and fabricated metal subsectors between 2011 and 2020. In this study, short-term liability (STL) and long-term liability (LTL) are used as capital structure measures, return on Assets and return on equity are used as firm performance measures, and sales growth and company size are considered control variables. The findings of this study indicate a negative association between debt and the operating performance of these companies in all three sectors. This implies that companies in the aforementioned industries will have to forfeit some of their company's worth if they raise the amount of debt in their capital mix.

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INTRODUCTION

The financial managers of each company seek to design the capital structure or a combination of different financial resources to help the company achieve its ultimate goal. Capital structure decisions are among the most important decisions of companies, and the correct adoption of them can primarily guarantee the achievement of company goals (Frank et al., 2009). The mix of debt and equity that a corporation uses to fund its operations is known as

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its capital structure. When Modigliani and Miller published their first paper in 1958 on the relationship between capital structure and corporate performance, this became the attention point for researchers. Since then, there has been a great deal of research into the nature of this relationship (Ahmeti et al., 2015).

Over time, various theories, such as pecking order, agency cost, and trade-off theories, have been developed to express the relationship between capital structure and company performance (Abeywardhana, 2017). Unfortunately, none of these theories has yet to propose an optimal capital structure acceptable to all parties and simultaneously helps different types of companies achieve their ultimate goals (Luigi & Sorin, 2009).

Since choosing the capital structure is one of the most crucial management choices the firm will make, it directly affects shareholder risk, income levels, and stock market value. Therefore, the results of this study will play an important role in enriching the literature on capital structure and will help company managers and other relevant groups to choose an effective combination of financial resources to enhance the operational performance of their companies. The primary purpose of this study is to examine how the capital structure affects the performance of industrial companies operating in each food, textile, and fabricated metal product sub-sectors registered in the Istanbul Stock Exchange from 2011-2020.

Since the results from the previous literature indicate the negative association between debt and the performance of manufacturing companies, this study will show what kind of relationship this has for companies engaged in sub-manufacturing sectors. In this study, as dependent variables which represent the capital structure of the mentioned companies, each of the short-term liability (STL) and long-term liability (LTL) ratios, as independent variables, which indicates the performance of these companies, each of the return on asset (ROA) and return on equity (ROE), each of the sales growth and firm size has been used as a control variable.

This study is based on 10-year secondary data of 40 industrial firms registered in the Istanbul Stock market from three sub-sectors of each food, textile, and fabricated metal product, which were selected using a stratified sampling method.

The following primary research questions will be attempted to be addressed by this investigation:

1. Is there a relationship between financial leverage and the performance of Turkish firms operating in each food, textile, and fabricated metal sub-sectors during the studying period?
2. If so, what is the nature of this relationship between each of the mentioned sub-sectors?

The following hypotheses are developed to answer the above research questions.

Using ROA and ROE as a firm’s performance measures, given the hypothesis as below:

H0 - There is no significant relationship between the firm's financial leverage, ROA, and ROE in each food, textile, and fabricated metal sub-sectors.

H1 - There is a significant relationship between the firm's financial leverage, ROA, and ROE in each food, textile, and fabricated metal sub-sectors.

Using STL and LTL as a firm's financial leverage measures, given the hypothesis as below:

H0: Short and long-term liability does not significantly affect firms' performance in each food, textile, and fabricated metal sub-sectors.

H1: Short and long-term liability significantly affect firms' performance in each food, textile, and fabricated metal sub-sectors.

Theoretical Framework

When a business starts, it may pursue several purposes, but the ultimate goal is to maximize the firm's value and the ownership of its shareholders (Frank & Goyal, 2009; Khan et al., 2021).

According to some financial scholars, companies can affect the cost and value of the firm by arranging an adequate capital structure. The capital structure is the mix of financing sources (Retained earnings, Debt, Common stock, Preferred stock) that a business uses to finance its assets. The scholarly discussion on the relationship between financial leverage and corporate value began with Modigliani and Miller's relevance theory of capital structure in 1958 (Ahmeti & Prenaj, 2015; Jaros & Bartosova, 2015).

Following Miller and Modigliani, the relationship between financial leverage and corporate performance attracted the attention of many researchers. As a result of their investigations, different results were obtained (Miller, 1988).

For years, various research studies have been conducted on whether there is a relationship between the capital structure and the firm's performance. If there is a relationship, what is the nature of this relationship? The results indicate different cases, meaning some researchers call this relationship positive, while another group of researchers repudiates that this relationship is positive; they consider it a negative relationship; some even deny the relationship between capital structure and firm performance. This means there is no single acceptable result for all parties in this regard; therefore, to evaluate the effects of leverage on the performance of relevant companies, it is necessary to examine these effects in different contexts of interest. The reason for those researchers whose studies show a positive relationship between leverage and the performance of companies is that, by increasing the level of leverage in the capital structure of companies, the competencies of company managers decrease, which in itself facilitates the increase of company value (Meckling & Jensen, 1976; Frydenberg, 2011).

This is precisely what the agency cost theory has addressed. Jensen and Meckling (1976), in their agency cost theory, believe that by incorporating debt into the capital structure, the agency costs, which are caused by a conflict of interest among stockholders and directors of

the firm, reduce and, as a result, facilitates the increase of the value of the company (Meckling & Jensen, 1976; Frydenberg, 2011).

Vijayakumaran (2017) investigated the influence of leverage on the operating performance of non-financial Chinese companies throughout 2003-2010. His finding supports the agency cost theory; based on his result, as the level of debt in the capital structure of these companies increases, their performance improves as a result, and their value increases.

As mentioned earlier, the results of some investigators deny the positive relationship between financial leverage and the performance of firms. In their view, by increasing the level of debt in the capital structure of the companies, their operating performance decreases, which is precisely what the pecking order theory of capital structure has addressed. Myers and Majluf (1984), in their pecking order theory of capital structure, believe that as the level of debt in the capital structure of companies increases, their operational performance decreases (Myers & Majluf, 1984; Luigi & Sorin, 2009). The findings of Thao Nguyen Thu (2016) support a negative relationship between leverage and corporate performance in BRIC emerging markets.

The findings of some studies suggest mixed results. Corey Cole et al. (2015) investigated the influence of capital structure on the operating performance of companies operating in the Industrial, Healthcare, and Energy Sectors throughout 2009-2015. His findings show that in the industrial sector, leverage and financial performance of companies are positively related. In contrast, in the energy sector, this relationship was apposite, and finally, in the healthcare sector, there was no significant relationship between capital structure and firms' performance.

RESEARCH METHOD

The aforementioned research is a quantitative study in which the effects of capital structure on the performance of the relevant companies were examined using econometric models.

Sample and Data Source

This study is based on companies registered on the Istanbul Stock Exchange that operate in the food, textile, and fabricated metal sectors. The total number of manufacturing firms operating in the above three sectors reaches 82 companies. In this study, due to lack of access to all data, 50% of the high-capitalized companies from each sector, reaching 40 companies, have been selected as a sample. The required data for this study has been provided from the companies' financial statements.

Variables

In this study, just like (Baum et al., 2006) study as a dependent variable that represents the capital structure of the mentioned firms, each of the short-term liability (STL) and long-term liability (LTL) ratios as independent variables, which indicates the operating performance of

these companies, each of the return on asset (ROA) and return on equity (ROE). As control variables, each sales growth and firm size have been used (Baum et al., 2007).

Data Analysis Steps and Model Specifications

In this study, data analysis was done in three stages. In the first stage, descriptive analysis was performed to show the general view of the data set. In the next stage, correlation analysis was conducted to identify the bilateral relations between the variables. In the third stage, the required data was tested for stationarity and multicollinearity before regression analysis to ensure the research yielded accurate results. Finally, regression analysis was performed to examine the effects of debt on the companies' performance.

To test and evaluate the impact of the dependent variable (capital structure) on the independent variable (firm performance), multiple Regression models have been employed using the Stata 16.0 software package.

In order to run the panel regression in the empathic data provided from the annual financial reports of related firms, the following regression equations have been prepared to identify and examine the effects of capital structure on the company's performance.

$ROA = \beta 0 + \beta 1 STLA + \beta 2$ LTLA$+ \beta 3\ GRW + \beta 4\ SIZE + \epsilon$

$ROE = \beta 0 + \beta 1 STLA + \beta 2$ LTLA$+ \beta 3\ GRW + \beta 4\ SIZE + \epsilon$

Where,

STLA – shows short-term liability (STL) to total assets (TA) ratio

LTLA – shows long-term liability (LTL) to total assets (TA) ratio

GRW - Shows sales increase compared to last year. (Sales for the current year - sales for the prior year) / (sales for the prior year)* 100

SIZE - shows the size of the company and the sales log.

ϵ - the error term

FINDINGS

In this study, we looked into how financial leverage affected the performance of manufacturing firms in the food, textile, and fabricated metal subsectors between 2010 and 2019. The study's overall empirical findings demonstrate a negative correlation between the financial leverage and operating performance of manufacturing firms in the aforementioned sectors; that is, businesses' performance has suffered as a result of their increased leverage and over-reliance on debt, which ultimately led to the loss of some of their value. Please refer to the following sections for more details regarding the research results.

Descriptive Analysis

Tables 1, 2, and 3 below show the statistical summary of each of the capital structure (Short and long-term liability), operating performance (ROA, ROE), and control (Sales growth, Firm size) variables of sample Turkish manufacturing companies operating in each of the food, textile, and fabricated metal sub-sectors during the years 2011-2020.

As shown in Table 1 below, in the food sub-sector, each of the short-term and long-term liability ratios, with an average value of 40.42% and 14.28 %, accounts for 54.8 percent of total liabilities. These figures indicate that the capital structure of the mentioned companies relies more on debt, with a large part of this debt being a long-term liability. This means the sample of Turkish companies operating in the food sub-sector has provided approximately 55% of their required assets through debt.

On the other hand, each of the operational performance indicators, ROA, and ROE of companies operating in the food sub-sector, with an average value of 1.8 and -1.2, indicates the poor performance of these companies during 2011-2020. The mentioned companies have earned an average of 1.8 and -1.2 incomes in exchange for each unit of the company's assets and shareholders' equity, respectively. In the food sub-sector, the control variables of each sales growth and size of companies have average values of 31.5% and 5.6 percent, respectively. Generally, the Min and Max values show the growth of the firms. The growth of the firms ranges from -98 to 1600. Also, the small and large values of the size of the companies show that during the years of study, the growth in the size of some companies has reached up to 9.6, while some other companies have not grown in size. Regarding the standard deviation, which shows the deviation of the values of variables from their average value, it should be said that, in the food sub-sector, each of the sales growth and ROE with values of 143.6 and 35.5, respectively, have the highest standard deviation. In contrast, the size of the companies with a value of 1.9 shows the lowest level of standard deviation.

The textile sector indicates a similar situation, as shown in Table 2 below; the statistical figures of the textile sub-sector show that the sample companies operating in this sector are relatively less dependent on debt. This means that in the textile sub-sector, each of the capital structures measures short-term and long-term liability with an average value of 27.9; these figures show that 43.5 percent of the capital structure of these companies consists of short-term and long-term liability. In other words, Turkish companies operating in the textile sub-sector have provided 43.5% of their total assets through debt. Similarly, the operational performance measures of ROA and ROE of the mentioned companies operating in the textile sub-sector with an average value of 4 and 7.2 indicate a relatively very good operational performance of these companies during 2011-2020. In the textile sub-sector, each control variable, growth in sales, and size of companies have average values of 17% and 5 percent, respectively. The difference in the sales growth values of these companies indicates that during the study period, one of the sample companies had a positive growth of 280, while one of the other companies had a negative growth of -62. Also, the maximum and minimum

values of these companies' size indicate that although they may differ in terms of product line, they are almost similar in size.

Regarding the standard deviation of variables in the textile sub-sector, it should be said that each of the sales growth and short-term liability with deviation values of 36 and 14, respectively, from the average value, represents the highest standard deviation level. In contrast, the size of the companies with a value of 1.2 shows the lowest level of standard deviation.

In the same way, the statistical figures of the fabricated metal sub-sector show that the capital structure of the sample companies operating in this sector is 46.2 and 16.8 percent, respectively, consisting of short-term liability and long-term liability. This figure of 63% shows that the fabricated metal sub-sector, in proportion to two other sectors (Food and textile) in the composition of their capital, has allocated a larger part to debt capital.

Regarding the performance variables of these companies engaged in the fabricated metal sub-sector, it should be said that the ROA and ROE of these companies, with an average value of 5.7 and 16.3, indicate an excellent operational performance compared to the previous two sectors.

Table 1: *Descriptive statistics of sample Food sub-sector companies*

Variables	Obs.	Mean	Std. Dev.	Min	Max
ROA	140	1.818571	10.70974	-35.76	24.42
ROE	140	-1.257429	35.45601	-251.05	62.03
STL	140	40.42864	18.89305	.55	84.25
LTL	140	14.28907	12.21119	.12	52.39
Sales growth	140	31.35986	143.6859	-98.04	1600
Firm size	140	5.67715	1.926847	0	9.574

In the fabricated metal sub-sector, the control variables of each sales growth and size of the companies have average values of 20.7% and 7.2 percent, respectively.

Table 2*: Descriptive statistics of sample Textile sub-sector companies*

Variables	Obs.	Mean	Std. Dev.	Min	Max
ROA	110	4.085818	6.639185	-18.5	32.32
ROE	110	7.223091	13.44438	-38.37	57.93
STL	110	27.95555	14.21726	3.6	62.47
LTL	110	15.64645	11.74595	.3	48.92
Sales growth	110	17.05255	36.14234	-62.	280.1
Firm size	110	5.035309	1.22249	2.39	8.544

Similarly, in the fabricated metal sub-sector, each sales growth and ROE with deviations of 31 and 21, respectively, from its medium value represent the highest standard deviation level. In contrast, the size of the companies with a value of 1.73 indicates the lowest standard deviation level.

***Table 3**: Descriptive statistics of sample Fabricate metal sub-sector companies*

Variables	Obs.	Mean	Std. Dev.	Min	Max
ROA	150	5.706	7.445481	-10.63	37.02
ROE	150	16.2858	21.34948	-30.54	75.17
STL	150	46.2002	14.36406	8.6	75.86
LTL	150	16.80173	13.47129	.22	61.67
Sales growth	150	20.71027	31.12364	-60.38	223.69
Firm size	150	7.285933	1.733058	4.454	10.809

Correlation Analysis

Tables 4, 5, and 6 below show the correlation relationship between each dependent (Short-term liability, long-term liability) and independent (ROA, ROE) variables in the sample companies operating in the food, textile, and fabricated metal sub-sectors during 2011-2020.

According to the statistical figures below for the food sub-sector, short-term liability (STL) and long-term liability (LTL) are significantly negatively related to the performance of Turkish firms operating in the food sub-sector. This means that any increase in short-term and long-term liability will reduce the performance of these firms.

In the control variables for sales growth, there is no evidence to show the relationship of this variable with the performance of relevant companies, which means that with any change in the sales growth of these firms, the performance of the mentioned companies will remain constant. In contrast, the firm's size positively correlates with the performance of companies operating in the food sub-sector. That is, as the volume of activities of these companies expands, it will positively affect the performance of the mentioned companies.

In the same way, in the textile sub-sector, short-term liability (STL) and long-term liability (LTL) are statistically negatively significant with the return on asset (ROA) of relevant companies. At the same time, these capital structure variables have no significant relationship with the return on equity (ROE). That is, allocating more of the capital structure to debt will harm the ROA of these companies and thus reduce their performance. In contrast, the level of debt will have no significant effect on the performance of companies for ROE.

For control variables, except for a positive association between company size and ROE of these companies, there is no other significant relationship between control variables and firm performance. Similarly, short-term debt and long-term liability have no significant relationship with the company's performance variables in the fabricated metal sector. That

is, any change in the capital structure of these companies will not affect their respective performance.

However, the control variables, which include each of the sales growth and size of the company, are significantly positively correlated with the operating performance of these companies. As the level of sales growth and the volume of activity of the companies engaged in the fabricated metal sub-sector increases, so does the mentioned company.

Table 4: *Correlations Analysis of sample Food sub-sector companies*

	ROA	**ROE**	**STL**	**LTL**	**Sales growth**	**Firm size**
ROA	1.0000					
ROE	0.8487	1.0000				
STL	-0.29***	-0.32***	1.0000			
LTL	-0.1091	-0.0555	-0.207**	1.0000		
Sales growth	0.0306	0.0240	0.150**	-0.1067	1.0000	
Firm size	0.28***	0.199**	-0.32***	0.54***	-0.0917	1.0000

Table 5*: Correlations Analysis of sample Textile sub-sector companies*

	ROA	**ROE**	**STL**	**LTL**	**Sales growth**	**Firm size**
ROA	1.0000					
ROE	0.8709	1.0000				
STL	-0.35***	-0.1476	1.0000			
LTL	-0.25***	-0.0956	0.191**	1.0000		
Sales growth	0.0654	0.0924	-0.0527	-0.0297	1.0000	
Firm size	-0.0293	0.1580*	0.48***	0.1754*	-0.0376	1.0000

Table 6: *Correlations Analysis of sample Fabricate metal sub-sector companies*

	ROA	**ROE**	**STL**	**LTL**	**Sales growth**	**Firm size**
ROA	1.0000					
ROE	0.9078	1.0000				
STL	-0.1248	0.0212	1.0000			
LTL	-0.0508	0.0676	-0.23***	1.0000		
Sales growth	0.221***	0.1727**	0.0345	0.0156	1.0000	
Firm size	0.334***	0.439***	0.225***	0.31***	0.0247	1.0000

Note:* significant at 0.10, ** significant at 0.05, and *** at 0.01.

In order to achieve an error-free result from research, we need to ensure that the data used in this study is free from non-stationarity and multicollinearity problems. Therefore, we use Levin Lin Chu (LLC) and Variance inflation factor (VIF) tests to examine the data's unit root and multicollinearity, respectively.

Panel Unit Root Test

Before performing regression analysis, the unit root properties of the variables used in this study should be investigated; if they are not, they should be converted into a fixed form.

The Levin Lin Chu (LLC) panel unit root test is commonly used to test the Stationarity of given variables. As shown in Table 3 below.

Table 7*. Panel Unit Root test of Food sub-sector companies*

Variables	Statistics	P-Value	Result
ROA	-1.7413	0.0408	Stationary
ROE	-1.8829	0.0299	Stationary
STL	-1.6487	0.0496	Stationary
LTL	-6.7385	0.0000	Stationary
Sales growth	5.0194	0.0500	Stationary
Firm's Size	-3.5677	0.0002	Stationary

Table 8*. Panel Unit Root test of Textile sub-sector companies*

Variables	Statistics	P-Value	Result
ROA	-4.7680	0.0000	Stationary
ROE	-4.7829	0.0000	Stationary
STL	-4.1148	0.0000	Stationary
LTL	-2.8254	0.0024	Stationary
Sales growth	-4.9266	0.0000	Stationary
Firm's Size	-2.6990	0.0035	Stationary

Table 9*. Panel Unit Root test of Fabricate metal sub-sector companies*

Variables	Statistics	P-Value	Result
ROA	-1.6939	0.0451	Stationary
ROE	-1.8461	0.0324	Stationary
STL	-1.7299	0.0418	Stationary
LTL	-1.7961	0.0362	Stationary
Sales growth	-2.7505	0.0030	Stationary
Firm's Size	-5.0315	0.0000	Stationary

The results from Tables 7, 8, and 9 show that in all three sub-sectors (Food, Textiles, and Fabricated metal), All variables, including dependent (STL, LTL), independent (ROA, ROE), and control variables (sales growth, company size) are free from the unit root, meaning that all variables used in this study are stationary.

Multicollinearity Test

Multicollinearity is a state in which two or more two predictors are closely related. Generally, the Inflation variance factor (VIF) test is used to determine whether there is a problem of Multicollinearity between the dependent variables used in a study or not.

According to Myers (2001) and Nachan (2006), if in a study, the average value of VIF is greater than 10 (VIF> 10), it shows a high level of Multicollinearity, which indicates a worrying situation.

Table 10: *Capital structure VIF results of Food, Textile, fabricated metal sub-sector companies*

Variables	**VIF Test Results**
STL	1.14
LTL	1.43
Sales growth	1.03
Firm size	1.53
Mean VIF	**1.28**
STL	1.33
LTL	1.32
Sales growth	1.05
Firm size	1.00
Mean VIF	**1.17**
STL	1.19
LTL	1.25
Sales growth	1.00
Firm size	1.24
Mean VIF	**1.17**

The results of the VIF test for each of the food, textile, and fabricated metal sub-sectors, listed in Table 10 below, show that the regression equations of each of the dependent variables (Short-term liability, long-term liability, Sales growth, and company size) are devoid from the multicollinearity problem because the average VIF value of none of the above sub-sectors is greater than 10.

Regression Analysis

In order to choose the right model between random effect and pooled, between fixed effect and pooled, and between fixed effect and random effect, we applied each of the Breusch-Pagan Lagrange (LM), F, and Hausman tests. After obtaining the results of the aforementioned tests, we decided that the Random Effects model is the most suitable model for examining the impacts of capital structure (Short and Long-term liability) on the performance (ROA, ROE) of manufacturing firms operating in the food, textile, and fabricated metal sub-sectors.

Table 11, which examines the impact of capital structure on food subsector companies' performance, shows that short-term liability (STL) with a coefficient of -.1221 and -5482 significantly negatively affects the ROA of firms, and in the same way, long-term liability (LTL) with the value of a coefficient of -.3084 and -.6918 has a significantly negative influence on the performance of food companies operating in the relevant sector. Similarly, the regression results show that the Performance of firms operating in the food sub-sector and sales growth are not significantly correlated. However, the size of companies, which shows the scope of the company's activities, is positively and significantly related to the company's operational performance.

In short, it can be said that the level of debt and performance of Turkish companies operating in the food sub-sector are inversely related; any increase in the level of debt will lead to a decrease in the operating performance of these companies. Therefore, to improve their activities' performance and increase their companies' value, Turkish manufacturing companies operating in the food sub-sector should design a capital structure in which the minimum proportion is assigned to debt.

***Table 11**: Random effect regression model sub-sector*

	ROA		ROE	
Explanatory Variables	Random Effect	P-Value	Random Effect	P-Value
STD	-.1221	0.011	-.5482	0.001
	(-2.53)		(-3.30)	
LTD	-.3084	0.000	-.6918	0.017
	(-3.65)		9-2.18)	
Sales growth	.0048	0.389	.0150	0.444
	(.084)		(0.77)	
Firm Size	2.082	0.000	3.7489	0.062
	(3.50)		(1.86))	
Constant	-.8067	0.845	9.0374	0.519
	(-0.20)		(0.65)	
Wald-Statistics	26.65	0.0000	18.95	0.0008
R^2	0.2338		0.1589	
Number of Companies	14		14	
Observations	10		10	
Duration	2011-2020		2011-2020	

Similarly, the results obtained from each of the Breusch-Pagan Lagrange, F, and Hausman tests suggest that the random-effects model (REM) is the most effective model for examining the effects of capital structure on the performance of companies operating in the textile sub-sector. The regression results reported in Table 12 below show that short and long-term liability with coefficients of -.19 and -.11 significantly negatively affect the ROA of manufacturing companies operating in the textile industry. This means that the level of debt and performance of companies operating in the textile sector are conversely related to each other; thus, the increase of debt in the capital structure of these companies, instead of improving their financial performance, damages the ROA and lowers the value of the companies. Similarly, the table below shows that short-term liability (STL) has a significantly negative impact on the ROE performance of these firms at a level of 10%.

For long-term liability (LTL), there is no evidence to show a significant relationship between long-term liability and the operating performance of textile companies. Regarding the control variables, it should be said that, according to the research results, there is no significant association between sales growth and the performance of industrial companies operating in the textile sub-sector. In contrast, the size of firms and the performance of these companies are significantly positively related to each ROA and ROE measure.

***Table 12**: Random effect regression model-textile sub-sector*

	ROA		ROE	
Explanatory Variables	Random Effect	P-Value	Random Effect	P-Value
STD	-.1929	0.000	-.2191	0.083
	(-3.52)		(-1.73)	
LTD	-.1159	0.041	-.0942	0.459
	(-2.05)		(-0.74)	
Sales growth	.0070	0.658	.0251	0.446
	(0.44)		(0.76)	
Firm Size	1.3181	0.047	4.3128	0.007
	(1.98)		(2.70))	
Constant	4.5367	0.138	-7.322	0.322
	(1.48)		(-0.99)	
Wald-Statistics	18.20	0.0011	8.60	0.0719
R^2	0.1978		0.0959	
Number of Companies	11		11	
Observations	10		10	
Duration	2011-2020		2011-2020	

The regression results of the fabricated metal sub-sector in Table 13 below show a similar situation to the food and textile sectors. Based on the regression results of this sector, short-

term and long-term liability with coefficient values of -.2652 and -.2943, sequentially, has a significantly negative effect on the performance of the mentioned firms at the level of 1 % for ROA. Similarly, short and long-term liability with the coefficient values of -.4546 and -.6241 are significantly and negatively related to the financial performance of these firms for ROE.

As can be seen, the regression results of the fabricated metal sub-sector show a negative relationship between debt and the financial performance of related companies. These results show that if these companies increase the level of debt in their capital structure, they should expect dire consequences that will ultimately reduce the operational efficiency and lower the value of these companies. The control variables of each sales growth and the size of the companies with the values of the coefficients of 0523 and 2.722 have a positive significant effect on the return on asset (ROA) of Turkish companies operating in the fabricated metal sub-sector. Similarly, short and long-term liabilities with coefficients of .1065227 and 9.811253 positively influence the return on equity (ROE) of the mentioned firms at the level of 1 %.

***Table 13**: Random effect regression model-Fabricated metal sub-sector*

	ROA		ROE	
Explanatory Variables	Random Effect	P-Value	Random Effect	P-Value
STD	-.2652	0.000	-.4546	0.004
	(-4.60)		(-2.85)	
LTD	-.2943	0.000	-.6241	0.000
	(-4.81)		(-3.70)	
Sales growth	.0523	0.000	.1065	0.003
	(3.80)		(2.95)	
Firm Size	2.7224	0.000	9.8112	0.000
	(4.17)		(5.04))	
Constant	1.9868	0.677	-25.91	0.067
	(0.42)		(-1.83)	
Wald-Statistics	51.14	0.0000	44.62	0.0000
R^2	0.2450		0.2171	
Number of Companies	15		15	
Observations	10		10	
Duration	2011-2020		2011-2020	

Table 14 below summarizes the effects of capital structure on the performance of sample Turkish companies operating in each food, textile, and fabricated metal sub-sectors during the study period (2011-2020).

***Table 14**: Summary of the analytical results (Beta coefficients of RE models)*

	Food Sub-Sectors		Textile Sub-Sectors		Fabricated Metal Sub-Sectors	
Explanatory Variables	ROA	ROE	ROA	ROE	ROA	ROE
Short Term Liabilities	-.1221	-.5482	-.1929	-.219	-.2652	-.4546
Long Term Liabilities	-.3048	-.6918	-.1159	-.0942	-.2943	-.6241
Sales growth	.0048	.01502	0070	0251	.0523	.1065
Firm Size	2.082	3.7489	1.318	4.312	2.722	9.811

Note:* significant at 0.10, ** significant at 0.05, and *** at 0.01.

DISCUSSIONS AND CONCLUSIONS

As mentioned earlier, the primary purpose of this study is to investigate the effects of capital structure on the performance of Turkish sample companies operating in the food, textile, and fabricated metal sub-sector from 2011 through 2020.

This research shows that each food, textile, or fabricated metal sub-sector is the sector where debt negatively impacts their respective companies. There seems to be a direct negative relationship between the level of debt and the performance of the mentioned firms. For example, as shown in the table above, the fabricated metal sub-sector with the largest share of debt in its capital structure suffers more damage to its performance, and the textile sub-sector with the lowest share of debt will suffer less operational loss. Also, the combination of corporate debt in all three sectors shows that most reference is made to short-term liability, which is mainly due to the lack of advanced debt markets or the weakness of long-term debt markets in Turkey, which cannot adequately provide the required long-term capital of companies for a reasonable cost. According to financial policymakers, companies mainly refer to short-term debt because of the lack of organized long-term debt markets (Manawaduge, 2011).

From the findings of the study, it can be concluded that the capital structure (Short and long-term liability) and financial performance (ROA, ROE) of companies operating in all three sectors are negatively intertwined, which means an increase in the level of debt will result in reduced performance of sample companies in all three sectors. In other words, as much as these companies, which are operating in the food, textile, and fabricated sub-sectors, devote most of their capital structure to debt, they should also expect the dire consequences of relying more on debt, consequences that, in addition to disrupting the operating performance of these companies will also lower the property value of their shareholders. High interest rates, risk aversion among borrowing firms, managers' hesitancy to invest in profitable projects, ongoing increases in financing costs brought on by high financial risk, and the potential for company bankruptcy are generally regarded as the main causes of the negative correlation between financial leverage and corporate performance (Githaigo & Kabiru, 2015; Onchong, 2016).

This result is consistent with the findings of (Nassar, 2016) study, which examined the effects of capital structure on the performance of manufacturing firms listed on the Istanbul Stock Exchange throughout 2005-2012. His findings show that Turkish manufacturing companies' debt and financial performance are negatively linked; this means that any increase in the debt level implies a decrease in the operating performance of these companies.

Also, the result of this study is inconsistent with the findings of (Vijayakumaran, 2017), who found a positive relationship between financial leverage and Chinese firms' performance. The results of this study are consistent with the findings of (Githaigo and Kabiru, 2015 and Onchong, 2016), which examined the effects of debt on the performance of manufacturing companies in Kenya and South Africa and found a negative relationship.

This study contradicts Obuya's result, which examined the impact of Debt Financing Options and the Financial Performance of Micro and Small Enterprises in Kenya and found a positive relationship between financing options and micro and small enterprises (Obuya, 2017).

In order to improve the operational performance of their activities, these companies should design a capital structure or a combination of financing resources in which the share of debt has reached its minimum level. This means these companies should focus more on their domestic financial resources than debt while forming their capital structure. In addition, as mentioned earlier, most of the debt these companies have referred to is short-term debt. Therefore, efforts should be made to establish advanced and more organized markets for long-term debt that can provide the required capital of companies at a reasonable cost.

Conflict of Interest

The author declares that there is no conflict of interest.

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