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An Empirical Study on the Determinants of the Capital Structure in Turkish Textile and Apparel Firms

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Tekstil ve Hazır Giyim Firmalarında Sermaye Yapısının Belirleyicileri Üzerine Ampirik Bir Çalışma

Abstract

This study aims to analyse the factors that influence the capital structure decisions of Turkish listed textile and apparel firms over the period from 2010 to 2019. The results of Driscoll and Kraay's (1998) panel regression model show that the leverage ratio is significantly and negatively affected by firm size, profitability, liquidity, asset tangibility, and is positively affected by non-debt tax shields, growth opportunities, earnings volatility, and GDP growth. The pecking order theory seems to be the most successful in explaining the determinants of the capital structure of Turkish textile and apparel firms.

Keywords : Capital Structure, Trade-off Theory, Pecking Order Theory, Leverage.

JEL Classification Codes : G30, G32, L67.

Öz

Bu çalışmanın amacı Borsa İstanbul'a kote olan tekstil ve hazır giyim firmalarında sermaye yapısı kararlarını etkileyen faktörleri araştırmaktır. 2010-2019 dönemini kapsayana çalışmada Driscoll ve Kraay (1998) panel regresyon yöntemi kullanılmıştır. Çalışmadan elde edilen bulgular, kaldıraç oranı ile firma büyüklüğü, karlılık, likidite ve varlık yapısı arasında negatif ilişki, borç dışı vergi kalkanı, büyüme fırsatları, kazanç volatilitesi ve ekonomik büyüme arasında ise pozitif bir ilişki olduğunu göstermektedir. Sonuçlar, tekstil ve hazır giyim firmalarında sermaye yapısı kararlarını açıklamada finansman hiyerarşisi teorisinin daha başarılı olduğunu göstermektedir.

Anahtar Sözcükler : Sermaye Yapısı, Dengeleme Teorisi, Ödünleşme Teorisi, Kaldıraç.

1. Introduction

Firms are valued based on their past and future investments. Firms must choose an appropriate financial mix to finance these investments. The financial resources of firms generally include equity and debts. The capital structure is a combination of debt, and equity, which firms employ in their investment. In the modern economy, the decisions taken regarding the optimal capital structure significantly contribute to the firms' survival, growth, and competitive advantage. Moreover, capital structure decisions majorly affect firms' financial success (profitability, performance, and value) (Kumar et al., 2017; Hossain, 2021).

The optimal capital structure is the best debt-equity combination that maximises a firm's market value while minimising its cost of capital. Many theorems have been developed in the literature related to achieve of optimal capital structure for firms (Haron et al., 2012). The starting point of empirical and theoretical studies on capital structure is based on Modigliani and Miller's (1958) "Irrelevance Theory". This theory states that there is no significant relationship between a firm's capital structure decisions and market value. However, this theory is valid in a market without taxes, intermediary costs, asymmetric information, and bankruptcy costs (Yıldız et al., 2009). Although these assumptions are unrealistic, the results of Modigliani and Miller's indifference theory contributed significantly to developing theories on capital structure. In this context, two main opposing theories, capital structure-Trade-Off Theory (TOT) and Pecking Order Theory (POT) are frequently discussed in the corporate finance literature.

According to the TOT, it is argued that firms seek debt levels that balance the tax advantages of additional debt against the costs of possible financial distress. From the POT perspective, it is argued that firms follow a financial hierarchy. Firms will borrow rather than issue equity when internal cash flow is insufficient to fund capital expenditures. Thus, firms' debt level will reflect their cumulative need for external funds. As a result, the TOT suggests an optimal capital structure, while the POT theory does not suggest an optimal capital structure (Myers, 2001).

The optimal capital structure has been a highly debated issue in the finance literature. The validity of capital structure theories has been tested in many studies using firm-specific factors and macroeconomic factors. This study aims to analyse the factors that influence the capital structure decisions of Turkish textile and apparel firms. In the Turkish literature, most of the research has commonly focused on the manufacturing industry in Turkey, on this topic. Why the Turkish textile and apparel industry has a high share in GDP and employment, high value-added and high export potential, it is important to examine the textile industry specifically in terms of finance. Even though capital structure theory is one of the most controversial topics of finance literature, there is only one study on the capital structure of firms operating in the textile and apparel industry in Turkey, which is an emerging market. In addition, when the literature is examined, most of the research has commonly focused on countries, country groups, manufacturing industries or banking industries, and it is seen that different results are obtained in these studies. Therefore, this

article contributes to the literature by explicitly investigating the factors influencing the capital structure decision of Turkish textile and apparel firms. The findings of this paper imply that firms mostly follow the POT.

After this introduction, this paper has the following structure. The theoretical underpinnings of the study are discussed, followed by a review of related studies in Section 2. Section 3 deals with the Turkish textiles and apparel industry. Section 4 describes the methodology. Section 5 presents the empirical results, and Section 6 concludes.

2. Literature Review

In this study, the influences of variables on firms' capital structures are briefly discussed below within the framework of TOT and POT. According to the TOT, large firms should be more highly leveraged. Because large firms are less prone to bankruptcy and tend to be more diversified and less volatile, the firm's cash flows will be due to diversification effects (Titman & Wessels, 1988; Yildirim et al., 2018). The POT generally predicts an inverse link between size and leverage. Large firms are better known because they have been around longer (Frank & Goyal, 2009). Also, the POT stipulates that larger firms face lower information asymmetry in financial markets and may issue more equity than smaller firms (Yildirim et al., 2018). Marsh (1982), Titman and Wessels (1988), Chakraborty (2010), and Haron and Ibrahim (2012) found negative relation, while Krishnan and Moyer (1996), De Jong et al. (2008), Topaloglu (2018) and Işık and Ersoy (2021) found positive relation.

From the TOT, older firms are less likely to go bankrupt due to their reputation and credibility in the market, which can help them access external financing opportunities faster. So, the influence of the age of firms on leverage is expected to be positive. Conversely, the POT says that older firms are more probably to accumulate funds than younger ones, which may reduce their need for external financing (Noulas & Genimakis, 2011; D'Amato, 2019). Consequently, a negative linkage between age and debt level is expected. Nevertheless, in empirical studies investigating this relationship, negative (D'Amato, 2019; Chakrabarti & Chakrabarti, 2019), positive (Khémiri & Noubbigh, 2018) and even insignificant (Handoo & Sharma, 2014) findings have been reported.

The TOT suggests that more profitable firms tend to employ more debt because of tax benefits associated with using debt tax shields and having a lower expected cost of financial distress (Yildirim et al., 2018). The POT supposes managers prefer to fund the projects internally due to the informational asymmetry between outside investors and managers. Moreover, profitable firms choose not to enhance external equity to abstain from potential dilution of ownership (Deesomsak et al., 2004). Also, according to POT, firms will primarily prefer internal finance. Therefore, when profitability is high, firms' need for financing from external funds will decrease. Thus, an inverse linkage is expected between profitability and debt level. Nunkoo and Boateng (2010) and Sayilgan and Uysal (2011) have found positive relation, Delcoure (2007), Chakraborty (2010), Dizgil (2019), and Çıtak

and Ersoy (2012) have found negative relation, while Topaloglu (2018) have not found significant relation.

Firms from the TOT should ensure sufficient liquidity by receiving debt to meet their obligations. Therefore, there must be a positive relationship between leverage and liquidity. On the other hand, POT says there must be an inverse association between leverage and liquidity, owing to the firms with enough liquidity having less requirement for external financing and borrowing (Alipour et al., 2015). In addition, firms with more excellent liquid assets may use less debt to protect the interest of shareholders against debtholders (Danso et al., 2020). Liquidity may have a mixed effect on the capital structure. In the literature, Topaloglu (2018), Chakrabarti and Chakrabarti (2019), Dizgil (2019) and Işık and Ersoy (2021) have found a negative linkage. Whereas, Dakua (2019) has found a positive linkage.

A giant non-debt tax shield should lead to a reduction in the amount of taxable income. TOT and POT suggest a negative link between leverage and non-debt tax shield (Danso et al., 2020). Many studies also support this prediction (Deesomsak et al., 2004; Sayilgan & Uysal, 2011; Proença et al., 2014; M'ng et al., 2017) in the empirical literature.

The TOT predicts that tangible assets act as collateral and lower the risk for creditors, which causes firms to operate with higher leverage (Yildirim et al., 2018). On the contrary, the POT postulates a negative relationship. Low information asymmetry associated with tangible assets makes equity issuances less costly, so debt levels should be lower for firms with higher tangibility (Frank & Goyal, 2009). Some studies have estimated a negative association (Alipour et al., 2015; Karacaer et al., 2016), while others (Nunkoo & Boateng, 2010; Sayilgan & Uysal, 2011; Panda & Nanda, 2020) have reported a positive relationship between the two variables.

The TOT suggest that growth opportunity is negatively correlated with leverage. Because the cost of financial distress rises with growth opportunities, and more significant financial distress forces managers to reduce debt (Moosa & Li, 2012). According to the POT, high-growth firms have a greater need for financing and thus can be expected to borrow more (Krishnan & Moyer, 1996). The empirical literature on the link between growth opportunities and leverage does not report consistent evidence. For example, the findings of Deesomsak et al. (2004), Antoniou et al. (2008), Aksoy et al. (2010), and Guner (2016) have given strong support for the negative association. On the other hand, Krishnan and Moyer (1996), Sayilgan and Uysal (2011), Serrasqueiro and Nunes (2014) and Topaloglu (2018) provide evidence of the positive connection between growth opportunities and leverage.

The TOT assumes that higher earnings volatility enhances the probability of financial distress. When bankruptcy costs are higher, increased earnings volatility lowers firms' debt ratio (Delcoure, 2007). According to POT, firms having more volatile cash flows need more external capital. Therefore, a positive linkage between earnings volatility and leverage is expected (Basti & Bayburt, 2019). There exist contradictory findings on the connection between these variables. De Jong et al. (2008) and Serrasqueiro and Nunes (2014) found a

negative association. Moosa and Li (2012) found a positive association. Delcoure (2007) and Karacaer et al. (2016) display no significant link.

According to the TOT, during periods of economic expansion, firms are likely to enhance their profitability by increasing their new investments. Therefore, profitable firms' willingness to benefit from more debt tax shields may cause them to resort to more external financing. Conversely, in terms of POT, economic growth is related to higher profitability and using more internal capital instead of debt financing (De Jong et al., 2008; Yildirim et al., 2018). On the other hand, empirical studies have mostly found a negative association (Yildirim et al., 2018; Tekin, 2019; Panda & Nanda, 2020). However, Mirza et al. (2017) have reported that the GDP growth rate positively links with leverage.

3. Turkish Textiles and Apparel Industry

With the export-based growth policy implemented in Turkey since 1980, the textile and apparel industry has started to grow and develop rapidly, which has resulted in increased investments in this industry. The textile and apparel industry is critical to the Turkish economy due to its share in the manufacturing industry, exports, GDP, and employment (Ticaret Bakanlığı, 2020).

Production in the textile and apparel industry is mainly carried out for export, and the leading trading partner is the European Union countries (Alkan et al., 2018). The sector with a total number of 50,395 enterprises has a share of 18.7% in the total number of enterprises in the manufacturing industry while 2.7% in the total number of enterprises in Turkey in 2018. Approximately one million people are employed in the sector, constituting 25.8% of the manufacturing industry and 6.6% of the total employment. The industry has played an essential role in providing the socio-economic balance in Turkey owing to the created high job. According to 2017 data, the added value created in the textile and apparel industry has 15.6% of the added value created in the manufacturing industry (Sanayi ve Teknoloji Bakanlığı, 2019).

Table: 1
The Share in the General Trade System of Manufacture Textiles and Apparel*
(Billion US $)

	2013	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Total Export	161.5	166.5	151.0	149.2	164.5	177.2	180.8
Manufacturing	151.5	156.5	142.3	140.3	154.7	167.1	171.2
Manufacture of Textiles	12.1	12.6	11.1	11.1	11.5	11.6	11.5
Manufacture of Apparel	15.8	17.1	15.5	15.5	15.6	16.2	16.4
Manufacture Textiles and Apparel	28.0	29.7	26.7	26.6	27.1	27.8	27.9
- The Share of Total Export	*17*	*18*	*18*	*18*	*16*	*16*	*15*
- The Share of Manufacturing	*18*	*19*	*19*	*19*	*18*	*17*	*16*

***Exports by ISIC, Rev.4, (General Trade System).*

Table 1 shows the share of the Turkish textile and apparel industry in total exports and manufacturing industry exports in 2013-2019 according to the Turkey Statistical Institute International Standard Industrial Classification (ISIC, REV.4). The share of the

textile and apparel industries in total exports is 6.4% and 9.1%, respectively. Their shares in the manufacturing industry are 6.7% and 9.6%, respectively, in 2019. The share of the textile and apparel industry in total exports is 15.4%, and its share in the manufacturing industry is 16.3%.

Production and manufacturing countries in the global economy have entered a transformation process substantially with developments in world trade. Following the Agreement on Textile and Clothing signed in 1995 by the World Trade Organization, which envisages the exact liberalisation of textile and ready-made garment trade, China has been a party to signing the agreement, a new era in the world textile industry.

China has become a global production centre (İSO, 2014), and international competition conditions have seriously influenced the Turkish textile and apparel industry. Particularly Turkey has high production costs (energy, labour cost, finance, tax, construction etc.) in comparison to competitors (China, India, Pakistan, Bangladesh, Vietnam, Indonesia etc.) (Atilgan et al., 2014). In addition, the global crisis experienced in 2008, the negative impact of the worldwide crisis on the purchasing behaviour of consumers for textile and apparel products in the European Union countries, our primary market, the change in the Euro-Dollar parity, and the political instability in neighbouring countries in recent years have negatively affected exports (Ticaret Bakanlığı, 2020). However, in the textile and apparel industry, one of the industries with the highest international competition, Turkey should have continued to have an important position in the European and world textile and apparel market. Turkey has a 3.6% share of world textile exports, ranking sixth among textile exporting countries in 2018; it ranks seventh with its 3.2% share in world apparel exports (Sanayi ve Teknoloji Bakanlığı, 2019). The share of Turkey in the European Union's apparel products market is 11.4%, and its share in the market of textile products is 17% in 2019. It ranks third after China and Bangladesh in apparel products exports to the European Union and second after China in textile products exports (ITKIB, 2020).

4. Data and Methodology

Panel data analysis examines a sample of 22 Turkish *textile and apparel firms* listed in BIST from 2010-2019. While financial data for firms is obtained from the Finnet database and the firms' websites, the data on GDP growth in the study is provided by the Central Bank of the Republic of Turkey. The following empirical specification is used to examine the capital structure determinants of Turkish *textile and apparel firms*:

$$\mathrm{FL_{it}} = \alpha + \beta \mathrm{X_{it-1}} + \xi_t + \mu_i + \epsilon_{it} \quad (1)$$

In Equation (1): i indexes the firm and t indexes the year; the independent variable is financial leverage denoted by $\mathrm{FL_{it}}$ and this variable is measured by three alternative indicators such as the ratio of total debts to total assets (TL), the ratio of short-term debts to total assets (STL) and the ratio of long-term debts to total assets (LTL); α is an intercept term; X_{it-1} is the matrix of one year lagged firm-specific and macroeconomic variables; β

is a vector of coefficients on independent variables; ξ_t is time dummies; μ_i is the unobserved firm-specific effect and finally ϵ_{it} is an i.i.d. random error term with $E(\epsilon_{it}) = 0$ and $Var(\epsilon_{it}) = \sigma^2$. Detailed explanations for the definitions of the variables in the financial leverage regression equation are given in Table 2.

Table: 2
Definitions of Dependent and Independent Variables

Variable	Measure	Notation
Dependent variables		
Total leverage	The ratio between total debt and total assets	TL
Short term leverage	The ratio between short-term debt and total assets	STL
Long term leverage	The ratio between long-term debt and total assets	LTL
Independent variables		
Firm size	Logarithm of sales	Ln(sales)
The logarithm	The logarithm of the number of years in activity	Ln(age)
Profitability	The ratio between earnings before interest, taxes, depreciation, and amortisation and total assets	EBITDA
Liquidity	The ratio between total current assets and short-term debt	LIQ
Non-debt tax shields	The ratio between total depreciation expenses and total assets	NDTS
Asset tangibility	The ratio between tangible assets and total assets	TANG
Growth Opportunities	The ratio between the market value of equity plus short- and long-term liabilities to total assets.	TQ
Earnings Volatility	The absolute value of percentage variations of earnings before interest and tax	RISK
GDP growth	The annual percentage growth rate of GDP	GDP

As mentioned above, the sample of this study is an unbalanced panel, and its cross-sectional dimension, N, is larger than the time dimension, T. Therefore, taking into account these two conditions related to the sample, the coefficients of the model specified in Equation (1) will be estimated. The econometric analysis of the financial leverage model comprises the following steps: First, Spearman correlation analysis and variance inflation factor (VIF) test are applied to determine whether multicollinearity among the independent variables is a severe concern. According to the results reported in Table 4, collinearity does not seem to be a significant problem for the model specification. Second, to choose between RE and FE estimators, I conduct the Hausman specification test under the null hypothesis that the random-effects estimator is consistent (Baum, 2006).

As reported in Table 5, the results of the Hausman specification test for the TL model, where the dependent variable is TL, imply that the null hypotheses cannot be accepted at any conventional level. Thus, this result allows us to conclude that the fixed effects estimation technique outperforms the random-effects GLS estimation technique for the TL model. However, for STL and LTL models, the Hausman specification test's results, as shown in Table 5, show that the null hypothesis cannot be rejected, which leads to the conclusion that it is necessary to use a random-effects GLS estimator.

However, both RE and FE estimators yield inconsistent coefficient estimates when autocorrelation, heteroscedasticity, or cross-sectional dependence are found in the error terms of model specification. Therefore, it is checked these assumptions use various tests, namely the Wooldridge test (for autocorrelation), the modified Wald statistic test and Brown and Forsythe test (for heteroscedasticity), and the Pesaran CD test (for cross-sectional dependence). According to the test results in Table 5, both autocorrelation and heteroscedasticity exist in all three models. In addition, the null hypothesis of no cross-

sectional dependence at the 0.05 significance level for TL and LTL models is rejected, implying that these models have a cross-sectional dependence. In this case, Driscoll and Kraay (1998) propose an estimator that yields autocorrelation and heteroscedasticity consistent standard errors for panels with N>T. This estimator, which can be employed for both balanced and unbalanced panels, also produces standard errors that are robust to general forms of cross-sectional and temporal dependence (Hoechle, 2007). Because of the reasons mentioned above, it is appropriate to use the Driscoll and Kraay (1998) estimator to estimate the financial leverage model parameters specified in Eq. (1).

5. Results and Discussion

The summary statistics for all the variables used in the empirical estimation are provided in Table 3. As indicated in Table 3, the average value of TL is about 52%. This ratio varies between a minimum of 3.61% and a maximum of 105.9%. The mean STL is approximately 36%, ranging between 87.72% and 3%. Table 3 depicts that, on average, the LTL of all sampled firms is about 16%. Table 3 also indicates that the minimum value for this variable is 0.07%, while the maximum value is 67.55%. The summary statistics findings reveal that firms in the textile and apparel industry tend to finance roughly half of their assets by using debt. Moreover, considering the maturity of the debt, firms in this sector mostly prefer employing short-term debt to long-term debt in financing their investments. This result may be explained by the lack of a sufficiently developed capital market, and the volatile economic environment makes it difficult for these firms to access long-term finance.

Table: 3
Summary Statistics

Variable	Mean	Median	Std. Dev.	Min	Max	N
TL	.5190	.5062	.2127	.0361	1.0594	219
STL	.3612	.3468	.1827	.0302	.8772	219
LTL	.1578	.1302	.1271	.0007	.6755	219
Ln(sales)	18.3345	18.7396	1.7721	11.1100	22.3600	219
Ln(age)	3.5865	3.7136	.4747	2.3026	4.2000	219
EBITDA	.0551	.0528	.0643	-.2045	.2303	219
LIQ	1.7058	1.3556	1.6242	.0317	10.7585	219
NDTS	.0241	.0240	.0156	-.0804	.0728	219
TANG	.3569	.3204	.2162	.0018	.9941	219
TQ	.9849	.9113	.4172	.3198	4.1905	219
RISK	.0364	.0138	.1828	0	2.6568	219
GDP	.0587	.0609	.0294	.0090	.1111	219

*Spearman p*airwise correlation matrix for independent variables employed in the regression analysis is presented in Table 4. When the correlation matrix is examined, it is seen that the maximum significant correlation value among independent variables is approximately 48%, which is between Growth and EBITDA variables. Gujarati and Porter (Gujarati & Porter, 2009) suggest that unless correlation values calculated among independent variables exceed 80%, multicollinearity is not a severe concern for regression analysis. Furthermore, in additional research, a VIF analysis is conducted to investigate the presence of multicollinearity. The unreported results indicate that the VIF coefficients range between 1.02 and 1.32, far lower than the acceptable upper limit of 10. Therefore, the results

of the VIF analysis supporting those of the correlation analysis indicate no multicollinearity concern in the model specifications.

Table: 4
Correlation Coefficients

Variables	I	II	III	IV	V	VI	VII	VIII	IX
(I) Ln(sales)	1								
(II) Ln(age)	0.2964*	1							
(III) EBITDA	0.5435*	0.0994	1						
(IV) LIQ	-0.0882	-0.1339**	0.1568**	1					
(V) NDTS	0.3642*	-0.0729	0.3258*	-0.1833*	1				
(VI)TANG	-0.0677	0.1971*	-0.2088*	-0.3499*	0.2534*	1			
(VII) TQ	0.1628**	-0.2103*	0.2746*	0.0148	0.1616**	-0.2293*	1		
(VIII) RISK	0.1781*	-0.1102	0.0977	0.1864*	0.0414	-0.1313	0.0676	1	
(IX) GDP	-0.1627**	-0.2321*	0.0048	0.1961*	0.0864	0.0080	-0.0696	0.0490	1

*Notes: Definitions of variables are outlined in Table 2. * p-value<0.01 and ** p-value<0.05.*

Table: 5
Regression Results

	Dependent variables					
	TL model		STL model		LTL model	
Independent variables	**Coefficients**	**Robust SEs**	**Coefficients**	**Robust SEs**	**Coefficients**	**Robust SEs**
$Ln(sales)_{t-1}$	-.0105**	.0034	.0113	.0149	-.0079	.0136
$Ln(age)_{t-1}$	-.2265	.2101	-.0325	.0485	.0382	.0620
$EBITDA_{t-1}$	-.9415***	.1072	-.7785***	.1013	-.0482	.1869
LIQ_{t-1}	-.0257***	.0072	-.0327***	.0030	-.0027	.0047
$NDTS_{t-1}$	1.9628***	.5505	1.3024*	.5691	.9177	.6389
$TANG_{t-1}$	-.1161*	.0518	-.3353***	.0711	.2261***	.0279
TQ_{t-1}	.0283**	.0109	-.0029	.0055	.0221	.0181
$RISK_{t-1}$	.0003	.0002	.0004***	.0001	-.00002	.0002
GDP_{t-1}	4.1730***	.8082	3.0266***	.1936	.1493	.4341
Intercept	1.3826*	.7313	.2958	.0701	.3349	.2872
Estimator selection test						
Hausman test	24.59***		11.68		14.20	
Autocorrelation test						
Wooldridge	19.073***		34.614***		7.305**	
Heteroskedasticity test						
Modified Wald	1006.60***					
Brown and Forsythe $W_{(50)}$			2.9113***		2.8221***	
Cross-sectional dependence test						
Pesaran CD	2.126**		0.455		5.013***	
R-squared	.4367		0.3247		0.2685	
F-statistic	2432.09***					
Wald chi2(17)			26675.38***		17145.95***	
Panel Estimator	Driscoll-Kraay FE		Driscoll-Kraay RE		Driscoll-Kraay RE	
Number of Obs.	197		197		197	
Number of firms	22		22		22	

Table 5 indicates regression results corresponding to Eq. (1), where the dependent variable is one of the three measures of leverage (TL, STL and LTL). From Table 5, the estimated coefficients of the firm size variable (sales) are statistically significant and negative only in the total leverage model. This finding suggests that, in line with the POT, textile and apparel firms' total leverage is negatively affected by firm size. A possible reason for the negative impact of firm size is that the complex structures of larger firms lead to more significant information asymmetry between firms and creditors. This finding is also similar to the result of previous studies (Titman & Wessels, 1988; Marsh, 1982; Chakraborty, 2010, Haron & Ibrahim, 2012). Regarding firm age, the effect of the age variable on the financing strategy of the firms is not statistically significant, regardless of how leverage is measured.

The influence of profitability on leverage indicators is negative in all models, as predicted by the POT. However, the estimated coefficients of profitability are significant in the TL and STL models. This finding indicates that the leverage ratio decreases *as firm profitability increases.* One possible explanation is that companies with high profits prefer to use less debt of their abilities to generate funds internally. This is in line with other empirical studies (Delcoure, 2007; Proença et al., 2014; Abdioğlu & Deniz, 2015; Dizgil, 2019; Tekin, 2019; Söylemez, 2019; Işık & Ersoy, 2021) and supports the logic of both the TOT and POT.

The impact of the liquidity variable on the leverage is negative and significant in the TL and STL models. These results, which support the POT, show that firms with more liquid assets tend to use these assets rather than use debt in financing their investments. This finding is also supported by other studies (Demirhan, 2009; Proença et al., 2014; Mirza et al., 2017; Topaloglu, 2018; Chakrabarti & Chakrabarti, 2019; Dizgil, 2019).

The results show that non-debt tax shields and leverage measures are positively related in all leverage models. However, this relationship is statistically significant in models of TL and STL. These findings, which are similar to the results of Delcoure (2007), Mirza et al. (2017), Söylemez (2019) and D'Amato (2019), contrast sharply with both theoretical expectations. Hence, the positive impact might be explained by the fact that NDTS, an indicator of firms' asset security, is associated with high leverage.

For the asset tangibility variable, the results show that this variable has a significantly negative effect on TL and STL during a very positive impact on LTL. The significant negative association of tangibility and total and short-term leverage measures confirms the hypothesis of POT and indicates that firms with more tangible assets could choose to operate with lower leverage ratios because of the lower cost of issuing equity. This finding is consistent with many empirical studies (D'Amato, 2019; Demirhan, 2009; Abdioğlu & Deniz, 2015; Işık & Ersoy, 2021). At the same time, the significant positive linkage between tangibility and long-term leverage supports the hypothesis of TOT. It shows that firms with high tangible assets quickly obtain external finance due to the tangibility collateral characteristic. This confirms previous empirical findings (D'Amato, 2019; Işık & Ersoy, 2021).

For the TQ variable as a proxy for the future growth opportunity of firms, the coefficient of this variable in the TL model is statistically significant and positive. This finding is similar to the finding of previous studies (Vo, 2017; Topaloglu, 2018). This finding, which validates the POT, also shows that higher market value is associated with higher total leverage. However, this variable does seem to be related to neither STL nor LTL.

As predicted by the POT, earnings volatility has a positive and highly significant influence on STL only. However, this powerful effect does not hold for the other models. This result, consistent with Mirza et al. (2017), demonstrates that firms operating in the textile and apparel sector increase their debt due to the higher cost of issuing equity.

The effect of GDP growth on firm leverage is positive in all models but statistically significant in TL and STL models. This means that debt in the textile and apparel sector usually increases in prosperous economic times. This finding, in line with the notion of the TOT, differs from the findings of Ahsan et al. (2016) and Yildirim et al. (2018). However, Mirza et al. (2017) provide evidence of the positive relationship between GDP growth and firm leverage.

6. Conclusion

This study examines whether firms' financing decisions are consistent with capital structure theories. For this purpose, it has been used a yearly data set of an unbalanced panel of Turkish textile and apparel firms traded in Borsa Istanbul for the period 2010-2019. In line with the aim of the study, the empirical validity of these theories has been questioned using some selected variables such as firm size, age, profitability, liquidity, non-debt tax shields, asset tangibility, growth opportunities, earnings volatility, and GDP growth.

Empirical findings from this study allow us to conclude that: (i) the total leverage ratio is significantly and negatively affected by firm size, profitability, liquidity, and asset tangibility, and is positively affected by non-debt tax shields, growth opportunities and GDP growth. Nevertheless, firm age and earnings volatility does not have a statistically significant influence on the total leverage; (ii) the short-term leverage ratio is significantly and negatively affected by profitability, liquidity and asset tangibility and is positively affected by non-debt tax shields, earnings volatility, and GDP growth. In addition to these results, firm size, firm age, and growth opportunities do not have a statistically significant influence on the short-term leverage ratio and (iii) The only statistically significant variable in the long-term leverage regression model is the tangibility of the assets. There is no statistically significant association between other variables with different signs and long-term leverage ratio. As a consequence, POT seems to be the most successful theory in explaining the determinants of the capital structure of Turkish textile and apparel firms. In other words, textile and apparel firms mostly follow the POT.

One of the areas where textile and apparel firms operating in a fiercely competitive environment can create a competitive advantage compared to their competitors is that they can reduce capital costs by reaching an optimal capital structure. For this to happen, it is necessary to know what factors determine firms' capital structure. Therefore, it is thought that the findings obtained from this study will guide both managers and owners of textile and apparel companies and policymakers.

This study has some limitations. First, this study has tested whether the TOT and POT are valid for textile and apparel firms. The use of static panel estimators in this study can be considered another study limitation. However, the models are less likely to suffer from endogeneity problems. This is because it is employed one-year lagged values of independent variables to mitigate endogeneity problems. In future studies, the validity of other capital structure theories, such as signalling, agency, and free cash flow theories, can

be explicitly tested in different sectors. Dynamic panel data estimators that consider the endogeneity problem may also be suggested.

References

Abdioğlu, N. & D. Deniz (2015), "The Determinants of Capital Structure for the Manufacturing Industry Firms Listed in Borsa İstanbul", *Sosyoekonomi*, 23(26), 195-213.

Ahsan, T. et al. (2016), "Firm, Industry, and Country Level Determinants of Capital Structure: Evidence from Pakistan", *South Asian Journal of Global Business Research*, 5(3), 362-384.

Aksoy, A. et al. (2010), "The Determinants of Capital Structure According to Industry Base, and Efficiency of Capital Structure Change to Protection of Firms from the Crisis Effects: An Application in ISE", *Third Sector Social Economic Review*, 45(1), 1-24.

Alipour, M. et al. (2015), "Determinants of Capital Structure: An Empirical Study of Firms in Iran", *International Journal of Law and Management*, 57(1), 53-83.

Alkan, B. et al. (2018), "Sektörel Görünüm: Tekstil ve Hazır Giyim", Türkiye Sınai Kalkınma Bankası (TSKB) *Ekonomik Araştırmalar Raporu*, Mart, İstanbul.

Antoniou, A. et al. (2008), "The Determinants of Capital Structure: Capital Market-Oriented Versus Bank-Oriented Institutions", *Journal of Financial and Quantitative Analysis*, 43(1), 59-92.

Atilgan, T. et al. (2014), "Performance Evaluation of the Textile and Clothing Enterprises in Borsa Istanbul", *Journal of Textile and Apparel*, 24(3), 243-251.

Basti, E. & N. Bayburt (2019), "Factors Affecting Capital Structure Choice: New Evidence from Turkish Non-Financial Listed Companies", *Journal of Business, Economics and Finance*, 8(1), 53-70.

Baum, C.F. (2006), *An Introduction to Modern Econometrics Using Stata*, Texas: Stata Press.

Chakrabarti, A. & A. Chakrabarti (2019), "The Capital Structure Puzzle - Evidence from Indian Energy Sector", *International Journal of Energy Sector Management*, 13(1), 2-23.

Chakraborty, I. (2010), "Capital Structure in an Emerging Stock Market: The Case of India", *Research in International Business and Finance*, 24(3), 295-314.

Çıtak, L. & E. Ersoy (2012), "The Determinants of Corporate Debt Ratio: An Empirical Analysis on Turkish Corporations", *International Research Journal of Finance and Economics*, 95, 151-162.

D'Amato, A. (2019), "Capital Structure, Debt Maturity, and Financial Crisis: Empirical Evidence from SMEs", *Small Business Economics*, May, 1-23.

Dakua, S. (2019), "Effect of Determinants on Financial Leverage in Indian Steel Industry: A Study on Capital Structure", *International Journal of Finance & Economics*, 24(1), 427-436.

Danso, A. et al. (2020), "Capital Structure Revisited. Do Crisis and Competition Matter in a Keiretsu Corporate Structure?", *International Journal of Finance & Economics*, 26(4), 5073-5092.

De Jong, A. et al. (2008), "Capital Structure around the World: The Roles of Firm -and Country-Specific Determinants", *Journal of Banking & Finance*, 32(9), 1954-1969.

Deesomsak, R. et al. (2004), "The Determinants of Capital Structure: Evidence from the Asia Pacific Region", *Journal of Multinational Financial Management*, 14(4-5), 387-405.

Delcoure, N. (2007), "The Determinants of Capital Structure in Transitional Economies", *International Review of Economics & Finance*, 16(3), 400-415.

Demirhan, D. (2009), "Analysis of Firm Specific Factors Affecting Capital Structure: Application on ISE Service Firms", *Ege Academic Review*, 9(2), 677-697.

Dizgil, E. (2019), "Micro Level Factors that are Effective on the Capital Structure Decisions of Companies: A Research on Companies in BIST Textile and Leather Index", *Bingöl University Journal of Economics and Administrative Sciences*, 3(2), 11-37.

Driscoll, J.C. & A.C. Kraay (1998), "Consistent Covariance Matrix Estimation with Spatially Dependent Panel Data", *Review of Economics and Statistics*, 80(4), 549-560.

Frank, M.Z. & V.K. Goyal (2009), "Capital Structure Decisions: Which Factors are Reliably Important?", *Financial Management*, 38, 1-37.

Gujarati, D.N. & D.C. Porter (2009), *Basic Econometrics* (Fifth Edition), New York: The McGraw-Hill Companies.

Guner, A. (2016), "The Determinants of Capital Structure Decisions: New Evidence from Turkish Companies", in: M. Karagoz et al. (eds.), *Proceedings of the Istanbul Conference of Economics and Finance* (84-89), Istanbul, Turkey.

Handoo, A. & K. Sharma (2014), "A Study on Determinants of Capital Structure in India", *IIMB Management Review*, 26(3), 170-182.

Haron, R. & K. Ibrahim (2012), "Target Capital Structure and Speed of Adjustment: Panel Data Evidence on Malaysia Shariah Compliant Securities", *International Journal of Economics, Management and Accounting*, 20(2), 87-107.

Haron, R. et al. (2021), "The Influence of Firm, Industry and Concentrated Ownership on Dynamic Capital Structure Decision in Emerging Market", *Journal of Asia Business Studies*, 15(5), 689-709.

Hoechle, D. (2007), "Robust Standard Errors for Panel Regressions with Cross-Sectional Dependence", *The Stata Journal*, 7(3), 281-312.

Hossain, M.S. (2021), "A Revisit of Capital Structure Puzzle: Global Evidence and Analysis", *International Review of Economics & Finance*, 75, 657-678.

Işık, Ö. & E. Ersoy (2021), "Determinants of Capital Structure: Empirical Evidence from Turkish Listed Manufacturing Firms", *Eskişehir Osmangazi Üniversitesi İİBF Dergisi*, 16(3), 842-855.

İSO (2014), *Tekstil İmalatı Sanayi*, Yayın No. 2014/4, İstanbul Sanayi Odası Yayınları.

ITKIB (2020), "Avrupa Birliği Hazır Giyim ve Tekstil Pazarında Türkiye'nin Yeri", İTKİB Genel Sekreterliği *Hazır Giyim ve Konfeksiyon Ar-Ge Şubesi Raporu*, Ocak.

Karacaer, S. et al. (2016), "Determinant of Capital Structure: An Application on Manufacturing Firms in Borsa Istanbul", *International Academic Journal of Accounting and Financial Management*, 3(2), 47-59.

Khémiri, W. & H. Noubbigh (2018), "Determinants of Capital Structure: Evidence from Sub-Saharan African Firms", *The Quarterly Review of Economics and Finance*, 70, 150-159.

Krishnan, V.S. & R.C. Moyer (1996), "Determinants of Capital Structure: An Empirical Analysis of Firms in Industrialized Countries", *Managerial Finance*, 22(2), 39-55.

Kumar, S. et al. (2017), "Research on Capital Structure Determinants: A Review and Future Directions", *International Journal of Managerial Finance*, 13(2), 106-132.

M'ng, J.C.P. et al. (2017), "The Determinants of Capital Structure: Evidence from Public Listed Companies in Malaysia, Singapore and Thailand", *Cogent Economics & Finance*, 5(1), 1-34.

Marsh, P. (1982), "The Choice between Equity and Debt: An Empirical Study", *The Journal of Finance*, 37(1), 121-44.

Mirza, S.S. et al. (2017), "Financing Behavior of Firms in Tranquil and Crisis Period: Evidence from China", *Cogent Economics & Finance*, 5(1), 1-16.

Modigliani, F. & M.H. Miller (1958), "The Cost of Capital, Corporate Finance, and the Theory of Investment", *The American Economic Review*, 48(3), 261-297.

Moosa, I. & L. Li (2012), "Firm Specific Factors as Determinants of Capital Structure: Evidence from Indonesia", *Review of Pacific Basin Financial Markets and Policies*, 15(2), 1-17.

Myers, S.C. (2001), "Capital Structure", *Journal of Economic Perspectives*, 15(2), 81-102.

Noulas, A. & G. Genimakis (2011), "The Determinants of Capital Structure Choice: Evidence from Greek Listed Companies", *Applied Financial Economics*, 21(6), 379-387.

Nunkoo, P.K. & A. Boateng (2010), "The Empirical Determinants of Target Capital Structure and Adjustment to Long-Run Target: Evidence from Canadian Firms", *Applied Economics Letters*, 17(10), 983-990.

Panda, A.K. & S. Nanda (2020), "Determinants of Capital Structure: A Sector-Level Analysis for Indian Manufacturing Firms", *International Journal of Productivity and Performance Management*, 69(5), 1033-1060.

Proença, P. et al. (2014), "Determinants of Capital Structure and the 2008 Financial Crisis: Evidence from Portuguese SMEs", *Procedia-Social and Behavioral Sciences*, 150, 182-191.

Sanayi ve Teknoloji Bakanlığı (2019), *Tekstil, Hazır Giyim ve Deri Ürünleri Sektörleri Raporu*, Sanayi ve Verimlilik Genel Müdürlüğü Sektörel Raporlar ve Analizler Serisi, Ankara.

Sayılgan, G. & B. Uysal (2011), "An Analysis of Determinants of Capital Structure of Turkish Firms Based on Turkish Central Bank Industrial Balance Sheets: 1996-2008", *Ankara University SBF Journal*, 66(4), 101-124.

Serrasqueiro, Z. & P.M. Nunes (2014), "Financing Behaviour of Portuguese SMEs in Hotel Industry", *International Journal of Hospitality Management*, 43, 98-107.

Söylemez, Y. (2019), "The Factors Affecting Capital Structure of Firms: The Application of Iron and Steel Industry", *Sosyoekonomi*, 27(40), 91-104.

Tekin, B. (2019), "The Factors Affecting Capital Structure: A Panel Data Analysis in the Context of Behavioural Corporate Finance", *Sosyoekonomi*, 27(42), 145-162.

Ticaret Bakanlığı (2020), *Hazır Giyim Sektör Raporu*, Sektörel Raporlar, Ankara.

Titman, S. & R. Wessels (1988), "The Determinants of Capital Structure Choice", *The Journal of Finance*, 43(1), 1-19.

Topaloglu, E.E. (2018), "Determination of the Firm Specific Factors Affecting Capital Structure Using Panel Data Analysis: An Application upon the Corporate Governance Index", *Finans, Politik & Ekonomik Yorumlar Dergisi*, 55(640), 63-100.

Vo, X.V. (2017), "Determinants of Capital Structure in Emerging Markets: Evidence from Vietnam", *Research in International Business and Finance*, 40(C), 105-113.

Yildirim, R. et al. (2018), "Determinants of Capital Structure: Evidence from Shari'ah Compliant and Non-Compliant Firms", *Pacific-Basin Finance Journal*, 51(C), 198-219.

Yıldız, M.E. et al. (2009), "Testing Capital Structure Theory Using Panel Data Regression Analysis: An Empirical Evidence from Istanbul Stock Exchange Manufacturing Firms", *İktisat İşletme ve Finans*, 24(278), 25-45.

Zafar, Q. et al. (2019), "The Determinants of Leverage Decisions: Evidence from Asian Emerging Markets", *Cogent Economics & Finance*, 7(1), 1-28.