THE ROLE OF FACTORING AS A FINANCING SOURCE FOR PUBLICLY LISTED FIRMS IN TURKEY

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Abstract
This paper evaluates the effect of factoring on the capital structures of public non-financial firms in Turkey using a two-part fractional regression model approach. A cross sectional dataset of 275 public and non-financial firms from Borsa Istanbul (BIST) are analyzed for the year 2016. In the first part of the analysis, a binary response model is estimated in order to determine role of factoring on a firm's decision to issue debt in the first place. In the second part, the effect of factoring on capital structure for leveraged firms are investigated by employing fractional regression model. Dependent variable, leverage ratio is measured both as a binary variable and as a fractional variable between zero and one. Factoring receivables are used as a proxy for factoring usage. Firm-specific factors of profitability, firm size, asset tangibility, growth opportunity, non-debt tax shield and liquidity are used as control variables in the models.
Keywords: Determinants of capital structure, Factoring, Zero leverage, Fractional regression model, Binary response model.

TÜRKİYE'DEKİ HALKA AÇIK FİRMALAR İÇİN BİR FİNANSMAN SEÇENEĞİ OLARAK FAKTÖRİNGİN ROLÜ

Özet
Bu makalede, Türkiye'de mali sektör dışında faaliyet gösteren halka açık firmalarda sermaye yapısı ve faktöring ilişkisi iki aşamalı kesirli regresyon modeli yaklaşımı kullanılarak araştırılmıştır. Borsa İstanbul'da işlem gören 275 firmanın 2016 yılına ait yatay-kesit verisi kullanılmıştır. Analizin ilk aşamasında ikili regresyon modeli kullanılarak firmanın kaldıraç kullanıp kullanmama kararında faktöringin etkisi araştırılmıştır. İkinci aşamada ise kaldıraçlı firmalarda faktöringin kaldıraç oranı üzerindeki etkisi araştırılmıştır. Bağımlı değişken hem 0 ya da 1 değerini alan bir ikili değişken hem de 0 ve 1 arası değer alan bir kesirli değişken olarak ölçülmüştür. Faktöring alacakları faktöring kullanımı için bir Proxy olarak kullanılmıştır. Firmaya özgü değişkenler olan karlılık, firma büyüklüğü, varlık yapısı, büyüme imkanı, borç dışı vergi kalkanı ve likidite kontrol değişkenleri olarak kullanılmıştır.
Anahtar Kelimeler: Sermaye yapısı belirleyicileri, Faktöring, Sıfır kaldıraç, Kesirli regresyon modeli, İkili tepki modeli

Introduction

Companies from emerging economies such as Turkey are heavily dependent on bank-based financing. Therefore, bank loan is the first choice for a firm to meet its financial needs. In recent years, factoring became another source of financing. Factoring is "... a financial service enabling enterprises to sell their accounts receivable to a factoring company in exchange for cash." (Soufani, 2002; 247). Factoring receivables are not treated as credit but used as a tool for leverage. (Milenkovic-Kerkovic, Dencic-Mihajlov, 2012; 429). In addition, they carry an interest cost.

Factoring financing is more expensive compared to bank loans. Firms may resort factoring for necessities when they reach credit line limit or provide insurance to their bad debts. Furthermore firms also engage factoring for window-dressing on their balance sheet to lower their leverage ratios and to increase equity ratios. (Stöter, 2013; 80) Because factoring entries are kept under account receivables in accordance with the International Financial Reporting Standards (IFRS) standards. (Ekergil, Cagiran, 2016; 230) In addition, the highly credible firms use factoring to manage the currency risk.

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Since factoring receivables kept under account receivables entries it is not easy to track the degree of involvement of firms in factoring financing. Meanwhile, the recent trend shows that the factoring sector is well-developing and the size of the factoring companies is growing. The share of total assets of factoring companies is already as large as 5% of the banking sector in Turkey. (Banking Regulation and Supervision Agency (BRSA) Data Set) Some studies have been conducted using survey data, while others focus on small and medium enterprises. Summers and Wilson (2000) discusses the need for in-house or outsource factoring decision in their research by applying firm-level survey. Similarly, Stöter (2013) analyzes decision for using full-service factoring or enter into an in-house factoring contract in his research with applying survey for German case. Klapper's (2006) comprehensive study provides valuable insight into different contract types of factoring for innovative financial solutions. To date, there has been no convincing evidence using actual public company level data, especially for Turkish market. Hence, further studies are required to shed light on the significance of factoring for capital structure decisions.

Filling the gap in the literature, this paper investigates the importance of factoring receivables for capital structure decisions of Turkish non-financial public firms.

Two important issues must be taken into account in capital structure research. Firstly, recent empirical studies showed that a distinction should be made between the decision of whether or not a firm should issue debt and the process of determining how much debt a leveraged firm should use. These two questions must be investigated separately and the results of the capital structure studies, which ignore this separation, should be taken with caution.

Secondly, it is common practice to use linear regression models with fractional dependent variables in capital structure research. The conditional expectation of this variable is a nonlinear function of the explanatory variables. When we use a linear model, it becomes miss-specified (Kieschnick and Moussawi 2017). Ramalho and Silva (2009) address this methodological problem using a non-linear fractional regression model approach developed by Papke and Wooldridge (1996). The later suggests a robust quasi-maximum likelihood (QML) method for regression models with a fractional dependent variable with a finite number of boundary observations.

A two-part fractional regression model approach developed in Ramalho and Silva (2009) and Ramalho and Murteira (2011) address the two issues mentioned above. Therefore, their approach is used in this study.

1. Sample

Sample data set comprise of 275 non-financial public companies for the year 2016. All firm level data except factoring receivables is extracted from Compustat Global database. A valid measure of leverage ratio is vital for a correct understanding of the firms' borrowing preferences. Following Welch (2011), leverage ratio is measured as the proportion of financial debt to total investment where financial debt is defined as the book value of long-term interest-bearing debt, and total investment represents book value of long-term interest-bearing debt plus market value of stockholders' equity.

Factoring is measured as the outstanding factoring receivables for 2016. According to trade off theory, firms has an optimal leverage ratio. Once a firm reach this level, issuing more debt becomes costly and does not preferred. At this point, factoring receivables may be used as an extra debt financing option. When firms use this option, their capital structure will remain same with the increase of debt. Our main argument is the use of factoring receivables as a source of debt financing without changing the capital structure. Thus, we expect a positive relationship between factoring receivables and leverage ratio.

Profitability, firm size, tangibility, non-debt tax shield, expected growth and sector leverage are used as control variables. Profitability is measured as the ratio of earnings before interest and taxes to total assets. Trade off theory argues that profitable firms can borrow at a lower rate due to their low bankruptcy risk. According to pecking order theory, the more profitable a firm, the less debt it uses. Since literature generally supports the pecking order view, a negative relationship between profitability and leverage ratio is expected in this study.

Firm size is measured as the natural logarithm of total assets. Tangibility estimated as the ratio of fixed assets to total assets. The variables are used as proxies of firm's credibility in debt market and are factors that lowers the cost of debt. Bankruptcy probability is lower for large firms. Besides, in case of bankruptcy, tangible assets are sold to satisfy the creditors' claims. Both trade off and pecking order theories suggest positive effects of firm size and tangibility on leverage ratio.

Expected growth is estimated as the growth rate of total assets. Growth companies prefer less debt. This situation implies a negative relationship between expected growth and leverage ratio.

Non-debt tax shield is estimated as the ratio of depreciation and amortization over total assets. According to trade off theory, since interest payment is subtracted from the earnings before tax estimation, debt usage provides a tax advantage. Depreciation and amortization are also tax-shields. Thus, a positive relationship between non-debt tax shield and leverage is expected.

2. Methodology

In this study, two models are estimated. The first model is the binary dependent variable model which can be defined as:

$$Y^* = \begin{cases} 0 \; for \; Y = 0 \\ 1 \; for \; Y \in (0,1] \end{cases}$$

$$P(Y^* = 1|X) = P(Y \in (0,1]|X) = F(X\theta) \tag{2.1}$$

where θ is a vector of variable coefficients and $F(.)$ is the cumulative logistic function. This logistic model is estimated with ML for the full sample. The second model is the fractional regression model which can be defined as:

$$E(Y|X, Y \in (0,1]) = G(X\gamma) \tag{2.2}$$

where γ is a vector of variable coefficients and $G(.)$ is the cumulative complementary log log function. This second model is estimated with QML (Ramalho and Silva, 2009). In this two-step approach, factors that affect the decision of whether or not use debt must be different from the factors that affect the amount of debt a leveraged firm must use. Thus, the coefficients of variables for the independent variables for these models are allowed to be different.

3. Results and Analysis

Table 1 and 2 reports the results from the binary and fractional regression models respectivey. Functional form misspecifications are tested P test statistic proposed by Davidson and MacKinnon (1981) and GOFF test (Ramalho et al., 2014). According to the simulation results provided by Ramalho and Murteira (2011), GOFF and P tests has better finite sample properties than Ramsey RESET test. Functional form misspecification test results showed that probit and complementary log log functions should be preferred respectively for the first and second model of two-part fractional regression model respectively.

First column of the table gives results for the binary regression model at (2.1). The second column gives results for the fractional regression model at (2.2). Standard errors are reported in parentheses.

Table 1. Results for the First Part of the Fractional Regression Model

Variable	Logit	Probit	Cauchit	Loglog	Cloglog
Factoring	0.104	0.061	0.117	0.091	0.056
	(0.116)	(0.064)	(0.195)	(0.104)	(0.053)
Profitability	0.053	-0.026	0.424	-0.010	-0.114
	(1.397)	(0.828)	(1.434)	(0.946)	(0.892)
Firm Size	0.381	0.237	0.292	0.302	0.238
	(0.110)	(0.063)	(0.131)	(0.089)	(0.056)
Tangibility	2.011	1.197	2.535	1.635	1.131
	(0.878)	(0.498)	(1.180)	(0.732)	(0.446)
Expected Growth	0.021	0.007	0.132	0.023	0.002
	(0.027)	(0.013)	(0.098)	(0.026)	(0.008)
Non-debt Tax Shield	-15.686	-9.075	-22.017	-11.742	-8.630
	(10.532)	(6.137)	(12.382)	(8.084)	(5.867)
Sector Leverage	2.155	1.287	1.712	1.735	1.174
	(1.683)	(1.012)	(1.659)	(1.191)	(1.075)
Constant	-2.266	-1.391	-1.670	-1.438	-1.703
	(0.999)	(0.592)	(1.047)	(0.711)	(0.621)
N	260	260	260	260	260
Pseudo R-square	0.141	0.140	0.142	0.141	0.138
RESET2	0.867	0.636	0.601	0.878	0.721
RESET3	0.908	0.657	0.774	0.861	0.887
GOFF1	0.772	0.591	0.361	0.635	0.670
GOFF2	0.585	0.723	0.263	0.635	0.670

Pseudo R-square is estimated as the square of the correlation between the predicted and actual values of dependent variable. R-square estimates of all functional form specifications are similar in Table 1. Model misspecification tests do not reject any one of the functional forms.

Only the coefficients of firm size and tangibility has significant and positive coefficients in for all model specifications Table 1. Thus, it can be argued that factoring has no effect on the decision of whether or not a firm should issue debt. The most important determinants are the firm size and asset tangibility at this level.

Table 2. Results for the Second Part of the Fractional Regression Model

Variable	Logit	Probit	Cauchit	Loglog	Cloglog
Factoring	0.017	0.011	0.014	0.012	0.013
	(0.010)	(0.006)	(0.007)	(0.008)	(0.006)
Profitability	-3.814	-2.119	-4.346	-1.785	-3.204
	(1.811)	(1.052)	(1.484)	(0.927)	(1.383)
Firm Size	0.039	0.020	0.052	0.014	0.035
	(0.045)	(0.027)	(0.044)	(0.025)	(0.037)
Tangibility	1.433	0.886	1.282	0.907	1.126
	(0.387)	(0.235)	(0.381)	(0.237)	(0.300)
Expected Growth	0.001	0.001	0.001	0.001	0.001
	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
Non-debt Tax Shield	-4.308	-2.625	-4.376	-2.660	-3.514
	(5.080)	(2.973)	(6.099)	(2.756)	(4.228)
Sector Leverage	-1.062	-0.671	-0.598	-0.754	-0.719
	(1.297)	(0.757)	(1.634)	(0.709)	(1.067)
Constant	-0.798	-0.471	-0.932	-0.068	-1.072
	(0.664)	(0.387)	(0.855)	(0.360)	(0.554)
N	198	198	198	198	198
Pseudo R-square	0.197	0.195	0.194	0.193	0.195
RESET2	0.666	0.554	0.516	0.381	0.836
RESET3	0.258	0.301	0.085	0.303	0.219
GOFF1	0.699	0.632	0.299	0.359	0.985
GOFF2	0.915	0.525	0.166	0.359	0.985

Pseudo R-square is estimated as the square of the correlation between the predicted and actual values of dependent variable. R-square estimates of all functional form specifications are similar in Table 2. According to the results of RESET3 tests, Cauchit specification for the link function is rejected at 10% level.

As can be seen from Table 2, factoring receivables have a positive and significant effect on leverage ratios. Moreover, profitability has a negative and significant effect on debt usage. Lastly, tangibility and expected growth has a positive relationship with leverage ratio.

Conclusion

The effect of factoring on the capital structure in Turkey is investigated in this study. A two-part fractional regression model approach is used where a binary response model is estimated in order to determine role of factoring on a firm's decision to issue debt and a fractional regression model is employed in order to analyze the effect of factoring on capital structure for leveraged firms. Results showed that factoring has no effect on the decision of whether or not a firm should issue debt. On the other hand, factoring receivables have a positive and significant effect on leverage ratios. This finding supports the view that firms use factoring as an additional debt financing source which does not affect the capital structure.

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