ERASMUS UNIVERSITY ROTTERDAM
Erasmus School of Economics

Bachelor Thesis [International Bachelor of Economics and Business Economics]

Capital Structure & a Firm's Optimal Funding Choice

Name Student: Hassan Hassan Mohamed Hassan Ali Amer
Student ID number: 494460

Supervisor: Prof. Dr. Sebastian Gryglewicz
Second Assessor: xxx

Date final version: 9th July, 2022

Table of Contents

Abstract

The following paper aims to test how a firm's deviation from it's optimal leverage ratio may affect it's behavior when issuing securities in the future. The predictions made are that the firm is more likely to adjust their leverage ratio towards their optimal capital structure if there is a deviation between the optimal and observed leverage ratio. The paper tries to model the theoretical frameworks presented by Myers (1984) where he describes his takes on two different approaches to capital structure, the pecking order and static tradeoff theories. This paper, which follows the methodology of Titaman (2001), takes a new approach by introducing a dynamic model for calculating the optimal ratio. This allows for the incorporation of adjustment costs and changes in firm characteristics over time. The results of this paper show that firms are only more likely to adjust to the optimal ratio if they must raise through debt. Moreover, the decision to raise through equity is more consistent with firms that are struggling and choose this security as a last resort.

1. Introduction

The optimal capital structure of a firm has been a prevalent debate in financial literature since the publication of Donaldson's (1961) "pecking order" theory and Modigliani and Miller's (1958, 1961) "M&M" theory. Capital structure is the method in which a firm chooses to finance its assets which can be done through existing cash flows, debt, or equity.

The publication of Myers' (1984) "Capital Structure Puzzle" presented two contrasting frameworks that built on the pecking order and M&M theories. Myers explained that unlike dividend policy models, which aimed to increase payout ratios, there is little research and knowledge in regards to how firms choose their capital structure. Moreover, the existing literature didn't seem to explain actual financing behavior by managers and executives. Therefore, Myers proposed two possible approaches for thinking about capital structure decisions.

1. Static Tradeoff Theory: This approach builds on the propositions of Modigliani and Miller, which will be discussed further in the literature review, and follows the idea that firms have a specific target debt to value ratio that they move towards. Given the tax advantage of debt, firms ideally finance their assets through debt and opt for a relatively higher target leverage ratio. However, this framework must be taken with a grain of salt. The reason being is that increasing leverage may lead to inflexibility in the capital structure and increase the risk of bankruptcy for a firm.

2. Pecking Order Theory: This framework follows Donaldson's (1961) publication and claims that firms strictly prefer funding through existing cash flows, followed by debt, and choose equity as a last resort. As a result, firms will naturally finance their assets through debt as they grow, and once there is enough cash flow to pay off the debt, they will gradually reduce their leverage ratio. This framework also assumes that firms do not have a target leverage ratio.

This paper follows the methodology of Titman, Opler, and Hovakimian's (2001) "The Debt-Equity Choice" and hypothesizes that firms generally have a target debt ratio and their choice of financing primarily aims to move the capital structure of the firm towards this target ratio. Although it may seem like the methodology follows the basis of static tradeoff theory, the authors rather use a dynamic model that accounts for real-time changes in firm value and firm characteristics. Therefore the target ratio is not static, as assumed by the static tradeoff theory, and may change from year to year. A firm's target ratio may decrease over time, and this can be achieved by financing through existing cash flows or issuing equity, which is a prediction of the

pecking order theory. This paper does not follow a specific framework but rather tries to model firm behavior in regards to capital structure using assumptions from both theories.

2. Literature Review & Hypothesis

2.1 M&M Theory

In 1958, Modigliani and Miller developed two propositions that shaped the way corporate finance approaches decisions in regards to raising capital and optimal capital structures. The first version of the propositions were limited due to the assumptions made by the authors which included perfectly efficient markets, no taxes, no agency or bankruptcy costs, and symmetric information. Despite these limitations, the propositions were used by other authors to develop models and frameworks that included the tax advantages of debt, like the static tradeoff theory. The M&M theory proposed the following:

1. Proposition I: The value of a firm is independent of its capital structure. Therefore, enterprise value is the same regardless of the leverage ratio. $V_L = V_U$, where V_L is the value of a levered firm that finances its assets through a combination of debt and equity, and V_U is the value of the same firm if it was unlevered by financing its assets solely through equity. However, this proposition only holds since the assumptions of the theory state that there are no tax-deductible interest payments.

2. Proposition II: The cost of equity for a firm increases in direct proportion to the leverage ratio of a firm. This is because of the higher risk equity holders take on if a firm raises capital through debt.

$$r_E = r_U + \frac{D}{E}(r_U - r_D)$$

Where:

- r_E is the cost of equity
- r_U is the cost of equity for a firm with no leverage
- r_D is the cost of debt
- $\frac{D}{E}$ debt to equity ratio

Although these propositions may seem irrelevant to the real world due to the unrealistic assumptions of the theory, their importance lies in showing that due to the violations of the

assumptions, capital structure indeed matters and a firm's choice between debt and equity can directly affect its value.

2.2 Static Tradeoff Theory

Myers' (1984) static tradeoff hypothesis is built on the M&M theory and introduced tax shields as well as various agency and financial distress costs. Myers hypothesized that firms in fact have an optimal target debt ratio they gradually move towards, and highlighted the importance of benefiting from tax shields when financing new assets. However, there is a need to balance the benefit of tax shields and potential bankruptcy and financial distress costs. In Fama and French's (2002) "Testing Trade-Off and Pecking Order Predictions About Dividends and Debt", the authors assessed the two frameworks, and stated the following in regards to the tax aspect of the static tradeoff theory "Taxes have two offsetting effects on optimal capital structures. The deductibility of corporate interest payments pushes firms toward more target leverage, while the higher personal tax rate, relative to equity, pushes them toward less leverage." This shows that although there may be an "optimal" leverage ratio, it is sensitive to costs of adjustments that may result from changes such as tax rates, interest rates, various firm characteristics, and exogenous shocks. Therefore, the static tradeoff model is unable to account for the adjustment costs and potential changes in the target ratio. The methodology of this paper aims to resolve this issue in the first stage regression by introducing a dynamic target ratio for firms that is controlled by various firm-level characteristics.

2.3 Pecking Order Theory

In contrast to the static tradeoff hypothesis, Myers (1984) also came up with a different approach to capital structure to deal between the balance of tax advantages, and potential financial distress costs of increased leverage. Pecking order claims that if firms require external financing, they should issue debt, and if issuing debt may be considered too risky, equity should be considered as the last option. The theory assumes that firms strictly prefer internal finance to debt, and preferred debt to equity. Since there are two types of equity, one which is the preferred choice and the other is the least preferred, firms do not have an optimal debt ratio when financing new assets. Once firms are able to generate enough existing cash flows to decrease leverage, they will then adjust to a lower leverage ratio.

2.4 Dynamic Tradeoff Models & Core Paper

The methodology of this paper follows Titman, Opler, and Hovakimian's (2001) "The Debt-Equity Choice", which aims to model the preference of security issuances of firms in relation to their deviation from their optimal leverage ratio. As previously explained, the idea of assuming firms do in fact have an optimal ratio is in accordance with the assumptions of the static tradeoff model, however this model includes a dynamic target ratio, which aims to solve for the possible costs of adjustment missing from the static tradeoff theory. The motivation of this paper is thus similar to Baxter and Cragg (1970), and Marsh (1982) which assumes that decisions in regards to changes in the level of debt are taken after in-depth analysis of the possible tradeoffs between the tax advantages and possible financial distress costs. The results of introducing a dynamic capital structure model therefore may show short-run pecking order behavior, since firms may adjust to lower their target ratio through internal financing. This short-run pecking order behavior is also observed in dynamic models presented by Fischer, Heinkel, and Zechner (1989), and Leland (1994).

2.5 Hypothesis & Research Question

The motivation behind this paper is to therefore, firstly, calculate a dynamic target ratio for various firms in the dataset. This target ratio will then be compared to the actual observed ratio. The deviation between the two values will be used to model future security issuance behavior of the firms in the data set. The aim is to show trends between the deviation in the optimal leverage ratio and whether firms will actually adjust their leverage based on this. The research question for this paper is therefore, "To what extent does the deviation between a firm's target leverage ratio and their observed ratio affect their choice in security when issuing or repurchasing capital?"
The paper makes the following predictions:

H_0: *The deviation between the observed and target leverage ratio of a firm is not significant in explaining future changes in the levereage ratio*

H_a: *The deviation between the observed and target leverage ratio of a firm is significant in explaining future changes in the leverage ratio*

3. Data & Empirical Approach

3.1 Data

For this paper, firm-level data was collected from the Compustat – Capital IQ North America database. This database provides standardized financial statement and market data on thousands of North American firms. The sample used in this paper includes around 32,000 firm years from 2009-2019.

Table 1 shows the distribution of the observations in the sample data collected. Five different types of security issuances and repurchases were calculated using the observations provided by the data set. The aim of the paper is to find a significant relationship between these security issuances and the deviation between the target and observed leverage ratio of the firm.

Table 1: Frequency of Security Issuances for North American Firms 2009-2019

Year	Equity Issue	Debt Reduction	Short-Term Debt Issue	Long-Term Debt Issue	Equity Repurchase
2009	236	1,826	1,786	267	61
2010	269	603	429	355	129
2011	256	547	380	491	192
2012	268	545	422	551	161
2013	393	612	409	569	179
2014	417	490	383	683	225
2015	356	558	383	654	279
2016	386	606	394	638	220
2017	466	622	409	669	197
2018	518	696	462	694	273
2019	725	1,027	912	676	224
Total	**4,298**	**8,370**	**6,607**	**6,280**	**2,158**

The security issuances (repurchases) were derived from the cash flow statement and changes in balance sheet items provided by Compustat. In total, the sample includes 17,185 security issuances and 10,528 repurchases. The issuances and repurchases were identified by generating a dummy

that would take a value of 1 if the net issuance (repurchase) exceeded 5% of the total assets of the firm. For example, a firm would be considered to have issued equity if the following equation is true:

$$\frac{Equity\ Issued - Equity\ Repurchased}{Total\ Assets} > 5\%$$

The increase in debt issuances in 2009 can be attributed to the corporate debt bubble that followed the financial crisis in 2008-2009. At the time, the US saw a large increase in corporate bond issuance by firms.

3.2 Empirical Approach

As previously mentioned, the methodology of this paper follows a two-stage regression process. The following equations give an overview of the of the two stages:

1. $Lev_{it} = W_{it}\alpha + \varepsilon_{it}$
2. $D_{it} = \beta LevDev_{it-1} + X_{it-1}\gamma + \eta_{it}$

In this first stage, the leverage ratio of the observation is regressed on multiple firm-level controls used for capital structure research, W_{it}. These controls will be discussed further in section 4.1. The leverage ratio is calculated by dividing the book value of the debt by the book value of the total assets of the firm year. A tobit model is used in the first stage because it allows for censoring of the dependent variable. In this case, the leverage ratio is censored from above the 1 and below the 0. This is because the book value of debt cannot be negative or exceed the book value of the assets. The estimation of the leverage calculated in the first regression is considered the firm's target leverage ratio.

In the second regression, which is a logit model, the dependent variable D_{it} signifies a dummy that takes a value of 1 if a certain security is issued and a value of 0 otherwise. The explanatory variable in this case, $LevDev_{it-1}$, is the deviation from the observed leverage ratio of the firm given by the book values and the target leverage ratio calculated in the first regression. The second model aims to predict how firms would adjust their leverage ratio at time $t = 0$, if there is a deviation between their observed and target leverage ratio at time $t = -1$. The second regression is also controlled with similar firm-level characteristics as those mentioned for the first regression.

4. Calculating Target Leverage

4.1 Determinants of the Target Leverage Ratio

Since the regressions aim to explain target leverage ratios and possible deviations from that target, control variables W_{it} and X_{it-1} are proxies for the leverage ratio of a firm and a potential deviation from that ratio, respectively. The controls that may explain a deviation rather than proxy for the leverage itself will be used in the second regression. Table 2 presents the descriptive statistics for the leverage and control variables chosen. To remove outliers, observations with a leverage greater than 1, firm size less than 0, and tangible asset ratio greater than 1 were removed as these observations do not fit the assumptions of the model and may result in biased estimations.

Table: 1 Descriptive Statistics for the Dependent and Control Variables

Variable	Observation	Mean	Standard Deviation	Min	Max
Leverage	32,526	0.278	0.219	0	1
Market to Book Ratio	22,040	0.159	0.256	0	1.47
SG&A	27,618	0.290	0.417	0	11.37
Tangible Assets Ratio	32,526	0.262	0.260	0	0.999
Firm Size	32,526	6.85	2.60	0.002	15.07
ROA	32,093	0.002	0.403	-11.37	3.99

Leverage was calculated by using the book value of debt and the book value of assets. Market to book ratio is the ratio of the market value of assets of the firm in relation to the book value of the assets. SG&A is the operating expenses of the firm scaled by the total assets. The value was scaled by total book value of assets to give the same weight to each observation regardless of the firms size. Tangible assets ratio is the ratio of property, plants, & equipment to

the total assets of the firm. Firm size is the natural logarithm of the total book assets, and ROA is the operating profit divided by the total assets of the firm.

4.2 First Regression Results

Table 3: Tobit Regression for the Target Leverage Ratio of Firms

	Leverage Ratio		
Variable	**Panel A**	**Panel B**	**Panel C**
Market to Book Ratio	-0.159**	-0.144**	
	(0.009)	(0.006)	
SG&A	-0.056**	-0.001	0.008*
	(0.007)	(0.002)	(0.004)
Tangible Assets Ratio	0.119**	0.126**	0.142**
	(0.006)	(0.006)	(0.005)
ROA	-0.094**		
	(0.007)		
Firm Size	0.010**	0.009**	0.012**
	(0.001)	(0.008)	(0.001)
Constant	0.207**	0.196**	0.152**
	(0.007)	(0.007)	(0.005)
Observations	17,985	18,115	35,908
Log-likelihood	3332**	3228**	4142**

*Coefficients are significant at the 1% are marked with ** and those significant at the 5% are marked with **

Panel A shows the initial regression for the target leverage ratio. The assumptions behind this model is that as firms increase their assets, they are able to increase their leverage further by using these valuable assets as collateral for debt to finance their growth opportunities. Therefore, the negative coefficient of the ROA may indicate that it is a better proxy for the deviation of the leverage ratio and should be used in the second regression. This negative coefficient is more in line with the pecking order theory which assumes that as firms accumulate cash flows and ROA increases, they will use internal financing to reduce their leverage. Panel B provides similar results; however the MB ratio will also be omitted from the regression because, the expectation is that

increases in the market value of a firm will allow them to finance their assets through debt, however firms also tend to issue equity after experiencing an increase in stock price. This gives reason to believe that it is also a better proxy for the deviation. An increase in the stock price a firm will result in a reduced leverage. Therefore, in accordance with the core article, the results from Panel C are used as the method to calculate the target leverage of the firms for the second regression, while the omitted controls will be proxies for the deviation of the leverage ratio in the second regression.

Since the aim of the first regression is to simply calculate the optimal leverage ratio while controlling for factors that may affect this ratio, there is no need to interpret the values of the coefficients themselves, since there is no explanatory variable.

5. Funding Choice Model

5.1 Explanatory Variables

For the second regression, the aim is to provide a model that explains issuance behavior in firms by observing their deviations from their optimal leverage ratio in the previous period. As previously explained, ROA and MB will be included in these regressions because they are a better proxy for deviation. Moreover, in addition to the leverage deficit variable, three new variables will be introduced that each measure the deviation in a different way:

1. Leverage Deficit: The difference between the observed debt to assets ratio and the target ratio estimated in the first regression. $LevDev_{it-1} = Target\ Leverage_{it-1} - Actual\ Leverage_{it-1}$

2. Target Leverage – Industry Standard: This is the difference between the target leverage estimated in the first regression and the industry average. Industries were classified by the first three digits of their SIC code. This variable aims to test whether a more complex estimation of the target leverage ratio improves upon the simpler average of the industry.

3. Actual Leverage – Industry Standard: This is the difference between the observed book value of the firms leverage at time, $t = -1$ and the industry average. It would be interesting to see how firms react to their deviation from their competitors.

4. DLTD – DLTE: Often times, when the issue size is much larger than the deviation, observing the leverage deficit alone may lead to incorrect observations about the deviation from the target leverage ratio. For example a firm, at time $t = -1$, has a total book value of assets of \$100,000, total debt of \$20,000, and a target leverage ratio of 0.21. If this firm needs \$10,000 to finance new

assets, it may be an easy conclusion to finance through debt since the firm is considered under levered. However, the firm will have a debt to assets ratio of 0.273 if financed through debt and a debt to assets ratio of 0.182 if financed through equity. The deviation to the target leverage is higher when issuing debt in comparison to issuing equity. The variable DLTD – DLTE, measures the absolute deviation between the observed leverage and target leverage when issuing debt, DLTD, and issuing equity, DLTE. A positive value for this variable would mean that firms would be closer to their target ratio if they finance their assets through equity rather than debt. DLTD – DLTE is calculated in the following way:

a. $DLTD = |Lev^D - Target\ Leverage_{it-1}|$, where

$Lev^D = (Total\ Debt_{it-1} + Issue\ Size_{it})/(Total\ Assets_{it-1} + Issue\ Size_{it})$

b. $DLTE = |Lev^E - Target\ Leverage_{it-1}|$, where

$Lev^E = (Total\ Debt_{it-1})/(Total\ Assets_{it-1} + Issue\ Size_{it})$

5.2 Univariate Results

Table 4 presents the mean values for the explanatory and control variables for each type of security issuance. It is important to note that the observations for each security issuance (repurchase) has decreased in comparison to Table 1 because firm years that saw both issuances in debt and equity were omitted since the issuances cancel out. Moreover, the observations that have missing values for different variables are also omitted to avoid bias in the means presented.

Starting with the firms that issue equity, it is worth noting that these are the smallest firms in the sample in terms of asset size. Moreover, it is the only group with an average return on assets below 0. These results generally support both the static tradeoff and pecking order framework, as it shows that firms will not resort to issuing equity unless they must. In this case it is very unlikely that firms with a negative ROA have available internal financing to fund assets, and since their asset size is, on average, smaller than other groups they are unable to use these assets as collateral to issue debt. It is clear that firms that choose to issue equity are, on average, struggling more than the other groups. This group also, on average, has the highest market to book ratio which may indicate that the firm issued equity based on market timing.

Looking at debt issuances and reductions, it is clear that these firms are relatively larger in terms of assets in comparison to those that issue equity and have much higher ROA's on average.

This supports the idea that firms with enough assets to raise debt choose to do so to benefit from the tax advantage but may also choose to reduce their leverage by paying off debt to avoid financial distress costs of over-leveraging.

Security issuances such as equity issue and debt reduction that reduce the overall leverage have negative values for the DLTD – DLTE, while the other security issuances that increase leverage have a negative value. This shows that firms on average, when issuing securities, adjust towards their optimal leverage as calculated in the first regression. Moreover, firms that tend to repurchase equity, on average, have the largest asset size and ROA. This supports the general static tradeoff framework that struggling firms generally issue equity initially, and increase their asset size while issuing more debt. At some point the firms with relatively high ROA can use internal finance to repurchase stock and increase leverage as observed by the averages for equity repurchasing.

Table 4: Mean Values for Security Issuances

	Sample Characteristics					
Variables	**Equity Issue**	**Equity Repurchase**	**Long Term Debt Issue**	**Short Term-Debt Issue**	**Debt Reduction**	**No Issue**
Total Assets	1,999	14,963	9,872	6,227	8,326	15,685
Leverage Ratio	0.299	0.258	0.298	0.338	0.363	0.263
Leverage Deficit	-0.029	0.029	-0.006	-0.054	-0.076	0.029
DLTD – DLTE	0.036	-0.006	-0.028	-0.057	0.040	0.000
ROA	-0.069	0.180	0.121	0.081	0.081	0.103
Market-Book Ratio	0.130	0.109	0.078	0.099	0.061	0.079
Issue Size*	0.240	0.112	0.136	0.140	0.126	-
Observations	578	1,074	1,999	551	1,372	5,392

Issuance size is the total issuance size divided by the book value of assets

5.3 Multivariate Results

Throughout the univariate results, the general hypothesis that firms adjust towards their optimal ratio tends to hold. In this section, the multivariate results for the second regression are presented. There are two logit models, the first compares equity and debt issuances, and the second looks at repurchases and debt reductions. The regressions are presented below in Table 5.

Table 5: Logit Model Comparing Firms that issue (repurchase) Debt and Equity

Logistic Model Comparing Debt vs. Equity Issuances and Repurchases		
Variable	**Debt vs Equity Issuance**	**Debt Reduction vs Equity Repurchase**
Target Lev – Industry Average	-1.67** (0.556)	2.44** (0.517)
Industry Average – Leverage Ratio	-1.66** (0.301)	3.61** (0.334)
DLTD – DLTE	-4.36** (0.460)	0.237 (0.366)
ROA	-5.95** (0.376)	15.88** (0.791)
Market to Book Ratio	0.166 (0.307)	3.18 ** (0.377)
Constant	-1.10** (0.066)	-2.58** (0.126)
Observations	2,969	2,446
Log-likelihood	-1200**	-1223**

*Coefficients are significant at the 1% are marked with ** and those significant at the 5% are marked with **

When looking at the coefficients for the first regression comparing debt and equity issuances, market to book ratio is the only insignificant variable. The signs of the first two

deviation coefficients are in line with the general hypothesis. Since the dummy for debt takes a value of 0, an increased deviation in the first two explanatory variables in the regression are predicted to have a negative coefficient which signifies that firms are more likely to issue debt when considered under levered from the optimal target. However, unlike the univariate results, the predictions made about the sign of the DLTD – DLTE do not hold for this regression. The model predicts that an increase in DTLTD – DLTE is more likely to result in an issuance of debt, even though issuing equity would adjust the firms leverage ratio closer to the optimal. However, the reasoning behind this may be supported by pecking order framework. Since the theory clearly states that firms should prefer debt to equity when looking at raising external capital, it makes sense that when firms are required to raise capital they would choose debt over equity when given the opportunity regardless of how it adjusts the capital structure in comparison to the optimal target ratio. Decisions on raising capital seem to value the tax advantage of debt very highly since the model predicts that they adjust their capital structure further from the optimal to raise debt.

The second model, which compares equity repurchases to debt reductions, also supports the general hypothesis with an increase in deviation between the optimal leverage and actual leverage more likely resulting in an equity repurchase which would increase the leverage ratio. The high coefficient for the ROA in the second regression, in comparison to the first, also supports the static tradeoff framework which suggests that firms with enough existing cash flows will repurchase under-valued shares. It is also important to note that the coefficient for the DLTD – DLTE variable was found to be insignificant when explaining repurchases.

6. Discussion & Robustness

The first regression provides an estimation for the optimal leverage ratio. Although the coefficients do not particularly provide insight since they are simply meant to control, the signs of the coefficients give insight to the firm characteristics related to the leverage ratio of the firm. As expected, firms with more assets (higher tangible assets ratio and firm size) are more likely to have a higher leverage ratio. This can be attributed to the benefit of tax-deductible interest payments.

The second regression introduced three deviation variables that each explain the issuance behavior in a different way. Finding the difference between the observed leverage and the industry average gives insight as to how firms adjust their capital structure based on competitors, since the industry average may be used as a benchmark for many managers. The results for the debt and equity issuance regression showed that a deviation from the benchmark of the industry resulted in firms issuing debt, which would decrease the deviation as a result. This is in line with the predictions made by the paper. The surprising finding was that the coefficient of the DLTD – DLTE was negative despite being significant. This meant that although issuing equity may have decreased the deviation to the optimal leverage ratio, firms were still more likely to issue debt. This is in line with the pecking order theory, claiming that firms do not adjust towards a specific target but rather have strict preference of raising debt over equity. This is supported by the univariate results which showed that small firms with low ROA's were more likely to issue equity.

When looking at the comparison between the equity repurchase and debt reduction, the DLTD – DLTE loses its significance. The deviation from the optimal leverage ratio in this case does not have explanatory power in explaining security repurchases. Consider a firm with excess cash and a relatively high leverage ratio in comparison to the optimal. Repurchasing shares may increase the overall leverage ratio but does not increase the outstanding debt itself. The financial burden of the leverage does not increase despite the debt to assets ratio increasing. The firm is simply repurchasing equity that they consider under-valued.

It is likely that the first stage regression is measured with an error, due to variations in the data set such as outliers and missing data. This was minimized throughout the methodology by removing observations that didn't have sufficient data for every variable. Although this may mean that the coefficients are biased, they can be consistent if $E(\varepsilon_{it}\eta_{it}) = 0$. Considering that the standard errors in the first regression were relatively small in comparison to their coefficients, The variance caused by measurement errors in the raw data will not affect the fundamental conclusions

of the paper. Therefore, it is not necessary to interpret coefficients of the regressions as they may be biased, but the signs and test statistics of the coefficients are able to model the behavior of the firms in the data set.

7. Conclusion

The main predictions made by this paper are that firms will choose adjust towards their optimal ratio at time $t = 0$, if they observed a deviation from the target at time $t = -1$. It is important to note however, that the aim of issuing a security is never to adjust to the optimal leverage ratio, but rather the choice of which security may be influenced by the value it adds to the capital structure. Therefore, the multivariate results only compared firms that were issuing or repurchasing securities. The results showed behaviors consistent with both the static tradeoff and pecking order frameworks. The DLTD – DLTE variable in univariate results was consistent with firms issuing securities that brought them closer to the optimal target. However, this does not mean that equity was preferred over debt by these firms. It's clear that equity issuances came from struggling firms with less total assets and low returns. They also had the highest relative issuance sizes, which may lead to the conclusion that equity was the only option to finance their assets. This is supported by the multivariate results comparing debt and equity issuances. The negative coefficient of the deviations and DLTD – DLTE show that debt is preferred over equity in cases were the deviation to the optimal would increase. Therefore, the static tradeoff framework is only consistent with the results in the cases that debt would adjust the leverage ratio towards the optimal.

In relation to the pecking order theory, the results show that firms have a high preference for issuing debt regardless of the optimal ratio. However, the theory claims that when firms accumulate enough excess cash, they choose to decrease leverage. This is not consistent with the results, which showed that the firms with the highest average ROA's and asset sizes chose to repurchase shares instead of decreasing their leverage ratio. This is supported by the insignificance of the DLTD – DLTE. As previously mentioned in the literature review, it is important for firms and executive management to be aware of the effects of leverage on a firms' value. Therefore, investment decisions should not simply be based on profitability but the method of raising capital should be analyzed in relation to firm value. It's clear from the results that firms prefer debt over equity when raising capital. However it's difficult to conclude whether these firms faced financial distress due to increasing their leverage.

8. Bibliography

Baxter, N. D., & Cragg, J. G. (1970). Corporate Choice Among Long-Term Financing Instruments. *The Review of Economics and Statistics*, *52*(3), 225. https://doi.org/10.2307/1926290

Fama, E. F., & French, K. R. (2002). Testing Trade-Off and Pecking Order Predictions About Dividends and Debt. *Review of Financial Studies*, *15*(1), 1–33. https://doi.org/10.1093/rfs/15.1.1

FISCHER, E. O., HEINKEL, R., & ZECHNER, J. (1989). Dynamic Capital Structure Choice: Theory and Tests. *The Journal of Finance*, *44*(1), 19–40. https://doi.org/10.1111/j.1540-6261.1989.tb02402.x

Fisher, A. J., & Donaldson, G. (1962). Corporate Debt Capacity: A Study of Corporate Debt Policy and the Determination of Corporate Debt Capacity. *The Journal of Finance*, *17*(3), 554. https://doi.org/10.2307/2977084

Hovakimian, A., Opler, T., & Titman, S. (2001). The Debt-Equity Choice. *The Journal of Financial and Quantitative Analysis*, *36*(1), 1. https://doi.org/10.2307/2676195

LELAND, H. E. (1994). Corporate Debt Value, Bond Covenants, and Optimal Capital Structure. *The Journal of Finance*, *49*(4), 1213–1252. https://doi.org/10.1111/j.1540-6261.1994.tb02452.x

MARSH, P. (1982). The Choice Between Equity and Debt: An Empirical Study. *The Journal of Finance*, *37*(1), 121–144. https://doi.org/10.1111/j.1540-6261.1982.tb01099.x

Miller, M. H., & Modigliani, F. (1961). Dividend Policy, Growth, and the Valuation of Shares. *The Journal of Business*, *34*(4), 411. https://doi.org/10.1086/294442

Myers, S. C. (1984). The Capital Structure Puzzle. *The Journal of Finance*, *39*(3), 575. https://doi.org/10.2307/2327916