Capital Structure
- A Swedish Real Estate Study -

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ABSTRACT

This thesis aims to explain the choice of capital structure in Swedish listed real estate firms during the period 1995-2004 from the perspective of conventional capital structure theory. The two main theories used are the pecking order- and trade-off theory. The fundamental of the pecking order theory is that manager's capital structure decisions are influenced by the market perceptions of managers' superior information. The trade-off theory provides evidence for that manager's trade off between costs and benefits of debt. We find that the pecking order theory seems to dominate the trade-off theory in order to explain the choice of capital. The firms included in our dataset are Castellum, FastPartner, Heba, Hufvudstaden, Kungsleden, Ljungberggruppen, Tornet, Wallenstam and Wihlborgs.

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1 INTRODUCTION

This thesis aims to test the main capital structure theories on a unique dataset consisting of financials for Swedish listed real estate firms. In this part we will give an introduction to the background, reasons and aims why this topic and industry have been chosen.

1.1 BACKGROUND

Capital structuring has been a debated subject ever since Miller and Modigliani (1958) presented their theories on debt financing. For a long time, academic- and financial institutions have been trying to solve the puzzle of capital structure. Academically the problem is interesting since it is fairly open ended and therefore a subject to criticism and controversies. Practically it is important since the choice of structuring determines the value of the firm. However, there has been doubt on whether capital structure is relevant in corporate finance. Although, the concern that capital structure should be irrelevant is not the belief of many.

Empirically, it has been proven that stock prices tend to change upon news on increased or decreased leverage mainly due to the market belief that value can be created or destroyed by using more or less debt (Shyam-Sunder, 1991).

1.2 PURPOSE AND CONTRIBUTION

A typical response from a commercial real estate investor often is “go for it – use as much debt as possible” (Riddiough, 2004, p3). Even though this may be a good approach the reasoning behind it is less compelling; debt is cheaper than equity, so use debt. This answer might be correct but is it really that simple? Too much debt can result in skyrocketing capital costs due to financial distress in terms of increased bankruptcy and agency costs (Riddiough, 2004).

There are previous studies testing if traditional capital structure theories such as the pecking order theory and trade-off theory are able to empirically explain the composition of corporate capital structure. In many studies the capital structure choice has been studied across several industries allowing for industry effects to influence their dataset. This is confirmed by Schwartz and Aronson (1967) that find evidence for strong industry effects on debt ratios. In this thesis we will therefore solely focus on the real estate industry which will hopefully exclude the appearance of industry effects and enable the possibility to yield stronger result.

The real estate industry provides an interesting area of study since it is unique in the matter of having high asset backing. This is due to its great deal of collateral which can be used to support high levels of debt. Many previous studies have mainly been focusing on American Real Estate Investment Trust, REIT, structures where the performance of the stock price is most likely related to the valuation of its underlying assets, continuously being revalued in order to reflect the market value. Sweden does not yet have a REIT structure, meaning that owners will suffer from double taxation, most probably corresponding to a discount on their equity.

In order to perform the capital structure tests we have constructed a unique dataset on listed Swedish real estate firms containing financial data for the period 1995-2004. This has been used to test whether the theories are applicable on the chosen industry and in what extent reality fits into the theoretical framework.

1.3 OUTLINE

The thesis is structured as follows; **Part two:** In this section the theoretical framework is presented explaining the capital structure theories and real estate implication in greater depth. **Part three:** Presented here is our dataset consisting of yearly financials for specific Swedish real estate firms where reasons are given for limitations and processing. **Part four:** An attempt to apply the theoretical framework of capital structure and specification of the models that are being tested. **Part five:** In this section the empirical findings are presented and analyzed. **Part six:** In this concluding part of the thesis a short summary is given that refers to our initial questions. Suggestions are also made on further research in the area.

2 THEORETICAL FRAMEWORK

Two main theories dominate the debate of capital structure. One being the trade-off theory representing an optimization process where managers' trade off between costs and benefits of debt. Second being the pecking order theory that describes how managers' capital structure decisions are influenced by the market perceptions of managers' superior information. In this chapter we will present these fundamental theories and how previous empirical findings on capital structure are applicable on the real estate industry.

2.1 THE MILLER AND MODIGLIANI THEORIES

Before Miller and Modigliani published their theories on capital structure there were no generally accepted theories. Miller and Modigliani (1958) argued that every firm has a set of expected cash flows which is shared by equity- and debt holders determined directly by the choice of debt ratio. Consequently, the relation between debt and equity would have no effect on the value of the firm since the cash flows would remain the same no matter claimant. Later Miller and Modigliani (1963) revised their theory saying that the firm value should be an increasing function of debt ratio due to the benefits of attracting a tax shield. For this to be true they stretched that a number of non-realistic assumptions had to be fulfilled.

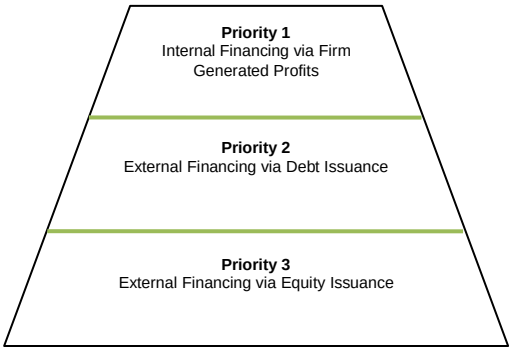
This conclusion led to an interesting debate on internal versus external financing and stimulated further research in the area. Research have shown that the theory seem to fail under certain circumstances, mostly including consideration of taxes, bankruptcy-, transaction-, and agency costs. Frank and Goyal (2003) argues that even though the Miller and Modigliani theory do not provide a realistic description of how firms should set up their capital structure it provides a theoretical framework of understanding why. From the academic questioning of Miller and Modigliani, theories such as both the trade-off theory and the pecking order theory evolved.

2.2 THE PECKING ORDER THEORY

The main objective of the pecking order theory is to point out that asymmetric information and signalling problems exists between managers and less-informed outside investors. Myers and Majluf's (1984) pecking order theory is an attempt to describe firms' decision hierarchy of

financing preferences. In this order firms tend to exhaust their internal funds first, use safe debt second and riskier external equity as a last resort. A financial hierarchy is apparent which exemplifies that when firms are facing financial deficits they tend to go further down the pecking order (Shyam-Sunder and Myers, 1999).

Figure 2.2.1: Pecking Order of Financial Hierarchy



The figure shows the financing choices given by the pecking order theory.

The pecking order theory does not claim a well defined debt target. Brealey et al (2006) suggest that having equity in both ends of the pecking order is one explanation for this, which is due to the existence of both internal and external equity. Every firm's cumulative need for external finance is therefore shown by its debt ratio. Brealey et al also concludes that the most profitable firms in general do not raise debt, a finding consistent with the pecking order theory, simply saying that profitable firms in general are not in need of external financing.

Firms with limited investment opportunities will continuously work themselves down to low debt ratios and vice versa. What drives the process is therefore not set by reaching an optimal capital structure; instead it is the consequence of hierarchical financing over time (Myers, 1984; Brealey et al, 2006).

Studies have shown a negative relation between leverage and profitability, which can be explained by the pecking order theory (Frank and Goyal, 2003; Gaud et al, 2005). MacKie-Mason (1990) finds that asymmetric information give reason for firms to care about who provides their funds, mostly due to fund providers having different information about the firm. Shyam-Sunder and Myers (1999) do also find evidence on firms following the pecking order

in their financing decisions. According to Brealey et al (2006) the pecking order theory work best for large and mature firms that have access to public bond markets, prefer internal financing and rarely issue equity.

In case of smaller growth firms the pecking order theory seems to be inconsistent with empirical studies. Brealey et al (2006) mentions that when external financing is required these smaller firms are more likely to rely on equity issuance which is against the theory of a pecking order.

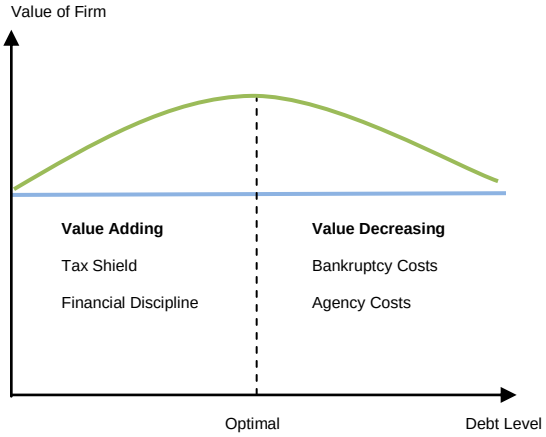
2.3 THE TRADE-OFF THEORY

The trade-off theory came as a reaction on the Miller and Modigliani theory, presenting the benefits of debt financing via debt related tax shields. Doubts were raised over the fact that there was no offsetting cost to debt. Therefore, a discussion followed saying that the optimal leverage should be found where a trade off between tax shield benefits of debt and costs of financial distress was found (Shyam-Sunder and Myers, 1999).

Debt enables the possibility to deduct interest charges raising incentive for higher leverage in order to maximize the tax shield. By doing this the firm value increases with the value of the tax shield (Graham, 2000). Damodaran (2001) stretches the increased financial discipline for managers as a consequence of higher debt levels. However there have been raised concerns on increasing risks of bankruptcy with increasing debt levels and likelihood of raising agency costs occurring between owners and managers. An underlying reason for this is a conflict of interests generated by debt (Brealey and Myers, 2003).

Therefore, according to the trade-off theory, an optimal debt level which maximizes the value of the firm does exist, when attaining a trade off as balancing the benefits of debt against the cost of financial distress. Naturally, it lies in every firms interest to find an optimal balance between internal and external financing (Frank and Goyal, 2007).

Figure 2.3.1: Trade Off between the Costs and Benefits of Debt



The trade-off theory of optimal capital structure assumes that firms balance the financial discipline and marginal present values of interest tax shields against the costs of financial distress. Equity financing is shown by blue line and debt financing is shown by green line.

Myers (1984) argues that in order for a firm to follow the trade-off theory it should set a target debt ratio and gradually move towards it. As seen in figure 2.3.1 this target should be where the optimal debt level lies. Therefore, under the trade-off theory, firms do only deviate from their optimal capital structure on a temporary basis, due to the cyclical nature of the economy and rebalances debt and equity to the long-term optimum (Feng et al, 2005).

Hovakimian et al (2001) find evidence for firms tending to move towards their target ratio over the long run. Fama and French (2002) points out that even though the mean reversion of leverage is slow it still is mean reverting. Gaud et al (2005) points out that firms do have target capital structures, concluding that the typical firm manages to adjust for more then half of the discrepancy between the actual debt ratio and target debt ratio within two years. The majority of observed changes in the capital structure are explained by targeting behavior. Smith and Watts (1992) shows that high / low growth firms are being more sensitive to market outlook and therefore also vulnerable due to the costs of financial distress choosing lower / higher leverage. Byoun and Rhim (2003) find differences between that the target debt ratio and actual debt ratio is an important aspect to take into consideration. According to their study firms tend to adjust their debt ratios to specific target debt ratios. This is consistent with the trade-off theory. A firm that has a target level of debt and if deviations from that target are gradually removed over time, a firm is said to exhibit target adjustment behavior (Frank and Goyal, 2007).

There are on the other hand empirical findings inconsistent with the idea of an optimal debt target. It has been shown at a numerous number of times that there is a negative correlation between debt ratio and profitability (Fama and French, 2002; Frank and Goyal, 2003). This is despite the fundamentals in the trade-off theory that speaks in favor of the positive relation between higher profits and thereby higher tax shields. This criticism is being put forward by Sarkar and Zapeto (2003) who predicts a negative relation between leverage and earnings in their modified trade-off model.

2.4 REAL ESTATE RELATED EMPIRICAL FINDINGS

2.4.1 THE PECKING ORDER THEORY

When studying a number of American REITs and the market reaction upon security offerings, Ghosh et al (1999) finds a significant negative stock price reaction to equity issues. This provides evidence for the existence of information asymmetry which is in accordance with the pecking order framework. In contradiction, Garmaise and Moskowitz (2004) do only find weak evidence for information asymmetry being important in real estate finance.

Bond and Scott (2006) performs a study on the listed real estate market in the United Kingdom finding that when external financing is needed debt is the most common security issued. They also notice that debt issuance seem to track the financing deficit closely.

2.4.2 THE TRADE-OFF THEORY

The research available on testing whether the theoretical framework on capital structure applies on the real estate industry is somewhat limited. Despite this, the industry does offer some unique characteristics such as supporting high levels of debt due to the high ratio of collateral on its balance sheet which should impose a reduction in costs of financial distress. Allen (1995) concludes that American REITs do raise more leverage compared to other industries, simply as a consequence of having lower agency and bankruptcy costs. Brown and Riddiough (2003) find evidence for firms striving towards a designated debt ratio when examining public security offerings of American REITs. Both of these empirical findings speak in favor of the trade-off theory and its ideas on optimal capital structure and target levels.

3 DATA

In this section we will present our dataset in terms of content, reasons for limitations and processing. Our unique dataset consists of yearly financials for nine Swedish real estate firms between 1995-2004 all listed at the Stockholm Stock Exchange.

3.1 DATASET DESCRIPTION

All firms in the dataset have the same fiscal year and most of the figures are cash flow based even though there are figures taken from the balance sheet and income statement.

Table 3.1.1: Summary of Firms in Dataset

Firm	Rank by Size[1]	Years of Observations
Tornet	1 (18,908 MSEK)	1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004
Wihlborgs	2 (16,595 MSEK)	1998, 1999, 2000, 2001, 2002, 2003
Castellum	3 (13,929 MSEK)	1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004
Kungsleden	4 (12,343 MSEK)	1999, 2000, 2001, 2002, 2003, 2004
Hufvudstaden	5 (10,620 MSEK)	1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004
Wallenstam	6 (9,202 MSEK)	1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004
Ljungberggruppen	7 (3,150 MSEK)	1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004
FastPartner	8 (2,724 MSEK)	1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004
Heba	9 (808 MSEK)	1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004

The complete dataset consists of 77 cross-sectional and time variant observations over a ten year period. The reason for why we have chosen the relevant time period is due to the implementation of the International Financial Reporting Standards, IFRS, in 2005 which had great impact on the valuation of assets. With the aim of being as consistent as possible we have therefore chosen a period before 2005. The historical availability of financials has unfortunately delimited us to a ten year period. Due to merger and acquisition activities biasing the data we have in some cases chosen to exclude a few numbers of observed yearly financials. This is however only apparent in the beginning or at the end of an observed ten year period. The included firms have been a function of available time periods.

[1] Ranking is made by book value of fixed assets 2003

By studying both the space and time dimension of data the quality of the results can be increased in ways that would be impossible using only one of these two dimensions. This is due to having repeated observations of cross-sectional data which enables the researcher to study the dynamics of change with short time series (Gujarati, 2003). If willing to accept the classical error term assumptions, fixed effect panel estimators can be used. By doing so our panel regression treats all year-firm combinations as equally important observations. This method is successfully performed by Frank and Goyal (2003).

4 METHOD AND MODELS

The aim of this section is an attempt to empirically apply the theoretical framework of capital structure on Swedish listed real estate firms. The model specifications that will be used are provided by Frank and Goyal (2003) and Shyam-Sunder and Myers (1999). Throughout the entire analysis two vital assumptions will hold; (1) The managers' objective is to maximise the value of the firm belonging to the shareholders, (2) The financing decisions of the firm are made after any investment decision.

4.1 THE PECKING ORDER MODEL

According to Shyam-Sunder and Myers (1999) the pecking order assumes that every capital outflow causes a financing deficit by the same amount of capital. In order to reduce this deficit the firm raise debt. Equity will only be issued as a last resort due to significant costs of financial distress. By constructing a financing deficit variable from information on corporate cash flow one can test if the pecking order theory is relevant. The deficit variable is constructed by the sum of dividends, net investments, change in working capital and internal cash flow. For definitions of variables please see table 4.1.1.1.

$$DEF_{it} = DIV_{it} + I_{it} + \Delta W_{it} - C_{it} = \Delta D_{it} + \Delta E_{it} \qquad \textbf{Equation 4.1.1}$$

To stress the validity of the model the aggregation aspect will be taken into consideration in order to see if each component of the financing deficit has the predicted influence on debt issuance.

4.1.1 MODEL SPECIFICATION

Shyam-Sunder and Myers (1999) assumes that any deficit will be entirely financed via net debt issuance. They argue for this being a good description of financing behaviour under different leverage scenarios. Despite this, they stretch that the simple setup for testing the pecking order theory cannot be correct under all scenarios, since a more extended model would need to also include the possibility of equity issuance. When having defined the deficit variable, testing the pecking order should be fairly straight forward.

$$\Delta D_{it} = \alpha + \beta_{PO} DEF_{it} + \varepsilon_{it} \qquad \textbf{Equation 4.1.1.1}$$

If net deficit is to be entirely financed with net debt issuance the following hypothesis must be true:

$$\beta_{PO} = 1 \qquad \textbf{Hypothesis 4.1.1.1}$$

Table 4.1.1.1: Summary of Variables

Variable	Definition
Firm *i*, Year *t*	Refers to firm, *i*, and year, *t*
Net Financing Deficit, DEF_{it}	Surplus / deficit during year *t*
Cash Dividend Paid, DIV_{it}	Cash dividend paid at end of year *t*
Net Investments, I_{it}	Capital expenditure, other use of funds and sale of PPE and investment
Change in Working Capital, ΔW_{it}	Change in operating working capital, cash and cash equivalents and current debt
Net Internal Cash Flow, C_{it}	Income before extraordinary items, depreciation and amortization, discontinued operations, deferred taxes, equity in net loss, earnings, other funds from operations, gain / loss from sale of PPE and other investments
Net Debt Issuance, ΔD_{it}	Long-term debt issuance or reduction
Net Equity Issuance, ΔE_{it}	Sale of common stock or stock repurchases

As opposed by Shyam-Sunder and Myers (1999) there might be factors in equation 4.1.1.1 that do not affect the net debt issuance on an aggregate level. The different components in DEF may have different impact on ΔD. For this to be tested we will need to stress the variables on a separate basis and will therefore also run the equation in its disaggregated form.

$$\Delta D_{it} = \alpha + \beta_{DIV} DIV_{it} + \beta_I I_{it} + \beta_W \Delta W_{it} - \beta_C C_{it} + \varepsilon_{it} \qquad \textbf{Equation 4.1.1.2}$$

Since it is only the net financing deficit that matters in equation 4.1.1.1 an increase in any of the components in equation 4.1.1.2 must have the same impact on net debt issuance as in the

aggregated form. For the aggregation step to be justified the following pecking order theory hypothesis must therefore be true:

$$\beta_{DIV} = \beta_I = \beta_W = \beta_C = 1 \qquad \textbf{Hypothesis 4.1.1.2}$$

4.2 THE STATIC TRADE-OFF MODEL

According to the trade-off theory managers are constantly striving to achieve an optimal capital structure. This optimum is achieved by reaching a target debt level. That level is being an object for disturbance factors due to the cyclical nature of economy which causes firms distraction from reaching this optimum. If being distracted, managers would have to work gradually back to the target debt level. Having a stable point of optimal debt would therefore result in a mean reverting behavior (Shyam-Sunder and Myers, 1999).

4.2.1 MODEL SPECIFICATION

The model specification presented in this section is in line with the model specified in Shyam-Sunder and Myers (1999). Their target adjustment model claims that changes in debt ratios can be explained by the difference between current debt ratio and target debt level.

The target being unobservable forces us to set a proxy for such target. Two proxies previously used by Shyam-Sunder and Myers (1999) and Jalilvand and Harris (1984) are a historical mean of debt ratio for each company and a rolling target debt level. Targets proxies being used in this thesis are expressed below:

Target 1: Historical Debt Level: Average Total $Debt_{1995\text{-}2004}$ / Average Net $Assets_{1995\text{-}2004}$ x Net $Assets_t$
Target 2: Three Year Rolling Average Debt Level: Total $Debt_{(t\text{-}3)\,-\,t}$ / Net $Assets_{(t\text{-}3)\,-\,t}$ x Net $Assets_t$

The trade-off model can be formulated as in equation 4.2.1.1 with $\beta_{TO} > 0$ an adjustment process towards the specified target exists. Also, $\beta_{TO} < 1$implies that there are positive adjustment costs why full adjustments is not made instantly.

$$\Delta D_{it} = \alpha + \beta_{TO}(D^*_{it} - D_{it\text{-}1}) + \varepsilon_{it} \qquad \textbf{Equation 4.2.1.1}$$

$0 < \beta_{TO} < 1$ **Hypothesis 4.2.1.1**

Table 4.2.1.1: Summary of Variables

Variable	Definition
Firm *i*, Year *t*	Refers to firm, *i*, and year, *t*
Net Debt Issuance, ΔD_{it}	Long-term debt issuance or reduction
Target Debt Level, D^*_{it}	Proxy for target debt level
Debt Level, D_{it-1}	Debt level in previous time period

4.3 THE CONVENTIONAL MODEL

Frank and Goyal (2003) presents a conventional leverage regression model consisting of four explanatory factors; growth, profitability, size and tangibility. The reason for including these factors is that they have historical significant impact on leverage and have therefore survived many tests. If interpreting the trade-off- and pecking order theory these variables will have specific impact on net debt issuance which is summarized in table 4.3.4.1.

4.3.1 GROWTH

According to the trade-off theory, firms experiencing large growth would raise less debt since the value of their growth opportunities in case of bankruptcy is close to zero. On the other hand, the pecking order theory stretches that small firms faces larger information asymmetries and therefore raise more debt. In order to minimize such asymmetries, firms with high growth will seek to issue debt. Since high growth firms traditionally have higher market-to-book ratios this measure will be used as a proxy (Frank and Goyal, 2003).

4.3.2 PROFITABILITY

According to the trade-off theory more profitable firms should use more debt since they have the possibility to shield more profit in order to get tax benefits associated with the use of debt tax shields. This is however not a common finding since both Fama and French (2002) and Frank and Goyal (2003) finds that there often is a negative relationship between leverage and

profitability. A conclusion which is consistent with the pecking order theory arguing that more profitable firms have a reduced need for external financing. The profits will therefore be used to pay down debt and the firms will achieve a low debt ratio over time.

4.3.3 SIZE

The trade-off theory suggest that there is a negative relationship between size and probability of default and concludes that larger firms should therefore be more leveraged. This is being consistent with the findings of Rajan and Zingales (1995) and Frank and Goyal (2003). The pecking order theory predicts larger firms to raise more debt since they are considered more diversified and therefore less risky. Consequently more debt is found in capital structures for large firms due to lower information costs and good reputation in debt markets.

4.3.4 TANGIBILITY

Findings by Rajan and Zingales (1995) and Gaud et al (2005) are consistent with the trade-off theory saying that tangible assets are appropriate for the purpose of raising debt since it act as good collateral. It also seems to reduce the cost of financial distress. Concluding this, firms with large ratios of tangible assets would be expected to raise more debt. On the other hand, the pecking order theory stretch that firms with few tangible assets faces larger asymmetric information problems and will therefore tend to raise more debt over time and become more levered (Frank and Goyal, 2003).

Table 4.3.4.1: Summary of Expected Signs on Coefficients

Factor	Trade-Off Theory	Pecking Order Theory
Growth	-	+
Profitability	+	-
Size	+	+
Tangibility	+	-

4.3.5 NESTED MODEL

In the pecking order test we try to explain the change of debt as an opposite to the conventional method which measures the level of debt. A model which is nested has various

factors contained within one another in a specifically hierarchical order. As Frank and Goyal (2003) points out the conventional regression can be run in first differences. Unfortunately, some accuracy may be lost. However Frank and Goyal successfully perform this test.

$$\Delta D_{it} = \alpha + \beta_T \Delta T_{it} + \beta_{MTB} \Delta MTB_{it} + \beta_{LS} \Delta LS_{it} + \beta_P \Delta P_{it} + \varepsilon_{it} \qquad \textbf{Equation 4.3.5.1}$$

Below is a modification of the conventional leverage regression where the deficit variable has been added. The reason for this is to see whether the net deficit variable is able to absorb significance from the other variables. If this is the case the construction of the net deficit variable is assumed to be robust and speaks in favour of the pecking order theory.

$$\Delta D_{it} = \alpha + \beta_T \Delta T_{it} + \beta_{MTB} \Delta MTB_{it} + \beta_{LS} \Delta LS_{it} + \beta_P \Delta P_{it} + \beta_{DEF} DEF_{it} + \varepsilon_{it} \qquad \textbf{Equation 4.3.5.2}$$

Table 4.3.5.1: Summary of Variables

Variable	Definition
Firm *i*, Year *t*	Refers to firm, *i*, and year, *t*
Net Debt Issuance, ΔD_{it}	Change in long term debt to market capitalization
Tangibility of Assets, ΔT_{it}	Change in tangibility of assets: Investment Portfolio$_t$ / Total Assets$_t$
Market-To-Book-Ratio, ΔMTB_{it}	Change in growth opportunities: Market Capitalization$_t$ / Net Assets$_t$
Size, ΔLS_{it}	Change in size: The Natural Logarithm of Income$_t$
Profitability, ΔP_{it}	Change in profitability: Net Operating Income$_t$ / Net Assets$_t$
Financial Deficit, DEF_{it}	Financial deficit

5 EMPIRICAL FINDINGS

This section will provide the empirical findings of our research in light of the theoretical framework previously given in this thesis. Descriptive statistics on the data will first be introduced and then a more substantial presentation will be given providing greater depth.

5.1 DESCRIPTIVE STATISTICS

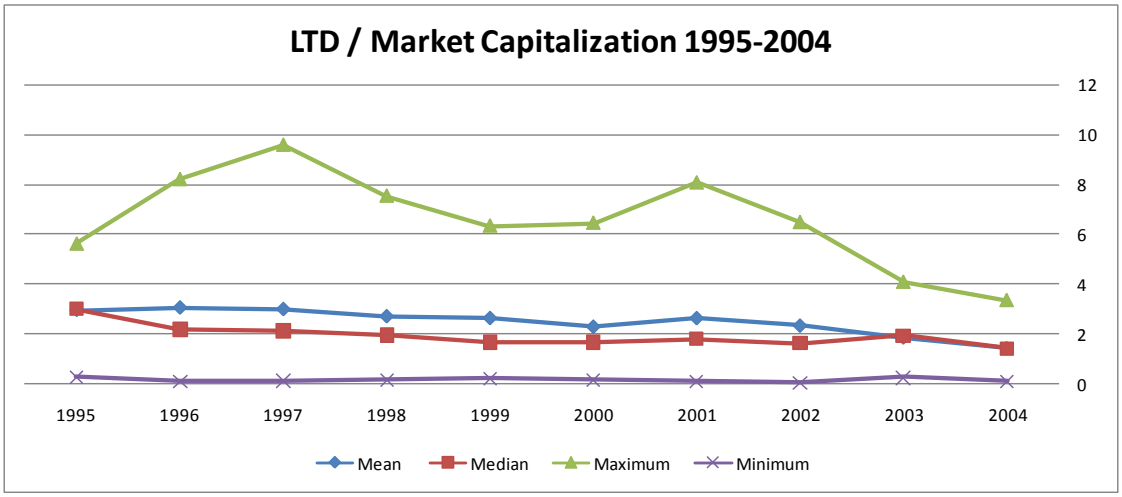
Table 5.1.1: Descriptive Statistics of the Nine Sample Firms Over a Ten Year Period

Years	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**
Number of observations	4	5	7	8	9	9	9	9	9	8
LTD / Market Capitalization										
Mean	2.97	3.06	2.99	2.71	2.63	2.29	2.63	2.33	1.86	1.42
Median	2.99	2.19	2.11	1.95	1.66	1.66	1.79	1.62	1.93	1.42
Maximum	5.61	8.20	9.59	7.54	6.33	6.45	8.07	6.47	4.07	3.34
Minimum	0.27	0.10	0.12	0.17	0.23	0.17	0.10	0.04	0.24	0.07
Investment Property / Total Assets										
Mean	0.89	0.94	0.94	0.94	0.95	0.93	0.94	0.94	0.94	0.95
Median	0.88	0.95	0.94	0.94	0.95	0.94	0.94	0.96	0.96	0.94
Maximum	0,96	0,97	0,98	0,98	0,97	0,99	0,99	0,99	0,99	0,99
Minimum	0,86	0,88	0,89	0,89	0,91	0,85	0,86	0,88	0,82	0,90

As seen in table 5.1.1 all firms have a high fraction investment property of its total assets. This is an expected finding since real estate assets function as collateral for external financing. The highest ratio of investment property to total assets belongs to Castellum in 2004 where the investment property consists of more than 99 percent of the firm's total assets. As expected we can see that the firms are highly leveraged with a mean long term debt to market capitalization being around three times market capitalization. We can however see a declining trend in this ratio most probably due to the increased interest in the real estate market lately resulting in higher firm valuations.

The high debt ratios are being consistent with the trade-off theory since real estate assets works as good collateral in the meaning of raising debt. The high ratio of collateral lowers financial distress.

Figure 5.1.1: Long Term Debt / Market Capitalization 1995-2004



The diagram shows the ratio of long term debt over market capitalization in the studied real estate firms.

The pecking order predicts external equity to be used as a last resort. If net equity issuance is rare net debt issuance stands as the most probable alternative for financing cash flow deficits validating the pecking order theory.

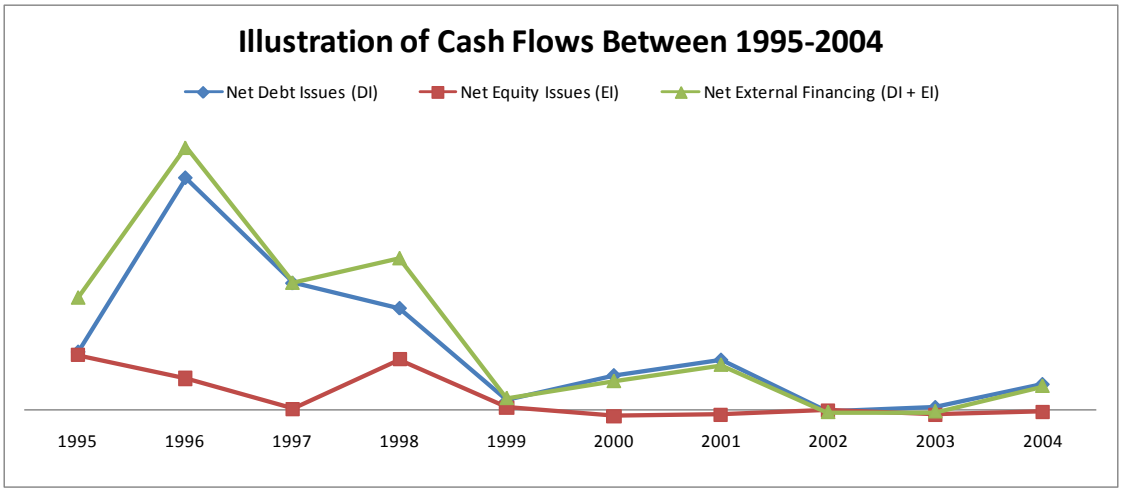
Table 5.1.2: Illustration of Average Firms Cash Flows[2]

Years	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**
Number of observations	4	5	7	8	9	9	9	9	9	8
Financing Deficit										
Cash Dividends Paid	0.07	0.06	0.01	0.02	0.03	0.04	0.04	0.04	0.04	0.19
Net Investments	0.39	1.03	0.55	0.62	0.12	0.17	0.25	0.04	0.10	-0.03
Change in Working Capital	0.03	-0.08	-0.02	-0.02	0.00	0.02	-0.01	0.04	-0.03	0.04
Internal Cash Flow	0.08	0.07	0.08	0.08	0.11	0.12	0.12	0.12	0.12	0.12
Net Financing Deficit	**0.40**	**0.94**	**0.46**	**0.54**	**0.04**	**0.10**	**0.16**	**-0.01**	**-0.01**	**0.08**
External Financing										
Net Debt Issues	0.21	0.83	0.45	0.36	0.03	0.12	0.18	-0.01	0.01	0.09
Net Equity Issues	0.19	0.11	0.00	0.18	0.01	-0.02	-0.02	0.00	-0.02	-0.01
Net External Financing	**0.40**	**0.94**	**0.46**	**0.54**	**0.04**	**0.10**	**0.16**	**-0.01**	**-0.01**	**0.08**

[2] Cash flows are scaled by net assets

As can be seen in figure 5.1.2 net debt issuance seems to track the financial deficit very well. An interesting finding is the negative net equity issuance during the years 2000-2001 which could be interpreted as an even stronger evidence for the significance of the pecking order theory. If studying the data based on median values, net debt issuance tracks net deficit almost perfectly meaning that a few single observations have a large impact on the net equity issuance for 1995 and 1998.

Figure 5.1.2: Illustration of Average Cash Flows



The diagram shows the average of net debt-, net equity- and net external financing issuing over the time period 1995-2004. All numbers are scaled by net assets.

5.2 TESTING THE PECKING ORDER THEORY

Following the methodology of Frank and Goyal (2003) we have tested our regression against the different dependent variables such as net debt issuance and gross debt issuance. From table 5.2.1 we conclude that regression PO1 seems to support the pecking order theory. Having net debt issuance as the dependent variable the R^2-value offers a fit of 0.954 which is slightly higher than many previous studies. Our beta in regression PO1 of 0.826 forces us to statistically reject the null hypothesis that $\beta_{PO}=1$. As concluded from regression PO2 the use of an alternative dependent variable such as gross debt issued do not seem to offer any wider explanatory power. This is consistent with Bond and Scott (2006).

A conventional method being used by Frank and Goyal (2003) and Shyam-Sunder and Myers (1999) are to scale the variables with net assets. By doing this controlling for firm size can be done. In regression PO3 and PO4 we have therefore scaled the variables with net assets and investment property. Scaling with net assets seems to offer a better explanatory power. This is also in accordance with the method and results of Bond and Scott (2006).

However, it is important to be aware of the risk that the scaling variables might be correlated with some of the regressed variables. If that is true we might manipulate the coefficients. Having a small sample size of relatively equally sized firms reduces our need for scaling. Therefore we have chosen not to take the risk of affecting the coefficients and further testing will mainly be un-scaled.

Table 5.2.1: Pecking Order Tests - $\Delta D_{it} = \alpha + \beta_{PO} DEF_{it} + \varepsilon_{it}$

	Net Debt Issued	Gross Debt Issued	Net Debt Issued / Net Assets	Net Debt Issued / Investment Property
	-PO1-	-PO2-	-PO3-	-PO4-
Constant, α	28.000 (24.810)	514.992* (0.147)	0.013 (0.012)	0.002 (0.003)
Financing Deficit, β_{PO}	0.826* (0.019)	0.784* (0.147)	0.851* (0.020)	0.851* (0.022)
N	77	77	77	77
R^2	0.954	0.269	0.964	0.950

*Significance at a 5% level is indicated by * and standard errors are given in parenthesis. Dependent variables are shown in the X-axis and the independent variables are shown in the Y-axis of the table.*

We have in the previous theoretical section made assumptions about net deficit being a component of a number of cash flow based components. In table 5.2.2 one can see whether this aggregated variable is justified empirically. Consistent with table 5.2.1 we can see that the use of alternative dependent variables do not offer any wider explanatory power.

In regression PO5 the null hypothesis of $\beta_{DIV}=\beta_I=\beta_W=\beta_C=1$ is being statistically rejected. This has been tested with an F-test on a five percent level. However, it does seem to be rather supportive for the aggregation step in general. Increases in cash dividend paid and net investments are almost matched by the increase in net debt issuance. For example an increase

in dividend of 1 MSEK results in an increase of net debt issuance of 0.928 MSEK. The net internal cash flow coefficient has the expected sign whereas an increase in internal cash flow of 1 MSEK would result in a net debt reduction of 0.674 MSEK.

In the trade-off theory there is also a prediction of a positive relationship between investments and debt. Therefore these conclusions are not unique for the pecking order theory which is also noticed by Frank and Goyal (2003).

Table 5.2.2: The Justification of the Aggregation Step - $\Delta D_{it} = \alpha + \beta_{DIV}DIV_{it} + \beta_I I_{it} + \beta_W \Delta W_{it} - \beta_C C_{it} + \varepsilon_{it}$

	Net Debt Issued	Gross Debt Issued
	-PO5-	-PO6-
Constant, α	-29.638 (83.343)	-183.882 (213.021)
Cash Dividend Paid, DIV_{it}	0.928* (0.087)	4.832* (0.222)
Net Investments, I_{it}	0.831* (0.025)	0.708* (0.063)
Change in Working Capital, ΔW_{it}	0.766* (0.131)	0.280 (0.335)
Net internal cash flow, C_{it}	-0.674* (0.260)	-0.061 (0.668)
N	77	77
R^2	0.955	0.876

*Significance at a 5% level is indicated by * and standard errors are given in parenthesis. Dependent variables are shown in the X-axis and the independent variables are shown in the Y-axis of the table.*

Information asymmetries between the market and firm managers are a crucial assumption of the pecking order theory. These asymmetries are based on that the firm manager knows more about the firm and its true value of assets than the market does. Concluding this, small firms would outperform larger firms when studying the relationship between financial deficit and net debt issuance. This is due to the simple reason that small firms are subject to the most information asymmetries.

We have chosen the small firm category to consist of the firms with the smallest amount of fixed assets in 2003[3]. The three smallest firm chosen are thereby FastPartner, Heba and Ljungberggruppen. There is also a significant difference in size between the three chosen firms and the rest of the firms.

If there is a difference in debt issuing depending on firm size the dummy for small firms in regression PO7 absorbs the added effect on debt issues that comes with a firm being small. Unfortunately this coefficient is not statistically significant. When testing whether the coefficient is significantly different from zero we can via a performed F-test not reject such a hypothesis on a five percent level and therefore not really make any clear conclusions. When studying regression PO8 where we control for size, differences in debt issuing can be found implying that smaller firms raise more debt. This is observed since the beta of the small firms is significantly closer to the hypothesized value of one.

Table 5.2.3: The Size Effect - $\Delta D_{it} = \alpha + \beta_{SMALL}DEF_{it} + \beta_{ALL}DEF_{it} + \varepsilon_{it}$

	Net Debt Issued	Net Debt Issued / Investment Property
	-PO7-	-PO8-
Constant, α	27.288 (24.991)	0.002 (0.003)
Dummy for Small Firms Financing Deficit, β_{SMALL}	0.042 (0.084)	- -
All Firms Financing Deficit, β_{ALL}	0.824* (0.021)	- -
Small Firms	- -	0.897* (0.030)
Large Firms	- -	0.807* (0.030)
N	77	77
R^2	0.954	0.952

*Significance at a 5% level is indicated by * and standard errors are given in parenthesis. Dependent variables are shown in the X-axis and the independent variables are shown in the Y-axis of the table.*

[3] The reason for choosing 2003 is that it is the latest data available for all nine firms in our dataset

These results support the pecking order theory saying that size effects are significant. This finding contradicts Fama and French (2002) and Frank and Goyal (2003) who concludes that large mature firms seem to follow the pecking order theory more closely.

5.3 TESTING THE TRADE-OFF THEORY

In the trade-off theory it is assumed that the firm will adjust to a target debt level in order to achieve an optimal capital structure. This target debt level would therefore be the point where the firm manages to balance off the costs and benefits with debt. The crucial assumption one must do here is to assume what that target debt level might be. We have assumed two alternative debt levels to function as proxies for this target. Target 1 is made out by a historical debt ratio over the whole period multiplied with net assets at the specific time period. Target 2 is made out by a rolling three year average debt ratio multiplied with net assets at the specific time period. By doing this we can see whether firms tend to adjust their current debt level to their "optimal" debt level which would confirm the trade-off theory.

Table 5.3.1: Trade-Off Tests - $\Delta D_{it} = \alpha + \beta_{TO}(D^*_{it} - D_{it-1}) + \varepsilon_{it}$

	Net Debt Issued	Net Debt Issued	Change in Debt Ratio	Change in Debt Ratio
	-TO1-	-TO2-	-TO3-	-TO4-
Constant, α	240.456* (92.758)	205.264* (77.427)	0.001 (0.083)	-0.056 (0.087)
Target 1, β_{T1}	-0.085 (0.065)	- -	-0.0001* (0.0001)	- -
Target 2, β_{T2}	- -	0.740* (0.162)	- -	0.0001 (0.0002)
N	68	64	68	64
R^2	0.029	0.248	0.080	0.005

Target 1: Historical Debt Level: Average Total $Debt_{1995-2004}$ / Average Net $Assets_{1995-2004}$ x Net $Assets_t$

Target 2: Three Year Rolling Average Debt Level: Total $Debt_{(t-3)-t}$ / Net $Assets_{(t-3)-t}$ x Net $Assets_t$

*Significance at a 5% level is indicated by * and standard errors are given in parenthesis. Dependent variables are shown in the X-axis and the independent variables are shown in the Y-axis of the table.*

Even though the statistical fit is rather poor for the estimated coefficients it is apparent that regression TO2 gives the best fit with a R^2-value of 0.248. Concluding this, the use of a rolling

three year debt target (Target 2) gives the most significant conclusion. A significant β_{T2} of 0.740 shows that firms appears to be adjusting to their targets rather quickly. This is consistent with previous studies of the real estate industry even though the adjustment pace is not as fast as in the study performed by Bond and Scott (2006).

In table 5.3.2 testing for size has been done. This has been performed via controlling for size and size dummies in the same way as previously done in the pecking order testing section. In terms of fit the dummy regression TO5 do not offer any wider explanatory power with insignificant coefficients and a poor R^2-value. Regression TO6 on the other hand which is the scaled version of regression TO5 gives a better fit and significant coefficients. According to these results firm size makes a significant difference. When controlling for size the target adjustments for small firms is 1.030 compared to 0.405 for large firms. These results are also consistent with the ones presented in previous studies such as Bond and Scott (2006) even though they do not manage to show for significant coefficients. Since having beta values not equal to one we cannot show with certainty that there is a full adjustment process within a year towards a specific debt target.

Table 5.3.2: Trade-Off Tests - $\Delta D_{it} = \alpha + \beta_{SMALL\text{-}T2}(D^*_{it} - D_{it\text{-}1}) + \beta_{LARGE\text{-}T2}(D^*_{it} - D_{it\text{-}1}) + \varepsilon_{it}$

	Net Debt Issued	Net Debt Issued / Investment Property
	-TO5-	-TO6-
Constant, α	199.188* (77.519)	0.027* (0 .008)
Dummy for Small Firms Target 2, $\beta_{SMALL\text{-}T2}$	0.027 (0.679)	- -
Dummy for Large Firms Target 2, $\beta_{LARGE\text{-}T2}$	0.780* (0.167)	- -
Small Firms	- -	1.030* (0.214)
Large Firms	- -	0.405* (0.197)
N	64	64
R^2	0.253	0.317

Target 2: Three Year Rolling Average Debt Level: Total $Debt_{(t-3)-t}$ / Net $Assets_{(t-3)-t}$ x Net $Assets_t$

*Significance at a 5% level is indicated by * and standard errors are given in parenthesis. Dependent variables are shown in the X-axis and the independent variables are shown in the Y-axis of the table.*

5.4 TESTING THE CONVENTIONAL LEVERAGE REGRESSION

In order to increase the robustness of our findings we will use a conventional model to explain levels of debt. This will be done by testing what sign the coefficients will take and compare this to our previous findings and the predicted outcome. The deficit variable will also be added to the regression in order to test the pecking order theory even further. If the deficit is truly significant it will absorb explanatory power from the other more conventional variables.

Table 5.4.1: Leverage Regression 1 - $\Delta D_{it} = \alpha + \beta_T \Delta T_{it} + \beta_{MTB} \Delta MTB_{it} + \beta_{LS} \Delta LS_{it} + \beta_P \Delta P_{it} + \beta_{DEF} DEF_{it} + \varepsilon_{it}$

	ΔD: The Change in Total Debt$_t$ / Market Capitalization$_{2003}$					
	All Firms		Small Firms		Large Firms	
	CL1	CL2	CL3	CL4	CL5	CL6
Constant, α	-0.169* (0.049)	-0.172* (0.048)	-0.351* (0.084)	-0.181 (0.107)	0.031 (0.034)	0.024 (0.032)
Δ Tangibility, β_T	1.390 (1.487)	1.068 (1.486)	0.164 (1.957)	-1.873 (1.994)	1.042 (1.240)	0.548 (1.191)
Δ Growth Opportunities, β_{MTB}	0.182 (0.113)	0.188 (0.112)	0.281 (0.154)	0.184 (0.146)	0.187* (0.090)	0.189* (0.085)
Δ Size, β_{LS}	3.312* (0.313)	3.123* (0.336)	4.350* (0.395)	1.788 (1.192)	1.047* (0.305)	0.793* (0.310)
Δ Profitability, β_P	-21.678* (4.877)	-19.028* (5.135)	-14.690* (5.953)	-5.656 (6.730)	-26.487* (4.776)	-20.1821* (5.327)
Financing Deficit, DEF	- -	0.0001 (0.0001)	- -	0.0001* (0.0001)	- -	0.0001* (0.0001)
N	68	68	26	26	42	42
R^2	0.707	0.720	0.867	0.910	0.550	0.641

ΔT: Change in Tangibility of assets: Investment Portfolio$_t$ / Total Assets$_t$

ΔMTB: Change in Growth Opportunities: Market Capitalization$_t$ / Net Assets$_t$

ΔLS: Change in Size: The Natural Logarithm of Income$_t$

ΔP: Change in Profitability: Net Operating Income$_t$ / Net Assets$_t$

DEF: Financial Deficit

*Significance at a 5% level is indicated by * and standard errors are given in parenthesis. Dependent variables are shown in the X-axis and the independent variables are shown in the Y-axis of the table.*

Regression CL1 and CL2 includes all firms. The coefficients on growth opportunities, size and profitability speaks in favor of the pecking order model. However it should be noticed that the coefficients on tangibility and size also speaks in favor of the trade-off model contradicting the

pecking order theory. It is also important to take into consideration that tangibility and growth opportunities do not show to be significant at a five percent level.

Regression CL3 tells us that small firms seem to use more debt as they are growing and less debt as they are getting more profitable. This speaks in favor of the pecking order theory. From regression CL5 we can see that growth opportunities are statistically significant at a five percent level together with size and profitability. This would mean that large firms tend to use more debt if facing a growth opportunity. Once again we conclude evidence for the pecking order being present. The later relationship is not found by Bond and Scott (2006).

When studying regression CL4 and CL6 we can in accordance with Frank and Goyal (2003) conclude that net deficit has a significant impact on the other variables which speaks in favor of the pecking order.

6 CONCLUSIONS

This concluding section will provide a short summary that refers to our initial questions and consequently recap the most vital empirical findings. Also we will make suggestions on further research that can be applied in the area

6.1 THE THEORIES AND MODELS

We have tested if the pecking order- and trade-off theory is able to explain the capital structuring choice of nine Swedish real estate firms. In the process of doing this we have tried not to solely rely on a single test with the ambition of increasing the robustness of our findings. Doing this, a number of conclusions have been reached.

(1) When firms search for external financing they tend to prefer debt issuance over equity issuance which can be seen since net debt issuance tracks net external financing closely through all periods. This is in accordance with previous studies such as Bond and Scott (2006) and confirms the reasoning behind the pecking order theory. In the pecking order testing we do reject the hypothesis 4.1.1.1 ($\beta_{PO}=1$) which thereby does not add support for the pecking order theory. However, the model does offer a good fit and a rather high significant beta coefficient implying that a 0.826 MSEK in increased debt issuance is directly caused by a 1 MSEK increase in financing deficit. Concluding this, the pecking order theory seems to capture the financial structure preferences even though it does not offer a perfect explanation.

(2) When scaling net debt issuance with investment property (regression PO8) we found a small and significant difference in debt issuance between small and large firms. This implies that small firms favour debt issuance over large firms adding support for the pecking order theory. However, we do not manage to reach such a conclusion with significant coefficients in regression PO7 raising doubts on the robustness of the results. A further reflection addressing this matter is the appearance of high debt ratios most probably possible by the high fixed asset ratios in the real estate industry. The high ratios may weaken the difference between large and small firms tendency to issue debt since the fixed assets

functions as collateral neutralizes the information asymmetry between different firm types. If this is the case the pecking order theory can still be applicable.

(3) Hypothesis 4.2.1.1 ($0 < \beta_{TO} < 1$) cannot be rejected implying a tendency that firms are adjusting to a specific debt target and therefore follow the trade-off theory. This is found when using a three year rolling average debt level (regression TO2). We do not find adjustments being as quick as in previous studies, possibly caused by high adjustment costs. In regression TO6 we do find evidence that smaller firms adjust more quickly to their debt target than larger firms.

Table 6.1.1: Comparison of Coefficients in Conventional Model Testing

Factor	Trade-Off Theory	Pecking Order Theory	Our Findings
Growth	-	+	+
Profitability *	+	-	-
Size *	+	+	+
Tangibility	+	-	+

*Significance at a 5% level is indicated by * and our findings is taken from regression CL1.*

(4) When testing the conventional model we find that only size and profitability provides significant coefficients. A positive coefficient on size indicates support of both the trade-off- and the pecking order theory. However, the negative coefficient on profitability adds support for the pecking order theory increasing the robustness of previous results. Regression CL3 increases the support for the pecking order theory showing that small firms use more debt as they are growing and less debt when being more profitable. When adding the deficit variable to the conventional regression it offers an opportunity of interpretation. In the case of small firms it manages to wipe out the significance on the other factors. This does support the pecking order theory. However, we do not find the same support when testing for large and all firms being somewhat expected since it did not gain significance as a separate explanation factor in the pecking order testing section.

Concluding this we seem to find more evidence supporting the pecking order theory. There seem to be a preference of internal over external financing and a preference of debt over equity issuance. This fits the pecking order theory and is most likely due to signalling consequences.

We had expected to find a greater support for the trade-off theory especially since the characteristics of real estate fits the trade-off theory better. It is possible that the frequent debt issuance in this thesis being considered as a support for the pecking order theory actually is an expression of the trade-off theory. The logic behind this could be that firms add assets to their portfolio via debt simply because real estate assets support it. If this is the case it is most likely lost in the specification of the trade-off model.

6.2 SUGGESTIONS TO FURTHER RESEARCH

A suggestion to further research would be to investigate how actors differ in their financing choices depending on type of real estate firm. Since the firms tend to have different aversions to risk depending on specializing in investment property or development property this could be interesting. This could be done via controlling for type in the regressions and including risk as a factor in the conventional regression model.

Also it would be compelling to perform a qualitative research study going deeper into the reasons for capital structure not blinded by the theoretical framework used in this thesis. For example, factors such as empire building do most certain have an impact on the choice of capital structure.

It would also be interesting to see if the implementation of the IFRS has had any effect on the results concluded in this study. However, a study with this character cannot yet be done due to time constraints.

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