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Master Thesis

Capital Structure Volatility: Is capital structure constant or a varying residual?

Authors:

Henrik NILSSON
23333@student.hhs.se

Xiaopeng HU
41020@student.hhs.se

Supervisor:

Michael HALLING
michael.halling@hhs.se

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Abstract

This paper examines the phenomenon of capital structure instability among private- and publicly listed firms in Sweden during the years 2000-2016. We observe a high level of capital structure volatility among private firms, while public firms appear to be more stable. Private firms are on average of smaller size and possess lower operating profitability than public firms. These are key characteristics of firms with high capital structure volatility. The observed debt instability among private firms is mainly driven by volatility in operating activities and in particular net working capital fluctuations. Collectively, private firms appear to treat debt as a varying residual from other firm policies, such as net equity payouts, liquidity targets and capital expenditures. This study contributes to the existing research field of capital structure dynamics by taking the step into the world of privately-owned firms.

***Keywords**: Capital structure, debt flow volatility, cash flow constraint*

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1. Introduction

All firms are financed by equity, debt or a combination of the two. The decisions firms make with regards to sources of financing constitute their capital structure. Since all firms are faced with capital structure decisions, it is in the interest of corporate stakeholders to grasp the dynamics of capital structure. 50 years has passed since Modigliani and Miller pioneered the field of capital structure research with their first proposition on the relationship between firm value and financial leverage. Since then many classical theories have developed to explain capital structure decision making; trade-off theory, pecking order theory and agency theory. Despite the countless efforts by academia to research capital structure decision drivers, there is still not a clear answer to what the underlying factors of capital structure policy making are. An emerging alternative explanation to the conventional, static trade-off theory is that perhaps are firms not as sophisticated as we think they are with regards to their capital structure policies. The notion of firms pursuing a static and optimal target leverage interval would imply that observed capital structure volatility is low, yet recent research in both the U.S. and Europe illustrate that capital structure stability is the exception rather than the rule (DeAngelo and Roll 2015). Campbell and Roger (2018) attribute the observed capital structure volatility of firms to a corporate finance trilemma, where firms, bounded by a cash flow constraint, cannot optimally pursue an equity payout policy, a debt policy and a liquidity (cash position) policy simultaneously. The outcome of the trilemma is the treatment of debt as a residual after having pursued the other firm activities.

The ambiguity characterizing capital structure research has followed us, the authors of the study, for years. We have wanted to explore the area of capital structure since early stages of our bachelor studies and coming back to this research field through this study is a subconscious reflection of precisely that pursuit. In this thesis, we set out to examine the instability of capital structure across private- and public firm ownership and over the years 2000-2016 in a Swedish setting. Specifically, we analyze capital structure volatility at firm level, the firm characteristics associated with financial leverage instability and the fundamental drivers of capital structure volatility. While the capital structure literature in general is wide-spanning, the universe of research focused on volatility of financial leverage is surprisingly small, with almost all empirical studies conducted on public firms and essentially no studies completed in Scandinavia. In this regard, this study brings empirical knowledge about capital structure dynamics in a Swedish setting. Perhaps more importantly, we analyze capital instability using detailed yet comprehensive data on private firms with the help of the Serrano database. This approach embodies two main benefits; firstly, we can study the capital structure instability of private firms stand-alone. Secondly, a cross-sample comparison can- and is

done with a subset of publicly listed Swedish firms to understand potential differences on capital structure due to firm ownership.
Our results indicate that capital structure volatility as a phenomenon is present also in a Swedish setting but only among private firms. Public firms appear to be more stable across time. Specifically, firms with high capital structure volatility are characterized by being smaller-sized rapidly and possess lower operating profitability, relative to firms with low capital structure volatility. Private firms display these characteristics associated with high capital structure volatility and also show high capital structure instability. The main drivers of the debt flow volatility among private firms appear to be volatility in operating activities and in particular fluctuations of net working capital. In essence, debt is treated as a varying residual from other firm activities among private firms.

An implication of our results is that since private firms appear to adjust debt levels in the pursuit of other firm policies, private firms are perhaps not as sophisticated as classical trade-off theory suggests with firms targeting an optimal financial leverage interval.

2. Literature review

2.1. Static capital structure

2.1.1. Modigliani-Miller theorem I

The foundation of capital structure theory partly consists of the famous Modigliani-Miller proposition that firm value is not influenced by its capital structure. Firm value is driven by operational activities and is not affected by the choice of financing sources (Modigliani and Miller, 1958). The MM theorem I is important in this thesis because if the theorem was empirically true, if capital structure decisions had no effect on firm value, there would be no reason to adjust the financial leverage ratio, at least from a firm value creation standpoint. Thus, a part of the foundation of the capital structure literature was built on supports the idea of capital structure being static and not a volatile firm parameter. A necessary assumption for the MM theorem I to hold is that capital markets are perfect. As capital markets in reality are imperfect due to the presence of e.g. taxes, alternative theories were developed to understand the dynamics of capital structure.

2.1.2. Trade-off theory

In the paper by Myers (1984), the static trade-off theory is laid out. Importantly, this theory considers that capital markets are imperfect through the presence of corporate taxes and costs of financial distress. The hypothesis laid out suggest that every firm has an optimal debt ratio at which firm value is maximized. The optimal debt ratio of a firm is determined by a tradeoff between the costs and benefits of borrowing, balancing the present value of tax shields and costs of financial distress. Although globalization have increased tax competition and pushed corporate tax levels downwards, the interest tax deductibility along with the disciplining effect of debt financing are still two major benefits of debt (Zucman, 2014). As Kraus and Litzenberger (1973) suggests, the cost of debt have two sources; direct bankruptcy costs and indirect bankruptcy costs through an increase in firm financial risk. Observed wide variations in debt ratios is according to the trade-off theory a sign of adjustment costs. The main idea is still however that there exists a static optimum leverage ratio interval for every firm that the firm gradually tries to adjust to, supporting the notion of a target leverage ratio (Myers, 1984). Myers (1984) and Kraus and Litzenberger (1973) can be viewed as early examples of researchers trying to further develop our understanding of capital structure decision making in companies by incorporating more realistic framework assumptions, reflecting market imperfections. While studies, such as Hovakimian, Opler, and Titman (2001) and Flannery and Rangan (2006), stress the importance of adjusting the target leverage ratio over time the outcome from Lemmon, Roberts and Zender (2008) suggests that due to the time-invariance of capital structure a time-adjusted target leverage is irrelevant and unnecessary, and the optimum target leverage is static over time. Furthermore, Lemmon, Roberts and Zender (2008), using public firm data from 1965 to 2003 (Compustat), find that find that initial low (high) financial leverage levels tend to remain so for over 20 years. Frank and Goyal (2008) finds similarly to Lemmon, Roberts and Zender (2008) that aggregate leverage stays in a narrow interval over long time horizons. Because variation in capital structure is observed to be time-invariant, the underlying factors driving the variation is suggested to be stable over time. Another implication of the observation of stable capital structures over time is that initial public offerings and factors such as changes in capital market access and distribution of control, occurring for firms from time to time, does not seem to influence capital structure stability.

2.1.3. Asymmetric information and pecking order theory

Research on asymmetric information between firm insiders (e.g. management) and outsiders (e.g. investors) arose as an alternative theory of explaining capital structure decision making in the 1970´s and 1980´s. Ross (1977) and Brealey, Leland, and Pyle (1977) began researching how the capital structure choices by a firm signals the information of firm insiders to outside investors. The pecking order theory was thereafter developed under the pioneering work by Myers and Majluf (1984) embodying the idea that capital structure policies are decided with the goal of mitigating inefficiencies in the firm´s investment decisions caused by information asymmetry. Rather than viewing firm financial leverage decision making as a trade-off between costs- and benefits of debt, pecking order theory specifically suggests that financing choices are influenced by a preference hierarchy (a pecking order). Internal financing (e.g. surplus cash) is firstly prioritized when a firm seeks to finance an investment. Secondly prioritized as a source of financing is the issuance of debt. When internal financing or additional debt financing is not possible, equity financing is used. To conclude, the general idea of the pecking order framework is that differing levels of information costs related to different financing decisions is driving capital structure decision making as opposed to e.g. trade-offs between benefits- and costs of leverage. Krasker (1986) further expanded the framework introduced by Myers and Majluf (1984) by incorporating firm flexibility with regards to deciding the size of new investment projects and the accompanying equity issue in the model. Narayanan (1988) and Heinkel and Zechner (1990) are other researchers obtaining similar results to Myers and Majluf (1984) and Krasker (1986). Lastly, Bradford (1987) illustrated that the famous underinvestment problem resulting from the high information costs of raising new capital from investors is partly mitigated if allowing managers to invest in firm issued equity in the model described by Myers and Majluf (1984).

The rivalry between the trade-off theory and the pecking order theory in the race of understanding capital structure decision making is however partly reduced when thinking about these two theories as co-existing. Fama and French (2005) suggests that the two competing models both carry elements of truth that help unravel the drivers of financing decision making. Interestingly, Abe de Jong, Verbeek, and Verwijmeren (2011) find indications of firms using the pecking order theory when raising capital, but allure to trade-off theory when reducing capital. Barclay and Smith (2005) maintains that while information costs will influence corporate financing choices, pecking order theory serves a complementary role as other costs and benefits of leverage, as introduced by trade-off theory, need to form part of a unified corporate finance policy theory.

2.1.4. Agency theory

Previously, tax, costs of financial distress and information costs have been addressed as important determinants for capital structure choices. Another relevant determinant could be agency costs. Agency theory´s attempt to explain drivers of capital structure decisions still rests on imperfect capital market assumptions but take a different stance on what capital structure decision making is fundamentally based on. As developed by Jensen and Meckling (1976) based on the earlier work of E. Fama and Miller (1972), agency theory suggests that firm stakeholders have conflicting interests. Since the agent (top management) is running the daily firm operations and not the principal (the shareholders), the agent risk making suboptimal decisions from the perspective of the shareholders. Managers have an incentive to grow firms beyond their optimal size at increases their power and compensation (Murphy, 1985), and the ability to finance that growth is negatively affected by a generous payout policy. The managers have an interest in retaining excess free cash flows to utilize them in a manner more attractive for their agenda. Here, debt has a strong benefit in reducing agency costs by disciplining management. Thus, the goal of a firm should be to try to maximize firm value by choosing an optimal capital structure that minimizes conflicts of interest among firm stakeholder, rather than balancing benefits of tax shields with costs of financial distress or minimizing information costs associated with different forms of financing (Grossman and Hart, 1982), (Jensen 1986).

2.2. Capital structure volatility

2.2.1. Instability of financial leverage

While Lemmon, Roberts and Zender (2008) and Frank and Goyal (2008) observe capital structure stability over time, with firms with initial high or low leverage staying low- or high-leverage firms for 20 years or more, DeAngelo and Roll (2015) find the exact opposite pattern, with extensive capital structure instability. Using public firm data in the U.S. from 1950 to 2008 from the same database as Lemmon, Roberts and Zender (2008), Compustat, DeAngelo and Roll (2015) arrive at the conclusion that capital structure stability is the exception rather than the rule, occurs in most cases at low leverage levels, and is almost always temporary. Furthermore, leverage cross-sections are found to differ markedly just a few years apart, and those differences growing each year rather than stabilizing at some long-term equilibrium. DeAngelo and Roll (2015) does not however develop a satisfactory theory or explanation to the observed leverage instability, but mentions different models, such as the neutral-mutation view with no leverage targets among firm and random leverage evolution over time (Miller, 1977) or the budget constraint as possible explanations. This is where things get interesting and why this thesis investigates capital structure stability in a Swedish setting. Two different teams of researchers, Michael Lemmon, Michael Roberts and Jaime Zender on the one hand, and Harry DeAngelo and Richard Roll on the other, using public firm data from the same database (Compustat) with data spanning a similar time period (1965-2003 versus 1950-2008 respectively), examining the same issue of capital structure stability, arrive at two completely opposite conclusions (!). Why is there such ambiguity with regards to observed research results, or the interpretation of them, in the field of capital structure stability for a topic central to so many firm decision makers? Further expanding the ambiguity in the field, Campbell and Rogers (2018) finds similarly to DeAngelo and Roll (2015) that, when using Bloomberg public firm data for UK, Germany, France and the PIIGS in the period 2006-2016), strong capital structure variations are observed. The volatility observed in the study not only confirms the capital structure instability observed by DeAngelo and Roll (2015) but in a continental European public firm setting but is also explained through the theory developed in the study introducing the concept of the corporate finance trilemma, and the cash flow constraint (built on the notion of the budget constraint).

2.2.2. Budget constraint

In the aims of understanding how different corporate finance policies interact, the budget constraint has been discussed as far back as Miller and Modigliani (1961) as well as in more recent papers by Fama and French, (2012) and Gaychev, Pulvino and Tarhan (2010). Connected to our research question of financial leverage residuality, Lambrecht and Myers (2012) uses the budget constraint as a tool to illustrate that if firms wish to choose their level of capital expenditure and dividends paid out, debt levels must fluctuate as a residual. In essence, they argue that if CAPEX is determined through firm investment opportunities and payout follows Lintner´s target adjustment model (1956) where payout changes is only partly absorbed by net income changes, then the remainder must be absorbed by changes in borrowing (with debt acting as a residual). See the budget constraint below.

$$\triangle \text{ Debt} + \text{Net income} = \text{CAPEX} + \text{Payout}$$

The idea brought forward by Lambrecht and Myers (2012) is that maintaining a target leverage ratio is difficult as firms typically have other policies to pursue, i.e. a payout policy or an investment (CAPEX) schedule. Under these circumstances, firm debt and by extension firm financial leverage becomes a varying residual instead of a stable parameter of capital structure policy. The idea that capital structure instability arises from a constraint that makes it difficult for firms to pursue multiple objectives simultaneously is one of the ideas from the literature that we more closely analyze later.

2.2.3. Corporate finance trilemma

A financial trilemma, with difficulties in pursuing multiple policies simultaneously, has been discussed in the literature all the way back by Mundell (1963) and Fleming (1962) but in a strictly international finance context. The concept of the corporate finance trilemma was by contrast formulated in the context of capital structure dynamics by Campbell and Rogers (2018) and builds on the ideas of the budget constraint interaction with corporate finance policies partly brought forward by Lambrecht and Myers (2012). While firms often wish to pursue a target debt level, a fixed capital expenditures schedule and a predetermined dividend policy simultaneously, they cannot. Cash flow from operating- and investing activities is the main source of value creation in a company and these cash flows generated has a limited number of uses; grow cash holdings (improve liquidity position), pay down debt or distribute equity payouts to shareholders. The CAPEX forms part of cash flows from operating- and investing activities however, so with negative cash flows here, firms may need to increase debt or reduce/halt equity distributions to satisfy the cash flow constraint. That is, a trilemma arises because the three policies of equity payout policy, debt policy and liquidity policy cannot be pursued at the same time given the cash flow constraint.

With debt flows, changes in cash holdings and equity payouts having to sum to Cash from Operating and Investing activities (CFOI), an optimal level of debt cannot be pursued without it affecting the two other policies. The concept of the corporate finance trilemma is applied in conjunction with the cash flow constraint to explain why companies´ debt fluctuate to varying extents depending on investment policy (CAPEX schedule). Below, the cash flow constraint is illustrated. In section 4.2.4 we shall return to the cash flow constraint as a tool to understand drivers of capital structure volatility.

$$\text{CFOI} + \triangle\ \text{Cash} + \text{Eqpay} + \triangle\ \text{Debt} = 0$$

See definitions below.
$\text{CFOI} = \text{Cash flow from operating and investing activities}$
$\text{Eqpay} = \text{Net equity payout} = \text{Dividends} + \text{Equity repurchases} + \text{Equity issues}$
$\text{dCash} = \text{Change in cash balances}$
$\text{dDebt} = \text{Debt flows}$

Campbell and Rogers (2018) find that differences in debt flow volatility is largely driven by differences in operating- and investing activities among firms, suggesting that instead other firm parameters such as equity payouts and cash position is kept relatively stable with debt changes. The ideas of the corporate finance trilemma and the cash flow constraint will be analyzed more closely later in this thesis.

Summarizing the literature review, it is clear that the theory of capital structure stability is as wide spanning as insufficient when it comes to finding a satisfactory level of understanding with regards to how firms make capital structure decisions. From the early ideas of Modigliani and Miller with no relationship between capital structure decision making and firm value creation under perfect information, to the evolving competing models of trade-off theory and the pecking order theory, complemented by the ideas of agency theory with agency costs being important in the decision-making process. On the other end of the spectrum there are research papers questioning the notion of a target leverage interval and the relevance of trade-off theory by illustrating the instability of firm capital structure levels over time. Imbedded in the theories are different stances on whether financial leverage is stable or not over time, Fama and French (2005) arrive at the conclusion that trade-off theory and pecking order theory stand-alone have serious problems and that they should be combined as part of a broader framework. Lastly, the emerging idea in the field is the notion of capital structure policy being driven by close interactions with equity payout policy as well as liquidity policy, and that observed instability is the result of firms being bounded by a cash flow constraint where it cannot optimally pursue several of these policies simultaneously. In this thesis, we will use parts of the literature framework to build an understanding of results observed in our analysis.

3. Methodology and data

3.1. Data

3.1.1. A description of the Serrano database

The Serrano database has been used throughout this thesis and was created by Per Weidenman and his team at the Swedish data company Bisnode. The Serrano database contains historical financial data at company level, where financial statement- & bankruptcy data has been collected from the Swedish Companies Registration Office (Bolagsverket), general firm data has been retrieved from Statistics Sweden (SCB) and group data from Bisnode´s group register. These three sources of data in the Serrano database makes the database comprehensive, spanning a wide spectrum of firms across a time period from 1998-2016, across many industries, and across different forms of ownership (public- & private companies and other legal forms).

The unique feature of the contents of the Serrano database is that there is one data entry per calendar year for the respective field in the database for each combination of year and company (corporate ID number). Since every field in the database have been adjusted to contain firm information as of December 31 instead of half-year or quarter-year, the Serrano database facilitates comparison between different companies and between different years for the same company. This adjustment principal also corrects for phenomena such as

- Short and long accounting periods
- Broken accounting periods
- Omissions and gaps in a company´s series of submitted financial statements Imputation for the latest year´s calendar year values
- Registration date and deregistration date during a calendar year
- Rules for what a newly started company is
- Rules for determining whether a business is active or not
- Conversion to calendar year values for stock data and ow data

In this thesis, the Serrano dataset has been used for the purpose of analyzing capital structures of privately-owned firms, in addition to the publicly listed firms. Previous research in the field has focused on publicly listed firms, so the comprehensive and detailed nature of Serrano allows for a more thorough analysis of these capital structure dynamics.
To get a public firm data, we need to know the year of it went listed, the current listing status and the market it was or is listed. The markets we are looking for Swedish listed firms are Aktietorget, Swedish Securities Dealers Association's Stock list, Innovationsmarknaden, Unofficial quotations list,

Nordic Growth Market (NGM), NGM Nordic MTF, Stockholms Börsinformation (NGM), Stockholm Stock Exchange (SSE), SSE "A2-list", SSE Foreign stocks, SSE First North, SSE Large Cap, SSE Mid Cap, SSE Observation list, SSE "O-listan", SSE OTC-list, SSE Small Cap, SSE Foreign stocks, SSE Waiting list, SSE External list, SSE "New Market".

3.1.2. Adjustments to the Serrano dataset and potential biases

Excluding other legal forms than corporations (Aktiebolag)

This study aims to analyze capital structure dynamics. Corporations with duties to shareholders and profit-maximization goals should thus have more to win or lose from taking on financial leverage than e.g. foundations or non-profit organizations. This makes corporations more interesting to examine for the purpose of this thesis. The first adjustment to our final dataset is to exclude all those firms not registered as corporations with the Swedish Companies Registration Office (Swedish Aktiebolag).

Excluding non-consecutive year observations

Since this study examines capital structure dynamics over time, firms with non-continuous year observations were excluded. Comparability would have been lost if firms with an unbalanced number of year observations were kept. It is the development and change of the capital structure of dynamics over time that marks the focus of this thesis, making this a necessary adjustment. In our final dataset, there are continuous observations for the sample firms in the time period 1999-2016. Since this study focus on the change and standard deviation across years, year 2000 is the first year of the dataset even if some of the variables in year 2000 are calculated using information from year 1999. The final dataset thus contains observations from year 2000-2016.

Since firms with non-continuous year observations are excluded, the reader should be aware about the survivorship bias that arise from keeping only those firms with continuous observations, (that avoided bankruptcy or deregistration in year 2000-2016). Dropping firms with non-consecutive year observations is however still necessary to facilitate comparability across the entire time span of the study (2000-2016).

Excluding firms active in the finance- and real estate industry

As is common practice in capital structure studies, financial- and real estate companies were excluded. The rationale for this adjustment is often that financial- and real estate firms operate under very different natures than other industries as they often have considerably higher debt capacity. In addition, their revenue and cost are different from normal companies. As a result, their financial leverage is often abnormally high in relation to all other industries, creating excessive noise in the dataset.

Excluding zero-leverage firms

Finally, due to the targeted focus on capital structure dynamics instead of specific "optimal" levels of financial leverage, zero-leverage firms are not interesting for the purpose of our analysis as there are no dynamics going on for this group of companies. Thus, in our final dataset, we exclude firms with an average debt to asset ratio of zero during the time period 2000-2016.

Winsorization and local table adjustments

As a general rule, winsorizing variables is avoided and only done with great diligence when deemed necessary. This principal is followed under the notion that excessive winsorizing of variables in the dataset might give rise to a selection bias, where the data has been adjusted (distorted) to the extent that proper randomization can no longer be achieved, with our final sample of observations being poor representatives of the population. A big challenge in this thesis has been working with large amounts of private firm data with an abundance of noise. In the efforts of achieving high quality data and producing meaningful results, tables have often been winsorized at the 1% and 99% levels.

To conclude, we:

- Exclude non-company registered organizations (other organizational forms than company, AB)
- Firms with non-continuous year observations
- Firms active in the real estate and financial services industry
- Firms with zero financial leverage throughout the time period 2000-2016
- Apply winsorizing and local adjustments diligently

3.2. Method and methodology

3.1.1. Deriving cash flow information

The absence of cash flow statements in the Serrano database requires the reader´s awareness. Our sample firms are corporations following Swedish jurisdiction. Thus, private firms in our dataset are not required to produce cash flow statements (only income statements and balance sheets). In the absence of cash flow statements in the Serrano dataset, cash flow information has been manually extracted from balance sheet- and income statements using common accounting relationships connecting the cash flow statement with the income statement and balance sheet.

Cashflow from operating activities (CFOP) is derived by combining the adjusted cashflow from the current year´s income statement (CFOPIS) and the operating cashflow stemming from the balance sheet (CFOPBS). In this case, ‘change in’ means the difference in current year balance sheet items and the previous year balance sheet items and represents change in net working capital.

$$\text{CFOP} = \text{CFOPIS} + \text{CFOPBS}$$

$$\text{CFOPIS} = \text{ Income before tax} + \text{D\&A and other noncash costs} - \text{Tax paid}$$

$$\begin{aligned}\text{CFOPBS} = \ & -\text{Change in Current Operating Assets} - \text{Change in Noncurrent Operating Assets} \\ & + \text{Change in Current Operating Liabilities} \\ & + \text{Change in Noncurrent Operating Liabilites}\end{aligned}$$

Income before tax, in the Serrano database, is equal to Profit or Loss after Net Financial Income, plus the Appropriations. Interest income or interest expense are considered as operating cash flows according to IAS 7. We assume the Depreciation item in the Serrano database is the sum of the depreciation, amortization, impairments and other non-cash costs. In order to adjust the provision and deferred tax item, which could be either non-cash or extra cash, we assume the increase of the provision in the balance sheet is an extra non-cash cost in the income statement while the decrease of the provision means the utilization of provisions, which means an extra cash outflow. No reversal of the provisions is considered in this case. This assumption results in two additional items in the formula with the change of untaxed reserves and the change of provisions.

Operating Cashflow from the balance sheet is the change of total operating liabilities minus the change of total operating assets. The change in operating liabilities can be separated into changes in short-term operating liabilities plus the change in long-term operating liabilities. To simplify the calculation in this case, we calculate the change in operating liabilities using the total liabilities minus untaxed reserves, provisions and all interesting-bearing liabilities. Change in operating assets directly refers to the change in Total Current Operating Assets.

Cashflow from investing activities, in general is calculated by looking at the change in tangible-, intangible- and financial assets, including any increases in goodwill and subtracting potential depreciations/amortizations which are not cash related.

$$\begin{aligned}\text{CFIN} = & -\text{Change in Tangible Fixed Assets} - \text{Change in Intangible Fixed Assets} \\ & - \text{Change in Financial Assets} - \text{D\&A}\end{aligned}$$

The increase in tangible- or intangible fixed assets mostly stems from CAPEX or acquisition, so we assume all of them are cash items disregarding any other reasons that might lead to the increase, while the decrease of the fixed assets may either be due to the depreciation or amortization or divestiture.

Hence, we subtract the depreciation and amortization, to get the net decrease and we consider this part as results of divestiture or liquidation, which are cash inflows. For financial assets, we assume all items are cash items and the changes should be considered directly as cash in- or outflows.
Cashflow from Financing Activities is derived from the change in equity (only looking at transactions with owners and excluding net income or retained earnings) and the change in liabilities.

$$\text{CFFI} = \text{Change in short term interesting liabilities} \\ + \text{Change in Long term interesting bearing liabilities} - \text{Dividend} \\ - \text{Net Equity Contributions}$$

The change in interesting bearing liabilities or change in financial debt, disregarding maturity (short-term or long-term), are considered directly as cash in- or outflows, since the debt financing is one of the most straightforward way of financing firms' operations. We disregard any non-cash write-down activities. For equity financing, a significant part of cash outflow is the dividend to the shareholders and is considered as cash outflows. Net equity contributions are the other equity activity that affect the total equity. For example, new issue of shares, repurchase and vesting, etc. It is calculated using the current year total equity, minus the previous year's equity, minus the current year's net income and adding back the dividend that has already been paid to shareholders.
The change in cash balance is considered a cash item. In this case, cash balance is considered an independent item that is not operating-, investing- or financing cash flow, and is calculated using the change of the liquid assets. After we derive the cashflow from different activities, we have another formula showing the relation of different cash items:

$$\text{Change in Cash balance} = \text{CFOP} + \text{CFIN} + \text{CFFI}$$

In conclusion, cash flow from operations is derived by adjusting net income for non-cash items, such as depreciation and amortization. The net income adjusted for non-cash items is then combined with the change in net working capital from the balance sheet to derive operating cash flow. Cash flow from investing activities is calculated by looking at the change in tangible- and intangible assets, including any increases in goodwill, and subtracting potential depreciations/amortizations which are not cash related. Finally, cash flow from financing activities is derived from the change in equity (only looking at transactions with owners and excluding net income or retained earnings) and change in liabilities. See a more detailed variable description in appendix.
Deriving the cashflow statement is essential to break down different parts that affect capital structure and capital structure volatility in this thesis. It is a good proxy for analyzing companies' operating-, investing- and financing outcomes and the decomposition of debt flows as well.

3.2.2. Instability of financial leverage

First, sample firms are examined on a descriptive basis by regressing the capital structure of company x in its first year of operations t against the capital structure of that firm in future years of operations t + n to understand the stability of capital structure of our sample firms and what level of explanation power R^2 for subsequent years after the initial year have on explaining financial leverage levels.
Next, firms are categorized into low leverage, moderate leverage and high leverage brackets to see if low leverage firms in the beginning of the time period stay low leverage firms throughout or if they become moderate or high leverage firms. Average total debt to assets is used as a measure of financial leverage throughout this thesis. As changes in capital structure might not exactly reflect volatility of capital structure, we also distinguish between total changes in capital structure and the standard deviation of capital structure.

3.2.3. Construction of debt flows

After looking at variables driving capital structure changes, we turn to the question of how the examined capital structure changes were implemented, as they could arise from changes in debt, equity or other liabilities. Here, we use the cash flow constraint to decompose debt flow into subcomponents.
The definition of debt flows in this case is the increase in debt a company needs to finance its operating-, investing- and equity change activities or the decrease in debt that a company repays with the cash from cash balance, operating, investing and equity change activities.
A detailed breakdown debt flows is an important part to analyze the reason of the debt change that how different are firms with different capital structure volatility regarding their operating, investing and equity payout activities. It is the foundation for the analysis afterwards and for the answer of our conclusion that if the capital structure is a residual or constant.

3.2.4. Capital structure volatility determinants

After describing our dataset with the above-mentioned procedures, our analysis begins with regressing the average debt-to-assets ratio against a number of firm-specific characteristics with potential importance in terms of explaining capital structure volatility. Specifically, variables such as firm profitability (ROA), growth (CAGR), size (Change in assets) and dummy variables for specific industries are created. In addition, a small size dummy variable is created in line with Leary (2009) for firms in the lowest two deciles according to the size of their assets. This small size dummy variable is created to capture the potential difficulties of accessing debt for small firms.

4. Results

4.1. Describing the dataset

4.1.1. Describing the dataset by public- and private ownership

In the efforts of describing our dataset along the ownership dimension, we may first illustrate differences in operating profitability, as measured by return on assets, ROA. Figure 1 shows the development of ROA for all firms across 17 years, from 2000 to 2016. An interesting observation is the development of the ROA during two time periods is characterized by market turbulence: the bursting of the dot-com bubble in year 2000 and the bursting of the housing bubble in year 2007. ROA declined during these crisis periods. This is however coupled with a more aggressive post-crisis ROA recovery, at least after the dot-com crisis, where remarkable recovery of ROA among all firms from 2001 to 2007 can be viewed. In addition, there is a sharp decline in ROA in 2011, which may be linked to the European sovereign debt crisis in 2011.

Figure 1: The development of ROA for all firms, over the years 2000-2016.

After looking at differences in operating profitability between public and private firms, another firm characteristic of importance is growth. Here, we use annual net sales growth to distinguish growth differences between the two categories of firms (public- and private firms). In figure 2, we observe that, just like in figure 1, public firms appear to be more unstable than private firms in our dataset, with aggressive changes in revenue growth across the years. However, a major difference to the ROA development in figure 1 is that public firms display consistently higher revenue growth than private firms. In figure 1, the relationship was the opposite with public firms having consistently lower operating profitability relative to private firms. At least among private firms, revenue growth falls after year 2000, year 2007, and in 2011, which are all time periods with macroeconomic instability due to different crises as previously described.

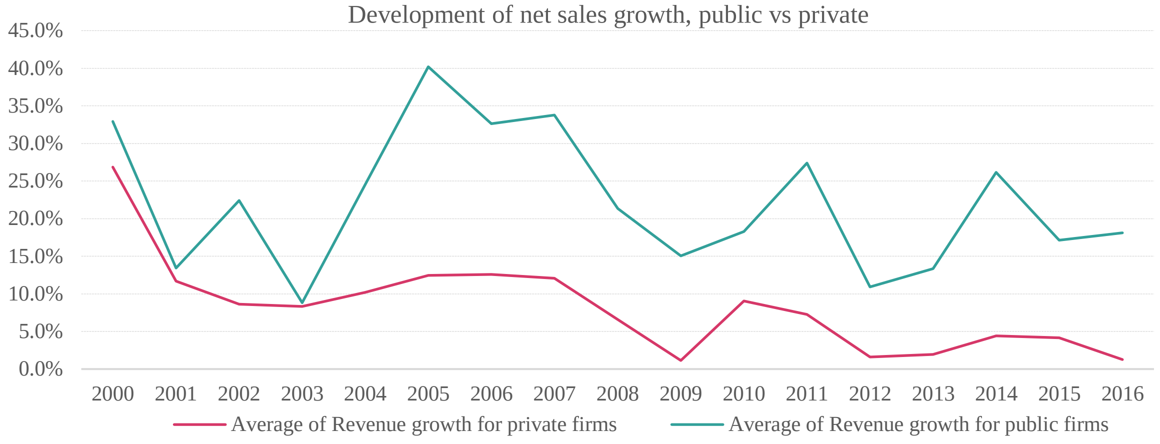

Figure 2: The development of net sales growth for public firms and private firms respectively, over the years 2000-2016.

When starting to think about capital structure changes, and the frequency of those changes, an intuitive path towards understanding is to begin looking at the development of the debt/asset ratio across firms and over time. An observation that immediately appears is that the capital structure of firms with our Swedish data, spanning both public and private ownership forms and across many industries, is in fact not constant over time. As observed in figure 3a, capital structure is dynamic, and a down sloping trend of less financial leverage across firms in our dataset is seen. The trend is also stagnant over time since our time horizon (year 2000-2016) covers two major crises; the dot-com bubble crash in year 2000 and the financial crisis in year 2008.

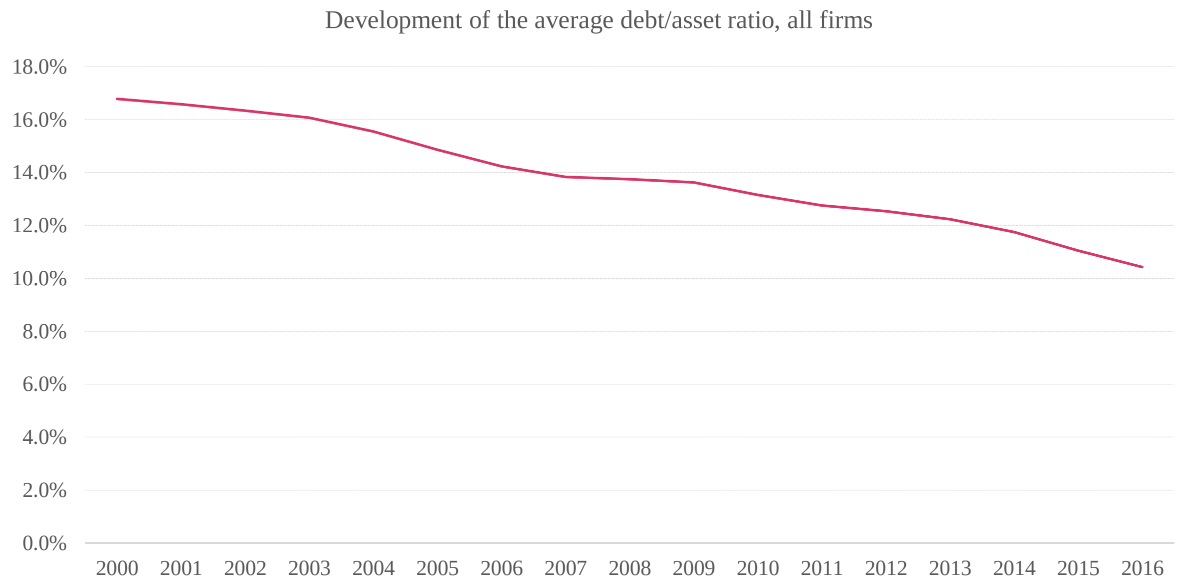

Figure 3a: The development of the average debt/asset ratio across all sample firms in the final dataset and over 16 years. Each year´s debt/asset ratio is calculated using the average of opening- and closing balance. Financial- and real estate firms have been excluded.

When describing the financial leverage development of solely publicly listed firms instead of all firms, the evolution of the D/A ratio is different and illustrates more capital structure dynamics than the overall set of firms (the graph for the private firms is essentially the same as Figure 3a given the dominance of private firms in our dataset). In Figure 3b, if one is to interpret the results from an economic standpoint, we can see that public firms de-levered rapidly following the bursting of the dot-com bubble, but with growing liquidity in debt markets in 2006-2007, Swedish public firms started increasing their financial leverage aggressively until the financial crisis in 2008 after which access to credit dried and a period of firm de-leveraging followed again.

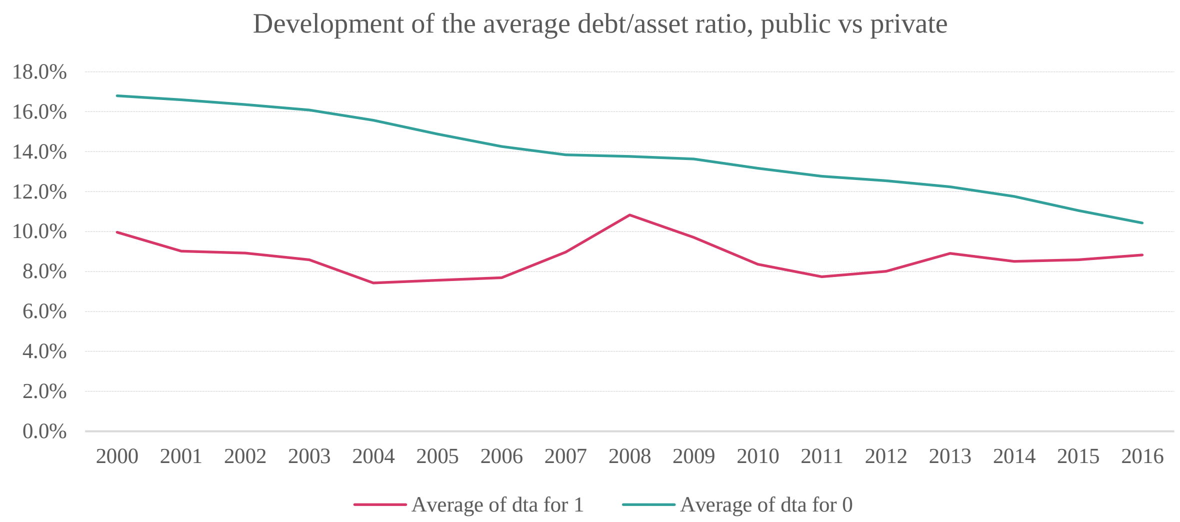

Figure 3b: The development of the average debt/asset ratio across public and private firms in the final dataset and over 16 years. Each year´s debt/asset ratio is calculated using the average of opening- and closing balance. Financial- and real estate firms have been excluded.

Another firm metric intimately related to financial leverage is operating leverage, because both impacts the total risk level of a company with the natural outcome that highly financially leveraged firms can rarely simultaneously possess a high operating leverage. Figure 3b shows a consistently lower financial leverage ratio among public firms compared to private firms. By the above-mentioned logic, we should see the lower financial leverage among public firms being coupled with observed higher operating leverage, which is exactly the case for most years in figure 4. In figure 4, the operating leverage, defined as the contribution margin divided by net operating income, have been graphed by year and firm ownership. It is worth noting that the operating leverage levels are consistently higher among public firms compared to private firms, peaking in 2008, and then shrinking to levels closer to the private firms.

Figure 4: The development of the average operating leverage across public and private firms in the final dataset and over 16 years. Each year´s operating leverage is calculated using fixed costs divided by total costs. Total costs are defined as fixed costs and variable costs combined. Financial- and real estate firms have been excluded.

In order to describe how the number of zero-leverage firms evolved throughout the examined time period 2000-2016 in our dataset, and to see if there are notable differences depending on firm ownership, a year-by-year calculation of the percentage of firms with zero leverage observed for each year is done. Figure 5a is based solely on public firms and figure 5b is based on private firms. An interesting observed difference between public and private firms is that the fraction of zero-debt firms as a percentage of total firms is increasing with great stability among private firms in figure 5b, while in figure 5a it is apparent that, among public firms, the fraction of zero-debt public firms relative to total public firms is almost unchanged from 2003 to 2016. Connecting to figure 3b displaying the average financial leverage among public firms 2000-2016 one interpretation of this is that the overall decrease in financial leverage for public firms is driven relatively more by firms with existing leverage decreasing it slightly than firms with former leverage turning completely debt-free (given the observed stable zero-debt firm development in figure 5a). For private firms, the story is different. Since private firms are dominant in the dataset figure 3a, based on both public- and private firms, with the decline over time in D/A represents the development for private firms. As the fraction of zero debt private firms as a percentage of the total number of private firms in the dataset is increasing smoothly over time, this de-leveraging trend is driven partly by an increasing number of zero-leverage firms by year among private firms.

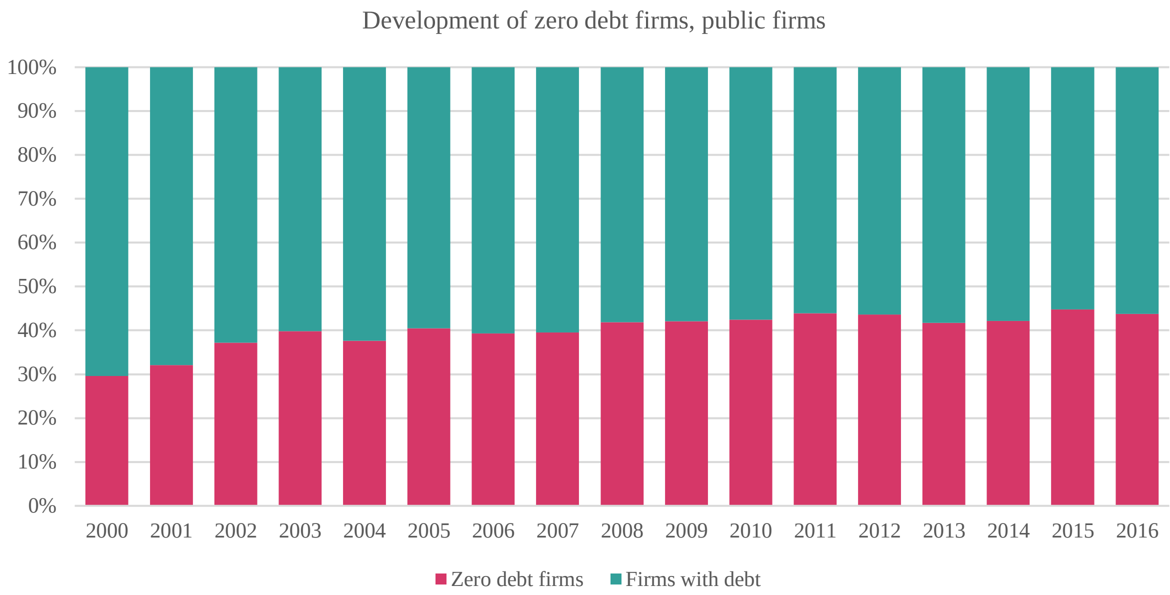

Figure 5a: The graph illustrates the fraction of zero-debt firms as a percentage of total firms by year. The figure is based on only publicly listed firms.

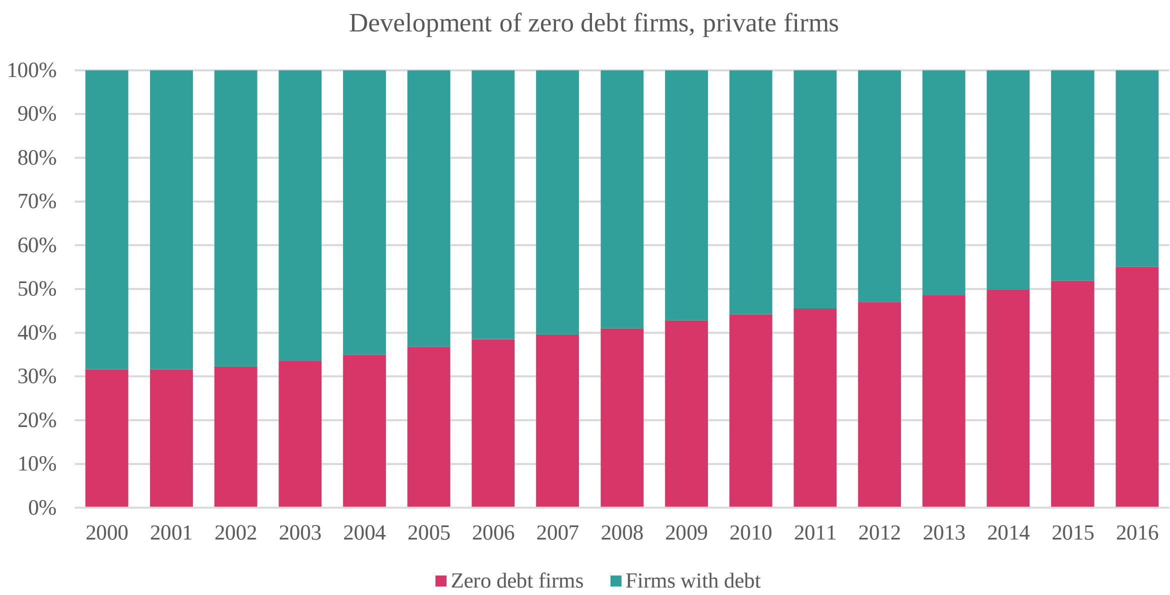

Figure 5b: The graph illustrates the fraction of zero-debt firms as a percentage of total firms by year. This figure is based on only private firms.

This thesis focus on analyzing capital structure dynamics along the dimension of firm ownership (public versus private firm ownership). Below however, there will be examples of complementary information about our dataset at industry level. The goal is to provide the reader with comprehensive information of the dataset used throughout this thesis.

Beginning with table 1, our dataset is decomposed to display the amount of observations and firms by industry and across public- and private ownership. In total, the dataset contains approximately 1.2 million observations spread across ten industries and 16 years (2000-2016). Furthermore, the final dataset contains almost 70 000 firms with consecutive year observations 2000-2016, of which 200 are publicly listed firms. Thus, from an ownership standpoint, most of the firms and observations are private. From an industry standpoint, it is worth noting that many observations and firms in the dataset are found in the industries shopping goods, corporate services or industrial goods industry.

Industry	Total Observations	No. private observations	No. public observations	Total firms	No. private firms	No. public firms
Construction industry	160,944	160,817	127	9,467	9,460	7
Convenience goods	49,732	49,598	134	2,925	2,918	8
Corporate services	281,077	280,531	546	16,534	16,502	32
Energy & Environment	14,786	14,759	27	870	868	2
Health & Education	57,375	56,939	436	3,375	3,349	26
Industrial goods	178,912	178,204	708	10,524	10,483	42
IT & Electronics	36,694	36,030	664	2,158	2,119	39
Materials	29,292	29,165	127	1,723	1,716	7
Other	58,442	58,338	104	3,438	3,432	6
Shopping goods	288,861	288,384	477	16,992	16,964	28
SNI07 missing	2,109	2,109		124	124	
Telecom & Media	16,476	16,378	98	969	963	6
Grand Total	**1,174,700**	**1,171,252**	**3,448**	**69,100**	**68,897**	**203**

Table 1a: The table illustrates the total number of observation and firms, the number of private observation and firms and the number of public observations and firms across year 2000-2016 and across all industries in our dataset.

After illustrating the size of the dataset and the distribution of observations and sample firms across industries we further expand the initial description of the dataset at an industry level in table 1b. Specifically, in table 1b, differences in industry characteristics, such as size (average total assets 2000-2016), operating profitability (average ROA 2000-2016), growth (average revenue growth 2000-2016), financial leverage (average D/A 2000-2016) and capital structure volatility (standard deviation of D/A 2000-2016 averaged out among firms in the respective industries) are displayed. The reader may note that Energy & Environment is the industry with the highest average total assets year 2000-2016 (742 MSEK) while having a relatively high average financial leverage (19%) and capital structure volatility (12%) during the same period. In simpler terms, firms in the industry Energy & Environment are characterized by having big balance sheets, with relatively high financial leverage and debt instability over time. As a contrast, IT & Electronics is an example of an industry with firms being smaller in terms of total assets (126 MSEK), less levered (8,5%) and less volatile (9%). More detailed industry-based tables can be found in the appendix with a year-by-year overview of the D/A development in different industries.

Industry	Average assets thSEK	Average return on assets	Average revenue growth	Average dta	Average SD
Construction industry	17,873	8.2%	8.4%	13.1%	0.09
Convenience goods	66,889	7.6%	6.1%	13.4%	0.10
Corporate services	21,832	7.5%	8.6%	13.0%	0.10
Energy & Environment	741,640	6.6%	8.5%	19.2%	0.12
Health & Education	126,597	10.8%	8.2%	10.8%	0.10
Industrial goods	84,681	7.6%	6.9%	14.6%	0.10
IT & Electronics	125,864	5.9%	10.5%	8.5%	0.09
Materials	176,835	6.6%	7.7%	20.6%	0.11
Other	23,412	4.5%	7.0%	16.4%	0.11
Shopping goods	24,097	6.1%	5.5%	14.9%	0.11
SNI07 missing	76,791	3.6%	12.4%	10.3%	0.12
Telecom & Media	389,089	3.7%	9.8%	9.1%	0.09
Grand Total	**59,946**	**7.1%**	**7.4%**	**13.9%**	**0.10**

Table 1b: The table illustrates the average size, growth, profitability, financial leverage and capital structure volatility over a 16-year period and across different industries in the dataset. The table has been winsorized at the 1% and 99% levels.

A final description of our dataset is the one characterizing public- and private firms by different firm characteristics such as average size, growth and return on assets. We may note that private firms in our data are significantly smaller (44 million SEK in average total assets 2000-2016), less profitable (ROA of 4.7%), but with similar average asset growth.

Industry	Average of assets thSEK	Average return on assets	Average dta	Average SD	Average asset growth
Private firms	44,173	4.7%	13.9%	10.2%	1.21
Public firms	5,417,917	7.5%	8.7%	7.8%	1.22

Table 1c: The table illustrates the average size, growth, profitability, financial leverage and capital structure volatility over a 16-year period and across public and private firms in the dataset. The table has been winsorized at the 1% and 99% levels.

4.2. Capital structure analysis

4.2.1. Capital structure dynamics across time and ownership

To facilitate an understanding of capital structure instability one can start regressing the capital structure of sample firms in the first year of observed values, year 2000, against the firm´s future years capital structure. In figure 6, a comparison between public and private firms is done. After one year, the average R^2 is quite similar between public and private firms (85% and 80% respectively). This essentially implies that in the short term, there is high financial leverage stability, where the financial leverage in year 2000 is explaining 80-85% of the financial leverage observed among firms in the dataset in the following year, in year 2001. However, next, something interesting happens. R^2 is not only falling more steeply by year for private firms relative to public firms, the fall is less smooth for private firms. How can one interpret the outcome in figure 6? The decline in predictive power of the capital structures in year 2000 over time is overall apparent across both public and private firms, indicating capital structure instability over a longer time horizon. As an example, after five years, the R^2 value is just 30% for private firms and 20% for public firms which illustrates the presence of variation in financial leverage levels among companies. The sharper decline in the predictive power of year 2000 financial leverage level among private firms, relative to public firms, may be viewed as an indication that private firms have a more unstable capital structure than public firms. We will explore this question deeper in section 4.2.2 when starting to analyze characteristics associated with capital structure instability.

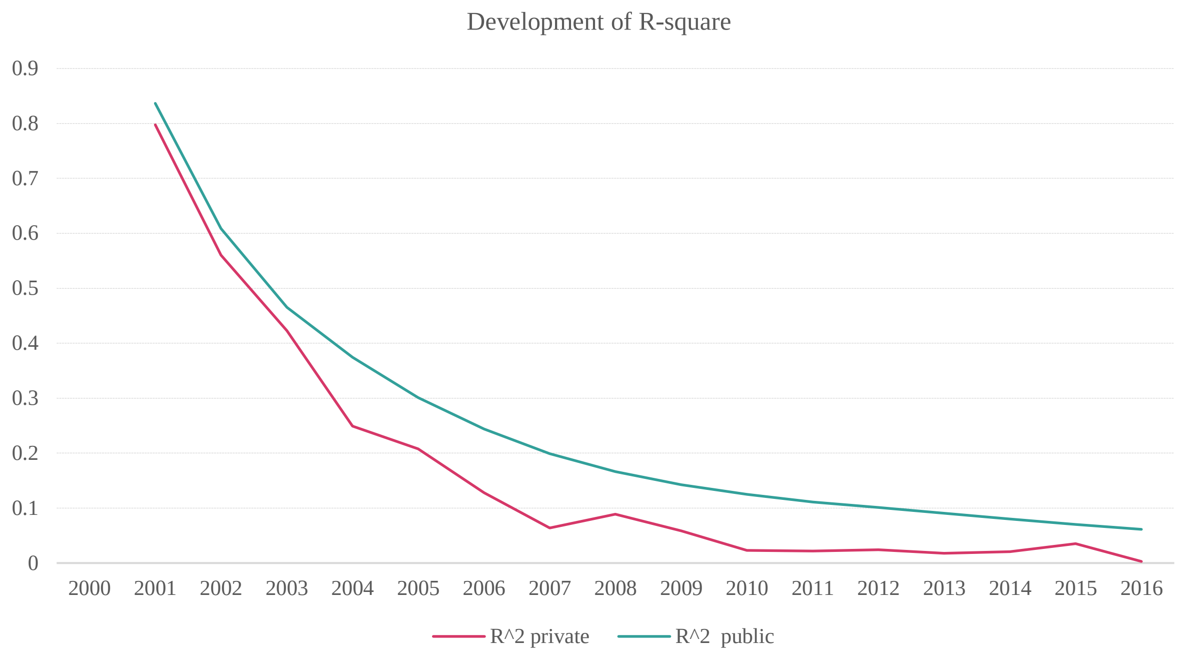

Figure 6: The table aims to illustrate the stability of capital structure over time. The financial leverage, as measured by D/A in the first year, year 2000, is regressed against the financial leverage of future years. This yields information about how well the capital structure of a firm in year 2000 can explain the capital structure of that same firm in year 2000 + n. An R^2 value of 1 implies perfect stability of capital structure, with the capital structure of a firm in year 2000 explaining 100% of the capital structure of a firm in year 2000 + n. The blue graph is based on private firms and the orange graph on public firms.

Continuing to examine capital structure instability, we categorize firms in our dataset into brackets depending on the level of average debt/asset ratio in year 2000 in table 2a. Then, we display the share of firms in each bracket maintaining the same level of financial leverage over time and up until year 2016, or the extent of financial leverage changes. Describing an extreme example, 21,881 sample firms had no average financial leverage in year 2000. Many of them, 59.6%, also had zero leverage (an average debt/asset ratio of zero) in year 2016. Meanwhile 3.8% of this bracket of firms (21,881) had increased their average debt/asset ratio significantly (from 0% to >50 %). The results from the table illustrate that the group of firms most likely to have an unchanged or stable capital structure in the long term is the group that initially displayed zero financial leverage (debt free). On the flipside, firms staying above 50% average financial leverage in year 2000 display large variation in the level of financial leverage 16 years later, in 2016. 15.7% of them still have more than 50% financial leverage, but 38.2 % of these 6,357 companies had become debt free in 2016. To conclude, firms starting out with low financial leverage in year 2000 are more likely to stay low leverage firms in the long term

(16 years later). Firms with initially high financial leverage (>50%) appears to show a larger variation in displayed financial leverage 16 years later, with a significant share of firms turning low-leverage firms.

		Debt/assets in year 2016							Total	No. Companies
		0%	0.1-9.9%	10-19.9%	20-29.9%	30-30.9%	40-40.9%	>50%		
Debt/assets in year 2000	0%	59.6%	16.8%	8.3%	5.5%	3.6%	2.5%	3.8%	100.0%	21,881
	0.1-9.9%	64.8%	14.7%	7.6%	4.9%	3.1%	2.2%	2.6%	100.0%	14,884
	10-19.9%	55.8%	15.6%	10.1%	7.2%	4.8%	2.8%	3.6%	100.0%	9,229
	20-29.9%	49.9%	15.0%	10.5%	9.2%	6.5%	3.9%	4.8%	100.0%	7,038
	30-30.9%	45.4%	14.3%	10.6%	9.4%	8.3%	5.4%	6.6%	100.0%	5,607
	40-40.9%	41.4%	12.4%	11.1%	10.4%	9.2%	6.6%	8.9%	100.0%	4,104
	>50%	38.2%	10.3%	9.4%	9.3%	9.0%	8.2%	15.7%	100.0%	6,357

Table 2a: This table illustrates how active firms are in changing their capital structure over time. Companies have been split into brackets based on their debt/asset ratio in year 2000. For each bracket of firms one can see the percentage of firms recording various financial leverage levels 16 years later, in year 2016. The table is based on the refurbished dataset, where firms with non-consecutive year observations are excluded, as well as firms with zero leverage 2000-2016 and firms in the finance- and real estate industry.

Below, we decompose table 2a into two different tables, table 2b illustrates the instability of capital structure levels over time among listed firms whereas table 2c displays the equivalent but for solely privately-owned firms in Sweden. When excluding non-consecutive year observations, consistently zero-leverage firms and finance- and real estate firms, there are naturally not a lot of companies left that have been listed on the Stockholm stock exchange in the time period 2000-2016. The pattern from table 2a remains however: firms with initially low leverage tend to stay so 16 years later whereas higher leverage firms display larger variation in recorded financial leverage ratios in 2016.

		Debt/assets in year 2016							Total	No. Companies
		0%	0.1-9.9%	10-19.9%	20-29.9%	30-30.9%	40-40.9%	>50%		
Debt / assets in year 2000	0%	46.7%	20.0%	23.3%	0.0%	3.3%	3.3%	3.3%	100.0%	30
	0.1-9.9%	52.9%	23.5%	5.9%	5.9%	2.9%	2.9%	5.9%	100.0%	34
	10-19.9%	26.7%	46.7%	6.7%	13.3%	6.7%	0.0%	0.0%	100.0%	15
	20-29.9%	50.0%	8.3%	33.3%	8.3%	0.0%	0.0%	0.0%	100.0%	12
	30-30.9%	20.0%	20.0%	20.0%	0.0%	20.0%	20.0%	0.0%	100.0%	5
	40-40.9%	0.0%	50.0%	0.0%	50.0%	0.0%	0.0%	0.0%	100.0%	2
	>50%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	1

Table 2b: This table illustrates how active publicly listed firms are in changing their capital structure over time. Companies have been split into brackets based on their debt/asset ratio in year 2000. For each bracket of firms one can see the percentage of firms recording various financial leverage levels 16 years later, in year 2016. The table is based on the refurbished dataset, where firms with non-consecutive year observations are excluded, as well as firms with zero leverage 2000-2016 and firms in the finance- and real estate industry. The table is based on public firms.

		Debt/assets in year 2016							Total	No. Companies
		0%	0.1-9.9%	10-19.9%	20-29.9%	30-30.9%	40-40.9%	>50%		
Debt/assets in year 2000	0%	59.6%	16.8%	8.2%	5.5%	3.6%	2.5%	3.8%	100.0%	21,775
	0.1-9.9%	64.9%	14.7%	7.6%	4.9%	3.1%	2.2%	2.6%	100.0%	14,795
	10-19.9%	55.9%	15.5%	10.2%	7.2%	4.9%	2.8%	3.6%	100.0%	9,182
	20-29.9%	49.9%	15.0%	10.5%	9.3%	6.6%	3.9%	4.8%	100.0%	7,009
	30-30.9%	45.4%	14.3%	10.6%	9.4%	8.3%	5.4%	6.6%	100.0%	5,591
	40-40.9%	41.4%	12.4%	11.1%	10.4%	9.2%	6.6%	8.9%	100.0%	4,095
	>50%	38.2%	10.2%	9.4%	9.3%	9.0%	8.2%	15.7%	100.0%	6,346

Table 2c: This table illustrates how active privately-owned firms are in changing their capital structure over time. Companies have been split into brackets based on their debt/asset ratio in year 2000. For each bracket of firms one can see the percentage of firms recording various financial leverage levels 16 years later, in year 2016. The table is based on the refurbished dataset, where firms with non-consecutive year observations are excluded, as well as firms with zero leverage 2000-2016 and firms in the finance- and real estate industry. The table is based on private firms.

An important distinction in this thesis is the one between changes in capital structure and the volatility (standard deviation) of capital structure. The standard deviation of capital structure is the volatility of the capital structure, which yields insights into our research question if the capital structure of firms is stable or a varying residual from other firm activities. When thinking about the difference between capital structure changes and capital structure volatility, a firm with zero leverage in year 2000 may do a significant one-time increase in financial leverage in year 2016 to a level of 50% financial leverage, and thus display a large change in capital structure. However, the change does not necessarily yield information about if capital structure is treated as a fluctuating firm residual from other prioritized policies because that one-time increase or decrease in financial leverage in year 2016 might very well be a part of a new, yet conscious, debt policy, e.g. a newly formed acquisition strategy. If a firm display a large volatility of its capital structure on the other hand, than the frequency with which the capital structure changes occur is high, which is a more accurate indicator of whether or not firms really follow strict capital structure policies or if the company board allows debt levels to fluctuate as a residual from the pursuit of other company goals (CAPEX schedules, dividend policy, liquidity position etc.).

In table 3a, the analysis from table 2 is deepened by looking at the interaction between changes in capital structures and volatility of capital structures. The results from table 3a suggests that a large share of the firms with the lowest displayed capital structure volatility across 2000-2016 (47.1% of 25,842 firms) simultaneously shows modest capital structure changes i.e. an increase or a decrease of 0-5% of average D/A during 2000-2016. Meanwhile, the quintile of companies with the highest capital structure volatility are firms which displayed large increases or decreases of capital structure changes between year 2000 and year 2016 (reductions or increases of the average D/A ratio by 15% or more). Thus, in this case, change and volatility follow the same direction, small changes are associated with low volatility and big leverage changes are associated with high volatility.

		Volatility of capital structure						
		q1 (lowest)	q2	q3	q4	q5 (highest)	Total	No. Companies
Changes in capital structures	<-15%	0.0%	6.0%	23.2%	33.3%	37.6%	100.0%	19,257
	-15% to -5%	10.9%	43.5%	24.9%	13.8%	7.0%	100.0%	10,283
	-5% to 5%	47.1%	23.1%	13.8%	9.1%	6.9%	100.0%	25,842
	5% to 15%	9.9%	31.8%	28.9%	19.4%	10.0%	100.0%	5,294
	> 15%	0.0%	6.6%	20.2%	31.0%	42.2%	100.0%	8,424

Table 3a: The table illustrates the relationship between capital structure changes and capital structure volatility. Firms are split depending on the total change in capital structure between year 2000 and year 2016. Companies with reductions in capital structure by 15% or more during 2000-2016 are grouped by "<-15%". Companies with increases in capital structure by 15% or more during 2000-2016 are grouped by ">15%". For the three other categories in-between, firms are categorized by a reduction of 5-15%, a reduction or increase of < 5 %, and an increase of D/A of 5-15%. On the y-axis

companies are grouped similarly depending on the standard deviation of the D/A ratio between 2000-2016. The table is based on public and private firms.

When decomposing table 3a into publicly- and privately owned and running the analysis of the interaction between capital structure changes and capital structure volatility again, the pattern displayed in table 3a reappears: the quintile of firms with the lowest capital structure volatility year 2000-2016 had modest capital structure changes in the same period (-5% to 5%) whereas the firms with highest capital structure volatility tended to have the biggest increase or reduction in the change of capital structures (<-15% or >15%).

		Volatility of capital structure						
		q1 (lowest)	q2	q3	q4	q5 (highest)	Total	No. Companies
Changes in capital structures	<-15%	0.0%	0.0%	16.7%	44.4%	38.9%	100.0%	18
	-15% to -5%	0.0%	20.0%	46.7%	26.7%	6.7%	100.0%	15
	-5% to 5%	48.8%	22.0%	17.1%	4.9%	7.3%	100.0%	41
	5% to 15%	0.0%	55.6%	11.1%	11.1%	22.2%	100.0%	9
	> 15%	0.0%	18.8%	12.5%	31.3%	37.5%	100.0%	16

Table 3b: The table illustrates the relationship between capital structure changes and capital structure volatility. Firms are split depending on the total change in capital structure between year 2000 and year 2016. Companies with reductions in capital structure by 15% or more during 2000-2016 are grouped by "<-15%". Companies with increases in capital structure by 15% or more during 2000-2016 are grouped by ">15%". For the three other categories in-between, firms are categorized by a reduction of 5-15%, a reduction or increase of < 5 %, and an increase of D/A of 5-15%. On the y-axis companies are grouped similarly depending on the standard deviation of the D/A ratio between 2000-2016. The table is based solely on public firms.

		Volatility of capital structure						
		q1 (lowest)	q2	q3	q4	q5 (highest)	Total	No. Companies
Changes in capital structures	<-15%	0.0%	6.1%	23.2%	33.3%	37.5%	100.0%	19,193
	-15% to -5%	11.0%	43.5%	24.8%	13.7%	7.0%	100.0%	10,229
	-5% to 5%	47.1%	23.1%	13.8%	9.1%	6.9%	100.0%	25,708
	5% to 15%	10.0%	31.7%	29.0%	19.3%	10.0%	100.0%	5,275
	> 15%	0.0%	6.5%	20.2%	31.1%	42.2%	100.0%	8,388

Table 3c: The table illustrates the relationship between capital structure changes and capital structure volatility. Firms are split depending on the total change in capital structure between year 2000 and year 2016. Companies with reductions in capital structure by 15% or more during 2000-2016 are grouped by "<-15%". Companies with increases in capital structure by 15% or more during 2000-2016 are grouped by ">15%". For the three other categories in-between, firms are categorized by a reduction of 5-15%, a reduction or increase of < 5 %, and an increase of D/A of 5-15%. On the y-axis companies are grouped similarly depending on the standard deviation of the D/A ratio between 2000-2016. The table is based solely on private firms.

4.2.2. Firm characteristics associated with capital structure volatility

Next, after having illustrated capital structure changes in our dataset in table 2 and displayed the relationship between capital structure changes and capital structure volatility in table 3, we do an initial characterization of firms with different degrees of capital structure changes in table 4. Table 4a, which includes both private and public firms, shows that firms with the biggest increases of financial leverage are bigger in terms of total assets compared to firms with the biggest decreases of financial leverage, and that the difference in mean is significant at the 1% level. Firms which increased their financial leverage in 2006-2016 (average D/A ratio) generally also have a bigger change in assets.

Specifically, firms with the biggest financial leverage increase (15% or more) had 1.86 times higher total assets in 2016 compared to year 2000, while firms that decreased their financial leverage by 15% or more only had 1.19 times higher total assets in year 2016. The difference in mean between these two groups of firms is significant at the 1% level. The reason why this result is interesting is because it might indicate that firms adopting higher financial leverage do so under an acquisition strategy or under an aggressive growth plan, given the big change in assets associated with the increases in financial leverage. As table 4b and 4c does not appear to show any big differences between private firms and public firms, they are placed in the appendix.

	Change in debt/assets between year 2000-2016						
Variable	q1 (highest decrease)	q2	q3	q4	q5 (highest increase)	Diff	t-value
Small size	0.22	0.21	0.24	0.13	0.13	-0.09	19.21
Total assets	13,237.88	15,078.81	18,438.21	20,627.12	16,333.10	3,095.22	-4.82
Change in assets	1.19	1.14	1.15	1.00	1.86	0.68	-29.45
Return on assets	0.07	0.07	0.08	0.07	0.06	-0.01	15.84
Revenue growth	0.04	0.04	0.03	0.04	0.04	0.00	-40.86

Table 4a: Firms have been split into quintiles based on their change in D/A between year 2000-2016. "q1" means a decrease in D/A of 15% or more between year 2000 and year 2016, whereas "q5" means an increase of 15% or more of D/A during 2000-2016. T-test are done to measure the significance of the difference in mean between the two groups "q5" and "q1" for the respective variables. ABS(t) > 2.58 means the result is significant at the 1% level. ABS(t) > 1.96 means the result is significant at the 5% level. ABS(t) > 1.645 means the result is significant at the 10% level. The dataset consists of both public and private firms. Firms with zero revenue growth have been removed. Variables are winsorized at the 1% and 99% levels.

Next, in table 5, we run the same analysis as in table 4 but looking at the standard deviation instead of the change (in financial leverage). When analyzing the firm characteristics associated with different degrees of capital structure volatility, the first observation is that debt stability (low capital structure volatility) is indeed more frequent among large companies. The difference in the mean of total assets between the groups with the lowest average capital structure volatility and the group with the highest average capital structure volatility is significant at the 1% level. This may indicate that large firms by asset size are more likely to follow a deliberate capital structure policy while smaller firms with higher capital structure volatility are more likely to treat capital structure as a residual from other firm activities. In addition, firms with the most volatile leverage also had the largest change in total assets 2016-2000 and lower operating profitability (lower ROA, 7% compared to 9%). For a decomposition between private and public firms, see table 5b and 5c in Appendix.

	Standard deviation of D/A between year 2000-2016						
Variable	q1 (lowest)	q2	q3	q4	q5 (highest)	Diff	t-value
Small size	0.21	0.19	0.17	0.18	0.20	-0.01	1.40
Total assets	22,325	17,427	16,277	15,114	11,509	-10,816	13.45
Change in assets	2.39	2.23	2.32	2.50	3.28	0.88	-7.84
Return on assets	0.09	0.08	0.07	0.07	0.07	-0.02	24.82
Revenue growth	0.00	0.01	0.02	0.01	0.00	0.00	-0.69

Table 5a: Firms have been split into quintiles based on their standard deviation of D/A between year 2000-2016. "q1" means a decrease in D/A of 15% or more between year 2000 and year 2016, whereas "q5" means an increase of 15% or more of D/A during 2000-2016. T-test are done to measure the significance of the mean between the two groups "Highest" and "lowest" for the respective variables. ABS(t) > 2.58 means the result is significant at the 1% level ABS(t) > 1.96 means the result is significant at the 5% level. ABS(t) > 1.645 means the result is significant at the 10% level. The dataset consists

of both public and private firms. Firms with zero revenue growth have been removed. Variables were winsorized at the 1% and 99% levels.

In trying to understand the relationship between capital structure dynamics and operational firm variables, such as profitability (ROA), size (total assets) and growth (change in assets, revenue growth), we regress capital structure changes 2000-2016 against a small size dummy variable and a set of firm specific variables. In table 6a, some of the main observations are that an increase in financial leverage (D/A) is associated with an increase in net sales growth, an increase in assets and a decrease in ROA. The increased growth associated with an increase in financial leverage further strengthens the idea that firms increasing their financial leverage strongly are pursuing a growth plan, where parts of the sales growth might be related to acquired revenue (new acquisitions). These results are also significant at the 1% level. Table 5a has been decomposed into public and private firms in appendix (see table 6b and 6c).

	(1)	(2)	(3)	(4)	(5)	(6)
Total assets	1.48e-07***					1.78E-08
	-1.81E-08					-1.92E-08
Small size		-0.0361***				-0.0275***
		-0.00261				-2.95E-03
Change in assets			0.00380***			0.00323***
			-0.000125			-1.76E-04
ROA				-0.0348***		-0.140***
				-0.00741		-1.04E-02
Net sales growth					0.208***	0.106***
					-0.00968	-1.13E-02
Constant	-0.0672***	-0.0603***	-0.0761***	-0.0628***	-0.0587***	-0.0533***
	-0.000969	-0.000988	-0.000954	-0.00107	-0.000972	-1.45E-03
Observations	67,591	67,591	67,588	67,591	58,943	58,942
R-squared	0.00	0.00	0.02	0.00	0.01	0.02

*Table 6a: Regressions seeking to map the relationship between changes in capital structure 2000-2016, a small size dummy variable, and a few operational firm variables. The results are winsorized at the 1% and 99% levels. *** Indicate the strongest degree of significance of the results (1%-level of significance). The regression is done on both public and private firms.*

The next step in our analysis is to run the same regression as in table 6 but with capital structure volatility as the dependent variable instead of capital structure change. In table 7a, some of the main observations are that an increase in the standard deviation of capital structure between 2000-2016 is associated with an increase in assets. The pattern that increasing capital structure volatility is associated with an increase in asset base was partly indicated in table 6a where we saw that the firms with the highest capital structure volatility had the biggest change in total assets relative to the firms with the lowest capital structure volatility. In addition, ROA is declining with increased financial leverage.

	(1)	(2)	(3)	(4)	(5)	(6)
Total assets	-1.04e-07***					-1.12e-07***
	-6.32E-09					-6.48E-09
Small size		0.00356***				-0.00206**
		-0.000901				-1.02E-03
Change in assets			0.000429***			0.000747***
			-0.0000413			-5.61E-05
ROA				-0.0471***		-0.0621***
				-0.00259		-3.39E-03
Net sales growth					-0.00451	-0.0157***
					-0.00318	-3.72E-03
Constant	0.105***	0.103***	0.102***	0.107***	0.102***	0.107***
	-0.00031	-0.000312	-0.000308	-0.000344	-0.000309	-4.51E-04
Observations	67,591	67,591	67,588	67,591	58,943	58,942
R-squared	0.00	0.00	0.00	0.01	0.00	0.02

*Table 7a: Regressions seeking to map the relationship between volatility in capital structure (D/A ratio) 2000-2016 and a small size dummy variable, and a few operational firm variables. The results are winsorized at the 1% and 99% levels. *** Indicate the strongest degree of significance of the results (1%-level of significance). The regression is done on both public and private firms.*

4.2.3. Implementing capital structure changes

After analyzing the firm characteristics associated with different degrees of capital structure change- or volatility, one might examine how firms changed their financial leverage ratio between 2000-2016 by analyzing the subcomponents of the debt / asset ratio. In table 8, firms are categorized similarly to previous tables into five quintiles depending on the extent of their capital structure change, where “q5” is the group with a financial leverage increase of 15% or more during 2000-2016. Initial financial leverage in 2000 and financial leverage in 2016 are calculated for each category of firms. Now, since there are multiple ways of changing your financial leverage, either through a change in total assets or through a change in debt, table 8a below is a decomposition of the D/A change into subcomponents where everything is scaled by total assets in 2016. An interesting finding in table 8a is that firms with the largest reductions in financial leverage during 2000-2016 did not change their balance sheet debt much at all, while a strongly positive change in equity and other liabilities helped de-lever this category of firms from 31.23% to 12.62%. When analyzing the other extreme group of firms, the group of firms with an increase in D/A from 5.87% to 36.39% in 16 years, almost the entire increase in financial leverage is explained by an increase in balance sheet debt (30.57 % of total assets in 2016). To conclude table 8a, it appears as if firms which increase their financial leverage aggressively start out with low leverage and increase balance sheet debt, whereas firms that decrease their financial leverage aggressively hold their balance sheet debt constant from 2000-2016 but grow their assets through a financing of equity and other liabilities.

Change in debt/asset ratio between 2000 and 2016	Origins of assets in 2016, by asset type							
	Debt 2000 (1)	Change in balamce sheet financial debt 2000 - 2016 (2)	Equity 2000 (3)	Change in Equity 2000 - 2016 (4)	Other liabilities 2000 - 2016 (5)	Change in other liabilities 2000 - 2016 (6)	Initial debt to assets (1)/(1+3+5)	Final debt /assets (1+2)/(1+2+3+4+5+6)
q1 (largerst decrease)	14.42%	-2.36%	10.48%	27.18%	21.28%	38.27%	31.23%	12.62%
q2	5.69%	2.71%	18.87%	28.86%	25.88%	21.43%	11.28%	13.24%
q3	0.88%	1.43%	17.81%	24.39%	28.81%	26.56%	1.84%	3.44%
q4	3.22%	16.77%	10.54%	31.69%	18.56%	21.35%	9.96%	21.10%
q5 (largest increase)	2.17%	30.57%	14.38%	11.68%	20.36%	22.03%	5.87%	36.39%

Table 8a: Firms have been split into quintiles based on their average change in D/A ratio between 2000-2016. The table aims to illustrate how the changes of capital structure was implemented. All numbers are scaled by total assets in 2016. The results are winsorized at the 1% and 99% levels. The table is based on both private and public firms.

When analyzing table 8 through a division of firms into public- (table 8b) and private firms (table 8c). A few observations are of interest for closer attention. First, looking at the two extreme groups “q1” and “q5”, it is immediately apparent that the publicly listed firms had more extreme changes in D/A ratios between 2000 and year 2016, going e.g. from 0.45% financial leverage in year 2000 to 38% indebtedness in 2016. However, when comparing the derivation of final debt / asset ratio for the category “q5” between public- and private firms, listed firms were much more diligent in changing balance sheet debt (17.69%) relative to the private firms in this category, where an increase in balance sheet debt drives the increase in financial leverage (36.03%). Likewise, looking at the category of firms with the greatest debt reductions, private firms were more reluctant to decrease financial leverage through debt repayment (-0.41%) relative to public firms (-9.25%). These observations raise the question, are listed firms looking to increase their financial leverage more carefully through formal debt issues and increases in balance sheet debt relative to private firms? When listed firms wants to increase their leverage, they seem to prefer to do so through a mix of increasing balance sheet debt and shrinking their assets, but when public firms want to de-lever, they are more geared towards a formal debt paydown vis a vis the alternative of maintaining current debt levels and increasing their assets. Private firms to the opposite appear to increase their leverage through an increase in balance sheet debt and decreases their leverage by holding debt constant in absolute amounts and growing their assets. Lastly, the reader may note that public firms, regardless of category of capital structure change, consistently have higher amounts of equity in year 2000 relative to total assets in 2016 compared to private firms, which is intuitive when thinking about the greater access listed firms have to equity capital markets relative to private firms.

Change in debt/asset ratio between 2000 and 2016	Origins of assets in 2016, by asset type							
	Debt 2000 (1)	Change in balamce sheet financial debt 2000 - 2016 (2)	Equity 2000 (3)	Change in Equity 2000 - 2016 (4)	Other liabilities 2000 - 2016 (5)	Change in other liabilities 2000 - 2016 (6)	Initial debt to assets (1)/(1+3+5)	Final debt /assets (1+2)/(1+2+3+4+5+6)
q1 (largerst decrease)	14.07%	-0.41%	8.87%	27.88%	24.83%	35.06%	29.46%	12.92%
q2	7.38%	4.26%	12.57%	31.77%	28.87%	20.26%	15.13%	10.11%
q3	0.92%	1.95%	13.96%	22.09%	30.62%	31.09%	2.02%	2.62%
q4	6.27%	19.13%	11.35%	19.66%	26.68%	21.16%	14.15%	20.75%
q5 (largest increase)	2.14%	36.03%	8.48%	11.61%	23.11%	20.48%	6.34%	35.43%

Table 8b: The table aims to illustrate how the changes of capital structure was implemented. Firms have been split into quintiles based on their average change in D/A ratio between 2000-2016. All numbers are scaled by total assets in 2016. The results are winsorized at the 1% and 99% levels. The table is based on only public firms.

Change in debt/asset ratio between 2000 and 2016	Origins of assets in 2016, by asset type							
	Debt 2000 (1)	Change in balamce sheet financial debt 2000 - 2016 (2)	Equity 2000 (3)	Change in Equity 2000 - 2016 (4)	Other liabilities 2000 - 2016 (5)	Change in other liabilities 2000 - 2016 (6)	Initial debt to assets (1)/(1+3+5)	Final debt /assets (1+2)/(1+2+3+4+5+6)
q1 (largerst decrease)	13.96%	-9.25%	12.70%	23.99%	9.79%	52.78%	38.31%	9.63%
q2	2.16%	1.05%	20.31%	30.85%	19.46%	26.34%	5.15%	15.23%
q3	2.01%	0.80%	21.98%	23.26%	33.67%	14.43%	3.48%	3.05%
q4	0.32%	18.52%	9.20%	43.73%	15.29%	13.07%	1.29%	25.64%
q5 (largest increase)	0.19%	17.69%	27.24%	9.05%	15.43%	29.80%	0.45%	37.99%

Table 8c: The table aims to illustrate how the changes of capital structure was implemented. Firms have been split into quintiles based on their average change in D/A ratio between 2000-2016. All numbers are scaled by total assets in 2016. The results are winsorized at the 1% and 99% levels. The table is based on only private firms.

4.2.4. Drivers of capital structure instability

Using the corporate finance trilemma theory where a firm cannot assess their debt policy without thinking about their CAPEX policy and equity payout policy, it is reasonable to think that a company´s debt policy is in close interaction with a firm´s equity payout policy and CAPEX policy through the budget constraint introduced earlier:

$$\triangle \text{ Debt} + \text{Net income} = \text{CAPEX} + \text{Payout}$$

Since a firm´s primary value creation comes from generating cash from operating and investing activities, which can then be used to make equity distributions to shareholders, pay down debt or grow cash holdings, in total, firms are subjected to a cash flow constraint when evaluating their debt policy:

$$\text{CFOI} + \triangle \text{ Cash} + \text{Eqpay} + \triangle \text{ Debt} = 0$$

In order to fully understand capital structure dynamics, it should through the above-mentioned relationships be clear that it is necessary to analyze capital structure changes in conjunction with an analysis of cash flows. To do this, the concept of debt flows may be introduced in this thesis. Debt flows is the change in debt required to finance equity payouts (dividends and equity repurchases), cash flow from operating and investing activities and changes in cash holdings and can be defined as the change in debt. When focusing on capital structure dynamics, one may rearrange the cash flow equation to focus on debt flows in order to analyze its main drivers:

$$-\text{Debt flows} = \text{CFOI} + \triangle \text{ Cash} + \text{Eqpay}$$

Now, we are ready to apply these cash flow relationships and conduct an analysis on our data of Swedish public- and private firms to see what is driving debt changes (debt flows). In table 9a, our dataset (both public and private firms) are separated into five categories based on their average debt flows between year 2000 and year 2016. Then, we decompose debt flows into its subcomponents to see if cash from operations activities, cash from investing activities, change in cash holdings, dividends or change in net equity contributions (equity issued less equity repurchased) is the strongest driver to the change in debt.

In table 9a, the first interesting relationship observed is the one between debt flows and cash flow from operating- and investing activities. Table 9a suggests that the quintiles of firms with higher debt flow/asset ratios (larger inflows of debt) are associated with lower cash from operating- and investing activities. This may indicate that when firms find it increasingly difficult to generate positive cash flows from operating- and investing activities, they are pushed towards increasing their debt levels in order to compensate for the decline in operating- and investing cash flows. A key question is however whether the decline in cash flows from operating- and investing activities is driven by operating or investing activities. Increasing debt levels to compensate for declines in investing cash flows may be part of a growth plan, where the company is in a deliberate investing phase with a CAPEX program. However, if debt is increasingly taken on to finance declines in short term operating cash flows, an investor would be worried about the cash generative ability of the company invested in and the efficiency of operations. Thus, when going one step further in the analysis in table 9a and decomposing cash from operating- and investing activities into two separate parts; cash from operations (1) and cash from investing activities (2), we can see that the difference in mean operating cash flows between “Largest outflows” and “Largest inflows” is not significant. However, when looking at cash from investing activities, we can see that the quintiles with higher debt flow/asset ratios have increasingly negative cash from investing activities, and the difference in mean between q1 and q5 is strongly significant. To conclude table 9a, differences in debt flow/asset ratio are associated with differences in cash from operating- and investing activities, where cash flow from investing activities is specifically the main differentiator.

Average debt flows between 2000 and 2016	Cash from operations	Cash from investing	Cash from operating and investing	Change in cash balances	Dividends	Net equity contributions	Net equity payout	Surplus of deficit to assets	Debt flow /assets
q1 (largest outflows)	8.78%	-0.95%	7.83%	0.12%	-3.66%	-1.21%	-4.87%	3.08%	-3.08%
q2	9.40%	-5.18%	4.22%	-0.68%	-3.00%	-0.35%	-3.35%	0.19%	-0.19%
q3	10.49%	-5.95%	4.53%	-0.19%	-3.78%	-0.52%	-4.24%	0.04%	-0.04%
q4	8.14%	-5.42%	2.72%	-0.64%	-3.12%	0.69%	-2.43%	-0.34%	0.34%
q5 (largest inflows)	7.09%	-7.37%	-0.28%	-0.08%	-2.29%	-0.06%	-2.35%	-2.72%	2.72%
difference	-1.69%	-6.42%	-8.11%	-0.20%	1.37%	1.15%	2.52%	-5.80%	5.80%
t-value	-1.45	5.15	4.48	0.56	0.33	-0.87	-0.71	5.99	-5.99

Table 9a: The table aims to illustrate where differences in debt flows originates from, as it can originate from differences in operating- and investing cash flows, cash holdings or net equity payouts. Firms have been split into quintiles depending on their average debt flows 2000-2016. A t-test is done on the difference in mean between the group of firms with the largest outflows of debt and the firms with the largest inflows of debt. ABS(t) > 2.58 means the result is significant at the 1% level. ABS(t) > 1.96 means the result is significant at the 5% level. ABS(t) > 1.645 means the result is significant at the 10% level. All numbers are scaled by total assets in 2016. The results are winsorized at the 1% and 99% levels. The table is based on both public and private firms.

While table 9a was based on both public and private firms, it would be interesting to find out if the conclusion, that differences in average debt flows among firms 2000-2016 largely depends on differences in operating- and investing activities, is different when decomposing the dataset analyzing the public and private firms separately. Public firms are generally subjected to higher reporting requirements and under stronger pressure to perform short-term results relative to private firms. Could this potentially mean that differences in debt flows among public firms originate from other sources than cash from operating- and investing activities (e.g. equity payouts)?

In table 9b, when the analysis is conducted strictly on public firms, a first observation to make is that the difference in debt flows between those with the largest outflows of debt and those with the largest inflows is much bigger for public firms than private firms. On to the analysis of drivers behind differences in debt flows, in table 9b, we observe just like with private firms in table 9c that increasing debt flows is significantly associated with worsening CFOI. This is intuitive; firms need to increase debt levels to finance worsened operating cash flows. However, an interesting difference between public- and private firms also appear; while the difference in CFOI is explained by cash flow from investing activities and not cash flow from operating activities for private firms, the opposite is the case for public firms, with a significant difference in mean between operating cash flows between q1 and q5 in table 9b (public firms). In addition, while there is no significant difference in dividends and net equity payout between high debt flow firms and low debt flow firms in table 9c (private firms), there is indeed a significant difference when looking at public firms in table 9b.

Average debt flows between 2000 and 2016	Cash from operations	Cash from investing	Cash from operating and investing	Change in cash balances	Dividends	Net equity contributions	Net equity payout	Surplus of deficit to assets	Debt flow /assets
q1 (largest outflows)	11.95%	-3.93%	8.01%	-0.49%	-3.89%	-2.49%	-6.38%	1.14%	-1.14%
q2	12.77%	-5.19%	7.58%	-0.44%	-7.33%	0.13%	-7.20%	-0.06%	0.06%
q3	13.98%	-5.75%	8.22%	-2.08%	-7.51%	1.46%	-5.54%	0.12%	-0.12%
q4	4.95%	-3.68%	1.28%	0.90%	-3.58%	0.78%	-2.80%	-0.62%	0.62%
q5 (largest inflows)	5.23%	-4.22%	1.01%	-0.01%	-6.16%	2.16%	-4.00%	-3.02%	3.02%
difference	-6.72%	-0.29%	-7.01%	0.48%	-2.27%	4.65%	2.38%	-4.17%	4.17%
t-value	2.92	-0.82	3.19	-0.69	-2.16	-1.96	-2.73	1.65	-1.65

Table 9b: The table aims to illustrate where differences in debt flows originates from, as it can originate from differences in operating- and investing cash flows, cash holdings or net equity payouts. Firms have been split into quintiles depending on their average debt flows 2000-2016. A t-test is done on the difference in mean between the group of firms with the largest outflows of debt and the firms with the largest inflows of debt. ABS(t) > 2.58 means the result is significant at the 1% level. ABS(t) > 1.96 means the result is significant at the 5% level. ABS(t) > 1.645 means the result is significant at the 10% level. All numbers are scaled by total assets in 2016. The results are winsorized at the 1% and 99% levels. The table is based on only public firms.

Average debt flows between 2000 and 2016	Cash from operations	Cash from investing	Cash from operating and investing	Change in cash balances	Dividends	Net equity contributions	Net equity payout	Surplus of deficit to assets	Debt flow /assets
q1 (largest outflows)	8.42%	-1.39%	7.03%	0.08%	-3.31%	-0.71%	-4.02%	3.09%	-3.09%
q2	8.73%	-5.19%	3.55%	-0.76%	-2.43%	-0.16%	-2.59%	0.20%	-0.20%
q3	9.36%	-5.50%	3.86%	-0.33%	-3.11%	-0.38%	-3.49%	0.04%	-0.04%
q4	9.28%	-6.51%	2.76%	-0.89%	-2.70%	0.53%	-2.17%	-0.30%	0.30%
q5 (largest inflows)	7.90%	-9.06%	-1.17%	-0.19%	-1.56%	-0.14%	-1.70%	-3.05%	3.05%
difference	-0.52%	-7.67%	-8.20%	-0.27%	1.75%	0.57%	2.32%	-6.14%	6.14%
t-value	-1.69	6.46	6.22	0.97	-1.45	-0.52	-1.62	6.48	-6.48

Table 9c: The table aims to illustrate where differences in debt flows originates from, as it can originate from differences in operating- and investing cash flows, cash holdings or net equity payouts. Firms have been split into quintiles depending on their average debt flows 2000-2016. A t-test is done on the difference in mean between the group of firms with the largest outflows of debt and the firms with the largest inflows of debt. ABS(t) > 2.58 means the result is significant at the 1% level. ABS(t) > 1.96 means the result is significant at the 5% level. ABS(t) > 1.645 means the result is significant at the 10% level. All numbers are scaled by total assets in 2016. The results are winsorized at the 1% and 99% levels. The table is based on only private firms.

As earlier described, debt flows represent changes in debt, and thus relates to changes in capital structure. In this thesis, our analysis of volatility has often started with looking at changes because changes of a variable are often more intuitive to imagine than the standard deviation of the same variable. However, even if capital structure changes are a part of the general purpose of this thesis to examine capital structure dynamics, the specific focus of this thesis is to understand capital structure volatility. It would thus be interesting to take the analysis conducted in table 8 one step further and try to understand where differences in average debt flow volatility between year 2000 and year 2016 originate from. First, let´s briefly look at differences in average capital structure volatility 2000-2016 and differences in average debt flow volatility 2000-2016 between public- and private firms. As can be seen below in figure 6, private firms have both higher capital structure volatility and higher debt flow volatility on average relative to public firms.

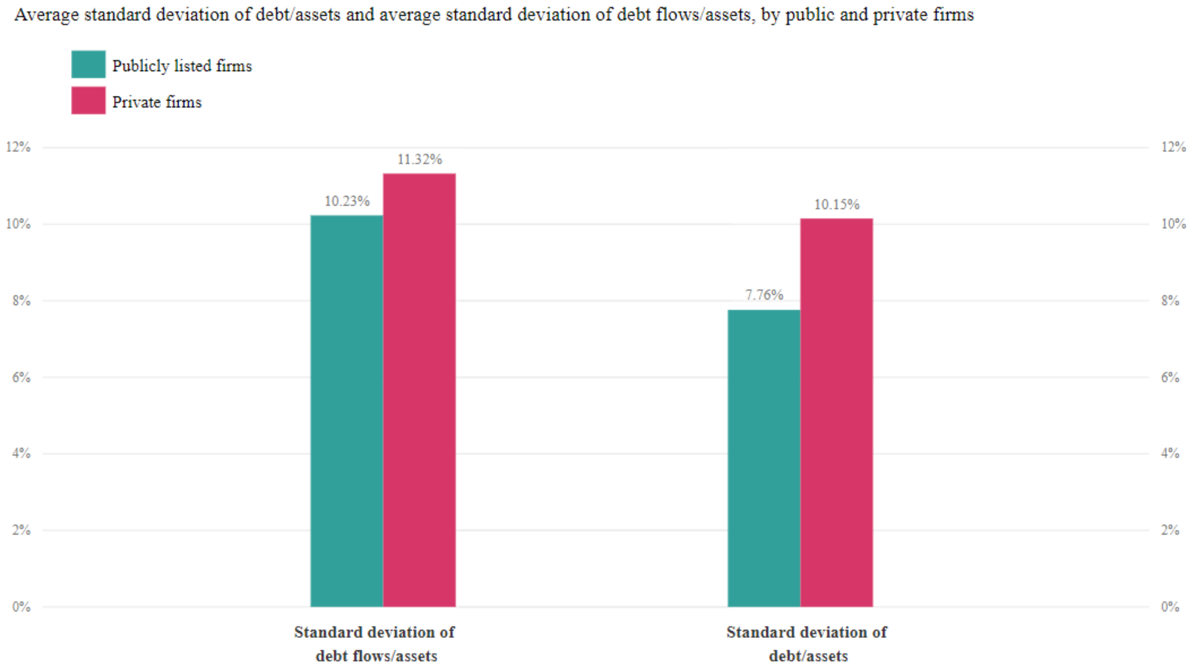

Figure 6: The table illustrates the average standard deviation of debt/assets and the average debt flow/assets during the period year 2000-2016 for public- and private firms respectively.

In table 10, firms are split into quintiles depending on their average standard deviation of debt flows between 2000 and 2016, scaled by total assets in 2016. Then, the standard deviation of each cash flow component is taken, again scaled by total assets in 2016. The first apparent observation when analyzing both public- and private firms in table 10a is that firms with higher debt flow volatility have significantly higher volatility across all three other components; cash from operating- and investing activities, change in cash balances and net equity payouts, compared to firms with low debt flow volatility. However, differences in volatility of CFOI appear to be particularly great depending on the level of debt flow volatility, ranging from 18.81% to 46.87%.

Standard deviation of debt flows between 2000 and 2016	Cash from operations	Cash from investing	Cash from operating and investing	Change in cash balances	Dividends	Net equity contributions	Net equity payout	Surplus of deficit to assets	Debt flow /assets
q1 (lowest)	20.16%	10.05%	18.81%	15.69%	5.44%	10.68%	10.52%	1.74%	1.74%
q2	19.35%	10.13%	18.12%	13.81%	4.74%	9.76%	9.56%	4.92%	4.92%
q3	20.03%	11.52%	19.22%	12.90%	4.27%	9.48%	9.23%	8.18%	8.18%
q4	23.33%	14.75%	23.51%	13.71%	4.04%	10.18%	9.93%	12.68%	12.68%
q5 (higest)	42.88%	29.28%	46.87%	19.83%	4.03%	16.51%	16.19%	29.80%	29.80%
difference	22.71%	19.24%	28.06%	4.14%	-1.41%	5.82%	5.66%	28.06%	28.06%
t-value	-47.23	-63.01	-64.36	-18.77	22.48	-20.36	-19.80	-163.72	-163.72

Table 10a: The table aims to illustrate the volatility of debt flows and possible relationships to the volatility of other variables. Firms have been split into quintiles depending on their volatility of debt flows 2000-2016. A t-test is done on the difference in mean between the group of firms with the lowest volatility of debt flows and the firms with the highest volatility of debt flows. ABS(t) > 2.58 means the result is significant at the 1% level. ABS(t) > 1.96 means the result is significant at the 5% level. ABS(t) > 1.645 means the result is significant at the 10% level. All numbers are scaled by total assets each year from 2000 to 2016. The results are winsorized at the 1% and 99% levels. The table is based on both public and private firms.

When comparing public- and private firms regarding debt flow volatility, the main difference is that there is not a significant difference in dividend volatility and net equity payout volatility among public firms with different debt flows, which is the case for private firms. This points towards the idea that public firms in general maintains a higher dividend stability as debt flows are changing compared to private firms. One could speculate using signaling theory that for a publicly listed firm, changing dividend levels are associated with stronger market signals than changing debt flows, and public firms emphasize dividend stability relatively more than debt flow stability. To conclude, increasing debt flow volatility among firms appear to be associated with decreasing cash holding volatility for public firms. There is not an obvious relation between net equity payout- or CFOI volatility and debt flow volatility among public firms given the low/no significance outcome from the t-test. For private firms, differences in debt flow volatility appear to be strongly connected to differences CFOI volatility. Differences in cash balance change volatility and net equity payout volatility matter as drivers, but to a minor extent relative to the firm variable cash flow from operating- and investing activities (CFOI). From the looks of table C, one could also make the distinction that differences in volatility of operating cash flow among private firms matter relatively more than differences in volatility in investing activities when it comes to explaining differences in debt flow volatility.

Standard deviation of debt flows between 2000 and 2016	Cash from operations	Cash from investing	Cash from operating and investing	Change in cash balances	Dividends	Net equity contributions	Net equity payout	Surplus of deficit to assets	Debt flow /assets
q1 (lowest)	21.85%	16.23%	18.62%	15.27%	5.97%	16.43%	17.58%	1.23%	1.23%
q2	14.99%	15.85%	18.51%	10.25%	3.52%	13.66%	14.11%	5.20%	5.20%
q3	20.09%	17.26%	17.85%	9.75%	2.18%	15.30%	15.36%	7.90%	7.90%
q4	21.90%	21.23%	18.64%	9.22%	2.66%	13.96%	14.54%	11.49%	11.49%
q5 (higest)	39.59%	45.84%	33.41%	5.71%	3.99%	22.14%	21.63%	22.02%	22.02%
difference	17.74%	29.61%	14.79%	-9.56%	-1.98%	5.72%	4.06%	20.79%	20.79%
t-value	-0.98	-1.56	-1.87	2.76	1.08	-0.79	-0.52	-6.75	-6.75

Table 10b: The table aims to illustrate the volatility of debt flows and possible relationships to the volatility of other variables. Firms have been split into quintiles depending on their volatility of debt flows 2000-2016. A t-test is done on the difference in mean between the group of firms with the lowest volatility of debt flows and the firms with the highest volatility of debt flows. ABS(t) > 2.58 means the result is significant at the 1% level. ABS(t) > 1.96 means the result is significant at the 5% level. ABS(t) > 1.645 means the result is significant at the 10% level. All numbers are scaled by total assets each year from 2000 to 2016. The results are winsorized at the 1% and 99% levels. The table is based on only public firms.

Standard deviation of debt flows between 2000 and 2016	Cash from operations	Cash from investing	Cash from operating and investing	Change in cash balances	Dividends	Net equity contributions	Net equity payout	Surplus of deficit to assets	Debt flow /assets
q1 (lowest)	11.74%	4.85%	12.10%	9.42%	2.74%	0.81%	3.29%	6.23%	6.23%
q2	14.24%	6.98%	15.31%	10.67%	3.75%	1.51%	4.81%	10.38%	10.38%
q3	17.26%	9.04%	19.28%	12.33%	4.40%	2.42%	6.18%	14.84%	14.84%
q4	22.11%	11.58%	25.33%	15.08%	5.09%	3.93%	8.25%	21.60%	21.60%
q5 (higest)	41.36%	14.53%	46.75%	22.14%	5.68%	9.70%	14.44%	47.38%	47.38%
difference	29.62%	9.67%	34.65%	12.72%	2.93%	8.88%	11.15%	41.15%	41.15%
t-value	-172.67	-93.77	-206.87	-95.05	-53.19	-96.92	-125.36	-287.42	-287.42

Table 10c: The table aims to illustrate the volatility of debt flows and possible relationships to the volatility of other variables. Firms have been split into quintiles depending on their volatility of debt flows 2000-2016. A t-test is done on the difference in mean between the group of firms with the lowest volatility of debt flows and the firms with the highest volatility of debt flows. ABS(t) > 2.58 means the result is significant at the 1% level. ABS(t) > 1.96 means the result is significant at the 5% level. ABS(t) > 1.645 means the result is significant at the 10% level. All numbers are scaled by total assets each year from 2000 to 2016. The results are winsorized at the 1% and 99% levels. The table is based on only private firms.

In table 11, we examine the relationships between CFOI-, cash holding- and equity payout volatility, observed in table 10 through a regression analyzing the responsiveness of debt flows, equity payouts and changes in cash balance to cash flow to changes in CFOI. A set of dummy variables are used to stay consistent with the analysis from previous tables, where firms were split into quintiles based on their debt flow (in this table based on debt flow volatility). These interaction terms display differences among quintiles of firms of how they respond to changes in CFOI.

When analyzing the regression outcome in table 11a, based on both public and private firms, one may first look at the regression of CFOI. For the base group comprising all firms (disregarding the grouping of firms on volatility), an initial observation is the connection between debt flows and CFOI, with a beta of 0.24. This means that for a firm in general, debt flow volatility is absorbing CFOI volatility by 24% (with equity payout absorbing 17% and changes in cash balance absorbing 50% of the volatility of CFOI). Since the CFOI can only be absorbed by debt flows, equity payouts and debt flows given the cash flow constraint introduced earlier, the sum of the parameters of CFOI in regression (1), (2) and (3) should be 1. However, as we winsorized the respective cash items to total assets, some of the most extreme numbers are compressed, thus the parameters are slightly less than 1.

Apart from the general case that CFOI will be absorbed by the change in cash balance, equity payouts and debt flow, in a specific case when the firms are in different debt flow volatility quintile groups, the additional influence on their CFOI absorbed by debt flows, equity payouts and cash balance will be changed, adding up to or subtracting from the base case. Concluding column (1) in table 11a, an increased debt flow volatility is associated with an increased debt flow absorption of CFOI; an increased debt flow volatility is associated with a decreased equity payouts absorption of CFOI; an increased debt flow volatility is associated with a decreased change in cash balances absorption of CFOI. Besides the CFOI being absorbed differently in different debt flow / assets groups, there are some other dummy variables that are informative. The smallest 20% companies regarding the previous year's total asset, have less equity payouts but more changes in cash balances. The highest 20%

companies regarding debt to assets ratio have higher debt flows, and lower equity payouts while the lowest 20% debt to assets firms are the opposite. Companies which did not pay a dividend or make any other equity contributions in the previous year, tended to have lower equity payouts in the current year, but make higher changes in their cash balances. The situation is similar in private firms, except that the small size lag variable becomes significant in 10% confidence level, which indicates small size in previous year are associated with a slightly higher debt flow. In public firms, the outcome is so different that most of the parameters are not significant, but we can still get some informative results that the highest debt flow standard deviation is associated with higher debt flow absorption of CFOI, higher changes in cash balance absorption of CFOI and a lower equity payouts absorption of CFOI. In addition, like private firms, the highest 20% debt/assets in company's previous year has higher debt flows and lower equity payouts. Companies that paid zero dividends in the previous year tend to have a higher debt flow and lower equity payouts this year.

	(1)	(2)	(3)
	Debt flows	Equity payouts	Change in cash balances
CFOI	0.242***	0.165***	0.498***
	-0.00146	-0.0012	-0.002
CFOI*dummySDdf1	-0.221***	0.0418***	0.179***
	-0.00147	-0.00199	-0.00327
CFOI*dummySDdf2	-0.144***	0.0225***	0.111***
	-0.00184	-0.0018	-0.00295
CFOI*dummySDdf3	0.000106	-0.00136	-0.000438
	-0.00194	-0.00163	-0.00269
CFOI*dummySDdf4	0.0551***	-0.00728***	-0.0321***
	-0.00205	-0.00144	-0.00258
CFOI*dummySDdf5	0.231***	-0.0659***	-0.223***
	-0.00214	-0.00145	-0.00263
DummySDdf1	0.0194***	-0.00774***	-0.0107***
	-0.00019	-0.000241	-0.000355
DummySDdf2	0.00883***	-0.00264***	-0.00496***
	-0.00023	-0.00022	-0.00032
DummySDdf3	-0.00270***	-0.000599***	0.00331***
	-0.000241	-0.000199	-0.000289
DummySDDf4	-0.00904***	0.00152***	0.00662***
	-0.00028	-0.000202	-0.000313
DummySDDf5	-0.0228***	0.00592***	0.0192***
	-0.000335	-0.000224	-0.000369
Dummyssizelag	0.000325	-0.0101***	0.0165***
	-0.000249	-0.000221	-0.000339
Dummydtahighlag	0.0333***	-0.0152***	-0.0194***
	-0.000276	-0.000181	-0.000281
Dummydtalowlag	-0.0127***	0.0201***	-0.00675***
	-0.000184	-0.000184	-0.000258
Dividendlag0	0.0173***	-0.0635***	0.0429***
	-0.00018	-0.00018	-0.000239
Net equity contributionlag0	-0.000225	-0.00266***	0.00132***
	-0.000193	-0.000158	-0.00024
Constant	-0.0206***	0.0577***	-0.0304***
	-0.000223	-0.000196	-0.000268
Observations	1,098,128	1,098,128	1,098,192
R-squared	0.48	0.33	0.52

Table 11a: The table aims to illustrate the responsiveness of debt flows, net equity payouts and changes in cash balance to cash flow from operating- and investing activities, by debt volatility quintile. Debt flows, equity payouts and changes in cash holdings in each year for each company in our dataset are regressed against cash flows from operating- and investing activities (denoted as CFOI). Similarly, to Campbell & Roger (2018) the independent variables (debt flows, equity payouts and changes in cash balance) are multiplied by -1 to create positive and more intuitive betas, as equity payouts, debt payouts and decreases in cash balance are appearing as positive. Variables are scaled by total assets in each year (2000-2016). A dummy variable is created for each debt flow volatility quintile of firms, where DummySDDf5 represents the quintile with the highest debt flow volatility, partly to analyze the interaction between different levels of debt flow volatility and CFOI. In addition, dummy variables are created for the two deciles of firms with the: smallest size (total assets), highest D/A, lowest D/A, Zero-dividend firms, and zero-repurchase firms (all based on the previous year, one-year lag). The results are winsorized at the 1% and 99% level. The table is based on both public- and private firms.

Connecting to the volatility analysis in table 10, in table 12, an analysis of the sources of debt flow variance is done. While it is true that the standard deviation is the focus of this thesis and not variance, and it is also true that variance is almost the same thing as the standard deviation from a statistical point-of-view, variance is additive with the benefit that the sources in a variance decomposition can be more clearly identified relative to a standard deviation breakdown. When analyzing the sources of debt flow variance for the quintile of firms with the lowest average debt flow variance 2000-2016, variance of CFOI (0.04%), variance of cash holdings (0.02%) and the covariance between them (-0.02%) absorb most of the debt flow variance (0.04%). Across the different quintiles of debt flow variance, things get more extreme, and it is no surprise that, just like in table 9, the main differentiator when it comes to explaining differing debt flow variance levels is the variance of CFOI, rather than the variance of equity payouts or the variance of cash balance. For the quintile of firms with the highest debt flow variance, they display a scaled CFOI variance of 11.06%, and the difference in mean relative to the group with the lowest variance is significant at the 1% level (t-value > 2.58).

Variances of debt flows from 2000 to 2016	Var(CFOI)	Var(Eqpayout)	Var(dcashbalance)	2 * Cov(1,2)	2 * Cov(1,3)	2* Cov(2,3)	Sum	Var(Debt flow)
	(1)	(2)	(3)	(4)	(5)	(6)	(1+2+3+4+5+6)	-(1+2+3+4+5+6)
q1 (lowest)	0.04%	0.02%	0.02%	-0.01%	-0.02%	0.00%	0.04%	0.04%
q2	0.24%	0.11%	0.12%	-0.07%	-0.14%	-0.02%	0.25%	0.25%
q3	0.66%	0.30%	0.32%	-0.18%	-0.37%	-0.04%	0.68%	0.68%
q4	1.53%	0.61%	0.60%	-0.35%	-0.69%	-0.07%	1.64%	1.64%
q5 (higest)	11.26%	2.76%	2.22%	-1.25%	-2.14%	-0.18%	12.67%	12.67%
difference	11.06%	2.06%	1.29%	-0.78%	-1.00%	0.00%	4.04%	12.63%
t-value	-36.03	-17.36	-20.20	17.80	23.55	0.11	-34.19	-70.41

Table 12a: The table aims to illustrate the variance of debt flows and possible relationships to the variance of other variables by decomposing debt flow variance into subcomponents. Firms have been split into quintiles depending on their average variance of debt flows 2000-2016. Variance of debt flows can also be broken down to the variance of cash from operating and investing activities, net equity payouts and change in cash holdings, as well as their correlations. Following the formula Var(a+b+c) = Var(a)+Var(b)+Var(C)+2Cov(a,b)+2Cov(a,c)+2Cov(b,c). Var(CFOI) is the variance of cash from operating and investing activities, var(eqpayout) is the variance of the change in net equity payout, var(dcashbalance) is the variance of the cash balance. Cov(1,2) shows the correlation between cash from operating and investing activities and equity payouts, cov(1,3) means the correlation between cash from operating and investing activities and change in cash holding, cov(2,3) means the correlation between equity payouts and cash holdings. Adjustments have been made to remove the effect from winsorizing and calculation errors. A t-test is done on the difference in mean between the group of firms with the lowest variance of debt flows and the firms with the highest variance of debt flows. ABS(t) > 2.58 means the result is significant at the 1% level. ABS(t) > 1.96 means the result is significant at the 5% level. ABS(t) > 1.645 means the result is significant at the 10% level. All numbers are scaled by total assets each year from 2000 to 2016. The results are winsorized at the 1% and 99% levels. The table is based on public and private firms.

When doing a comparison of the sources of debt flow variance between public and private firms, the variance of debt flow is largely absorbed by the variance in cash holdings. It is notable that the difference in mean of Var(CFOI) between q1 and q5 is insignificant in table 12b.

Variance of debt flows from 2000 to 2016	Var(CFOI) (1)	Var(Eqpayout) (2)	Var(dcashbalance) (3)	2 * Cov(1,2) (4)	2 * Cov(1,3) (5)	2* Cov(2,3) (6)	Sum (1+2+3+4+5+6)	Debt flow -(1+2+3+4+5+6)
q1 (lowest)	0.04%	0.04%	0.03%	-0.04%	-0.03%	-0.03%	0.02%	0.02%
q2	0.31%	0.20%	0.07%	-0.17%	-0.10%	-0.03%	0.29%	0.29%
q3	0.54%	0.45%	0.34%	-0.47%	-0.13%	-0.10%	0.63%	0.63%
q4	1.61%	1.19%	1.02%	-1.23%	-0.55%	-0.70%	1.34%	1.34%
q5 (higest)	5.22%	2.91%	0.18%	-1.77%	-0.33%	-0.02%	6.18%	6.18%
difference	4.44%	1.94%	-1.02%	-0.71%	0.64%	0.87%	1.91%	6.16%
t-value	-1.39	-1.00	2.52	0.75	-1.56	-3.13	-1.52	-2.69

Table 12b: The table aims to illustrate the variance of debt flows and possible relationships to the variance of other variables by decomposing debt flow variance into subcomponents. Firms have been split into quintiles depending on their average variance of debt flows 2000-2016. A t-test is done on the difference in mean between the group of firms with the

lowest variance of debt flows and the firms with the highest variance of debt flows. ABS(t) > 2.58 means the result is significant at the 1% level. ABS(t) > 1.96 means the result is significant at the 5% level. ABS(t) > 1.645 means the result is significant at the 10% level. All numbers are scaled by total assets each year from 2000 to 2016. The results are winsorized at the 1% and 99% levels. The table is based on public firms. Adjustments have been made to remove the effect from winsorizing and calculation errors.

Variances of debt flows from 2000 to 2016	Var(CFOI)	Var(Eqpayout)	Var(dcashbalance)	2 * Cov(1,2)	2 * Cov(1,3)	2* Cov(2,3)	Sum	Var(Debt flow)
	(1)	(2)	(3)	(4)	(5)	(6)	(1+2+3+4+5+6)	-(1+2+3+4+5+6)
q1 (lowest)	0.04%	0.02%	0.02%	-0.01%	-0.02%	0.00%	0.04%	0.04%
q2	0.24%	0.11%	0.12%	-0.07%	-0.14%	-0.02%	0.25%	0.25%
q3	0.66%	0.30%	0.32%	-0.17%	-0.38%	-0.04%	0.68%	0.68%
q4	1.54%	0.61%	0.60%	-0.34%	-0.69%	-0.07%	1.64%	1.64%
q5 (higest)	11.25%	2.73%	2.22%	-1.23%	-2.14%	-0.18%	12.66%	12.66%
difference	11.05%	2.06%	1.28%	-0.78%	-0.99%	0.00%	4.03%	12.62%
t-value	-36.18	-17.47	-20.14	18.13	23.54	0.29	-34.31	-70.44

Table 12c: The table aims to illustrate the variance of debt flows and possible relationships to the variance of other variables by decomposing debt flow variance into subcomponents. Firms have been split into quintiles depending on their average variance of debt flows 2000-2016. A t-test is done on the difference in mean between the group of firms with the lowest variance of debt flows and the firms with the highest variance of debt flows. ABS(t) > 2.58 means the result is significant at the 1% level. ABS(t) > 1.96 means the result is significant at the 5% level. ABS(t) > 1.645 means the result is significant at the 10% level. All numbers are scaled by total assets each year from 2000 to 2016. The results are winsorized at the 1% and 99% levels. The table is based on private firms. Adjustments have been made to remove the effect from winsorizing and calculation errors.

A lot of the focus thus far has been on analyzing debt flow- and financial leverage instability. It is based on our results likely that operating- and investing cash flows is a major driver of the observed instability. So, why not go one step further and ask what is in turn driving CFOI variance? In table 13a, we have decomposed the variance of cash flow from operating- and investing activities (denoted as CFOI or CFOPIN in this thesis) into its two subcomponents: the variance of cash flow from operating activities (CFOP), the cash flow from investing activities (CFIN) and the covariance between them. The benefit of this decomposition is that, for a decomposition based on all firms, one can identify the variance of cash flow from operating activities as a driving contributor to the overall variance of the variable cash flow from operating- and investing activities. The same variance decomposition but for solely private firms can be found in appendix (table 13b). The results are in table 13b are identical to table 13a.

Variances of debt flows from 2000 to 2016	Var(CFOP)	Var(CFIN)	2 * Cov(1,2)	Var(CFOPIN)
	(1)	(2)	(3)	(1+2+3)
q1 (lowest)	0.03%	0.01%	-0.01%	0.04%
q2	0.22%	0.06%	-0.04%	0.24%
q3	0.59%	0.20%	-0.13%	0.66%
q4	1.31%	0.48%	-0.26%	1.53%
q5 (higest)	8.59%	3.81%	-1.15%	11.26%
difference	8.56%	3.80%	-1.14%	11.22%
t-value	-29.12	-36.73	28.08	-37.12

Table 13a: The table aims to illustrate the decomposition of the variance of cash flow from operating- and investing activities. Firms have been split into quintiles depending on their average variance of debt flows 2000-2016. A t-test is done on the difference in mean between the group of firms with the lowest variance of debt flows and the firms with the highest variance of debt flows. ABS(t) > 2.58 means the result is significant at the 1% level. ABS(t) > 1.96 means the result is significant at the 5% level. ABS(t) > 1.645 means the result is significant at the 10% level. All numbers are scaled by total assets each year from 2000 to 2016. The results are winsorized at the 1% and 99% levels. The table is based on all firms. Adjustments have been made to remove the effect from winsorizing and calculation errors.

Finally, we began our journey towards increased understanding of capital structure dynamics by firstly confirming observed financial leverage instability across time and for both public- and private firms. Next, we started characterizing firms with displayed instability and found capital structure volatility to be associated with smaller-sized, fast-growing firms with lower operating profitability relative to low-volatile firms. After having characterized firms with high volatility, we started analyzing the drivers of capital structure volatility by using the cash flow constraint and examining debt flows. In doing so, operating- and investing activities appeared to be driving the debt flow volatility, and in a further decomposition, differences in the variance of cash flow from operating activities appear to be relatively more explanatory than the variance of cash flow from investing activities. Now, we have reached the final step of our analysis. In table 14a, we do a final variance decomposition to track down the sources of instability of cash flow from operating activities. The cash flow from operations can generally be divided into cash flow from the income statements (CFOPIS) and the cash flow from changes in net working capital (balance sheet items, CFOPBS). The main observation in table 13a is that when decomposed, the variance of cash flow from operations is mostly driven by the variance of net working capital changes.

Variances of debt flows from 2000 to 2016	Var(CFOPIS)	Var(CFOPBS)	2 * Cov(1,2)	Var(CFOP)
	(1)	(2)	(3)	(1+2+3)
q1 (lowest)	0.01%	0.03%	0.00%	0.03%
q2	0.09%	0.16%	-0.03%	0.22%
q3	0.24%	0.43%	-0.07%	0.59%
q4	0.51%	0.96%	-0.16%	1.31%
q5 (higest)	3.13%	6.23%	-0.77%	8.59%
difference	3.12%	6.21%	-0.77%	8.56%
t-value	-30.13	-28.79	29.58	-30.59

Table 14a: The table aims to illustrate the decomposition of the variance of cash flow from operating activities, where the variance of cash items from the income statements can be compared with the variance of items from the balance sheet (changes in net working capital). Firms have been split into quintiles depending on their average variance of debt flows 2000-2016. A t-test is done on the difference in mean between the group of firms with the lowest variance of debt flows and the firms with the highest variance of debt flows. ABS(t) > 2.58 means the result is significant at the 1% level. ABS(t) > 1.96 means the result is significant at the 5% level. ABS(t) > 1.645 means the result is significant at the 10% level. All numbers are scaled by total assets each year from 2000 to 2016. The results are winsorized at the 1% and 99% levels. The table is based on all firms. Adjustments have been made to remove the effect from winsorizing and calculation errors.

5. Discussion

In this section, our goal is to interpret our results from an economic standpoint and to discuss the significance of our findings in light of what was known about capital structure instability before this study. To do so, we will start this discussion by retreating to the initial question of whether capital structure instability is observed or not over time and if there is a difference in instability between public- and private firms. Next, we will discuss the characteristics associated with capital structure stability to understand the profile of firms with volatile capital structures. Finally, a discussion of the underlying drivers of the volatility is addressed and how to interpret the associated results.

Starting with the discussion of whether or not the capital structure of firms is stable or not, in our research, firms do generally display variation in their capital structure levels across time. If capital structure levels were stable, the financial leverage of a company today would have a high predictive power over future financial leverage levels of that same company, which by observation was not the case in figure 6. This was also clear in table 2a, where changes in financial leverage between year 2000 and year 2016 was observed among certain groups of firms. In this regard, low-leverage firms to a higher degree than high-leverage firms tend to maintain their financial leverage over time. An important discussion to have is whether observed capital structure instability differs between public- and private firms. In the pursuit of answering that question, there are indicators that public firms have more stable capital structure levels than private firms. Figure 3b illustrates that, although publicly listed firms underwent large fluctuations in capital levels during the financial crisis, the average financial leverage across public firms have really not changed a lot over time (2000-2016), whereas the decline in financial leverage among private firms over time is apparent. Building on that, figure 5a showed that among public firms, the fraction of zero-leverage firms as a % of total firms have been very stable from 2003 to 2016 (around 40%), while the fraction of zero debt firms in the dataset is steadily increasing by year among private firms (table 4b). Furthermore, in figure 6 it is apparent that the ability to predict future financial leverage levels using this year´s financial leverage is lower and declines faster for private firms relative to public firms. Figure 6 concludes the idea that private display a higher capital structure volatility over time relative to public firms, for which the case of capital structure instability is less certain relative to private firms.

In explaining why private firms appear to have a more unstable capital structure than public firms, one must first understand the firm characteristics associated with capital structure instability. Table 5a suggests that the group of firms with the highest capital structure volatility over time (2000-2016) are predominantly smaller-sized firms with rapid growth in assets and lower operating profitability than the group of firms with the lowest capital structure volatility. This profile of volatile-firms was also confirmed in the regression carried out in table 7a. In the light of the existing literature, the exact same pattern of debt volatile firms being smaller-sized and less profitable was found by Campbell & Roger (2018). Now, how do all of this relate to the observed higher capital structure instability among private firms relative to public firms? In table 1c, private firms are clearly smaller-sized and carries lower average operating profitability than public firms. It appears as if several of the firm characteristics identified among firms with high capital structure volatility also appears among private firms. Thus, it is no surprise that private firms carry a higher capital structure instability relative to public firms. Trade-off theory can only be used to understand the observed results for the larger publicly listed firms as the average financial leverage level appear to revert to a long-term mean after the turbulence during the financial crisis, as seen in figure 3b. Thus, the idea that there are certain benefits and cons of financial leverage for which there is an optimum target leverage interval fits very well for public firms. In explaining the drop-in leverage for public firms during the financial crisis and using trade-off theory, the financial crisis with the following collapse of the financial eco system and the credit crunch induced abnormal costs of financial distress for financially leveraged firms and forced a quick de-leveraging process. As credit access increased and the financial eco system recovered, interest rates fell, and costs of financial distress rapidly decreased and public firms could start lever up again towards the long-term optimum target leverage interval observed (8%-10%). In addition, understanding that public firms are also subjected to higher financial statement reporting requirements than private firms, it is reasonable to think that being listed on a stock exchange induces discipline on firms and their aims of maintaining a stable capital structure. Figure 3b not only suggested a more stable capital structure among public firms over time than private firms, but also a lower one. An immediate reflection is that the stock market punishes firms with excessively high financial leverage, both upon the IPO and during the listing period. A combination of trade-off theory and pecking order theory could be used as a supporting theoretical framework for this argument. Trade-off theory suggests that an important benefit of debt is that it gives top management discipline to perform in order to be able to make interest payments and debt amortizations. With the higher reporting- and transparency requirements associated with being publicly listed as a firm, one could argue that asymmetric information is lowered between firm insiders and outsiders, such as external investors, among publicly listed firms relative to private firms. Under such circumstances, debt financing and financial leverage becomes a relatively more important financing tool for private firms to mitigate the asymmetric information and compensate for the lower reporting transparency towards their investors. We should thus observe consistently higher financial leverage among private firms which is also the case. Another possible explanation for the consistently lower financial leverage among public firms is that public firms perhaps have higher operating leverage relative to private firms and must keep a lower financial leverage in order to maintain a balanced total risk level in the firm. This is exactly what we observe in figure 4. The peak difference in operating leverage between public- and private firms occur, perhaps unsurprisingly, in 2008, at the peak of the financial crisis. Combining this insight with figure 3b, public firms appear to increase both financial- and operating leverage to peak levels at the same time in 2008, after which both operating- and financial leverage levels dropped to levels similar- or lower than pre-crisis leverage levels.

There is still uncertainty surrounding the persistent decline in financial leverage among private firms. How can one interpret the increasing fraction of zero-debt firms over time among private firms? After all the cost of debt, i.e. the interest expense from debt, is tax deductible. Our thesis is about explaining the unstable debt behavior among firms rather than examining the zero-leverage puzzle. Thus, we will avoid making further comments than noting that global competition on corporate tax levels has increased over time and made many countries, including Sweden, steadily decrease corporate taxes (and more corporate tax cuts are yet to come going forward in Sweden). With this in mind, the benefits of interest cost tax deductibility are reduced with lower actual corporate tax levels, and the pros of financial leverage are less obvious in a low-corporate tax environment for firms with tax deductibility of debt being one of the main benefits of debt.

Coming back to the core question of why private firms' financial leverage shows capital structure instability rather than staying in a long-term target interval, we analyzed this phenomenon by looking at the possible underlying drivers of the observed volatility. In doing so, the cash flow constraint sets a limit to the list of possible debt flow volatility drivers to generally three firm variables: change in cash position, net equity payouts and cash flow from operating- and investing activities. From table 10b, it is hard to disentangle drivers of debt flow volatility among public firms due to poor significance. However, explaining public firm capital structure volatility is not as important as understanding where the debt instability stems from for private firms, given that private firm capital structure behavior is much more volatile relative to public firms. In table 10c, it is interesting to note that differences in debt flow volatility is strongly associated with differences in CFOI volatility (cash flow from operating- and investing activities). Net equity payout and changes in cash balance certainly play a role as drivers of debt flow volatility among private firms, but to a minor extent. This exact observation was confirmed in table 12c, when a similar decomposition was done but using the variance instead of the standard deviation to examine the robustness and consistency of the table 10 results. How can one interpret this outcome from an economic standpoint? Using the corporate finance trilemma theory, in the efforts of optimizing different firm policies, private firms appear to treat debt and financial leverage as a residual from other firm activities to a higher extent than public firms. The observed CFOI volatility as an underlying driver of debt flow volatility among private firms tells us that differences in operating- and investing activities is absorbing a lot of the debt fluctuations. In other words, the cash position and net equity payouts are relatively more stable while debt flows fluctuate strongly with CFOI.

In a further decomposition looking at the sources of CFOI variance, it is apparent that the variance of cash flow from operating- and investing activities predominantly stems from the variance in operating cash flows rather than the variance of investing activities. In the current research landscape, there is a lack of research of the analysis of the underlying drivers of debt flow volatility at a deeper level than this point due the insufficient data. However, due to the detailed yet comprehensive level of information on private firms in our dataset, we have managed to take the analysis to unprecedented levels. In table 14, the final variance decomposition reveals information that the variance in net working capital changes is the main driver of the variance of cash flow from operating activities, rather than the variance of cash flow from the income statement. Reverting back to the question of where witnessed capital structure volatility among private firms stems from, the analysis in its first step showed that unstable cash flows from operating- and investing activities was a significant underlying driver of the debt flow volatility. However, a deeper analysis shows that unstable investing activities is not the reason for the debt flow volatility, rather unstable operating activities. In particular, high fluctuations in net working capital among private firms is to a large extent driving the overall observed debt flow volatility. How should one think about this? From a corporate finance trilemma perspective, debt seems to be a fluctuating as a residual from policies on net equity payout and the liquidity position. Importantly, when seeing that it is actually instability in operating- and not investing activities that is driving the debt flow volatility, that yields additional insight that capital expenditure schedules (CAPEX) are fairly stable across private firms and over time. Thus, after setting appropriate payout levels to investors, ensuring sufficient liquidity, and safeguarding planned CAPEX levels, firm debt levels are adjusted as a residual to meet the financing needs of what is left to cover: operations. In particular, it appears as if changing net working capital needs among private firms are predominantly driving the requirement for debt adjustments.

What are some of the main implications from the results? When tackling this question from a firm stakeholder perspective, investors is a key stakeholder for which our outcome has implications for. From a debt investor´s standpoint, it is crucial to understand the planned use of the provided capital by the firm in order to judge the risk and cash generative ability of the firm. This is why debt covenants with cash-like components such as EBITDA are sometimes found in debt contracts. The results point towards the idea that debt flows are fluctuating with operating activities, and net working capital. However, investors typically like to see firms being fairly self-financing i.e. being cash generative enough operationally to cover the financing of necessary investing activities. If the firm is using interest-bearing debt, perhaps with longer maturities than a year, to finance short-term activities and financing gaps such as net working capital, instead of long-term investment plans (CAPEX), than this is clearly negative information about the cash generative ability of the firm that debt investors need to be aware about. The cash generative status of the firm is naturally also important for many equity investors, so the need for increased awareness about the uses of debt flows by the firm includes both debt- and equity investors.

Finally, another implication of our results is that since private firms appear to adjust debt levels in the pursuit of other firm policies, private firms are perhaps not as sophisticated as classical trade-off theory suggests with firms targeting an optimal financial leverage interval.

6. Conclusion, limitations and further research

6.1. Conclusion

The outcome of our research suggests that public firms have a firm a much higher capital structure stability than private firms. Our empirical observations from public firm data supports the classical trade-off theory of a long-term optimum target leverage interval for which firms optimally balance the pros and cons of debt financing. For public firms, this long-term average financial leverage appears to be around 8%-10%. Thus, there is, to the contrary of recent research papers in the area conducted by DeAngelo and Roll (2015) and Campbell & Roger (2018), an insufficient amount of evidence to state that public firms treats capital structure as a residual from other firm activities.

For private firms the story is different. Private firms show more capital structure dynamics than public firms over time. Throughout the thesis, we identified firms with high capital structure volatility being characterized by being smaller in size, fast-growing but with lower operating profitability relative to firms with low capital structure volatility. When analyzing private firms in our dataset, these appear to similarly be characterized by being smaller-sized and with worse operating profitability relative to public firms. To conclude, private firms share several of the traits associated with high capital structure volatility and thereby it should come as no surprise that they indeed display a high capital structure volatility.

When digging into the roots and causes of the displayed capital structure volatility among private firms, the cash flow constraint was used to analyze the sources of debt flow volatility. From this analysis, we can conclude that differences in debt flow volatility stems from operating activities, and in particular, instability of net working capital. Using the logics of the corporate finance trilemma theory, private firms appear to treat their capital structure as a residual after the net equity payout policy, CAPEX schedule and liquidity position have been safeguarded. In other words, debt flows are adjusted to meet the remaining financing needs of operations and net working capital after other firm activities have been assured. This finding yield insight into the uses of debt flows among private firms which have implications for firm stakeholders, such as investors seeking to identify the cash generative ability and risk of the investment before making a final decision on if- and how much capital to inject to the firm.

6.2. Limitations and suggestions for further research

The aim of this thesis was to investigate capital structure volatility across public- and private firms and to gain an understanding of how stable debt policies are. The focus on ownership differences was decided after a review of the current research landscape in the field where a research gap was identified on the issue of capital structure volatility among private firms. Given the detailed level of information of private firms in Sweden accessed through the Serrano database, this particular focus was realistic and reasonable to pursue.

Due to the strong focus on firm ownership differences in this thesis, we have simultaneously and deliberately chosen to not do an in-depth analysis of industry differences in capital structure dynamics. In this thesis, we settle with descriptive statistics of industry-level information of capital structure stability. Even still, Table 1F yields insights into a potentially interesting continuation of our research on capital structure dynamics. In table 1F, the average financial leverage has been declining across all industries over time, which coupled with Figure 7, where the composition and number of zero-leverage firms have increased over time, need to be further investigated. Especially since one industry, Energy & Environment, have counterworked this trend completely by maintaining both a high- and stable financial leverage over the last 16 years. Delving deeper into the characteristics of this industry and benchmarking this industry against a high capital structure volatility industry such as IT & Electronics, can potentially yield deepened understanding of industry-level capital structure volatility.

The deeper you go, the more there is to uncover. In addition to a deeper focus on capital structure industry dynamics, there are several other possible suggestions for further research. Increasing the data sample and doing a comparative analysis among solely private firms with another Nordic country would be a natural extension of this study to further enrich the research in the field, given sufficient access to private firm data. One could also imagine a continuation of this study why there is an increase in the fraction of zero-debt firms among privately owned firms but not publicly owned firms. Lastly, doing an analysis with increased consideration to operating leverage and the its indirect impact on the financial leverage policies of firms would be an interesting next step on the journey towards improved understanding of capital structure phenomena.

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Appendix

Variable definition

Description variables: The following list describes variables from the Serrano database with its equivalent item name in the financial statements, that have been used to derive cash flow data.

Variable name in Serrano database	Item name in financial statements	Comments and assumptions
rr01_ntoms	**Net sales**	**Income from sales, cash item**
rr02_rointov	**Other operating income**	**Income from other operating activities, cash item**
rr05_avskriv	**Depreciation and amortization**	**Depreciation and amortization that directly cause the decrease of fixed assets, including machine, intangible assets, goodwill etc. non-cash item**
rr04_perskos	**Personnel Cost**	**Compensation for employees, cash item**
rr04a_loner	Salary and compensation expenses	Part of Personnel cost, cash item
rr04b_sockostn	Social security expenses	Part of Personnel cost, cash item
rr03_jfrst	**Items affecting comparability**	**Adjustment of statement item, e.g. is non-recurring but impacting the profit, cash item**
rr06_rorkoov	**Other operating cost**	**Other operating cost generated, cash item**
rr06a_prodkos	Production costs	Part of other operating cost, cash item
rr07_rorresul	**Operating Profit**	**EBIT, previous items sum-up**
rr08_finintk	**Financial income**	**Sum-up of financial income, cash item**
rr08a_rteinknc	Interest income from group companies	Part of financial income, cash item
rr08b_rteinext	External interest income	Part of financial income, cash item
rr08c_rteinov	Other financial income	Part of financial income, cash item
rr08d_resand	Share in profits in group companies and associated companies	Part of financial income, cash item
rr09_finkostn	**Financial Expense**	**Sum-up of financial expense, cash item**
rr09a_rtekoknc	Interest expenses to group companies	Part of financial expense, cash item
rr09b_rtekoext	External interest expenses	Part of financial expense, cash item
rr09c_rtekoov	Other financial expenses	Part of financial expense, cash item
rr09d_jfrstfin	Positive financial items affecting comparability	Part of financial expense, cash item
rr12_resefin	**Income before tax**	**EBT, previous items sum-up**
rr13_bsldisp	**Appropriations**	**Appropriations, assume to be cash item in this case**

rr14_skatter	**Tax**	**Tax payment & deferred tax item, mixed item. In general, it is mostly cash, and we assume the increase in untaxed reserves (balance sheet item) as a non-cash part, excluding from here and a decrease in untaxed reserves a cash item adds it here**
rr15_resar	**Net Income**	**EBT+tax**
rr00_utdbel	Dividend amount	Dividend for shareholders, cash item

Variable name in Serrano database	**Item name in financial statements**	**Comments and assumptions**
br01_imanlsu	**Intangible Fixed Assets**	**Increase in this item is the new investments, thus cash out, decrease in this could be either divestiture or d&a adjustment, thus this item should combine together with the tangible fixed asset, compare with the d&a in current fiscal year. The net decrease are divestitures (cash in)**
br01a_foubautg	Capitalized expenditure for research and development	Part of intangible fixed assets
br01b_patlic	Patents, licenses, concessions	Part of intangible fixed assets
br01c_goodwill	Goodwill	Part of intangible fixed assets
br01d_imanlov	Other intangible fixed assets	Part of intangible fixed assets
br02_matanlsu	**Tangible Fixed Assets**	**Similar to intangible fixed assets, investing activities**
br03_maskiner	machinery and equipment	Part of tangible fixed assets
br02a_byggmark	Buildings and land	Part of tangible fixed assets
br02b_matanlov	Other tangible fixed assets	Part of tangible fixed assets
br04_fianltsu	**Financial Assets**	**Investing activities**
br04a_andknc	Participation in group companies and associated companies	Part of financial assets
br04b_lfordknc	Long-term receivables - group and associated companies	Part of financial assets
br04c_landelag	Loans to partners and related parties	Part of financial assets
br04d_fianltov	Other financial assets	Part of financial assets
br05_anltsu	**Total fixed assets**	**Sum-up intangible and tangible fixed assets**
br06c_lagersu	**Total inventories**	**Operating activities, disregarding non-cash changes, e.g., write-down or impairments, considering 100% cash item**
br06a_pagarb	Work in progress	Part of total inventories
br06b_lagerov	Other inventories	Part of total inventories
br06g_kfordsu	**Total Current receivables**	**Operating activities, cash item**
br06d_kundford	Accounts receivable - trade	Part of total current receivables
br06e_kfordknc	Current receivables - group and associated companies	Part of total current receivables
br06f_kfordov	Other current receivables	Part of total current receivables

br06_lagerkford	**Total current operating assets**	**Total inventory + Total current receivables**
br07_kplackaba	**Liquid Assets**	**Consider this as cash balance, cash item**
br07a_kplacsu	Investments in securities	Part of liquid assets
br07b_kabasu	Cash and bank balance	Part of liquid assets
br08_omstgsu	**total current assets**	**Total current operating assets + Total liquid assets**
br09_tillgsu	**Total assets**	**Sum up all asset parts**
br10_eksu	**Total equity**	**Sum of the shareholders' equity, all cash item. However, not all of them belongs to net equity payout, some of them come from the retained earnings or net income from current year**
br10a_aktiekap	Share capital	Belongs to net equity contribution, cash item
br10b_overkurs	Share premium reserve	Belongs to net equity contribution, cash item
br10c_uppskr	Revaluation reserve	Belongs to net equity contribution, cash item
br10d_ovrgbkap	Other restricted equity	Belongs to net equity contribution, cash item
br10e_balres	Accumulated profit or loss	Retained earnings, already calculated in income statement
br10f_kncbdrel	Group contributions	Belongs to net equity contribution, cash item
br10g_agtskel	Shareholders' contributions	Belongs to net equity contribution, cash item
br10h_resarb	Profit/loss for the year	Retained earnings, already calculated in income statement
br11_obeskres	**Untaxed reserves**	**As mentioned in income statement, the increase of this item indicates a non-cash part of the tax in the current fiscal year, while we assume the decrease of this item is the tax payment**
br12_avssu	**provisions**	**Assume provision and utilization only, disregard the reversal of the provision**
br13_ksksu	**Total short-term liabilities**	**Sum up all the short-term liabilities**
br14_kskkrin	Short term interest-bearing liabilities	Financial activities, cash item
br13a_ksklev	Accounts payable - trade	Operating activities, cash item
br13b_kskknc	Current liabilities - group and associated companies	Operating activities, cash item
br13c_kskov	Other current liabilities	Operating activities, cash item
br15_lsksu	**Total long-term liabilities**	**Sum up all the long-term liabilities**
br15a_lskknc	Non-current liabilities - group and associated companies	Operating activities, cash item
br15b_lskov	Other non-current liabilities	Operating activities, cash item
br15c_obllan	Bond Holdings	
br16_lskkrin	Long-term interest-bearing liabilities	Financial activities, cash item
br17_eksksu	**Total liabilities and equity**	**Sum up all equity and liabilities part**

Tables

No. observations	Column Labels																
Row Labels	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**Grand Total**
Construction industry	9,229	9,233	9,259	9,272	9,287	9,303	9,417	9,453	9,464	9,492	9,522	9,565	9,614	9,655	9,695	9,741	9,743	160,944
Convenience goods	3,054	3,036	3,017	3,013	2,988	2,969	2,967	2,897	2,894	2,897	2,887	2,874	2,862	2,848	2,842	2,841	2,846	49,732
Corporate services	16,169	16,219	16,242	16,188	16,220	16,249	16,136	16,622	16,642	16,692	16,743	16,782	16,795	16,821	16,829	16,835	16,893	281,077
Energy & Environment	846	845	840	801	810	813	814	872	882	899	900	906	905	908	914	911	920	14,786
Health & Education	3,320	3,344	3,352	3,351	3,347	3,362	3,343	3,387	3,394	3,396	3,376	3,395	3,404	3,402	3,398	3,401	3,403	57,375
Industrial goods	10,594	10,655	10,682	10,730	10,771	10,774	10,782	10,412	10,415	10,423	10,419	10,394	10,383	10,381	10,375	10,368	10,354	178,912
IT & Electronics	2,194	2,179	2,171	2,233	2,223	2,215	2,252	2,140	2,126	2,118	2,118	2,118	2,115	2,123	2,128	2,121	2,120	36,694
Materials	1,718	1,720	1,709	1,725	1,723	1,732	1,729	1,708	1,729	1,721	1,725	1,719	1,725	1,726	1,733	1,731	1,719	29,292
Other	3,368	3,361	3,348	3,407	3,401	3,397	3,414	3,498	3,483	3,479	3,497	3,464	3,466	3,472	3,471	3,460	3,456	58,442
Shopping goods	17,538	17,434	17,404	17,301	17,248	17,213	17,169	17,002	16,959	16,874	16,805	16,775	16,723	16,659	16,608	16,594	16,555	288,861
SNI07 missing	130	127	129	126	125	124	121	121	121	121	121	121	121	124	124	125	128	2,109
Telecom & Media	940	947	947	953	957	949	956	988	991	988	987	987	987	981	983	972	963	16,476
Grand Total	**69,100**	**69,100**	**69,100**	**69,100**	**69,100**	**69,100**	**69,100**	**69,100**	**69,100**	**69,100**	**69,100**	**69,100**	**69,100**	**69,100**	**69,100**	**69,100**	**69,100**	**1,174,700**

Table 1D: The amount of sample firms in our final dataset across different industries and ownership.

Average assets	Column Labels																	
Row Labels	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**Grand Total**
Construction industry	12,467	12,547	12,626	12,699	13,677	15,061	16,904	17,076	18,700	19,865	19,651	21,439	21,395	21,744	21,236	22,489	23,086	17,873
Convenience goods	34,921	38,664	41,117	42,430	44,414	51,127	55,037	73,441	76,255	73,599	73,547	77,494	83,287	96,721	78,680	99,963	105,290	66,889
Corporate services	14,186	13,696	16,951	17,662	19,481	21,929	23,641	20,707	20,309	22,480	23,072	24,038	25,627	24,628	27,393	26,766	27,618	21,832
Energy & Environment	424,246	451,695	488,993	507,249	540,420	590,765	607,709	603,728	797,646	873,476	963,321	921,711	933,587	903,441	892,438	1,002,622	960,811	741,640
Health & Education	71,796	82,595	90,922	103,647	103,843	120,136	125,392	150,120	153,454	142,015	144,575	140,904	141,934	138,047	137,901	143,703	158,128	126,597
Industrial goods	50,261	50,305	49,320	51,233	54,250	60,130	71,612	84,442	89,620	89,458	97,058	103,968	106,113	106,364	116,862	129,116	135,897	84,681
IT & Electronics	86,528	116,331	112,788	116,469	119,776	128,924	106,829	124,058	141,017	141,039	135,611	133,874	132,216	128,573	136,110	136,615	146,703	125,864
Materials	102,676	107,107	104,320	107,753	150,352	148,111	146,088	177,475	177,005	196,350	205,183	220,871	222,711	218,076	237,967	235,609	247,467	176,835
Other	25,212	38,955	17,729	19,666	18,167	18,168	15,929	29,917	28,415	23,567	23,737	23,837	25,776	25,203	19,659	19,879	24,051	23,412
Shopping goods	16,169	18,352	18,461	18,760	19,594	21,492	22,520	23,504	23,772	24,296	27,374	28,227	28,395	29,726	28,440	30,283	31,751	24,097
SNI07 missing	103,170	151,874	128,878	149,103	136,960	147,229	98,620	106,549	67,749	34,175	28,197	26,542	25,179	22,840	26,130	22,639	21,352	76,791
Telecom & Media	210,002	201,887	268,745	303,592	312,936	335,095	386,080	415,279	431,203	457,722	482,480	487,378	513,850	472,688	443,716	438,671	426,893	389,089
Grand Total	**36,561**	**39,773**	**41,007**	**43,133**	**46,122**	**50,511**	**53,620**	**59,747**	**64,209**	**66,019**	**69,694**	**71,329**	**72,974**	**72,249**	**73,361**	**78,040**	**80,742**	**59,946**

Table 1E: The table illustrates the amount of average total assets by industry and year in SEK 000´s among the sample firms.

Average dta	Column Labels																	
Row Labels	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**Grand Total**
Construction industry	15.4%	15.1%	15.2%	15.1%	14.7%	14.2%	13.5%	13.1%	13.0%	12.9%	12.5%	12.1%	12.0%	11.9%	11.4%	10.5%	10.0%	13.1%
Convenience goods	17.7%	17.0%	16.1%	15.4%	14.8%	14.3%	14.0%	13.6%	13.3%	12.7%	12.0%	11.7%	11.6%	11.3%	11.0%	10.5%	10.0%	13.4%
Corporate services	15.1%	15.2%	15.2%	15.0%	14.7%	14.1%	13.7%	13.3%	13.2%	13.1%	12.6%	12.2%	11.8%	11.4%	10.9%	10.3%	9.8%	13.0%
Energy & Environment	19.9%	19.9%	19.8%	19.4%	18.9%	18.2%	17.7%	18.4%	18.8%	19.2%	19.4%	19.3%	19.4%	19.6%	19.9%	19.6%	19.1%	19.2%
Health & Education	14.3%	13.5%	13.0%	12.7%	12.2%	11.9%	11.3%	11.2%	11.1%	10.9%	10.3%	10.0%	9.7%	9.1%	8.2%	7.6%	6.9%	10.8%
Industrial goods	18.0%	17.9%	17.9%	17.7%	16.8%	15.7%	14.8%	13.9%	13.8%	14.0%	13.7%	13.0%	12.8%	12.7%	12.2%	11.4%	10.7%	14.6%
IT & Electronics	10.3%	10.4%	10.7%	11.0%	10.4%	9.6%	8.9%	8.7%	8.3%	8.0%	7.6%	7.5%	7.3%	6.9%	6.4%	5.9%	5.4%	8.5%
Materials	22.8%	23.5%	23.5%	23.2%	22.5%	21.8%	21.2%	21.0%	20.8%	20.5%	20.0%	19.6%	19.5%	18.8%	17.9%	16.9%	16.0%	20.6%
Other	17.9%	18.0%	18.1%	18.2%	18.4%	17.9%	17.2%	16.3%	15.9%	15.9%	15.6%	15.6%	15.5%	15.3%	15.1%	14.3%	13.6%	16.4%
Shopping goods	18.7%	18.2%	17.5%	17.0%	16.4%	15.5%	15.0%	14.7%	14.8%	14.7%	14.0%	13.6%	13.4%	13.1%	12.7%	11.9%	11.2%	14.9%
SNI07 missing	20.0%	19.2%	18.3%	14.5%	12.8%	11.3%	9.4%	8.3%	7.8%	7.8%	8.7%	7.9%	7.3%	5.9%	5.0%	4.9%	4.8%	10.3%
Telecom & Media	11.7%	11.9%	11.6%	11.3%	11.1%	10.7%	9.9%	9.6%	9.4%	9.1%	8.3%	7.7%	7.4%	6.9%	6.6%	6.3%	5.8%	9.1%
Grand Total	**16.8%**	**16.6%**	**16.3%**	**16.1%**	**15.5%**	**14.9%**	**14.2%**	**13.8%**	**13.7%**	**13.6%**	**13.2%**	**12.8%**	**12.5%**	**12.2%**	**11.8%**	**11.0%**	**10.4%**	**13.9%**

Table 1F: The table illustrates the development of financial leverage, as measured by debt/assets, over time and by industry. Since the debt/asset ratio is based on the average of opening- and closing balance, closing balance in year 1999 is used to calculate year 2000 metrics. Financial- and real estate firms have been excluded. Firms with non-continuous year observations have been excluded in order to measure the development over time. The table is based on both public- and private firms

	Change in debt/assets between year 2000-2016						
Variable	q1 (highest decrease)	q2	q3	q4	q5 (highest increase)	Diff	t-value
Small size	0.29	0.11	0.22	0.17	0.21	-0.08	0.36
Total assets	13,738,783.53	9,929,112.35	5,077,224.14	37,788,114.49	6,699,369.98	-7,039,413.55	0.63
Change in assets	1.51	1.94	1.01	0.54	1.84	0.33	-1.47
Return on assets	0.09	0.04	0.03	0.06	0.05	-0.04	1.58
Revenue growth	0.04	0.10	0.06	0.01	0.04	-0.01	-1.99

Table 4b: Firms have been split into quintiles based on their change in D/A between year 2000-2016. "Highest" means an increase in D/A of 15% or more between year 2000 and year 2016, whereas "Lowest" means a decrease of 15% or more of D/A during 2000-2016. T-test are done to measure the significance of the mean between the two groups "Highest" and "lowest" for the respective variables. ABS(t) > 2.58 means the result is significant at the 1% level. ABS(t) > 1.96 means the result is significant at the 5% level. ABS(t) > 1.96 means the result is significant at the 5% level. ABS(t) > 1.645 means the result is significant at the 10% level. The dataset consists of both public firms only. Firms with zero revenue growth have been removed. Variables were winsorized at the 1% and 99% levels.

Variable	Change in debt/assets between year 2000-2016						
	q1 (highest decrease)	q2	q3	q4	q5 (highest increase)	Diff	t-value
Small size	0.22	0.21	0.24	0.13	0.13	-0.09	19.14
Total assets	12,000.00	13,079.68	15,814.07	18,247.11	14,471.37	2,471.37	-4.72
Change in assets	1.15	1.14	1.16	1.28	1.68	0.53	-29.61
Return on assets	0.07	0.07	0.08	0.07	0.06	-0.01	15.89
Revenue growth	0.04	0.03	0.03	0.04	0.04	0.00	-40.81

Table 4c: Firms have been split into quintiles based on their change in D/A between year 2000-2016. "Highest" means an increase in D/A of 15% or more between year 2000 and year 2016, whereas "Lowest" means a decrease of 15% or more of D/A during 2000-2016. T-test are done to measure the significance of the mean between the two groups "Highest" and "lowest" for the respective variables. ABS(t) > 2.58 means the result is significant at the 1% level. ABS(t) > 1.96 means the result is significant at the 5% level. ABS(t) > 1.96 means the result is significant at the 5% level. ABS(t) > 1.645 means the result is significant at the 10% level. The dataset consists of private firms only. Firms with zero revenue growth have been removed. Variables were winsorized at the 1% and 99% levels.

	Standard deviation of D/A between year 2000-2016						
Variable	q1 (lowest)	q2	q3	q4	q5 (highest)	Diff	t-value
Small size	0.22	0.11	0.16	0.15	0.00	-0.22	1.83
Total assets	2,441,429	9,254,403	2,657,179	2,492,020	7,030,809	4,589,380	-1.58
Change in assets	2.45	4.51	5.37	2.32	10.53	8.08	-1.95
Return on assets	0.01	0.02	-0.01	0.01	0.07	0.06	-0.08
Revenue growth	0.14	0.09	0.01	0.05	0.10	-0.04	0.65

Table 5b: Firms have been split into quintiles based on their standard deviation of D/A between year 2000-2016. T-test are done to measure the significance of the mean between the two groups "Highest" and "lowest" for the respective variables. ABS(t) > 2.58 means the result is significant at the 1% level. ABS(t) > 1.96 means the result is significant at the 5% level. ABS(t) > 1.96 means the result is significant at the 5% level. ABS(t) > 1.645 means the result is significant at the 10% level. The dataset consists of only public firms. Firms with zero revenue growth have been removed. Variables were winsorized at the 1% and 99% levels.

	Standard deviation of D/A between year 2000-2016						
Variable	q1 (lowest)	q2	q3	q4	q5 (highest)	Diff	t-value
Small size	0.21	0.19	0.17	0.18	0.20	-0.01	1.58
Total assets	19,280	15,385	14,418	13,627	10,617	-8,663	13.27
Change in assets	2.37	2.21	2.29	2.47	3.27	0.90	-8.06
Return on assets	0.09	0.08	0.07	0.07	0.07	-0.02	25.20
Revenue growth	0.00	0.01	0.01	0.01	0.00	0.00	-0.96

Table 5c: Firms have been split into quintiles based on their standard deviation of D/A between year 2000-2016. T-test are done to measure the significance of the mean between the two groups "Highest" and "lowest" for the respective variables. ABS(t) > 2.58 means the result is significant at the 1% level. ABS(t) > 1.96 means the result is significant at the 5% level. ABS(t) > 1.96 means the result is significant at the 5% level. ABS(t) > 1.645 means the result is significant at the 10% level. The dataset consists of only private firms. Firms with zero revenue growth have been removed. Variables were winsorized at the 1% and 99% levels.

	(1)	(2)	(3)	(4)	(5)	(6)
Total assets	-1.56E-09					-1.52E-10
	-1.35E-09					-1.73E-09
Small size		-0.0364				-0.0746*
		-0.0337				-4.35E-02
Change in assets			0.00216**			2.12E-03
			-0.00107			-1.49E-03
ROA				-0.147		-1.75E-01
				-0.125		-1.58E-01
Net sales growth					0.0825	3.54E-02
					-0.111	-1.34E-01
Constant	0.00637	0.000111	-0.0152	-0.000267	0.0106	1.69E-02
	-0.0211	-0.0212	-0.0213	-0.0188	-0.0246	-2.97E-02
Observations	97	97	97	97	81	81
R-squared	0.01	0.00	0.02	0.01	0.01	0.05

*Table 6b: Regressions seeking to map the relationship between changes in capital structure 2000-2016 and a set of industry dummy variables, a small size dummy variable, and a few operational firm variables. The results are winsorized at the 1% and 99% levels. *** Indicate the strongest degree of significance of the results (1%-level of significance). The regression is done on public firms.*

	(1)	(2)	(3)	(4)	(5)	(6)
Total assets	1.67e-07***					1.01E-08
	-2.13E-08					-2.22E-08
Small size		-0.0357***				-0.0275***
		-0.00261				-2.96E-03
Change in assets			0.00393***			0.00335***
			-0.000128			-1.80E-04
ROA				-0.0351***		-0.143***
				-0.00746		-1.05E-02
Net sales growth					0.209***	0.105***
					-0.00975	-1.14E-02
Constant	-0.0673***	-0.0604***	-0.0764***	-0.0628***	-0.0588***	-0.0533***
	-0.000976	-0.000992	-0.000957	-0.00107	-0.000974	-1.47E-03
Observations	67,287	67,287	67,284	67,287	58,716	58,715
R-squared	0.00	0.00	0.02	0.00	0.01	0.02

*Table 6c: Regressions seeking to map the relationship between changes in capital structure 2000-2016 and a set of industry dummy variables, a small size dummy variable, and a few operational firm variables. The results are winsorized at the 1% and 99% levels. *** Indicate the strongest degree of significance of the results (1%-level of significance). The regression is done on both private firms.*

	(1)	(2)	(3)	(4)	(5)	(6)
Total assets	-1.31E-10					-2.55E-10
	-3.71E-10					-3.87E-10
Small size		-0.0324***				-1.91E-02
		-0.0123				-1.27E-02
Change in assets			0.000771**			0.00106**
			-0.000299			-4.30E-04
ROA				0.0208		2.83E-02
				-0.0373		-3.80E-02
Net sales growth					-0.0333	-6.52E-02
					-0.0385	-4.10E-02
Constant	0.0758***	0.0783***	0.0709***	0.0745***	0.0720***	0.0721***
	-0.00635	-0.00616	-0.00624	-0.00561	-0.00727	-8.81E-03
Observations	97	97	97	97	81	81
R-squared	0.00	0.03	0.03	0.00	0.01	0.07

*Table 7b: Regressions seeking to map the relationship between volatility in capital structure (D/A ratio) 2000-2016 and a set of industry dummy variables, a small size dummy variable, and a few operational firm variables. The results are winsorized at the 1% and 99% levels. *** Indicate the strongest degree of significance of the results (1%-level of significance). The regression is done on public firms.*

	(1)	(2)	(3)	(4)	(5)	(6)
Total assets	-1.18e-07***					-1.24e-07***
	-7.46E-09					-7.53E-09
Small size		0.00340***				-0.00231**
		-0.000902				-1.02E-03
Change in assets			0.000445***			0.000770***
			-0.0000423			-5.74E-05
ROA				-0.0481***		-0.0636***
				-0.00261		-3.43E-03
Net sales growth					-0.00389	-0.0152***
					-0.0032	-3.76E-03
Constant	0.105***	0.103***	0.102***	0.107***	0.102***	0.107***
	-0.000313	-0.000313	-0.000309	-0.000346	-0.00031	-4.55E-04
Observations	67,287	67,287	67,284	67,287	58,716	58,715
R-squared	0.00	0.00	0.00	0.01	0.00	0.02

*Table 7c: Regressions seeking to map the relationship between volatility in capital structure (D/A ratio) 2000-2016 and a set of industry dummy variables, a small size dummy variable, and a few operational firm variables. The results are winsorized at the 1% and 99% levels. *** Indicate the strongest degree of significance of the results (1%-level of significance). The regression is done on private firms.*

	(1)	(2)	(3)
	Debt flows	Equity payouts	Change in cash balances
CFOI	0.0679*	0.856***	0.0372
	-0.0382	-0.0858	-0.0521
CFOI*dummySDdf1	-0.0492	0.0967	0.0367
	-0.038	-0.11	-0.0707
CFOI*dummySDdf2	0.000843	-0.022	0.0452
	-0.038	-0.0825	-0.0577
CFOI*dummySDdf3	0.0173	0.0596	-0.0277
	-0.0324	-0.0937	-0.0459
CFOI*dummySDdf4	-0.00428	0.0202	-0.111**
	-0.0406	-0.0848	-0.0471
CFOI*dummySDdf5	0.238***	-0.265**	0.0999*
	-0.047	-0.125	-0.0517
DummySDdf1	0.0128**	-0.0633***	0.0262*
	-0.00635	-0.0213	-0.015
DummySDdf2	0.00514	-0.00549	-0.00145
	-0.00637	-0.0115	-0.00871
DummySDdf3	0.0067	-0.00859	0.000329
	-0.00573	-0.0088	-0.00649
DummySDDf4	0.00103	0.00189	0.000307
	-0.00765	-0.0112	-0.00736
DummySDDf5	-0.0168*	0.0125	0.00278
	-0.00942	-0.0134	-0.00906
Dummyssizelag	-0.000351	-0.00583	0.011
	-0.00624	-0.0204	-0.014
Dummydtahighlag	0.0325***	-0.0429***	0.00133
	-0.00966	-0.0148	-0.00723
Dummydtalowlag	-0.00829	0.0187	-0.0129
	-0.00512	-0.014	-0.00946
Dividendlag0	0.0261***	-0.0519***	0.0168*
	-0.00608	-0.0131	-0.00911
Net equity contributionlag0	-0.0190***	0.0237*	0.00163
	-0.00682	-0.0124	-0.00903
Constant	0	0	0
	1303	1303	1305
Observations	0	0	0
R-squared	0.00	0.00	0.00

Table 11b: The table aims to illustrate the responsiveness of debt flows, net equity payouts and changes in cash balance to cash flow from operating- and investing activities, by debt volatility quintile. Debt flows, equity payouts and changes in cash holdings in each year for each company in our dataset are regressed against cash flows from operating- and investing activities (CFOI). Similarly, to Campbell & Roger (2018) the independent variables (debt flows, equity payouts and changes in cash balance) are multiplied by -1 to create positive and more intuitive betas, as equity payouts, debt payouts and decreases in cash balance are appearing as positive. Variables are scaled by total assets in each year (2000-2016). A dummy variable is created for each debt flow volatility quintile of firms, where DummySDDf5 represents the quintile with the highest debt flow volatility, partly to analyze the interaction between different levels of debt flow volatility and CFOI. In addition, dummy variables are created for the two deciles of firms with the: smallest size (total assets), highest D/A, lowest D/A, Zero-dividend firms, and zero-repurchase firms (all based on the previous year, one-year lag). The results are winsorized at the 1% and 99% level. The table is based on public firms.

	(1)	(2)	(3)
	Debt flows	Equity payouts	Change in cash balances
CFOI	0.243***	0.163***	0.500***
	-0.00146	-0.00117	-0.00199
CFOI*dummySDdf1	-0.221***	0.0390***	0.185***
	-0.00148	-0.00195	-0.0032
CFOI*dummySDdf2	-0.143***	0.0198***	0.116***
	-0.00185	-0.00176	-0.00289
CFOI*dummySDdf3	0.000799	-0.00392**	0.00377
	-0.00194	-0.00159	-0.00264
CFOI*dummySDdf4	0.0564***	-0.00866***	-0.0306***
	-0.00206	-0.0014	-0.00255
CFOI*dummySDdf5	0.233***	-0.0651***	-0.223***
	-0.00215	-0.00141	-0.00261
DummySDdf1	0.0194***	-0.00750***	-0.0112***
	-0.000191	-0.000236	-0.000348
DummySDdf2	0.00878***	-0.00232***	-0.00550***
	-0.00023	-0.000216	-0.000316
DummySDdf3	-0.00286***	-0.000292	0.00295***
	-0.000241	-0.000195	-0.000286
DummySDDf4	-0.00925***	0.00176***	0.00646***
	-0.000281	-0.000198	-0.000311
DummySDDf5	-0.0231***	0.00594***	0.0192***
	-0.000336	-0.00022	-0.000368
Dummyssizelag	0.000424*	-0.0101***	0.0166***
	-0.000249	-0.000219	-0.000338
Dummydtahighlag	0.0334***	-0.0154***	-0.0193***
	-0.000276	-0.000178	-0.000281
Dummydtalowlag	-0.0128***	0.0202***	-0.00687***
	-0.000185	-0.000182	-0.000256
Dividendlag0	0.0171***	-0.0632***	0.0427***
	-0.00018	-0.000179	-0.000238
Net equity contributionlag0	-0.0000237	-0.00317***	0.00172***
	-0.000193	-0.000156	-0.000238
Constant	-0.0206***	0.0580***	-0.0306***
	-0.000223	-0.000194	-0.000267
Observations	1,093,283	1,093,283	1,093,343
R-squared	0.48	0.33	0.52

Table 11c: The table aims to illustrate the responsiveness of debt flows, net equity payouts and changes in cash balance to cash flow from operating- and investing activities, by debt volatility quintile. Debt flows, equity payouts and changes in cash holdings in each year for each company in our dataset are regressed against cash flows from operating- and investing activities (CFOI). Similarly, to Campbell & Roger (2018) the independent variables (debt flows, equity payouts and changes in cash balance) are multiplied by -1 to create positive and more intuitive betas, as equity payouts, debt payouts and decreases in cash balance are appearing as positive. Variables are scaled by total assets in each year (2000-2016). A dummy variable is created for each debt flow volatility quintile of firms, where DummySDDf5 represents the quintile with the highest debt flow volatility, partly to analyze the interaction between different levels of debt flow volatility and CFOI. In addition, dummy variables are created for the two deciles of firms with the: smallest size (total assets), highest D/A, lowest D/A, Zero-dividend firms, and zero-repurchase firms (all based on the previous year, one-year lag). The results are winsorized at the 1% and 99% level. The table is based on private firms.

Variances of debt flows from 2000 to 2016	Var(CFOP)	Var(CFIN)	2 * Cov(1,2)	Var(CFOPIN)
	(1)	(2)	(3)	(1+2+3)
q1 (lowest)	0.03%	0.01%	-0.01%	0.04%
q2	0.22%	0.06%	-0.04%	0.24%
q3	0.59%	0.20%	-0.13%	0.66%
q4	1.31%	0.48%	-0.26%	1.54%
q5 (higest)	8.58%	3.81%	-1.14%	11.25%
difference	8.54%	3.80%	-1.13%	11.21%
t-value	-29.27	-36.79	28.23	-37.29

Table 13b: The table aims to illustrate the decomposition of the variance of cash flow from operating- and investing activities. Firms have been split into quintiles depending on their average variance of debt flows 2000-2016. A t-test is done on the difference in mean between the group of firms with the lowest variance of debt flows and the firms with the highest variance of debt flows. ABS(t) > 2.58 means the result is significant at the 1% level. ABS(t) > 1.96 means the result is significant at the 5% level. ABS(t) > 1.645 means the result is significant at the 10% level. All numbers are scaled by total assets each year from 2000 to 2016. The results are winsorized at the 1% and 99% levels. The table is based on all firms.

Figures

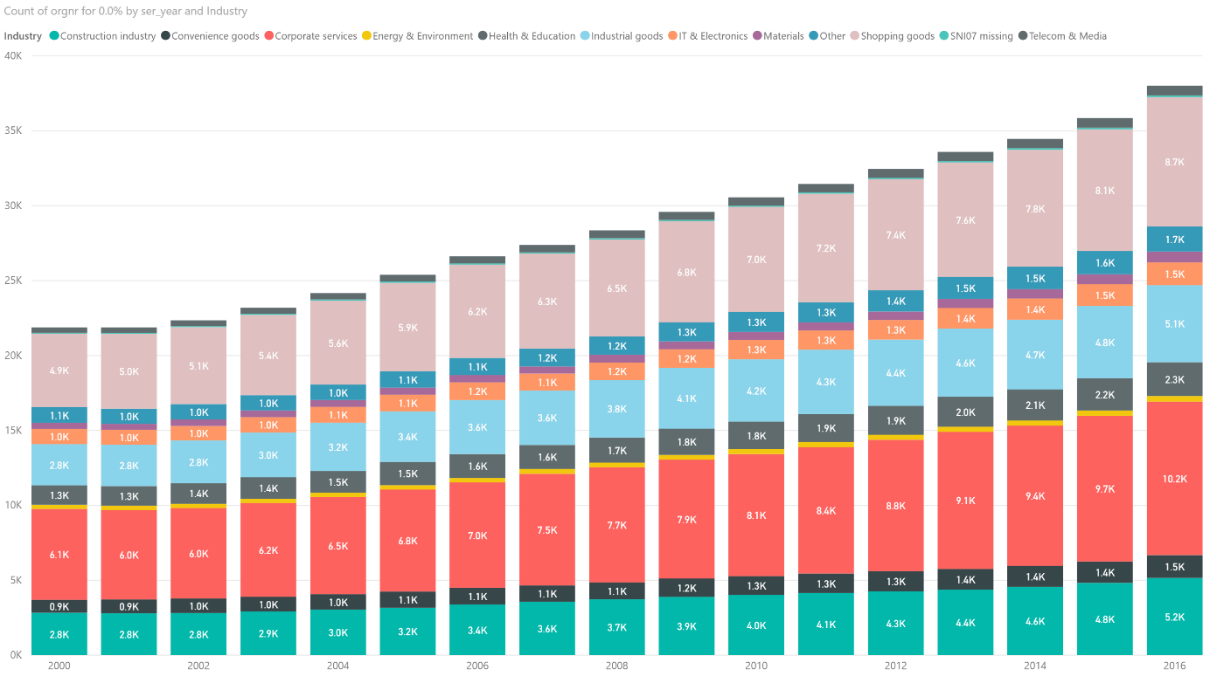

Figure 7: The table illustrates the amount of zero debt-firms every year and across every industry. Financial- and real estate firms have been excluded. Firms with non-continuous year observations have been excluded in order to measure the development over time.