What effect does CEO age have on corporate decisions?

- A comparable study of private and public Swedish firms over the years 1997-2013

Emil Rystedt
23051@student.hhs.se

Anthony Grivas
22719@student.hhs.se

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Stockholm School of Economics

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Abstract

The purpose of this paper is to examine, within a Swedish context, whether there are systematic effects related to CEO age and how they affect decision-making. The paper examines the financial leverage, operating leverage, cash-to-asset ratio and quick ratio on all Swedish limited companies. It also investigates whether the effect of CEO age on corporate policies depend on if a company is listed or not.

Previous studies on US firms suggest that younger CEOs tend to make riskier decisions and there are different theories provided. Personal characteristics that changes with age and considerations for the future career are potential reasons for observed behavioral biases. The results in this thesis show the opposite relationship to previous studies and indicate that young CEOs in public firms tend to be more risk-avert than older CEOs. However, in private firms, young CEOs have riskier corporate policies in line with previous theories. We conclude that CEO age does have an effect on corporate policies and that the ownership structure is important for this relationship because of career concerns.

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1. Introduction

In this paper, we will examine the effect of CEO age on corporate policies. Age will have an effect on personal characteristics which, in turn, impacts the decision making process. The age of the CEO could have an effect on career concerns, experience, risk-aversion, incentive structures, physical and mental stamina, confidence and overconfidence among other things. Closely related to the age is tenure which is also mentioned in previous studies to be a proxy for personal characteristics such as experience and confidence. Furthermore, we examine differences between private and public firms. When going public the firm's ownership structure changes and becomes more dispersed, the reporting requirements changes and previously unavailable data becomes accessible to the public market. These changes should, in turn, have an effect on information asymmetries and furthermore on CEO behavior.

When modeling in finance, the assumption that decision makers behave rationally is often made. CEOs are assumed to use well-researched information in statistical models to make an informed decision, resulting in profitable economic outcomes. However, in reality, there is limited time to make decisions and a cost associated with gathering information. Important decisions are therefore many times heavily based on the judgment of the CEO and will be affected by personal characteristics such as age, education, experience, gender and financial incentives. These factors could be expected to have an impact on the decisions a manager takes and hence on the performance of the firm. Specifically, regarding CEO age, there are several theories of how it would affect risk-taking and investment decisions. The majority of the previous research has been conducted on US data, laying a foundation that could be used when examining other markets.

In theory, age affecting corporate policies is proof of irrational behavior that could be present due to agency problems. Theoretically, all CEOs, regardless of their age, should act similarly given the preconditions of the company to maximize value for shareholders. Knowing how the age of the CEO might affect corporate policies could be important for boards when electing a new CEO or monitoring an existing CEO. If the correlation between age and risk-taking exists, it could also be helpful for an analyst when analyzing firms and CEO successions. If a younger CEO is hired, this might indicate a different risk-taking approach in the future. Although age and tenure are the focus of this thesis, the sex of the CEO is also included in the analysis as differences in the results would also indicate irrational behavior.

In the US, it has been shown that young CEOs are concerned about their future careers. Because the labor market for CEOs is forgiving, terminated CEOs or CEOs at bankrupt firms easily find a new job. At the same time, if the market sees them as being vigorous and high-performing, they might greatly improve their future career and personal wealth. The *Market Signaling Hypothesis* predicts that young CEOs will take on more risk to signal their abilities to the market and by doing so taking advantage of the great upside and limited downside of the CEO labor market. Furthermore, information asymmetry affects the career concerns of the manager since the market participants will have less information about the manager's ability. The difference in availability of information between private and public firms should affect the information asymmetry and also the managers' ability to signal his abilities to the market. However, some studies find opposite results showing that young security analysts and fund managers are more careful than older colleagues because a mistake will be punished harder than what a good performance will reward in terms of their future career. This behavior is instead referred to as *The Market Learning Hypothesis.*

The private firms with a higher degree of ownership concentration might have tighter control over the firm and follow up the work of the CEO more closely, prohibiting him or her from taking on excessive risk.

Research shows that public firms are characterized by a systematic short-sightedness where investors are expected not to be able to account for positive, long-term NPV projects in a fair way and managers instead focus on short-term earnings. If short-term earnings are more valued at public firms, a manager concerned about a future career might have more to lose if higher risk leads to short-term failure. A private firm with a longer time horizon could be more forgiving resulting in the hypothesis that the correlation between age and risk metrics should be weaker for public firms.

Previous literature has tested the effect of age on manager behavior. For example, acquisitions and divestment activity have been shown to be negatively correlated with age. Others have looked at tendency to favor self-initiated projects, R&D investments, leverage, stock volatility and found similar results although there are papers showing the opposite relationship.

The ambition of the paper is to add to previous research on the topic. We have therefore identified four risk metrics to regress against the age of the CEO. Previous papers have mostly been focused on US data and the relationship does not necessarily have to be the same in Sweden as the labor market is smaller and the work culture different. Furthermore,

we combine theories about age and risk-taking behavior with comparisons between public and private firms to investigate whether the ownership structure has an impact on the effect of age. To test whether age is an important factor which can explain corporate policies and add to previous research in the area, we have chosen to look at public and private Swedish firms between the years 1997 and 2013. The metrics financial leverage, operating leverage, cash-to-asset ratio and quick ratio will serve as measures of risk-taking corporate policies and we will test whether age and tenure have a significant effect on them.

The results regarding leverage, both the operating and financial, are insignificant in most tests and therefore provide little evidence for the theories discussed beneath. However, in the case of public firms the *Market Learning Hypothesis* seems to hold true. In the financial leverage regression for public firms the result is significant at the 1% level, supporting theories that argue that younger CEOs run their operations with less debt. The findings in the operating leverage regression for the same sample of firms also suggest a positive correlation between age and (operating) leverage, although not significant. Moreover, the tenure of the CEO is positively correlated in both leverage regressions for the public firms and male CEOs in public firms tend to have higher operating and financial leverage.

Considering the private firms, the results are the opposite, suggesting that CEO age and leverage are negatively correlated. Since the private firms account for more than 99% of the observations, the results when taking all firms into account are very similar. However, these results are all insignificant, but they suggest that younger CEOs undertake more risk and have a more aggressive approach. When examining the CEO tenure, the results are mixed. In the financial leverage regression tenure is positively correlated, the case is the opposite in the operating leverage regression. In the case of private firms, the career concerns are not the driving force. Hence, other factors such as overconfidence, risk-aversion or some other personal characteristic drives the fact that younger CEOs in Swedish private firms undertake more risk.

When examining the liquidity metrics cash-to-assets ratio and quick ratio a different approach is implemented. Regardless of being a public or private firm we select the largest quarter of the companies based on total assets. The intuition behind this is to have a homogeneous sample and thereby eliminate the effect of not controlled for variables such as maturity of the firm and the ability to get credit among other things. The cash-to-assets ratio regression is significant at the 1% level and suggests that younger CEOs, on average, keep greater cash reserves. I.e. that they run their operations more conservatively. However, when

examining the relationship between the current assets less the inventories and the current liabilities, the relationship is reversed. The older the CEO is the higher the quick ratio (significant at the 5% level), i.e. they can better meet their short-term obligations. Because these two metrics measure similar policies, namely how much cash is needed to run the firm and what liquidity risk the firm can accept, we are careful to draw any conclusions as they show opposite results.

Overall the results from this thesis provides some evidence that CEO age has an effect on corporate policies and more specifically, risk taking in a company. Furthermore, if a company is listed or not has an effect on this relationship because career concerns makes young CEOs in public firms more careful. This is the opposite to what previous studies have found in the US which suggests that the US labor market for CEOs is different from the one in Sweden.

2. Previous literature

2.1 Literature on CEO Age

Age can function as a proxy for the personal characteristic experience. The experience of the manager, for example years as CEO or the years of education, contains important information about the ability of the CEO. Implicitly, the age therefore contains information about the ability of the CEO (Yim (2010)). Age can also be a proxy for mental and physical stamina. Older executives may be less able to grasp new ideas and learn new behaviors. In addition, older managers have a tendency to seek more information, to evaluate information in-depth, and take longer to make decisions (Taylor (1975)). Other authors find evidence that the age of a manager will affect his or her level of risk aversion. The authors found a relationship indicating that *"the most mature executives were the most risk averse"* (MacCrimmon and Wehrung (1990)).

Prendergast and Stole (1996) write that individuals want to be perceived as being quick to combine their experience with new information to maximize firm value. Young CEOs will be more active and change policies quicker and more in order to signal that they are better at interpreting information. On the other hand, older CEOs will be reluctant to change policies in order to signal that their previous decisions were not bad.

The fact that CEOs want to signal their analysis skills could be due to career concerns, i.e. a CEO with a reputation for being quick and active might have more career options to exploit than a more careful one. Previous theories regarding career concerns among CEOs conclude that they should be different depending on the age of the CEO, as an older CEO is closer to retirement while a young CEO has a long career ahead of him. The career concerns are therefore stronger the younger the CEO is (Gibbons and Murphy (1992)). If career concerns affect how CEOs make decisions and what decisions are made, the age of the CEO should therefore also matter for the corporate policies of the firm. Existing theories, such as the *Market Signaling Hypothesis*, in fact show that younger CEOs tend to make bolder and riskier investment decisions in order to signal their superiority over other CEOs to the market (Li, Low & Makhija 2011). Some theories hypothesize that young managers want to increase firm size because managing a large firm should imply a greater compensation but young CEOs are also more prone to restructure in a way that decreases firm size. This shows that the managers care about the market's perception of them as vigorous CEOs rather than

only about their remuneration. Theories stating that career concerns affect corporate policies are based on the fact that there is information asymmetry between market participants (future potential employers and the CEOs), which in turn, results in a need for signaling behavior.

There are also conflicting theories showing that career concerns can have the reverse effect and have decision makers be more careful in order to avoid ruining their future career. However, this *Market Learning Hypothesis* might be relevant only in specialized markets such as mutual fund managers (Chevalier and Ellison (1999)), security analysts (Hong, Kubik, and Solomon (2000)) and macroeconomic forecasters (Lamont (2002)) where the decision maker potentially has more to lose than to gain. However, when looking at the CEO labor market Eckbo et al. (2012) find that a third of incumbent CEOs maintain an executive employment after their previous firm has filed bankruptcy. Moreover, they argue that the salary of the CEO at the new firm does not drop. This suggests that CEOs in the US market find new jobs rapidly without sacrificing any salary regardless of the prior performance. In other words, the US CEO labor market appears to be forgiving and have a relatively larger upside than downside considering the consequences of undertaking risk. It will be highly interesting to examine whether the same tendency can be supported in the Swedish market.

If CEOs have career concerns, they might have a preference for making projects they themselves initiated successful over others' projects. Managers often fail to terminate self-initiated bad-performing projects because they have career concerns (Boot (1992)). On the contrary, Li, Low and Makhija (2011) further explore this favoritism phenomenon and state that there are other factors such as the CEO's "psychological bias."

There are many papers exploring the relationship between age and the decisions made by CEOs. Because theories such as the one presented by Taylor (1975) stating that an older CEO have less physical stamina and will be slower to react to information and the ones described by Li, Low and Makhija (2011) that CEOs are concerned about their careers all have similar outcomes, namely that younger CEOs will be more aggressive and risk taking in the decision making, it is hard to distinguish what factor that is dominant. This paper will therefore acknowledge that a relationship could be due to several reasons rather than one single theory.

Jenter and Lewellen (2015) look at the effect of the age of the CEO on merger activity and find that there is a spike in the likelihood of having a successful merger when the target company's CEO is close to 65 year of age. Similarly to other papers, Jenter and

Lewellen base their theories on the career concerns. The fact that there is a spike close to retirement age means that the relationship between CEO age and the corporate policies is not necessarily linear. As the CEO grows older, decreasing career concerns changes the behavior of the CEO but when reaching a high enough age, there is no longer a career to be concerned about and for example taking on much more risk or engaging in merger activities could not lead to a worse future career.

2.2 Literature on Private and Public Ownership

Previous research shows that there is a structural difference in capital structure among private firms compared to public firms. This is explained by information asymmetry where external capital markets and minority owners generally have less knowledge of the performance in a private firm. Furthermore, ownership concentration is higher in private firms making it costlier to issue equity.

The work of Graham, Harvey & Rajgopal (2005, 3) sheds light upon the potential shortsightedness of public firms and associated costs of going public. They argue that positive NPV projects can get rejected if an undertaking of such a project would result in a shortcoming of the current quarter's earnings forecast. This long-term value-destroying approach is implemented among *''the majority of managers''*. Moreover, their findings can partially be explained by the fact that the agency problems are more severe in public firms. This conflict between agents results in a more conservative investment approach for public firms and a slower responsiveness to ''*changes in investment opportunities''.* These findings hold even during the recent financial crisis, despite the financial constraints of private firms during tougher economic times (Asker, Farre-Mensa & Ljungqvist (2014)).

Our thesis looks at the effect of CEO age on corporate policies and furthermore, the ownership structure will be further looked into, to see whether this has an effect on this relationship. Private firms are often owner-managed, illiquid and have highly concentrated ownership. These factors result in a better monitored management to ensure that the long-term value of the firm is maximized (Bhide (1993)). Furthermore, stock market listings result in a corporate investment approach that over-focuses on the short-term gains and the current share price, this at the expense of the shareholder's long-term interests (Narayanan (1985)).

Additionally, public firms prefer to invest in short-horizon projects since they believe that stock market investors fail to value long-term projects fairly (Poterba & Summers

(1995)). Holmstrom (1982) argues that the short-termism of public firms results in inefficiently low investment levels and that public firms are less sensitive to changes in investment opportunities than private firms.

Regarding our regressions of financial leverage, the article of Brav (2009) is of high interest. He finds that private firms are much more dependent on debt financing. Due to this, they run their operations with higher leverage ratios and are less keen on using external capital markets as a financing source. The above results in *''greater sensitivity of their capital structures to fluctuations in performance''*. I.e. when the profitability increases, so does the investments of the public firms whereas private firms tend to stockpile their cash. However, in the case of dividend payouts, the public firms smooth out the payout whereas the private firms are positively correlated with the performance. This finding is also in line with Michaely and Roberts (2012), showing that publicly held companies pay out (relatively) higher dividends and are *''more sensitive to changes in investment opportunities.''* The reason being the strong signaling to the market as a public firm. Moreover, public equity is cheaper than private equity, due to information asymmetry and the will to maintain control over the firm. Furthermore, firms with spread ownership and higher transparency rely more on equity financing and have lower debt ratios.

In the case of the cash-to-assets regressions, Gao, Harford and Li (2013) provide a foundation within the area of the subject. They argue that firms tend to hold more cash if the information asymmetry regarding their investment opportunities is great. Private firms hold, despite their greater financing frictions (limited access to external capital), around half the cash reserves of what their public counterparts do. In other words, the effect of agency conflicts is greater than the financing friction, leading to higher cash reserves in public firms. Public firms do not only invest their cash reserves in a short-sighted manner, they also spend it in less efficiently. Moreover, they study the differences between well-governed and poorly governed public firms. They find that well-governed firms will shrink the firm via payouts or reducing leverage when they sitting on excess cash while the poorly managed will simply convert it to other assets. This results in that the latter hold, on average, less cash.

Taking the larger picture into account, public firms tend to be impacted to a larger extent by macro-economic factors (Maksimovic, Phillips & Yang (in press)). This indicates that it should be harder for CEOs of public firms to impact their companies all other factors equal.

The characteristics of the sample of public firms and the sample of private firms should be very different. While the median of the assets in public firms is MSEK 174, the median number for the assets in private firms is SEK 712 000. In other words, the public firms are in general large and mature firms with broader established operation than the private firms. This also puts a higher pressure on the CEOs and will require a more experienced, more educated person with the right qualifications. They are professional CEOs and should therefore be the ones with the most career concerns. Career concerns and the signaling behavior in the form of risk taking originates from information asymmetry between potential future employers and the CEO and the possibility to inform about his superior abilities to the market by taking on more risk. In public firms, the market will be informed about the performance of the firm constantly, while the few stock owners of the private firms will be the only ones who are regularly updated on the decisions of the CEO of the firm. Therefore, the signaling behavior which is behind the theories of market signaling and market learning are mostly relevant for public firms.

2.3 Theory and Risk Metrics

As described in the previous literature section, there are many theories for how and why the age of a manager affects corporate policies. Most of them, predict that younger CEOs will make bolder and more aggressive decisions, make faster decisions and be more willing to take risk. This paper will test whether young CEOs in Swedish firms are less risk averse than older CEOs. However, because different theories predict this outcome, it will be impossible to say whether the correlation depends solely on career concerns, solely on the physical condition of a CEO or perhaps a combination of many factors.

2.3.1 Financial Risk and Leverage

In order to test the risk-taking behavior of the CEOs and their respective firm, we have identified a few risk metrics that measure different types of risk. The financial leverage is a common metric used to measure financial risk. In “Profitability, Financing and Growth of the Firm” Runsten and Johansson describe the leverage formula shown below.

$$r_e = r_a + (r_a - r_d) * D/E$$

According to them, the risk can roughly be divided into an operating part (r_a) and a financial part $(r_a - r_d) * D/E$. As can be seen, taking on additional leverage will magnify returns as long as the unlevered return on assets is positive and larger than the cost of debt. For this reason, a downturn leading to negative returns will lead to magnified losses if the assets are levered.

Because both negative and positive returns are magnified, the probability of defaulting on loans increases with leverage. This is compensated for by a higher cost of debt. Apart from credit risk, risk might also come from a value loss of the assets. If a company has to repay its loans by selling off the assets, there might not be any buyers and the illiquidity leads to a loss. Adjusting the leverage of a company is done constantly and companies often have target leverage ratios to which they dynamically adjust. Changing the target and using debt to financing new assets or repurchasing stocks can be done fairly quickly as can using cash to repay debt. Therefore, a new CEO, young or old, will be able to change the firm's leverage within one to two years and thus, his or her risk appetite can be directly measured with leverage.

The definition of financial leverage is the debt-to-equity ratio which is the ratio between the adjusted total liabilities divided by the adjusted equity. A*djusted equity* is calculated as total equity + untaxed reserves - deferred tax liability and *adjusted total liabilities* as non-current liabilities + current liabilities + provisions + deferred tax liability.

Frank and Goyal have conducted much research in financial leverage and what drives it. They have written a review of the literature on the *Tradeoff Hypothesis* and in 2009 they provided evidence consistent with the theory. They find that median industry leverage, market-to-book assets ratio, tangibility (tangible assets/total assets), profits, log of assets, expected inflation affects the financial leverage and therefore most of these will be included as control variables in our test.

2.3.2 Operating risk and leverage

Leverage can also be in the form of operating leverage. It comes from the use of fixed costs when running the firm's business. Robinson et al. (2015) describe operating leverage as a magnifying effect of sales on operating profit coming from the use of fixed costs instead of variable costs. A profitable firm that increases their sales will proportionally increase the variable costs but the fixed costs will stay the same and so the EBIT increases at a faster rate.

Similarly, if sales are decreasing, costs will decrease slower with a higher operating leverage and EBIT will decrease faster.

$$Operating\ Leverage\ =\ Delta\ Operating\ Profit\ /\ Delta\ Sales$$

Changing corporate policies regarding cost structures is not as easy as changing the capital structure of the firm. Adjusting the operating leverage could for example require investing or divesting in heavy machinery and changing the contracts with suppliers. However, in two years' time, a CEO should have been able to make noticeable changes to its operations and therefore, the operating leverage is a good metric to measure the CEOs willingness to take on operating risk. However, the timeframe to make a change in operating leverage will vary across different industries.

Van Horne (1977) writes that the overall leverage of the firm consists of both operating and financial leverage. In order to keep the overall leverage at an appropriate level, both types of leverage will have to be adjusted based on the other meaning that a higher financial leverage should indicate a lower operating leverage and vice versa. This is called the *Tradeoff Hypothesis* and intuitively makes sense as a greater operating leverage means a greater risk of not being able to cover interest costs, thus limits the firm's ability to finance assets via debt.

2.3.3 Quick Ratio and Cash-to-Assets Ratio

The quick ratio defined below, measures the company's ability to meet its short-term obligations or in other words, its liquidity. A quick ratio of two means that a company has liquid assets that could pay the short-term obligations two times over.

$$Quick\ Ratio\ =\ \frac{Total\ Current\ Assets\ -\ Total\ Inventories}{Total\ Current\ Liabilities}$$

There is a capital cost associated with having liquid assets and firms typically want to minimize excess cash in order to maximize profits. However, there is also a cost associated with holding too little cash as the company might not be able to pay its suppliers. A manager willing to take higher risk might want to hold more cash to increase profits and

therefore we have chosen to test how CEO age affects the quick ratio.

Similar reasoning about liquidity and risk appetite can be applied to the cash-to-assets ratio as a higher ratio means that the company holds more cash available for short term payments. Therefore, we have added this risk metric as well.

$$Cash - to - Asset\ Ratio\ =\ Cash\ Reserves\ /\ Total\ Assets$$

The liquidity measures will apart from risk management be affected by how much is needed. A typical benchmark used is 1% of total assets that is needed to run firms' regular operations. However, this will of course greatly depend on what industry the firm is operating in and how big the firm is. Furthermore, firms' access to credit and other financial constraints will have a huge impact on the amount of cash held which in term should be affected by the maturity of the firm.

The data sample includes all limited liabilities companies which will vary heavily in maturity and size. When testing the liquidity, we have kept the largest quarter of the companies (based on assets, denoted as *Large Firms*) in order to have a sample with firms more similar to each other and thereby eliminating the effect of not controlled for variables.

3. Data & Methodology

This thesis is conducted using panel data on Swedish limited companies, public as well as private ones. The database that is used, Serrano (Bisnode), contains information about all limited firms in Sweden from the years 1997-2013. The reason that the latest edition of the Serrano database is not used, is due to integrity issues. The scrambled data regarding social security number is yet only available for data until the year of 2013.

3.1 Accounting Data

The data considering the accounting information of the firms is extensive. It is available through different dta-files which, in turn, are reduced focusing on the presented variables below (see section 3.5.1).

When accounting for the industry fixed effects, a sector variable is used. The variable merges industries into a sector variable (thirteen sectors) based on the Swedish standard industrial classification system (SNI codes). The purpose is to get a more holistic picture of what industry the firms operate within and to be able to compare the different sectors in a lucid way. Furthermore, the industry fixed effects are used in order to examine the possibility that certain industries with a higher risk profile than others, attract young CEOs. The time fixed effects are used to capture the macro-economic factors and state of the world economy. For example, a CEO getting one year older and therefore taking more risk than he otherwise would have done could be countered by a change in the business cycle. This effect will hopefully be captured using time fixed effects.

Furthermore, another data source containing a list of all listed companies in Sweden on all stock exchanges for every year between 1997 and 2013 is also used.

3.2 Data Processing

Originally, the Serrano database includes all legal entities. Since our paper examines the CEO behavior in limited liabilities firms, observations of other legal entities have been excluded. This originally reduces the data to slightly more than 5 million observations. However, when merging with the file containing CEO personal numbers, about four fifths of the observations

are dropped because the data is missing. Most likely, this is because these most of the observations that are dropped are firms that are so small that they have not reported who the CEO is or they have no CEO. However, the missing observations might be because the database is incomplete but hopefully, the missing observations are random and therefore do not result in biases.

The age of CEOs originally ranges between 18 and 107 which is unrealistic. The presence of these extreme values might be due to reporting errors or that the numbers are not updated. We therefore winsorize CEO age at 1% and end up with the new, more appropriate range between 26 and 73 years of age. The same is done to the age of the CEO when hired before the variables tenure and tenure squared are generated.

This paper is looking into the effect of CEO age on corporate policies and in order to find a relationship between the two, the CEO needs to have had the time to affect the corporate policies. We drop the observations where the tenure is below 2 years because the CEO will yet not have made a significant impact on the corporate policies.

The second step after cleaning the data was to generate new variables. Both independent variables and dependent ones were generated. They are presented in section *3.5.1 Regression Variables*. Thirdly, the four regressions presented in section *3.5 Statistical Methods* were performed using both industry and time fixed effects. The findings are commented using the previous literature and the interpretations are presented in section *4. Results* and *5. Implications and Conclusions*.

After executing the steps described above the following information gives a picture of the merged dataset that has been used as the foundation for the regressions; the number of firms is 65 331 for the year 2013 where the public firms account for 148 firms. The CEO age span, winsorized at 1%, is the same for the group of public and private firms (26 and 73 years of age). Moreover, the public firm CEOs are, on average, slightly older (50.5 years) compared to their private counterparts (49.8).

3.3 Statistical Methods

The multiple linear regression approach is implemented in order to determine how the four main parameters are explained by the independent variables beneath. Moreover, the OLS regression technique is implemented for the regressions beneath. This approach minimizes the distance between the observations and the best-fitted line. Firstly, we examine how the

financial leverage is affected by the following explanatory variables. The regressions are performed for all limited liabilities firms, for only the public firms and lastly for only the private ones.

$$FinLev = \beta_0 + \beta_1 * Age + \beta_2 * Age^2 + \beta_3 * Tenure + \beta_4 * Tenure^2 + Control\ Variables + u$$

Secondly, we examine the other side of leverage, the operating leverage of the firm. The same three regression division is performed for the operating leverage. The additional explanatory variables are in the financial leverage model are based on the work of Frank and Goyal discussed above.

$$OpLev = \beta_0 + \beta_1 * Age + \beta_2 * Age^2 + \beta_3 * Tenure + \beta_4 * Tenure^2 + Control\ Variables + u$$

Looking at the liquidity of the firms, we regress the cash-to-assets ratio over the independent variables beneath. In this case we examine the largest quarter of the firms based on the size of total assets. The purpose, as discussed above, to have a sample with more similar firms.

$$CashAs = \beta_0 + \beta_1 * Age + \beta_2 * Age^2 + \beta_3 * Tenure + \beta_4 * Tenure^2 + Control\ Variables + u$$

Moreover, we examine the quick ratio, in other words the short-term liquidity capacity. The same quarter of the firms is used when conducting the regression based on the same argument.

$$QRatio = \beta_0 + \beta_1 * Age + \beta_2 * Age^2 + \beta_3 * Tenure + \beta_4 * Tenure^2 + Control\ Variables + u$$

3.3.1 Regression Variables

Dependent Variables

Operating Leverage: Delta EBIT/Delta Sales

The operational leverage variable captures the operational risk of the firm. The higher the operating leverage is the higher is the risk of the firm, since the profits are more sensitive to sales fluctuations in that case.

Financial Leverage: Debt/Adjusted Equity

The financial leverage variable captures the financial risk of the firm. Firms with a high debt/adjusted equity ratio are riskier.

Cash-to-Assets Ratio: Cash/Total Assets

This parameter illustrates how much money is saved for future investment opportunities. The more cash you save the less is the chance to miss out on good investment opportunities. However, this comes at the cost of missing out on a higher return on these cash.

Quick Ratio: (Current Assets - Inventories)/Current Liabilities

The quick ratio captures the liquidity of the firm. A higher quick ratio indicates that the firm is more liquid since it can cover its short-term obligations by selling of its current assets.

Independent Variables

CEO Age: fiscal year – birth year

The age of the CEO.

CEO Age^2

The square of the above variable.

CEO Tenure: fiscal year – start year

The number of years that the CEO has maintained the position within the same firm.

CEO Tenure^2

The square of the above variable

Control Variables

Firm size: log Total Assets

The control variable takes the firm size into account. It helps in order to determine if the findings depend on the firm size e.g. that larger firms tend to hire older CEOs.

Sex Dummy: Female = 0, Male = 1

The dummy variable *''Sex''* captures differences between men and women.

Type of Firm: Private firm = 0, public firm = 1

The dummy variable *''Type of Firm''* captures differences between firms that are listed and the ones that are not. Hence it captures the implications/effects of going public.

Lagging Dependent Variable

The one year lagging variable adjusts the results for the autocorrelation in each regression.

Tangibility

The tangibility is the total amount of total tangible fixed assets divided by the total assets. The more fixed and current assets the company has the more tangible it is.

Return on Assets

The return on assets controls for the profitability of the firm. It is the adjusted operating profit or loss after financial income divided by the amount of total assets.

Financial Leverage

See explanation above.

3.4 Robustness test

The data set used is huge and potentially contains errors. For example, the age spanned between 18 and 107 which suggests that all observations are not up to date. Furthermore, the observations of CEO age are much fewer than those of the accounting data and lots of observations are lost when these are merged. Many of these should be small firms that do not have a reported CEO, inactive firms that don't have a CEO or other reasons. Potentially, there could be errors in the data that is left and especially for smaller firms that do not have the same reporting requirement as bigger firms. To test the robustness of our results we therefore perform the same regressions on two new sets of data on the private firms. The first set is created by dropping the smaller half of the firms (dropped firms with a revenue below the median) and the second set by keeping the top quarter of firms based on size of the revenue.

To further test the robustness of the results, financial and operating leverage are regressed for each industry separately. If it is true that a younger CEO will take more risk, this should also be shown for separate industries.

3.5 Expected Results

In the previous literature section, different theories for how CEO age affects corporate policies and risk in the firm are presented. In the US, studies have shown that personal characteristics and concern for the future career make CEO have riskier corporate policies. Based on these findings we hypothesize that similar results should be found in Swedish firms as well meaning that leverage should be higher if the CEO is young while the amount of cash held should be lower. Tenure and age are in previous studies often predicted to be proxies for personal characteristics which can impact corporate policies and therefore, hypotheses regarding tenure are the same as for age. Furthermore, career concerns should be the strongest among CEOs in public firms and because public firms are monitored by the public continuously, CEOs have the ability to signal their abilities to the market by changing their behavior. Therefore, the market signaling hypothesis should be applicable to public firms in Sweden and the correlation between risk taking and age should be more negative in public firms than in private firms. To summarize, our predictions about the results can be described with the hypotheses shown below:

Hypothesis 1.1: Age and Tenure are negatively correlated with financial leverage.
Hypothesis 1.2: The negative correlation is stronger in public firms than in private firms.

Hypothesis 2.1: Age and Tenure are negatively correlated with financial leverage.
Hypothesis 2.2: The negative correlation is stronger in public firms than in private firms.

Hypothesis 3: Age and Tenure are positively correlated with the cash to assets ratio.
Hypothesis 4: Age and Tenure are positively correlated with the quick ratio.

4. Results

4.1 Financial Leverage

Table 1 - Financial Leverage

VARIABLES	*All Firms*	*Public Firms*	*Private Firms*	*Top 50% Private Firms*	*Top 25% Private Firms*
Age	-0.0507	0.135***	-0.0497	-0.534**	-0.645*
	(0.212)	(0.0378)	(0.213)	(0.214)	(0.358)
Age^2	0.000751	-0.00126***	0.000747	0.00544**	0.00630*
	(0.00213)	(0.000358)	(0.00214)	(0.00230)	(0.00364)
Tenure	0.478	0.0619	0.480	1.825***	3.509***
	(0.585)	(0.0640)	(0.587)	(0.650)	(1.289)
$Tenure^2$	-0.0294	-0.00703*	-0.0295	-0.108**	-0.211**
	(0.0319)	(0.00405)	(0.0320)	(0.0437)	(0.0841)
Log of assets	0.531*	0.0351***	0.544*	0.820	1.553
	(0.280)	(0.00731)	(0.287)	(0.869)	(1.593)
Sex	2.235**	0.238**	2.246**	0.296	1.582
	(1.101)	(0.0934)	(1.104)	(0.534)	(1.231)
Lagging financial leverage	0.792***	0.182	0.792***	1.053***	1.057***
	(0.132)	(0.113)	(0.132)	(0.0564)	(0.0560)
Tangibility	2.540	1.258***	2.495	-2.246	-5.729
	(1.724)	(0.441)	(1.710)	(2.391)	(4.312)
RoA	-2.664	-1.254***	-2.665	-7.491	-22.58*
	(1.850)	0.135***	(1.850)	(7.412)	(12.33)
Constant	-3.618	-3.793***	-3.685	-1.496	-11.35
	(4.599)	(1.049)	(4.653)	(6.839)	(16.39)
Observations	373,49	1,545	371,945	187,992	95,662
R-squared	0.619	0.240	0.619	0.788	0.796

Note: The dependent variable in the five regressions is financial leverage. The variables Age, Age^2, Tenure, $Tenure^2$ and Sex refer to the CEO in the company observed. Log of Assets is the natural logarithm of the assets in thousands of SEK. Lagging financial leverage is a one year lagging variable of the dependent variable. Tangibility is the tangible assets divided by total assets in the company and RoA is the return on assets in the company. The second column shows the regression for all companies in the data sample while the third and fourth divides the sample into public and private firms. The fifth and sixth column shows regressions for the largest 50% and 25% of the firms based on revenue. Standard errors are reported in brackets. *** Significant at 1%, ** Significant at 5%, * Significant at 10%

The result regarding all firms indicates that the financial leverage is negatively correlated with age. I.e. the older the CEO the lower the financial leverage. The negative correlation is in line with the predictions that younger CEOs take more risk. The beta for tenure on the other hand, although not significant, is positive and opposite to what the theory predicts. The results for private firms are similar and the explanatory value is the same in both cases (R square equals 0.619). This result indicates that the different theories stating that younger CEOs are more prone to take risks are true. The independent variable is not statistically significant in explaining the financial leverage for private firms but when the smaller firms are dropped, the regression shows a better fit. This strengthens the conclusion that age in fact does have an effect on risk taking in companies.

Furthermore, in public firms the age coefficient is positive, indicating that older CEOs undertake higher financial leverage. This finding suggests that in Swedish public firms the *Market Learning Hypothesis* holds true. In private firms however, a negative correlation is found. Because theories regarding career concerns mostly should be relevant when explaining the behavior of CEOs in public firms, this means that there are other factors related to age that make younger CEOs have riskier corporate policies. This factor could for example be some personal characteristic such as over-confidence, physical stamina or less risk-aversion.

The control variables as suggested by the *Tradeoff Hypothesis* including tangibility, profitability (in this case return on assets) and the size of the firm, are in line with the predictions and for the public firms, these coefficients are significant. However, what is also interesting is that in all three cases, men undertake higher levels of financial leverage and the relationship is stronger in private firms. The data shows that there are behavioral biases and age is potentially one of them while the sex of the CEO certainly affects the risk-taking.

Table 2 – Industry numbers

Industry Number	*Industry name*	*Industry Number*	*Industry name*
1	Energy & Environment	8	Finance & Real Estate
2	Materials	9	IT & Electronics
3	Industrial Goods	10	Telecom & Media
4	Construction Industry	11	Corporate Services
5	Shopping Goods	12	Other Industries
6	Convenience Goods	13	Missing Industry
7	Health & Education		

Note: The table clarifies the industry numbering in table 3. Firms are categorized based on SNI codes delivered by bolagsverket.

Table 3 - Financial Leverage in different industries

	1	2	3	4	5	6	7	8	9	10	11	12	13
Age	-0.295	0.395	-0.16	0.466***	0.623*	0.341*	0.207***	1.278**	0.0352	0.106	0.146***	2.027**	-4.1
	(0.323)	(0.482)	(0.138)	(0.133)	(0.336)	(0.196)	(0.0637)	(0.651)	(0.0486)	(0.389)	(0.0519)	(0.86)	(3.144)
Age^2	0.0044	-0.0032	0.00149	-0.00440***	-0.00611*	-0.00398*	-0.00182***	-0.0123**	-0.000285	-0.000926	-0.00149***	-0.0194**	0.042
	(0.00359)	(0.0046)	(0.00126)	(0.00131)	(0.00331)	(0.00212)	(0.000627)	(0.00594)	(0.000494)	(0.00395)	(0.000517)	(0.00835)	(0.0304)
Tenure	-1.436	-1.666	0.441	-0.982***	-2.277*	0.219	-0.264	-0.909	-0.0163	-0.893*	-0.356***	-4.419**	26.19
	(1.218)	(1.355)	(0.306)	(0.278)	(1.285)	(0.679)	(0.184)	(1.029)	(0.0923)	(0.504)	(0.111)	(1.818)	(19.03)
$Tenure^2$	0.0814	0.0846	-0.0286*	0.0520***	0.126*	-0.0453	0.0077	0.0137	0.000226	0.0585*	0.0180***	0.255**	-1.377
	(0.0646)	(0.0735)	(0.0168)	(0.0177)	(0.0753)	(0.0539)	(0.011)	(0.0489)	(0.0051)	(0.0302)	(0.00603)	(0.103)	(1.165)
Ln(assets)	0.374	0.114	0.266***	0.421***	0.838**	0.274**	0.216***	0.989**	0.0912***	0.177	0.241***	1.926**	11.99
	(0.236)	(0.229)	(0.0814)	(0.101)	(0.38)	(0.132)	(0.0454)	(0.401)	(0.0278)	(0.22)	(0.0641)	(0.875)	(7.46)
Sex	1.264	2.71	-2.031*	-1.307	-0.0686	0.822	0.483**	3.530***	0.235	0.491	-0.0716	-6.693	87.04*
	(2.127)	(1.903)	(1.128)	(0.979)	(0.982)	(1.025)	(0.197)	(1.106)	(0.27)	(0.526)	(0.234)	(7.428)	(47.08)
Lagging financial leverage	0.860***	1.313***	0.579***	0.0318**	0.0856	0.225*	0.225**	0.613***	0.771***	0.906***	0.521***	0.459	0.864***
	(0.0899)	(0.162)	(0.153)	(0.0126)	(0.0965)	(0.116)	(0.0938)	(0.139)	(0.0885)	(0.246)	(0.141)	(0.398)	(0.142)
Tangibility	2.206	7.069*	0.711	3.172***	4.691**	5.827***	2.539***	7.637*	2.840***	0.665	1.910***	2.078	-10.89
	(2.456)	(3.945)	(0.862)	(0.904)	(2.21)	(1.624)	(0.859)	(3.901)	(0.896)	(2.083)	(0.579)	(4.841)	(13.76)
Roa	2.187	-0.204***	-1.917	-0.719*	-2.261	-0.0426	-0.0266	-1.347	-0.540***	-0.724	-0.132	-0.284	-2.627
	(1.775)	(0.0723)	(1.418)	(0.436)	(2.371)	(0.047)	(0.0242)	(1.209)	(0.184)	(0.988)	(0.109)	(0.47)	(3.439)
Constant	1.086	-11.18	4.787	-5.745	-7.837	-0.163	-4.060**	-31.45**	-1.194	-0.881	-1.904	-36.72**	-120.5
	(8.266)	(10.8)	(3.007)	(3.51)	(6.251)	(4.393)	(1.659)	(14.9)	(1.049)	(8.419)	(1.16)	(18.18)	(92.51)
Observations	3.269	6.819	44.787	22.616	58.926	14.796	18.931	48.273	28.658	7.442	98.05	10.55	8.828
R-squared	0.289	0.783	0.448	0.041	0.009	0.013	0.106	0.452	0.53	0.637	0.306	0.259	0.706

Note: The dependent variable is financial leverage. The variables Age, Age^2, Tenure, $Tenure^2$ and Sex refer to the CEO in the company observed. Log of Assets is the natural logarithm of the assets in thousands of SEK. Lagging financial leverage is a one year lagging variable of the dependent variable. Tangibility is the tangible assets divided by total assets in the company and RoA is the return on assets in the company. Industry numbers refer to the following industries: 1. Energy & Environment 2. Materials 3.Industrial Goods 4.Construction Industry 5.Shopping Goods 6.Convenience Goods 7.Health & Education 8.Finance & Real Estate 9.IT & Electronics 10.Telecom & Media 11.Corporate Services 12.Other Industries 13. Missing Industry. Standard errors are reported in brackets. *** Significant at 1%, ** Significant at 5%, * Significant at 10%

The results from the regressions on separate industries do not support the findings in the previous tests. The age coefficients indicate a positive correlation between age and financial leverage and the results are significant on a 1% or 5% level in five industries.

4.2 Operating Leverage

The table below shows the outcome of the three regressions done using operating leverage as the dependent variable. Results are presented next to each other for comparison and a full table of regression results including fixed effects is presented in the appendix.

Table 4 - Operating Leverage

VARIABLES	*All Firms*	*Public Firms*	*Private Firms*	*Top 50% Private Firms*	*Top 25% Private Firms*
Age	-4.799	1.202	-4.830	-3.181	-2.487
	(3.118)	(8.928)	(3.135)	(3.817)	(8.855)
Age^2	0.0362	-0.0221	0.0364	0.00970	-0.0272
	(0.0256)	(0.0875)	(0.0257)	(0.0559)	(0.147)
Tenure	-6.330	35.32	-6.488	-10.90	-32.63
	(19.37)	(26.80)	(19.45)	(37.37)	(77.79)
Tenure^2	0.731	-1.782	0.739	1.317	3.421
	(1.439)	(1.519)	(1.443)	(2.792)	(5.816)
Log of assets	-4.674	1.115	-4.842	-3.228	23.90
	(3.404)	(1.725)	(3.523)	(4.248)	(34.96)
Sex	-16.04	3.164	-16.10	-27.17	-74.42
	(16.59)	(13.31)	(16.66)	(29.10)	(71.63)
Lagging operating leverage	1.84e-05	0.00794	1.67e-05	-0.000415	-0.000484
	(0.000432)	(0.0120)	(0.000432)	(0.000433)	(0.000564)
Financial leverage	0.00202	-1.788	0.00205	0.00231	0.00144
	(0.00193)	(6.413)	(0.00196)	(0.00231)	(0.00232)
Constant	195.8	-144.8	197.8	189.6	31.23
	(177.3)	(273.5)	(178.6)	(184.3)	(146.5)
Observations	225,27	867	224,403	135,659	70,39
R-squared	0.000	0.018	0.000	0.000	0.000

Note: The dependent variable in the five regressions is operating leverage. The variables Age, Age^2, Tenure, Tenure^2 and Sex refer to the CEO in the company observed. Log of Assets is the natural logarithm of the assets in thousands of SEK. Lagging operating leverage is a one year lagging variable of the dependent variable. The second column shows the regression for all companies in the data sample while the third and fourth divides the sample into public and private firms. The fifth and sixth column shows regressions for the largest 50% and 25% of the firms based on revenue. Standard errors are reported in brackets. *** Significant at 1%, ** Significant at 5%, * Significant at 10%

The regression with operating leverage as the dependent variable does not show any significant results and the effect of age on operating leverage is less obvious than on financial leverage. The R^2 is extremely low which means the regression model captures real conditions very poorly. However, there are discrepancies between public and private firms in this parameter as well. The results suggest that in public firms the operating leverage increases, the older the CEO is and decreases in the case of private firms. This is the same pattern that was observed for the test on financial leverage meaning that some characteristic related to age, affects the risk taking by the CEO. In the case of public firms where career concerns should be of importance as well, the *Market Learning Hypothesis* seems to be an explaining factor rather than the *Market Signaling Hypothesis*. The lagging dependent variable is smaller for the operating leverage than for the financial leverage meaning that, CEOs regardless of working for public or private firms, appear to be able to change operational risk easier than the financial risk profile of the firm.

The robustness tests on financial leverage supported the conclusion that financial leverage is correlated with age of the CEO and the regressions on only the bigger firms showed a higher significance than for all private firms. This cannot be seen in the case of operating leverage as the coefficient decreases while the standard deviation increases. Furthermore, the R^2 is extremely low for all tests which tell us that the regression model cannot explain operating leverage in a good way.

In the regressions for both financial and operating leverage, age seems to affect risk taking negatively in private firms and positively in public firms. On operating leverage, this same pattern is shown for tenure as well. This could indicate that both tenure and age are proxies for the same personal characteristics. However, in the tests on financial leverage, the correlation coefficients for age and tenure do not match. This makes it hard to interpret in what way tenure affects risk taking. If the results from financial leverage is looked at, it seems as though more tenured CEOs dare to make bolder decisions but this is only seen in public firms on operating leverage.

Table 5 - Operating Leverage in different industries

	1	2	3	4	5	6	7	8	9	10	11	12	13
Age	-2.226	-1.700	-3.903	20.17*	-4.668*	-12.79	-8.232	-48.37	-9.043	1.538	-1.091	4.105	8.523
	(5.175)	(5.102)	(13.72)	(10.50)	(2.495)	(15.30)	(8.631)	(43.43)	(9.264)	(4.538)	(2.340)	(3.105)	(8.010)
Age^2	0.0292	0.0167	0.0618	-0.195**	0.0452*	0.166	0.0954	0.334	0.0895	-0.0186	0.0141	-0.0380	-0.0743
	(0.0483)	(0.0493)	(0.141)	(0.0992)	(0.0240)	(0.170)	(0.101)	(0.290)	(0.0926)	(0.0462)	(0.0228)	(0.0303)	(0.0705)
Tenure	0.903	3.150	74.45	-26.10	12.33	71.99	5.957	-168.5	-15.16	32.23*	-0.906	1.242	-29.82
	(21.13)	(19.30)	(68.23)	(27.86)	(7.646)	(61.49)	(5.720)	(161.9)	(19.83)	(17.81)	(6.869)	(9.017)	(27.11)
$Tenure^2$	-0.263	-0.304	-4.038	2.045	-0.656	-4.026	-0.428	12.75	0.319	-1.796*	-0.0307	-0.158	1.442
	(1.405)	(1.260)	(3.608)	(1.924)	(0.430)	(3.908)	(0.340)	(12.38)	(0.750)	(0.982)	(0.394)	(0.476)	(1.373)
Log of assets	-2.851	-1.510	-9.611	-3.137	0.146	-16.80	5.143	-24.10	6.628	4.190	0.221	1.476	1.743
	(2.520)	(2.028)	(7.977)	(4.366)	(1.175)	(11.10)	(5.084)	(23.03)	(8.619)	(3.356)	(1.255)	(2.054)	(2.627)
Sex	-51.03**	20.32	-61.26	-23.83	0.371	48.77	3.470	-196.5	-25.93	26.29**	9.580*	-20.72	33.83
	(25.59)	(18.76)	(41.88)	(50.87)	(11.93)	(46.05)	(11.42)	(193.0)	(25.90)	(12.77)	(5.581)	(23.59)	(30.30)
Lagging operating leverage	-0.00968	0.000895	-5.90e-05	-6.67e-05	-0.00880	0.00308	-0.000451	-0.00198	-0.000281	0.000962	0.000686	0.00880*	-0.0154
	(0.00931)	(0.00274)	(0.000158)	(0.000631)	(0.00741)	(0.00219)	(0.000763)	(0.00240)	(0.000288)	(0.00138)	(0.000670)	(0.00533)	(0.0193)
Financial leverage	0.0687	-0.0104	0.106	-0.00352	0.0631	-0.0272	0.319	0.168	0.169	0.568	0.0181	0.173	-0.000478
	(0.0676)	(0.0131)	(0.154)	(0.00372)	(0.0957)	(0.0314)	(0.389)	(0.166)	(0.176)	(0.596)	(0.0229)	(0.160)	(0.000639)
Constant	110.1	60.85	-134.0	-443.1*	64.94	71.02	111.4	2,368	280.5	-195.7	12.48	-95.81	-156.6
	(189.4)	(91.21)	(218.7)	(232.6)	(54.37)	(397.6)	(134.0)	-2,189	(281.7)	(184.7)	(61.01)	(62.29)	(162.0)
Observations	1,937	4,299	29,05	15,233	37,836	9,751	11,689	25,455	17,832	4,616	60,476	5,818	411
R-squared	0.008	0.003	0.001	0.001	0.000	0.002	0.002	0.000	0.001	0.004	0.000	0.004	0.052

Note: The dependent variable is operating leverage. The variables Age, Age^2, Tenure, $Tenure^2$ and Sex refer to the CEO in the company observed. Log of Assets is the natural logarithm of the assets in thousands of SEK. Lagging operating leverage is a one year lagging variable of the dependent variable. Industry numbers refer to the following industries: 1. Energy & Environment 2. Materials 3.Industrial Goods 4.Construction Industry 5.Shopping Goods 6.Convenience Goods 7.Health & Education 8.Finance & Real Estate 9.IT & Electronics 10.Telecom & Media 11.Corporate Services 12.Other Industries 13. Missing Industry. Standard errors are reported in brackets. *** Significant at 1%, ** Significant at 5%, * Significant at 10%

The table above shows the output of regressions run separately for each industry. Just as previous tests on operating leverage, the regressions have a very low R^2 meaning that the model poorly explains the operating leverage. The significance of the age variable is also very low. However, the age coefficients for each industry are mostly negative (9 out of 13) which adds to the evidence from previous tests that CEO age and operating risk in firms are negatively correlated.

4.3 Cash-to-Assets Ratio

The table below shows the outcome of the regression done using cash divided by assets as the dependent variable. The regression is performed on the biggest quarter of the firms in the sample, thus it is not divided into public or private firms. A full table including fixed effects can be found in the appendix.

Table 6 - Cash-to-Assets Ratio

VARIABLES	*Large Firms*
	Cash-Asset Ratio
Age	-0.00790***
	(0.000575)
Age^2	7.86e-05***
	(5.72e-06)
Tenure	0.0104***
	(0.000803)
Tenure^2	-0.000285***
	(6.14e-05)
Sex	-0.0221***
	(0.00191)
Log of Assets	-0.0183***
	(0.000305)
Constant	0.471***
	(0.0148)
Observations	134,194
R-squared	0.064

Note: The dependent variable cash divided by assets. The variables Age, Age^2, Tenure, Tenure^2 and Sex refer to the CEO in the company observed. Log of Assets is the natural logarithm of the assets in thousands of SEK. Large firms refer to the largest quarter of the firms in the original full sample of all firms as measured by assets. Standard errors are reported in brackets. *** Significant at 1%, ** Significant at 5%, * Significant at 10%

The liquidity metric cash-to-assets ratio is analyzed and regressed using the largest quarter of the companies based on total assets. As stated above, the purpose is to have a more homogeneous sample and eliminate the effect of not controlled for variables. In these large firms the age of the CEO is significant at the 1% level. The beta coefficient indicates that older CEOs, on average, hold less cash than their younger counterparts. This finding is not supported by the theories that suggest that younger CEOs run their operations with higher risk. Rather, it is the *Market Learning Hypothesis* and theories that suggest that younger CEOs are afraid to make mistakes and therefore run their operation more conservatively that explain this finding. Moreover, all coefficients are significant at the 1% level. Despite this, the explanatory power of the regression is low (0.064)

4.4 Quick Ratio

The table below shows the outcome of the regression done using the quick ratio as the dependent variable. The regression is performed on the biggest quarter of the firms in the sample and is not divided into public or private firms, just like the above regression. A full table including fixed effects can be found in the appendix.

Table 7 - Quick Ratio

VARIABLES	*Large Firms*
	Quick Ratio
Age	7.003
	(8.968)
Age^2	-0.0252
	(0.0926)
Tenure	-0.551
	(21.99)
Tenure^2	-0.601
	(1.435)
Sex	59.63**
	(23.90)
Log of assets	78.83***
	(16.65)
Constant	-1,173***
	(309.6)
Observations	131,536
R-squared	0.001

Note: The dependent variable the quick ratio defined as current assets less inventories divided by current liabilities. The variables Age, Age^2, Tenure, Tenure^2 and Sex refer to the CEO in the company observed. Log of Assets is the natural logarithm of the assets in thousands of SEK. Large firms refer to the largest quarter of the firms in the original full sample of all firms as measured by assets. Standard errors are reported in brackets. *** Significant at 1%, ** Significant at 5%, * Significant at 10%

The other liquidity metric that is analyzed is the quick ratio, a metric that captures how well the company can meet its short term obligations. Similarly, to the cash-to-assets metric, a high value indicates that the company holds more cash, thereby lowering their liquidity risk. The same sample of large firms is used for the quick ratio regression. The age coefficient indicates that older CEOs hold more current assets relative to their current liabilities than younger CEOs. These results therefore indicate that younger CEOs tend to run their firms more conservatively and more carefully in terms of liquidity risk. However, the explanatory power of the model is very low (R^2 being 0.001).

Looking at the results from the cash-to-asset ratio and the quick ratio, it is hard to draw any conclusions about the risk-taking. Both measures are supposed to measure the willingness to have liquidity risk in the firm. More liquid assets means that there is less risk

that the company would have to sell an illiquid asset at a discount. However, when the liquid assets are put in relation to short-term obligations instead of total assets, the results are very different. Because liquidity risk depends on the obligations as well, the quick ratio should be the better measure. However, the explanatory power of the regression model is lower for the quick ratio and the age coefficient is significant for cash to assets but not for the quick ratio which again makes it hard to draw any clear conclusions from the results.

5. Implications and conclusions

CEO age seems to have some explanatory value on corporate policies within a Swedish context during the last two decades. The results indicate that risk-taking in private firms might be negatively correlated with CEO age and positively in public firms but the results are only significant for public firms. The results also provide evidence that CEO tenure affect corporate policies. However, the effect is different from what was hypothesized and different for the different types of leverage which makes it hard to conclude why tenure is important. The different relationships observed between public and private firms and the effects of age on risk-taking are very interesting and might give some insight into what factors are behind the behavioral biases found. If it is true that the effect of career concerns is applicable only on the effect of age on risk-taking in public firms, some other factors must be behind the fact that younger CEOs are more risk-taking in private firms. It could be because young people are more overconfident, because they are less risk-averse or some other personal characteristic.

If career concerns lead to a signaling behavior among CEOs in line with the predictions of the *Market Signaling Hypothesis*, young CEOs in public firms should be even more risk-taking than young CEOs in private firms. However, the correlation seems to be positive for public firms, both for operating and financial leverage and this contradicts this theory. Instead, there is something distinguishing the public firms from the private firms that makes young CEOs less risk-willing instead. An explanation could be provided by the findings in the specialized labor markets such as for the mutual fund managers, security analysts and macroeconomic forecasters. The effect of career concerns on the CEOs' behavior depends on what consequences higher risk and higher volatility in performance leads to. In the US, research showed that CEOs are rewarded for increasing their performance but not punished for bad performance to the same extent. Therefore, increasing risk will increase the CEOs net present wealth and the opposite conditions are true for the specialized workers. The labor market for CEOs in Sweden does not necessarily have to be the same as the one in the US which might explain the results. Because Sweden is a much smaller economy, it might not be as easy for a Swedish CEO to find a new employment after a failure. Hence, the Swedish CEO labor market might be less forgiving than the US CEO labor market and the consequences of undertaking risk might be more severe in terms of new CEO job opportunities.

Regarding the upside of a successful risk-taking, it might not be as big as in the US either. Extensive bonuses to top managers are often written about negatively in Swedish media and the wage gaps are not as high as in the US. Our findings therefore suggest that the Swedish CEO labor market resembles that of a specialized labor market in the US which does not reward risk-taking.

The primary purpose of this paper has been to investigate the effect of CEO age on risk-taking in the firm. However, another interesting discovery is the difference in risk-taking between men and women. Men systematically have a higher financial leverage than women, especially in private firms. This result suggests that men are more willing to take risk than women. When testing the effect of the sex on operating leverage however, the results are quite different. In private firms, women seem to take on much more risk than men but in public firms, men are the ones who take on more risk. As the coefficient is only significant when testing the financial leverage, the results overall indicate that men are more risk-willing than women.

In conclusion, this paper has found some indications that age is in fact related to corporate policies and that younger CEOs are willing to take more risk. However, this is not proven statistically and the results should be analyzed with caution. The regressions on separate industries do not support the theory which might suggest that young CEOs are not more risk taking but rather that they are attracted to industries where leverage is generally higher. Even so, the thesis provides some support for theories and discoveries from earlier studies. Moreover, it seems as though the Swedish labor market for CEOs is not as rewarding as it is in the US which dampens young CEOs risk appetite.

In this paper we have tried to isolate metrics which reliably measures risk but the risk-taking and the purpose for the risk-taking are hard to measure and there are many different potential explanations for the behavioral biases found. We believe that further research on the topic really could benefit from adding on to the quantitative analysis with a more qualitative approach where young and old CEOs in both private and public companies are interviewed.

6. References

Antia, M., Pantzalis, C. & Park, J.C. 2008, "CEO Decision Horizon and Firm Performance: An Empirical Investigation", *Available at SSRN 1107422*, .

Asker, J., Farre-Mensa, J. & Ljungqvist, A. 2014, "Corporate Investment and Stock Market Listing: A Puzzle?", *Review of Financial Studies*, , pp. hhu077.

Bebchuk, L. & Grinstein, Y. 2005, *Firm expansion and CEO pay*, .

Bertrand, M. & Mullainathan, S. 2003, "Enjoying the quiet life? Corporate governance and managerial preferences", *Journal of political Economy*, vol. 111, no. 5, pp. 1043-1075.

Bhide, A. 1993, "The hidden costs of stock market liquidity", *Journal of Financial Economics*, vol. 34, no. 1, pp. 31-51.

Boot, A.W. 1992, "Why hang on to losers? Divestitures and takeovers", *The Journal of Finance*, vol. 47, no. 4, pp. 1401-1423.

Brav, O. 2009, "Access to capital, capital structure, and the funding of the firm", *The Journal of Finance*, vol. 64, no. 1, pp. 263-308.

Chevalier, J. & Ellison, G. 1999, "Career concerns of mutual fund managers", *Quarterly Journal of Economics*, vol. 114, no. 2, pp. 389-432.

Dittmar, A., Mahrt-Smith, J. & Servaes, H. 2003, "International corporate governance and corporate cash holdings", *Journal of Financial and Quantitative analysis*, vol. 38, no. 01, pp. 111-133.

Eckbo, B.E., Thorburn, K.S. & Wang, W. 2012, "How costly is corporate bankruptcy for top executives?", *Tuck School of Business Working Paper*, , no. 2012-109.

Forbes, D.P. 2005, "Are some entrepreneurs more overconfident than others?", *Journal of Business Venturing*, vol. 20, no. 5, pp. 623-640.

Frank, M.Z. & Goyal, V.K. 2009, "Capital structure decisions: which factors are reliably important?", *Financial Management*, vol. 38, no. 1, pp. 1-37.

Gao, H., Harford, J. & Li, K. 2013, "Determinants of corporate cash policy: Insights from private firms", *Journal of Financial Economics*, vol. 109, no. 3, pp. 623-639.

Gibbons, R. & Murphy, K.J. 1991, *Optimal incentive contracts in the presence of career concerns: Theory and evidence*, .

Graham, J.R., Harvey, C.R. & Rajgopal, S. 2005, "The economic implications of corporate financial reporting", *Journal of Accounting and Economics*, vol. 40, no. 1, pp. 3-73.

Hambrick, D.C. & Fukutomi, G.D. 1991, "The seasons of a CEO's tenure", *Academy of management review*, vol. 16, no. 4, pp. 719-742.

Holmström, B. 1999, "Managerial incentive problems: A dynamic perspective", *The Review of Economic Studies,* vol. 66, no. 1, pp. 169-182.

Holmstrom, B. & Costa, J.R.I. 1986, "Managerial incentives and capital management", *The Quarterly Journal of Economics,* , pp. 835-860.

Hong, H., Kubik, J.D. & Solomon, A. 2000, "Security analysts' career concerns and herding of earnings forecasts", *The Rand journal of economics,* , pp. 121-144.

Jensen, M.C. & Meckling, W.H. 1979, "Rights and production functions: An application to labor-managed firms and codetermination", *Journal of business,* , pp. 469-506.

Jenter, D. & Lewellen, K. 2015, "CEO preferences and acquisitions", *The Journal of Finance,* vol. 70, no. 6, pp. 2813-2852.

Johansson, S. & Runsten, M. 2014, 3rd edn, Studentlitteratur AB, Lund.

Li, X., Low, A. & Makhija, A.K. 2014, "Career concerns and the busy life of the young CEO", *Charles A.Dice Center Working Paper,* , no. 2011-4.

MacCrimmon, K.R. & Wehrung, D.A. 1990, "Characteristics of risk taking executives", *Management science,* vol. 36, no. 4, pp. 422-435.

Maksimovic, V., Phillips, G. & Yang, L. 2013, "Private and public merger waves", *The Journal of Finance,* vol. 68, no. 5, pp. 2177-2217.

Michaely, R. & Roberts, M.R. 2012, "Corporate dividend policies: Lessons from private firms", *Review of Financial Studies,* vol. 25, no. 3, pp. 711-746.

Narayanan, M. 1985, "Managerial incentives for short-term results", *The Journal of Finance,* vol. 40, no. 5, pp. 1469-1484.

Poterba, J.M. & Summers, L.H. 1995, "A CEO Survey of US Companies' Time Horizons and Hurdle Rates", *Sloan management review,* vol. 37, no. 1, pp. 43.

Prendergast, C. & Stole, L. 1996, "Impetuous youngsters and jaded old-timers: Acquiring a reputation for learning", *Journal of political Economy,* , pp. 1105-1134.

Robinson, T.R., Henry, E., Pirie, W.L. & Broihahn, M.A. 2015, *International financial statement analysis,* John Wiley & Sons.

Taylor, R.N. 1975, "Age and experience as determinants of managerial information processing and decision making performance", *Academy of Management Journal,* vol. 18, no. 1, pp. 74-81.

Van Horne, J.C. 1977, *Financial Management and Policy,* Prentice Hall, New Jersey.

Yim, S. 2013, "The acquisitiveness of youth: CEO age and acquisition behavior", *Journal of Financial Economics,* vol. 108, no. 1, pp. 250-273.

7. Appendix

Table 4.1 - Operating Leverage All Firms

All Firms
Linear regression

Number of obs	= 225270
F(20, 225236)	= 0.85
Prob > F	= 0.6475
R-squared	= 0.0001
Adj R-squared	= -0.0001
Root MSE	= 9026.2952

Operating Leverage	Coef.	Robust Std. Err.	t	P>|t|	[95% Con	f. Interval]
Age	-4.798554	3.117725	-1.54	0.124	-10.90922	1.312108
Age^2	.0361874	.0256055	1.41	0.158	-.0139988	.0863736
Tenure	-6.330424	19.36654	-0.33	0.744	-44.28835	31.62751
Tenure^2	.7308612	1.438535	0.51	0.611	-2.088631	3.550354
Log(Assets)	-4.674061	3.404193	-1.37	0.170	-11.34619	1.998071
Sex	-16.03664	16.59244	-0.97	0.334	-48.55739	16.48411
Lagging Operating Leverage	.0000184	.000432	0.04	0.966	-.0008283	.0008651
Financial Leverage	.0020168	.0019288	1.05	0.296	-.0017636	.0057972
Materials	7.797115	12.4075	0.63	0.530	-16.52126	32.11549
Industrial Goods	-7.864564	30.05941	-0.26	0.794	-66.78023	51.05111
Construction Industry	11.18731	17.12366	0.65	0.514	-22.37463	44.74925
Shopping Goods	-.8549532	17.26909	-0.05	0.961	-34.70192	32.99202
Convenience Goods	46.06113	33.30758	1.38	0.167	-19.22087	111.3431
Health & Education	12.56781	16.7475	0.75	0.453	-20.25686	45.39247
Finance & Real Estate	-151.842	163.6535	-0.93	0.353	-472.5987	168.9147
IT & Electronics	-31.05469	26.83149	-1.16	0.247	-83.64373	21.53434
Telecom & Media	14.84516	19.64813	0.76	0.450	-23.66467	53.35499
Corporate Services	2.974316	13.31643	0.22	0.823	-23.12555	29.07418
Other Industries	.013052	15.889	0.00	0.999	-31.12899	31.1551
Missing Industry	13.57251	17.3428	0.78	0.434	-20.41894	47.56396
Constant	195.7515	177.2703	1.10	0.269	-151.6938	543.1968
Year	absorbed			(14		categories)

Table 4.2 - Operating Leverage Public Firms

Public Firms
Linear regression

Number of obs	= 867
F(19, 834)	= 0.41
Prob > F	= 0.9890
R-squared	= 0.0182
Adj R-squared	= -0.0194
Root MSE	= 383.5409

Operating Leverage	Coef.	Robust Std. Err.	t	P>|t|	[95% Con	f. Interval]
Age	1.202282	8.927782	0.13	0.893	-16.32128	18.72584
Age^2	-.0221389	.0874892	-0.25	0.800	-.1938637	.1495859
Tenure	35.31594	26.79536	1.32	0.188	-17.27834	87.91021
Tenure^2	-1.781753	1.518962	-1.17	0.241	-4.763191	1.199685
Log(Assets)	1.114928	1.724637	0.65	0.518	-2.27021	4.500066
Sex	3.16401	13.30846	0.24	0.812	-22.958	29.28602
Lagging Operating Leverage	.007943	.012022	0.66	0.509	-.0156539	.0315398
Financial Leverage	-1.787938	6.412928	-0.28	0.780	-14.37531	10.79944
Materials	.3565347	23.73141	0.02	0.988	-46.22377	46.93684
Industrial Goods	16.21212	66.27226	0.24	0.807	-113.8679	146.2921
Construction Industry	-19.30924	24.14501	-0.80	0.424	-66.70136	28.08288
Shopping Goods	-26.82133	24.15448	-1.11	0.267	-74.23205	20.5894
Convenience Goods	-17.00688	24.71433	-0.69	0.492	-65.51649	31.50272
Health & Education	-10.31809	23.80471	-0.43	0.665	-57.04228	36.40611
Finance & Real Estate	-15.77867	22.62573	-0.70	0.486	-60.18874	28.6314
IT & Electronics	-9.746639	22.78088	-0.43	0.669	-54.46123	34.96796
Telecom & Media	9.415807	33.32204	0.28	0.778	-55.98912	74.82073
Corporate Services	-18.63988	27.01872	-0.69	0.490	-71.67256	34.39281
Other Industries	-6.312514	23.9914	-0.26	0.793	-53.40314	40.77811
Constant	-144.8217	273.4529	-0.53	0.597	-681.5585	391.915
Year	absorbed			(14		categories)

Table 4.3 - Operating Leverage Private Firms

Private Firms
Linear regression

Number of obs	= 224403
F(20, 224369)	= 0.85
Prob > F	= 0.6470
R-squared	= 0.0001
Adj R-squared	= -0.0001
Root MSE	= 9043.6849

Operating Leverage	Coef.	Robust Std. Err.	t	P>|t|	[95% Con	f. Interval]
Age	-4.829671	3.134687	-1.54	0.123	-10.97358	1.314235
Age^2	.0364493	.0257024	1.42	0.156	-.0139268	.0868253
Tenure	-6.487665	19.44667	-0.33	0.739	-44.60264	31.62731
Tenure^2	.7387578	1.443168	0.51	0.609	-2.089815	3.567331
Log(Assets)	-4.84193	3.522852	-1.37	0.169	-11.74663	2.06277
Sex	-16.1038	16.65855	-0.97	0.334	-48.75414	16.54654
Lagging Operating Leverage	.0000167	.0004321	0.04	0.969	-.0008303	.0008636
Financial Leverage	.0020546	.0019591	1.05	0.294	-.0017852	.0058944
Materials	8.347942	12.45257	0.67	0.503	-16.05877	32.75465
Industrial Goods	-7.661891	30.19193	-0.25	0.800	-66.83731	51.51353
Construction Industry	11.64478	17.1347	0.68	0.497	-21.9388	45.22835
Shopping Goods	-.3723899	17.22807	-0.02	0.983	-34.13897	33.39419
Convenience Goods	46.70852	33.30837	1.40	0.161	-18.57504	111.9921
Health & Education	13.14677	16.78922	0.78	0.434	-19.75967	46.05321
Finance & Real Estate	-151.9232	164.0587	-0.93	0.354	-473.4742	169.6278
IT & Electronics	-30.88177	26.95951	-1.15	0.252	-83.72173	21.95819
Telecom & Media	15.24901	19.66836	0.78	0.438	-23.30047	53.79848
Corporate Services	3.439578	13.31854	0.26	0.796	-22.66443	29.54358
Other Industries	.409638	15.88528	0.03	0.979	-30.72511	31.54439
Missing Industry	14.08455	17.31825	0.81	0.416	-19.85878	48.02788
Constant	197.7556	178.6223	1.11	0.268	-152.3395	547.8507
Year	absorbed			(14		categories)

Table 1.1 - Financial Leverage All Firms

All Firms
Linear regression

Number of obs =	373490
F(21, 373454) =	67.10
Prob > F =	0.0000
R-squared =	0.6188
Adj R-squared =	0.6188
Root MSE =	213.5702

Financial Leverage	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
Age	-.0506767	.2117783	-0.24	0.811	-.4657558	.3644024
Age^2	.0007509	.0021277	0.35	0.724	-.0034193	.0049211
Tenure	.478152	.5845598	0.82	0.413	-.6675679	1.623872
Tenure^2	-.029393	.0319237	-0.92	0.357	-.0919624	.0331765
Log(Assets)	.531175	.2799189	1.90	0.058	-.0174578	1.079808
Sex	2.234932	1.10054	2.03	0.042	.0779064	4.391958
Lagging Financial Leverage	.7923334	.1321235	6.00	0.000	.5333753	1.051291
Tangibility	2.540214	1.723861	1.47	0.141	-.8385034	5.918931
ROA	-2.663676	1.849909	-1.44	0.150	-6.289442	.9620906
Materials	-.7015716	1.942112	-0.36	0.718	-4.508053	3.10491
Industrial Goods	-2.169818	1.541526	-1.41	0.159	-5.191164	.8515286
Construction Industry	-3.050003	1.836446	-1.66	0.097	-6.649383	.5493767
Shopping Goods	-1.752668	1.679125	-1.04	0.297	-5.043703	1.538367
Convenience Goods	-1.536474	1.643717	-0.93	0.350	-4.758111	1.685163
Health & Education	-2.016186	1.58519	-1.27	0.203	-5.123112	1.090739
Finance & Real Estate	-1.711349	2.017411	-0.85	0.396	-5.665415	2.242718
IT & Electronics	-1.899833	1.564888	-1.21	0.225	-4.966968	1.167302
Telecom & Media	-1.155488	1.562578	-0.74	0.460	-4.218095	1.907119
Corporate Services	-1.504517	1.543416	-0.97	0.330	-4.529567	1.520533
Other Industries	-1.615596	3.75445	-0.43	0.667	-8.974207	5.743016
Missing Industry	12.85765	9.76648	1.32	0.188	-6.284356	31.99967
Constant	-3.617907	4.598717	-0.79	0.431	-12.63125	5.395442
Year	absorbed			(15		categories)

Table 1.2 - Financial Leverage Public Firms

Public Firms
Linear regression

Number of obs =	1545
F(20, 1511) =	17.30
Prob > F =	0.0000
R-squared =	0.2403
Adj R-squared =	0.2237
Root MSE =	1.3056

Financial Leverage	Coef.	Robust Std. Err.	t	P>|t|	[95% Con	f.	Interval]
Age	.1354703	.0377757	3.59	0.000	.061372		.2095686
Age^2	-.001257	.0003581	-3.51	0.000	-.0019594		-.0005546
Tenure	.061864	.0640415	0.97	0.334	-.0637557		.1874837
Tenure^2	-.0070306	.0040483	-1.74	0.083	-.0149714		.0009102
Log(Assets)	.0351439	.0073079	4.81	0.000	.0208092		.0494787
Sex	.2383338	.0934379	2.55	0.011	.0550521		.4216156
Lagging Financial Leverage	.1818738	.1134168	1.60	0.109	-.0405972		.4043448
Tangibility	1.258369	.4409889	2.85	0.004	.3933539		2.123384
ROA	-1.253744	.224976	-5.57	0.000	-1.695043		-.812446
Materials	.04384	.3661403	0.12	0.905	-.6743571		.7620372
Industrial Goods	.3203992	.3554551	0.90	0.368	-.3768385		1.017637
Construction Industry	.0947374	.3646408	0.26	0.795	-.6205184		.8099933
Shopping Goods	.3254019	.359696	0.90	0.366	-.3801545		1.030958
Convenience Goods	.6479151	.3759086	1.72	0.085	-.0894427		1.385273
Health & Education	-.398261	.3633042	-1.10	0.273	-1.110895		.314373
Finance & Real Estate	.2834671	.3773839	0.75	0.453	-.4567847		1.023719
IT & Electronics	.3250385	.3729312	0.87	0.384	-.4064792		1.056556
Telecom & Media	.0882043	.4699414	0.19	0.851	-.8336022		1.010011
Corporate Services	.251919	.362746	0.69	0.487	-.4596201		.963458
Other Industries	.7362001	.4544238	1.62	0.105	-.1551682		1.627568
Tangibility	0	(omitted)					
Constant	-3.792944	1.048822	-3.62	0.000	-5.850244		-1.735644
Year	absorbed			(14			categories)

Table 1.3 - Financial Leverage Private Firms

Private Firms
Linear regression

Number of obs =	371945
F(21, 371909) =	66.90
Prob > F =	0.0000
R-squared =	0.6188
Adj R-squared =	0.6188
Root MSE =	214.0130

Financial Leverage	Coef.	Robust Std. Err.	t	P>|t|	[95% Con	f. Interval]
Age	-.0497116	.2127903	-0.23	0.815	-.4667744	.3673511
Age^2	.0007467	.0021362	0.35	0.727	-.0034402	.0049336
Tenure	.4802849	.5865997	0.82	0.413	-.6694332	1.630003
Tenure^2	-.0294543	.0320497	-0.92	0.358	-.0922707	.0333621
Log(Assets)	.5438861	.2874458	1.89	0.058	-.0194992	1.107271
Sex	2.245668	1.104315	2.03	0.042	.0812435	4.410092
Lagging Financial Leverage	.7923293	.1321258	6.00	0.000	.5333666	1.051292
Tangibility	2.494626	1.710302	1.46	0.145	-.857514	5.846767
ROA	-2.664763	1.850268	-1.44	0.150	-6.291233	.9617074
Materials	-.6974381	1.961212	-0.36	0.722	-4.541355	3.146479
Industrial Goods	-2.202426	1.557433	-1.41	0.157	-5.254948	.8500958
Construction Industry	-3.096552	1.849547	-1.67	0.094	-6.72161	.5285065
Shopping Goods	-1.797024	1.691093	-1.06	0.288	-5.111515	1.517467
Convenience Goods	-1.587263	1.659821	-0.96	0.339	-4.840463	1.665938
Health & Education	-2.048665	1.602735	-1.28	0.201	-5.189978	1.092649
Finance & Real Estate	-1.746971	2.024919	-0.86	0.388	-5.715752	2.221809
IT & Electronics	-1.941218	1.581544	-1.23	0.220	-5.040997	1.158561
Telecom & Media	-1.19144	1.572483	-0.76	0.449	-4.273461	1.89058
Corporate Services	-1.548974	1.559115	-0.99	0.320	-4.604793	1.506845
Other Industries	-1.647227	3.77839	-0.44	0.663	-9.052758	5.758305
Missing Industry	12.80015	9.760496	1.31	0.190	-6.330132	31.93043
Constant	-3.684857	4.652842	-0.79	0.428	-12.80429	5.434575
Year	absorbed			(15		categories)

Table 6.1 - Cash-to-Asset Ratio Large Firms

Large Firms
Linear regression

Number of obs =	134194
F(18, 134160) =	659.31
Prob > F =	0.0000
R-squared =	0.0890
Adj R-squared =	0.0888
Root MSE =	0.2039

Cash/Assets	Coef.	Robust Std. Err.	t	P>|t|	[95% Con	f. Interval]
Age	-.0079009	.0005747	-13.75	0.000	-.0090273	-.0067746
Age^2	.0000786	5.72e-06	13.74	0.000	.0000674	.0000898
Tenure	.0103979	.0008026	12.96	0.000	.0088248	.011971
Tenure^2	-.0002853	.0000614	-4.65	0.000	-.0004055	-.000165
Sex	-.022098	.0019145	-11.54	0.000	-.0258503	-.0183457
Log(Assets)	-.0183491	.000305	-60.17	0.000	-.0189468	-.0177514
Materials	-.0066163	.0042326	-1.56	0.118	-.0149122	.0016796
Industrial Goods	-.0011814	.0036532	-0.32	0.746	-.0083415	.0059788
Construction Industry	.0531064	.0041966	12.65	0.000	.0448811	.0613317
Shopping Goods	.0074266	.0037397	1.99	0.047	.0000969	.0147564
Convenience Goods	.0601543	.0041874	14.37	0.000	.051947	.0683616
Health & Education	.1155173	.004787	24.13	0.000	.1061348	.1248997
Finance & Real Estate	-.0100639	.0036672	-2.74	0.006	-.0172516	-.0028762
IT & Electronics	.1058022	.0043905	24.10	0.000	.0971969	.1144076
Telecom & Media	.0785784	.0057667	13.63	0.000	.0672757	.0898811
Corporate Services	.0774554	.0038212	20.27	0.000	.069966	.0849448
Other Industries	.0326412	.0052432	6.23	0.000	.0223646	.0429178
Missing Industry	.0472893	.0065273	7.24	0.000	.0344959	.0600827
Constant	.4711056	.0147885	31.86	0.000	.4421204	.5000908
Year	absorbed			(16		categories)

Table 7.1 - Quick Ratio Large Firms

Large Firms
Linear regression

Number of obs	= 131536
F(18, 131502)	= 3.60
Prob > F	= 0.0000
R-squared	= 0.0009
Adj R-squared	= 0.0007
Root MSE	= 5796.7538

Quick Ratio	Coef.	Robust Std. Err.	t	P>|t|	[95% Con	f. Interval]
Age	7.003055	8.967706	0.78	0.435	-10.57349	24.5796
Age^2	-.0252351	.0925742	-0.27	0.785	-.206679	.1562087
Tenure	-.5514447	21.99455	-0.03	0.980	-43.66036	42.55747
Tenure^2	-.6005039	1.434685	-0.42	0.676	-3.41246	2.211453
Sex	59.62856	23.90091	2.49	0.013	12.78321	106.4739
Log(Assets)	78.83477	16.65126	4.73	0.000	46.1986	111.4709
Materials	32.99357	49.13675	0.67	0.502	-63.31358	129.3007
Industrial Goods	54.98062	35.76102	1.54	0.124	-15.11034	125.0716
Construction Industry	88.78263	39.85069	2.23	0.026	10.67599	166.8893
Shopping Goods	99.59178	41.53027	2.40	0.016	18.1932	180.9904
Convenience Goods	85.71392	40.05845	2.14	0.032	7.20008	164.2278
Health & Education	72.06831	38.95909	1.85	0.064	-4.290801	148.4274
Finance & Real Estate	243.9392	87.23931	2.80	0.005	72.95176	414.9267
IT & Electronics	163.6114	50.80626	3.22	0.001	64.03204	263.1908
Telecom & Media	81.80958	43.17876	1.89	0.058	-2.820021	166.4392
Corporate Services	187.7802	59.1382	3.18	0.001	71.87035	303.69
Other Industries	152.9132	46.61782	3.28	0.001	61.54312	244.2833
Missing Industry	337.0167	80.24637	4.20	0.000	179.7353	494.2982
Constant	-1173.382	309.5589	-3.79	0.000	-1780.112	-566.6522
Year	absorbed			(16		categories)