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Bachelor Thesis

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Earnings management during initial public offerings

An empirical analysis of the existence and the incentives behind earnings management

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Abstract:

In this thesis we study the existence of earnings management in connection to IPOs, as well as the potential effect that having a CEO selling shares in the IPO can have on the level of exercised earnings management. We apply the Modified Jones Model on a set of IPO firms going public on Nasdaq OMX and Nasdaq First North during the years 2006-2016. We find evidence that firms going public manage their earnings predominantly during the years leading up to the IPO as well as in the issue year. We also find evidence that having a CEO who is selling shares in connection to the IPO causes the firm to manage their earnings downwards during the issue year. Several robustness tests support these findings.

Tutor: Håkan Thorsell

Keywords: *Earnings management, IPO, managerial equity ownership, convergence of interest hypothesis.*

1. INTRODUCTION

In this thesis, we conduct two tests with regards to earnings management in an IPO setting. Firstly, we test for the existence of earnings management during a five-year window of the issue year for firms going public. We find that IPO firms manage their earnings in the years leading up to the IPO, during the issue year and the year following the issue year. The effect is most notable during the issue year as well as during the year prior to the IPO. Secondly, we analyse the effect that having a CEO selling shares in connection to the IPO and thereby reducing their managerial equity ownership has on the level of earnings management exercised during the issue year. We find that the sale of shares has a negative effect on the level of earnings management exercised.

1.1 Background

The Initial Public Offering (IPO) marks the first time that the shares of a private firm are offered to the public (Berk & DeMarzo, 2014). Going public is considered a major milestone in the lifecycle of a firm and is also highly important from a capital market perspective. When a firm is becoming publicly traded it is crucial to find potential investors who are willing to buy shares in the firm. If a firm fails to meet market expectations in connection to the IPO, they risk the share price at the first day of trading to close below the offer price, which is often described as a major failure (Mulford & Comiskey, 2002).

The potential investor will value a firm based on its ability to generate future earnings, which is considered the most important indicator of a firm's performance (Mulford et al., 2002). This generates an incentive for firms to engage in *earnings management*. This opportunistic earnings behaviour is enabled by the information asymmetry that is prevalent between managers and the prospective investor prior to the IPO. The prospective investor has to rely on the potentially manipulated information in the prospectus report, as other public information is difficult to obtain (Teoh, Wong & Rao, 1998). A possible way to reduce the opportunistic earnings behaviour is by retaining managerial equity ownership. This could potentially align the interests between shareholders and the manager.

Previous research on the existence of earnings management in an IPO setting is divided with regards to both when and if it occurs. DuCharme, Malatesta & Sefcik (2001) find evidence that firms engage in earnings management during the year prior to the IPO, and that this effect decreases during the following years. Teoh, Welch & Rao (1998), however, find evidence that firms engage in earnings management during the years following the IPO. Ball & Shivakumar

(2008) find that firms do not engage in earnings management, either prior or post the IPO. Furthermore, the results from studies on the effect that managerial equity ownership has on the level of earnings management exercised is also divided. Alves (2012) finds that managerial ownership effectively aligns the goals of the shareholders and the manager, resulting in less earnings management. Yeo, Tan, Ho & Chen (2002) find support of the contrary, that managerial equity ownership rather increases the level of earnings management.

1.2 Purpose

The purpose of this thesis is twofold. Firstly, we are interested in examining if earnings management exists in connection to an IPO in a Swedish setting. We find it interesting to study if potential investors can trust the financial statements to accurately reflect the performance of the firm, or if they can expect to be deceived. Secondly, as an extension to the first study, we are also interested in studying the incentives that a CEO who reduces their managerial equity ownership in the IPO might have to affect the financial statements. The findings of our studies should be of interest to potential shareholders of the firms going public, as it might reveal alternative agendas that the supposedly shareholder-focused management might have.

1.3 Contribution

This study will contribute to prior research in *two ways*. *Firstly*, the study will add additional research regarding the existence of earnings management in an IPO setting. Previous research reaches different conclusions, which is why we find it interesting to analyse this in a Swedish setting. *Secondly,* the study will explore the different incentives the CEO might have to manage the earnings of the firm in connection to an IPO. As the CEO is responsible for the operational decisions of the firm, they are able to influence potential investors perception of the firm's performance through the financial statements. The second study will therefore explore the agenda of the CEO in an IPO setting. To our knowledge, the amount of research within this field is limited.

1.4 Delimitation

The period for the study has been limited to only include IPOs made during the period 2006-2016. We choose this timeframe as the accounting data has to be partially manually collected from the database Retriever Business, which only provides data from the year 2006. Furthermore, as we are interested to study earnings management in a Swedish setting, we have limited the sample of IPO firms to only include IPOs of Swedish group companies on Nasdaq OMX and Nasdaq First North.

We choose to include Nasdaq First North and to not only focus on Nasdaq OMX due to the fact that only focusing on Nasdaq OMX would have generated too few data observations for us to draw reliable conclusions. As the Nasdaq First North market attracts small growth firms it might have an impact on our results. However, we hope to mitigate this impact by using specific control variables.

We divide the firms into industries following the GICS classification. We have excluded banks and insurance companies as their accounting differ and would therefore reduce the comparability of our study. Including the banks and insurance companies would therefore reduce the comparability of the studies.

We decide to focus on the change in equity ownership of the CEO. Alternative compensation schemes such as stock options or lockup agreements will therefore not be a part of this research.

In order to facilitate easy comparison to past research, only one accrual based model will be used – The Modified Jones Model. We make this choice as the Modified Jones Model has been proven to be the most frequently used model in studies of earnings management in connection to IPO. We hope to capture the effect that performance might have on the discretionary accruals by including the ROA as an independent variable.

2. THEORY

In this section, we present the theoretical framework. We start by describing agency theory and the information asymmetry present in an IPO setting. We then provide a brief background on the field of earnings management. We conclude by combining agency theory, earnings management and the IPO setting by discussing the various motives that the CEO might have to manage earnings when the firm is going public.

2.1 Agency theory

Agency theory relates to the separation of ownership and control (Jensen & Merckling 1976) and describes the situation that occurs when one party (the principal) delegates work to another (the agent), who is to execute the task. In agency theory, the agent is driven by *extrinsic* motivation, which includes everything the agent gains from executing a the task (Anthony, Govindarajan, Hartmann, Kraus and Nilsson, 2014). This includes, but is not limited to, monetary rewards. When the interests of the agent are not aligned with those of the principal, there is a conflict of interest, which is associated with agency costs. This is known as the principal-agent problem (Goolsbee, Levitt & Syverson, 2013). For the purpose of this thesis, the principal-agent problem relates to the conflicting interests of the shareholders and the CEO. As the Swedish Corporate Governance Code states, the responsibilities of a CEO are the firm's day-to-day operations. Shareholders may through the board decide on the strategic direction of the firm, however the responsibility of execution lies in the hands of the CEO (Swedish Corporate Governance Board, 2015). To assure that shareholders' interests are protected, monitoring managerial actions becomes essential but costly to implement and maintain (Fama & Jensen, 1983). Past research on goal congruence by Nyberg, Fulmer, Gerhart & Carpenter (2010) find that despite the good intention of managers, they are not immune from systematic decision biases and the agency costs related to these decisions can be very high. Consequently, agency theory relies on incentive contracts such as managerial equity ownership (Eisenhardt 1989).

2.2 Information asymmetry

When there is an imbalance in information prevailing between two parties, this phenomenon is commonly referred to as information asymmetry (Balakrishnan & Koza 1993). In an IPO setting, an information asymmetry arises as the management of the firm has more information than the financial market about the firm's ability to generate future cash flows (Chaney & Lewis, 1995). As there is often a lack of information available to outside investors prior to the

IPO (Teoh et al., 1998), this information asymmetry enables management to maximise personal benefits, by affecting the financial reporting quality (Alzoubi, 2016). Thus, investors often have to rely on potentially manipulated financial statements in the prospectus report (Teoh et al., 1998).

Previous research by Leland & Pyle (1977) argue that for reported earnings to be a credible signal of the value of the firm, there must be costs associated with inflating them. Firms can reduce the costs of information asymmetry in connection to an IPO by having retained managerial ownership. This would positively signal the manager's private information regarding the true quality of the firm to outside parties and ultimately increase the value of the firm (Chaney et al., 1995; Harjoto & Garen 2005).

2.3 Earnings management

According to IFRS, the objective of external financial reporting is to *"provide financial information about the reporting entity that is useful to present and potential investors and creditors in making decisions in their capacity as capital providers."* (IFRS, 2007). Healy & Wahlen (1999) share this view and argue that the role of financial reporting and standard setting is to facilitate a credible way to effectively communicate the economic position of a firm. This trade-off between credibility and usefulness present the standard setters with an inherent conflict between the relevance and the reliability of the presented accounting data. If all firms were forced to report their financial position using the same accounting methods, estimates and disclosures, the presented data might not be particularly relevant to users. On the other hand, if total discretion was advised, the reliability of the data could be questioned. The management would then be able to choose the methods and estimates that effectively serve their interests by inflating or deflating the presented earnings figure (Healy et al, 1999). In this thesis, we use the definition of earnings management introduced by Healy & Wahlen (1999), stating that:

> *"Earnings Management occurs when managers use judgement in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers." (Healy & Wahlen 1999)*

Healy and Wahlen (1999) conclude that earnings management occurs in four generic cases; when a firm wants to (1) window dress the financial statement prior to the offering of securities

to the public, (2) increase manager compensation or job security, (3) avoid violating debt covenants, or (4) reduce regulatory costs and/or increase benefits (Healy et al., 1999).

The literature on earnings management frequently makes the distinction between real- and accrual based earnings management. Cohen, Dey & Lys (2008) describe real earnings management as situations where the management take actions that, aside from affecting the reported earnings, also have real operational implications for the firm. In practice, real earnings management might appear as a reduction in the spending on R&D. This will increase the earnings in the current period, potentially at the expense of future earnings. Since accrual based earnings management has attracted considerably more interest and lends itself easier to study, this thesis will only focus on the use of accrual based earnings management.

There are several ways to increase or decrease the reported earnings through the use of accruals. The firm can for instance book a restructuring reserve. This will effectively reduce the reported earnings in the current period and create a positive accrual, ready to be released into future earnings. The firm can also change the amortisation period, to amortise assets more slowly. By doing so, firms can inflate the earnings in the current period. (Schilit & Perler, 2010).

The accrual based models have their vantage point in the procedure of separating the firm's total accruals into a non-discretionary and a discretionary part. The total accruals are estimated as the difference between the net income and the cash flow from operations (DeAngelo, 1988). The accruals that cannot be motivated by the operating nature of the firm are called discretionary accruals (DA), while the accruals that can be motivated are called non-discretionary accruals (NDA). Given this connection, the expression for total accruals (TA) is presented as Equation (1) (Healy, 1999):

$$TA_{it} = NDA_{it} + DA_{it} \quad (1)$$

All accruals need to be reversed at some point in time (Dechow, Hutton, Kim & Sloan, 2012). The positive effect from an income increasing activity in a period will inevitably be offset by a negative effect from an income decreasing activity in the future. This makes it impossible to sustainably manage earnings in one direction for a long period of time (DeFond & Park, 2001). The time it takes for the accruals to reverse has proven to be difficult to study. Dechow, Hutton, Kim & Sloan (2012) claim that it is safe to assume that accruals related to working capital will reverse in the subsequent year, while Allen, Larson & Sloan (2010) find

that abnormal accruals often take longer than one year to reverse. The effect of reversals imply that if earnings are managed upwards, investors selling shares will benefit at the expense of investors retaining their shares (Mulford et al., 2002).

2.3.1 A review of the development of accrual based models

Healy (1985) introduced the concept of accrual based estimates of earnings management through what became known as the Healy Model. The Healy Model assumes that the non-discretionary part of the total accruals remains constant over time, from which it follows that the entire effect of earnings management can be derived from the change in mean total accruals during the period of study. DeAngelo (1986) extended the Healy Model by estimating the discretionary accruals as the difference in total accruals between two directly adjacent periods, rather than between a given estimation and the mean total accruals. Similar to the Healy Model, the DeAngelo Model assumes that the non-discretionary accruals remain constant throughout the period of study (Dechow, Sloan & Sweeney, 1995). The implicit assumption that the non-discretionary part of the total accruals remains constant over time was challenged by Kaplan (1985) and later formalised by Jones (1991) through the Jones Model. The Jones Model relaxes the assumption that the non-discretionary accruals are constant, giving way to the idea that they are influenced by changes in lagged total assets, revenue and property, plant and equipment.

An important limitation of the Jones Model is that revenues are considered to be non-discretionary. This inflates the estimated non-discretionary accruals and in effect causes the estimated discretionary accruals to become systematically biased towards zero. This limitation gave rise to the Modified Jones Model developed by Dechow, Sloan & Sweeney (1995) which adjusts the change in revenues with the change in receivables. Instead of considering revenues to be non-discretionary, Dechow, Sloan & Sweeney assume that all changes in credit sales are derived from the use of earnings management. This modification reduces the likelihood of the discretionary accruals being biased towards zero (Dechow et al., 1995).

Kothari, Leone & Wasley (2005) argue that the Modified Jones Model is incorrectly specified for firms with abnormal performance, measured as the return on assets, *ROA*. They propose the Performance-matched Model in which the discretionary accruals are estimated using the Jones or Modified Jones Model and subsequently adjusted for the discretionary accruals of a firm exhibiting similar ROA (Kothari et al., 2005). Keung & Shih (2013) find, however, that performance matching systematically causes the discretionary accruals to be underestimated

for the firm in question, as the performance related abnormal accruals are likely to vary between the firm and the ROA-matched control firm.

2.3.2 Managerial equity ownership and earnings management

A discrepancy in the goals of the shareholders and the management can give rise to suboptimal operational decisions such as earnings management (Kazemian & Sansusi 2015). One way to align the goals of the shareholders and the managers is by the use of managerial equity ownership. Fama (1980), Fama & Jensen (1983) and Jensen & Merckling (1976) state that if managers place a portion of their fortune in shares of the firm they will be more inclined to act in the interests of the shareholders. This is in accordance with the *convergence of interest hypothesis* which states that the willingness of managers to act in shareholders' interests increases with the level of managerial equity ownership. (Morck, Shleifer and Vishny 1988).

The effect of managerial equity ownership on the estimated level of earnings management has been tested through numerous studies. Alves (2012) study Portuguese firms between the years 2002 and 2007 and finds that both managerial ownership and ownership concentration is effective at aligning the goals between the shareholders and the management, preventing the use of earnings management (Kazemian et al., 2015). However, Cheng & Warfield (2005) find in their study based on Standard & Poor's listed firms between the years 1993 – 2000, that the equity stake of the CEO has a positive relationship to outperforming analysts' earnings forecasts. They attribute their finding to the possibility that earnings management was present in the sample. Yeo, Tan, Ho & Chen (2002) also find support for the thesis that managerial ownership can cause earnings management to occur. Through their study of firms listed in Singapore between the years of 1990 to 1992 they are able to conclude that earnings management increases in firms where the equity ownership of the CEO exceeds 25 percent of the total number of shares (Tan, 2008). This is due to as the managers gain sufficient voting power through their ownership, their job security is no longer threatened (Tan, 2008). There are also incentives for value maximising managers to manage the earnings downwards. McAnally, Srivastava & Weaver (2008) find that managers with granted stock options might be incentivised to manage the earnings downwards in order to get a lower strike price and increase their personal wealth (Anthony et al., 2014). One can see that there exists contradictory evidence on whether managerial equity ownership implies engagement in earnings management or not.

2.3.3 Incentives for the CEO to engage in earnings management in an IPO setting

Since earnings are considered to be one of the most important indicators of a firm's performance (Mulford et al., 2002), management might be incentivised to be opportunistic in reporting earnings in order to positively influence potential investors perception of the firm in connection to an IPO (Chaney et al., 1995). However, the use of earnings management is not without risks. Xie (2001) find a negative correlation between the level of earnings management exercised prior to the IPO and the offer price, implying that the investors are able to correctly spot the usage of earnings management. The evidence is mixed as to when earnings management occurs in connection to the IPO. Teoh, Wong & Rao (1998) argue that opportunistic behaviour causes firms to increase their reported earnings prior to the IPO in order to warrant a higher share price. This is supported by Friedlan (1994) who find that firms manage earnings prior to the IPO to get higher offer prices. Chaney & Lewis (1995) further argue that value-maximising managers driven by extrinsic rewards are incentivised to engage in upwards earnings management prior to the IPO as it may increase the value of the firm (Chaney et al., 1995).

However, there are also incentives to engage in earnings management after the issue year. Commonly, there is a lock-up period for the major shareholders and influential managers during which they are not allowed to sell their shares. Also, the verbal commitments made by the underwriters of the IPO regarding future earnings, incentivise management to continue to report high earnings after the issue year (Teoh et al., 1998). There are also alternative compensation structures that might lead the management to engage in more or less earnings management. Mikkelson, Partch & Shah (1997) argue that the interests of managers and shareholders may still be aligned despite the sale of equity if the managers retain a substantial share of their equity after the issue year. Furthermore, they argue that the compensation of managers is usually linked to the share price which could potentially act as a substitution for large equity ownership and thus, have similar effects on the amount of earnings management exercised. (Mikkelson et al., 1997).

2.3.4 Previous studies on earnings management in the IPO setting

Several studies measure the existence of earnings management by estimating the discretionary accruals. Table 1 presents an overview of studies made in an IPO setting. The majority of the studies use the Modified Jones Model for the estimation of discretionary accruals. The results as to when and if firms engage in earnings management is divided. Several studies find that the firms engage in earnings management during the issue year, whilst it is more difficult to draw a general conclusion regarding the period prior to- and post the issue year.

Table 1.

Previous research on earnings management in an IPO setting.

Year	Author(s)	Title	Data	Accruals Based Model	Conclusion
1998	Teoh, Wong & Rao	*"Are Accruals During Initial Public Offerings Opportunistic?"*	1980 - 1990, U.S.	Modified Jones model	IPO firms exhibit abnormal accruals in the years post the IPO
2001	DuCharme, Malatesta & Sefcik	*"Earnings Management: IPO Valuation and Subsequent Performance"*	1982 - 1987, U.S.	Modified Jones model	IPO firms exhibit abnormal positive accruals prior to issue year. These decrease during the years post the IPO
2003	Roosenboom, van der Goot & Mertens	*"Earnings Management & Initial Public Offerings: evidence from Netherlands"*	1984 - 1994, Netherlands	Modified Jones model	IPO firms exhibit abnormal discretionary accruals in the first year as a public firm but not in the years prior to the IPO
2006	Cormier & Martinez	*"The Association between Management Earnings Forecasts, Earnings Management and the Stock Market Valuation: Evidence from French IPOs"*	2000 - 2002, France	Modified Jones model	IPO firms exhibit abnormal discretionary accruals in the issuing year
2008	Ball & Shivakumar	"Earnings Quality at Initial Public Offerings"	1992 - 1999, U.K.	Jones model	IPO firms do not exhibit abnormal discretionary accruals in the issuing year
2008	Armstrong, Foster & Taylor	*"Earnings Management Around Initial Public Offerings: A Re-examination"*	1986 - 2005, U.S.	Balance Sheet model and Modified Jones model	IPO firms exhibit high abnormal accruals prior to and during the issuing year
2014	Miloud	*"Earnings Management & Initial Public Offerings: An Empirical Analysis"*	1995 - 2005, France	Modified Jones model	IPO firms manage their earnings upwards during the issuing year and the first year following the IPO
2015	Gumanti, Nastiti, Utami & Manik	*"Audit Quality and Earnings Management in Indonesian Initial Public Offerings"*	2000 - 2006, Indonesia	Modified Jones model	IPO firms exhibit abnormal accruals
2015	Cheng, Wang & Wei	*"State Ownership and Earnings Management around Initial Public Offerings: Evidence from China"*	2003 - 2009, China	Modified Jones model & Kothari Model	IPO firms exhibit abnormally high discretionary accruals in the issuing year as well as two years prior to the IPO

3. METHOD

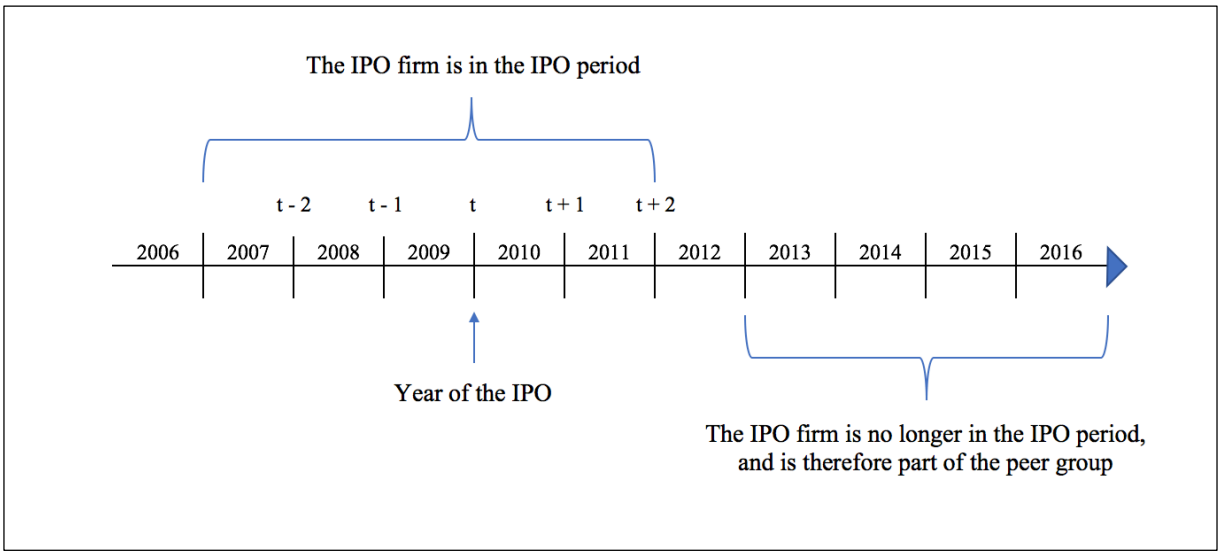
We start this section by defining the IPO period and presenting our hypotheses. We then continue with the operationalisation of the Modified Jones Model and the choice between a cross-sectional and a time-series based model. After this, we discuss the use of absolute and non-absolute discretionary accruals and how they relate to our study. We end the section by presenting the main regression model used in the test of hypothesis 2.

3.1 Definition of the IPO period

As an IPO is considered to be a major event for the firm (Teoh et. al 1998), we define a period during which we hypothesise that earnings management will occur as a consequence of the firm going public. We visualise the definition of our IPO period for a firm going public in 2009 in Figure 1. As previous research finds evidence of earnings management both prior to and post the IPO, we have chosen to define the IPO period as the period between two years prior to, and two years post the issue year. During this period, we hypothesise that the firm is likely to manage their earnings as a consequence of the IPO. Three years after the issuing year, we judge that the effect of earnings management resulting from the IPO has disappeared. After this period, the IPO firm becomes a part of the peer group.

Figure 1.

Visualisation of the IPO period for a firm going public in the year 2009.



3.2 Hypotheses

The aim of this thesis is twofold. Firstly, we are interested in examining whether we can find evidence that firms systematically use earnings management in the form of discretionary accruals in connection to going public.

As previous research points out, opportunistic behaviour can cause the management to engage in earnings management in order to report high earnings prior to the IPO in the hope that it will generate a higher market valuation (Teoh et al., 1998). Past studies have generated mixed evidence of when earnings management occurs in connection to an IPO. However, the vast majority of research indicates that earnings management occurs sometime during the IPO period. With this background, we present our first hypothesis:

Hypothesis 1: *Firms going public engage more in earnings management during one or several years in connection to the IPO compared to their non-issuing peers.*

Secondly, we are interested in estimating the effect that having a CEO who is selling shares in the firm in connection to the IPO has on the level of earnings management measured in the issue year. We choose to estimate this effect during the issue year rather than during the year prior to the IPO as some of the financial data on our control variables is only available once the firm has become publicly listed. Because of the lack of public information in connection to an IPO (Teoh et al., 1998) there is an information asymmetry between the firm and outside investors. This incentivises value-maximising managers who are selling shares in the IPO to manage earnings upwards, giving rise to a principal-agent-problem between the CEO and potential investors (Chaney et al.,1995). In agency theory, the manager is driven by extrinsic motivation of increasing personal wealth (Anthony et al., 2014). Therefore, if the CEO of a firm decrease their level of ownership in the firm in connection to the IPO, we hypothesise that earnings will be managed upwards to maximise the proceeds from the sale of shares (Alzoubi, 2016). We therefore propose the following hypothesis:

Hypothesis 2: *Having a CEO who is selling shares in the firm in the IPO will cause the firm to manage the earnings upwards at the end of the issue year.*

3.3 The Modified Jones Model

We see two distinct advantages of using the Modified Jones Model over other possible models. Firstly, the Modified Jones Model is one of the most frequently used models when estimating discretionary accruals in studies of earnings management in an IPO setting. Using the Modified Jones Model therefore makes for easy comparison to previous results, increasing the comparability of our study. Secondly, performance matched models such as the Kothari model are difficult to operationalise in practice, as they entail matching the IPO firm to a non-issuing firm in the same industry with a similar return on assets, ROA. For a limited data set such as ours, this might prove to be difficult. In the Modified Jones Model, the non-discretionary accruals are estimated for firm *i* during year *t,* according to Equation (2):

$$NDA_{it} = \propto_1 \left(\frac{1}{A_{it-1}}\right) + \propto_2 (\Delta REV_{it} - \Delta REC_{it}) + \propto_3 (PPE_{it}) \quad (2)$$

where ΔREC_{it} is the net receivables in year *t* less the net receivables in year *t-1,* scaled by total assets in year *t-1*. ΔREV_{it} is the net revenue in year *t* less the net revenue in year *t-1* scaled by total assets in year *t-1*. PPE_{it} represents the property plant and equipment in year *t*. Finally, $\propto_1, \propto_2$ and $\propto_3$ represent firm-specific parameters, estimated for each firm by applying the method used in the original Jones Model, see Equation (3):

$$TA_{it} = a_1 \left(\frac{1}{A_{i,t-1}}\right) + a_2(\Delta REV_{it}) + a_3(PPE_{it}) + \upsilon_{it} \quad (3)$$

where a_1, a_2 and a_3 denote the OLS estimates of $\propto_1, \propto_2, \propto_3$ and TA_{it} is the total accruals scaled by total assets in year *t-1*. Total accruals are estimated in a given year *t* by subtracting the cash flow from operations ($CFFO_{it}$) from the net income (NI_{it}), as in Equation (4):

$$TA_{it} = NI_{it} - CFFO_{it} \quad (4)$$

The total accruals are separated into non-discretionary accruals (NDA_{it}) and discretionary accruals (DA_{it}). The discretionary accruals are used as a proxy for earnings management. The discretionary accruals for each firm in year *t* are scaled by the total assets in year *t-1* in order to mitigate potential issues of heteroscedasticity arising from differences in firm size (Jones, 1991).

3.3.1 Cross-sectional and time-series approach

The firm-specific parameters $\propto_1, \propto_2$ and $\propto_3$ in the Modified Jones Model are meant to capture the unique accrual motivating economic circumstances that each firm face (Dechow et al., 1995). There are two ways to estimate these; as a cross-sectional regression of firms with similar characteristics in the year of interest, or as a time-series regression of the firm in question (DeFond & Jiambalvo, 1994). In the time-series approach, the parameters are estimated during a pre-event window for each firm, during which earnings management is hypothesised to not occur. The parameters are then assumed to be constant for the firm during the period when earnings management is proposed to be occurring. The time-series approach has a limitation in that it imposes excessive requirements on the data at hand, requiring a minimum of six data observations in order to have enough degrees of freedom to compute the t-statistics for inference testing (DeFond et al., 1994). In a year based study of firms going public, this would translate to a necessity of having data available of six years prior to the first year of estimation. For studies in an IPO setting the popularity of this approach has decreased due to the extensive data requirements and lack of consideration for external economic factors (Subramanyam 1996).

The cross-sectional approach assumes that the firm-specific parameters change each year as the external economic conditions change. By re-estimating the parameters each year, the probability of accurately capturing the firm's use of use of discretionary accruals in its accounting increases (Teoh et al., 1998). This is especially important as IPOs tend to cluster during periods of good economic conditions, causing the influence of external economic factors to be potentially large. By using a cross-sectional approach, we are able to mitigate this effect. The cross-sectional approach, however, requires a relevant peer group as the basis for the analysis. In a study of an IPO-setting, This is a weakness of the approach as the peer group needs to include firms with similar characteristics as the issuing firm. Therefore, the issuing firms are most commonly matched to a group of non-issuing peers in the same industry and year (Teoh et al., 1998).

In light of the substantial data requirements and lack of consideration for external economic factors that are associated with the time-series approach, we decide that the cross-sectional approach is more suitable for estimating earnings management in the IPO period. We match the IPO-firms to non-issuing firms operating in the same industry during the same year and

follow Kothari, Leone & Wasley (2005) in the recommendation of having at least 10 non-issuing peer firms available per estimation year.

3.4 Yearly and quarterly reports

The accounting data used in the study will be based on annual reports rather than quarterly reports. While using quarterly reports would enable us to measure the effects of earnings management closer to the actual IPO date, it would also introduce a number of problems. Firstly, quarterly reports are likely to introduce problems of seasonality, such as operating cycles varying between firms. Secondly, as most databases only provide data based on annual reports, using quarterly reports would imply an additional data collection process. For these two reasons, we decide to use annual reports throughout the study.

3.5 Absolute and non-absolute discretionary accruals

A key question relating to the research design of accrual based studies is whether to use the absolute or non-absolute values of the discretionary accruals. The appropriateness of using the respective values depend on the purpose of the study. The use of absolute values of discretionary accruals has a key advantage in that it reduces the probability that in a given period, the effect of a firm using positive discretionary accruals in order to increase earnings are offset by a firm using negative discretionary accruals in order to reduce earnings. Absolute values of discretionary accruals can therefore produce more reliable inference tests. However, as using absolute discretionary accruals effectively removes the sign of the discretionary accruals, it also removes the possibility to conclude whether the earnings were managed upwards or downwards in a certain period.

In hypothesis 1, we will test for the existence of earnings management using absolute discretionary accruals. This is as we are interested in measuring the absolute earnings quality in connection to an IPO to determine if the IPO setting makes the firm manage their earnings to a greater extent than otherwise. Therefore, the different incentives that firms may have to manage earnings upwards or downwards will in the first study be disregarded. However, in hypothesis 2, the direction of the discretionary accruals is relevant as we seek to determine if having a CEO who sells shares in connection to the IPO influences a firm to manage their earnings upwards or downwards. Thus, the second part of the study will estimate the relationship between discretionary accruals and a CEO selling shares, using non-absolute values of discretionary accruals.

3.6 Testing of hypotheses

3.6.1 Hypothesis 1

As a first step in the analysis, several two-sided t-test will be conducted based on the absolute level of discretionary accruals. The t-tests will establish if and at what point during the IPO period the earnings are managed. The mean value of the absolute discretionary accruals of the IPO firms will be compared to those of other non-issuing firms traded on Nasdaq OMX and Nasdaq First North. We expect to find a statistically significant difference in the mean values in one or several of the years in the IPO period.

3.6.2 Hypothesis 2

After testing hypothesis 1, we go on to study only the issue year and the effect that having a CEO who sells shares in the firm in the IPO has on the level of estimated discretionary accruals. For this, we use the multivariate regression presented in Equation (5). To mitigate the effect of heteroscedasticity, we use robust regressions throughout the study.

$$\begin{aligned} DiscrAccruals_{it} = \beta_0 &+ \beta_1 CEOSells_{it} + \beta_2 LaggedDA_{it} + \beta_3 ROA_{it} + \beta_4 LnMVEquity_{it} \\ &+ \beta_5 Leverage_{it} + \beta_6 AQ_{it} + \beta_7 RevGrowth_{it} + \beta_8 Industry_{it} \\ &+ \beta_9 Year_{it} + \varepsilon_{it} \end{aligned} \tag{5}$$

The dependent variable $DiscrAccruals_{it}$ is the discretionary accruals of firm *i* in year *t*. The discretionary accruals are estimated using the Modified Jones Model. β_0 represents the constant in the regression - the average level of discretionary accruals which will be present if all the independent variables take the value 0. Lastly, ε_{it} is the residual from the regression model, the variation that we are unable to explain.

Our research variable *CEOSells* is a dummy variable taking the value 1 if the number of shares that the CEO owns post the IPO is smaller than the number of shares that the CEO owns prior to the IPO. This information can be found in the IPO prospectus, where the ownership of the CEO is commonly stated. In the cases where we are unable to find information regarding the ownership level post the IPO, we assume that the number of shares held by the CEO remains unchanged. We choose to measure whether there is a change in the absolute number of shares as this will capture a realised gain in monetary terms for the CEO. This is of interest as a monetary reward is one of the most commonly cited and arguably the strongest extrinsic reward (Anthony et al., 2014). If we would have chosen a relative measure of the change in equity

ownership, such as a decrease in the relative ownership in the firm, we would potentially include cases where the CEO does not sell but is rather diluted.

LaggedDA represents the discretionary accruals in the year prior to the IPO. This variable is intended to capture the degree to which the discretionary accruals in the year of interest are influenced by those in the previous year. Previous research finds a negative correlation, analogous to the notion that the accruals reverse (DeFond & Park 1997).

ROA represents the return on total assets, calculated as the net income divided by the opening balance of the total assets. Kothari, Leone & Wasley (2005) argue that *ROA* captures the effect that firm performance has on discretionary accruals. A firm exhibiting a high *ROA* will have a greater need to invest in working capital in order to support the growth, causing the *ROA* to correlate positively with the reporting of high accruals. (Kothari et. al., 2005)

LnMVEquity is the natural logarithm of the market value of equity at the first day of trading. The market value of equity is calculated in the first day of trading as the natural logarithm of the total number of shares outstanding multiplied by the closing share price. We use the natural logarithm of the market value of equity rather than the value itself as we expect the market value of equity to have a non-linear distribution within our sample. Previous research finds a negative correlation between firm size, measured as the market value of equity, and discretionary accruals. This is consistent with the thesis that larger firms are watched more closely by capital market actors and are therefore not able to manage their earnings to the same extent as smaller firms (Watts & Zimmerman, 1986).

Leverage is calculated as the debt-to-equity ratio at the beginning of the year, by dividing total liabilities with the total equity, this is a measure of financial distress. We expect the discretionary accruals to be positively correlated with leverage as debtholders to firms experiencing financial distress will emphasise the earnings of the firm to determine their future ability to repay. This would in turn incentivise managers to use earnings management to report higher earnings (DeAngelo, DeAngelo & Skinner, 1994).

AQ, auditor quality, is a dummy variable taking the value 1 if the IPO prospectus of the firm going public was audited by an auditing firm included in Big 4 (KPMG, EY, Deloitte & PwC) and 0 if not. This information was collected from the IPO prospectus. Previous research finds a negative correlation between auditor quality and discretionary accruals, consistent with the

thesis that auditing firms included in the Big 4 are more rigorous in their auditing and leave less room for earnings management (Chen, Firth, Gao & Rui 2006).

RevGrowth is measured as the change in net revenue. Previous research finds a positive correlation between revenue growth and earnings management. Hribar & Nichols (2007), state that firms with high revenue growth tend to have strong incentives to increase equity that supports their growth and thus high discretionary accruals (Hribar & Nichols 2007).

Finally, we add the dummy variables *Industry* and *Year* for each industry and year, to mitigate potential differences in discretionary accruals influenced by the year the firm went public and the industry that the firm is part of (McGahan & Porter, 1997). The non-discretionary part of the accruals is estimated with the year and industry of the firm in mind through the cross-sectional version of the Modified Jones Model. However, we still believe there might be certain factors related to the respective years and industries, necessitating the inclusion of these control variables.

4. EMPIRICS

In this section, we describe the firm selection process for the group of IPO firms as well as for the peer group. We also discuss the choices made with regards to data sources, industry classifications and stock exchanges to be included in the study. Finally, we present descriptive statistics for our chosen data samples.

4.1 Sample selection of IPO firms

The accounting data for the sample of IPO firms is collected from Wharton Research Data Services (WRDS) and manually supplemented with data from Retriever Business. Since Retriever Business only has data available from the year 2006, we chose to limit our sample to only include IPOs made during the years 2006-2016. Furthermore, we limit our sample to only include firms going public on Nasdaq OMX and Nasdaq First North. We discuss this choice of stock exchanges in section 4.4. The initially identified sample consists of 409 firms going public on either list and was identified from Nasdaq OMX Nordics (Nasdaq, 2017). The number of firms in the sample of IPO firms used in the test of *hypothesis 1* differs from the number of firms in the sample of IPO firms used in the test of *hypothesis 2*. This is due to some additional reductions of firms that had to be made in order to conduct the regression analysis in hypothesis 2. A review of the adjustments made to the original list of 409 firms for the testing of hypothesis 1 is presented in Table 2.

Table 2.

Sample selection of IPO firms when testing hypothesis 1.

Selection Criteria	**# of adjustments**	**# of firms remaining**
Original selection		*409*
(1) Change of exchange	*-114*	*295*
(2) Preferred stock	*-9*	*286*
(3) Parallel listing	*-11*	*275*
(4) Non-Swedish group company	*-26*	*249*
(5) Excluded industry (4010, 4030)	*-3*	*246*
(6) Financial data unavailable	*-91*	*155*
(7) Too few yearly industry observations	*-22*	*133*
Final sample	**-276**	**133**

(1) We exclude firms that did a change of exchange rather than an initial public offering. This reduces our sample by 114 firms.

(2) We eliminate issuing's that are not offerings of common stock but preferred stock. This included 9 firms.

(3) We also remove listings that are parallel listings rather than initial public offerings. This reduces our sample by 11 firms.
(4) As we intend to only study Swedish firms, firms with a non-Swedish group company are excluded. This reduces our sample by 26 firms.
(5) We also exclude three banks and insurance companies (GICS codes 4010 and 4030) from our sample as their balance sheets do not distinguish operational and non-operational items (Damodaran, 2011), which makes it difficult to estimate the discretionary accruals.
(6) Furthermore, firms that do not have accounting data available for our calculations of the discretionary accruals are removed. This reduces our sample by 91 firms.
(7) For the estimation of the firm specific parameters in our cross-sectional regression, previous research recommends having at least 10 observations in each industry-year group. Consequently, we remover 22 firms that do not have enough industry-year observations.

After these adjustments, we are left with 133 IPO firms in our sample when conducting the inference tests for our first hypothesis. For the sample selection to be used in the second hypothesis, we start with these 133 firms. As we examine the IPO prospectuses, we find that we have to make additional adjustments, presented in Table 3.

Table 3.
Sample selection of IPO firms when testing hypothesis 2.

Selection Criteria	**# of adjustments**	**# of firms remaining**
Initial selection from hypothesis 1		*133*
(1) Missing IPO prospectus	*-11*	*122*
(2) Missing data on control variables	*-22*	*100*
(3) Missing data for the issue year	*-16*	*84*
Final sample	**-49**	**84**

(1) We exclude 11 firms for which we are unable to obtain the IPO prospectus.
(2) 22 firms lack data on the control variables and are therefore excluded.
(3) Finally, as we in the second hypothesis are only interested in examining the issue year, we exclude the firms that lack the data necessary to calculate the discretionary accruals for the issue year. This includes 16 firms.

Thus, in the test of our second hypothesis, our final data set consists of 84 firms.

4.2 Sample selection of peer group

In order to have a sufficiently large peer group in the estimation of the non-discretionary accruals, we need to collect a secondary set of non-issuing peer firms. The starting point for this set is all the firms currently listed on Nasdaq OMX and Nasdaq First North that are not also one of our IPO firms. Note that as described in section 3.1, the IPO firm automatically becomes part of the peer group two years after the IPO. The peer group therefore consists of both the firms selected through this process and the firms for which the earnings management effect from the IPO has disappeared. The initial sample of the secondary set consisted of 846 firms in the peer group. However, as in the case of the IPO firms, similar adjustments needed to be made to the peer group. We present the adjustments in Table 4. The accounting data for the sample of peer group firms is collected from WRDS and manually supplemented by data from Retriever Business.

Table 4.

Sample selection of peer group.

Selection Criteria	**# of adjustments**	**# of firms remaining**
Original selection		*846*
(1) Non-Swedish group company	*-257*	*589*
(2) Excluded industry (4010, 4030)	*-5*	*584*
(3) Financial data unavailable	*-289*	*295*
(4) Too few yearly industry observations	*-19*	*276*
Final sample	**-570**	**276**

(1) We remove 257 firms from the initial sample as they have non-Swedish group companies.
(2) We remove banks and insurance companies from our sample for the same reasons as previously mentioned in section 4.1. This excludes 5 firms from our sample.
(3) Furthermore, we remove firms that do not have the necessary accounting data available. This reduces our sample by 289 firms.
(4) Lastly, we remove 19 firms that have less than 10 observations in their industry-year group.

These adjustments ultimately reduce our number of firms in the peer group by 570 firms, leading to a final data set of 276 firms selected for the peer group. In the cross-sectional estimation of the discretionary accruals using the Modified Jones Model, this results in a total of 64 cross-sectional regressions being performed on the basis of industry-year group.

4.3 Industry classification

As the matching of the IPO firms to a suitable peer group is made on the basis of industry and year, we need to choose a suitable industry index to use to classify the firms. For this purpose, we have chosen to use the Global Industry Classification Standard (GICS), compiled by S&P and Morgan Stanley Capital International in 2001. GICS is annually updated (Morgan Stanley Capital International, 2017). Unlike the frequently used SIC classification, GICS do not differ across databases (Hrazdil & Scott 2013). Previous research by Bhojraj, Lee & Oler (2003) show that the GICS classification is a better specified industry classification than SIC and should therefore be preferred when classifying firms by industry.

4.4 Inclusion of Nasdaq First North

Nasdaq First North is mainly a market for smaller growth firms, and despite being under the surveillance of Nasdaq Nordic (Nasdaq, 2017), there are still some regulatory differences between Nasdaq First North and Nasdaq OMX. With regards to financial reporting, Nasdaq OMX requires firms to adopt IFRS/IAS, whereas Nasdaq First North does not. Nasdaq OMX requires firms to have published financial reports in accordance with IFRS/IAS for at least three years before getting approval to become publicly listed. This is not required for firms on Nasdaq First North. Nasdaq OMX requires the firms to have an auditor responsible for the IPO, whose tasks are to ensure that the board and management of the firm fulfil their obligations to the stock exchange and that the information in the prospectus reports is accurate. This is not required for firms on Nasdaq First North. However, they do require the firm to have a certified adviser approved by Nasdaq OMX. Furthermore, Nasdaq First North does not require the firm to issue a prospectus reports in connection to going public. This is mandatory when applying for listing on Nasdaq OMX. Also, Nasdaq OMX requires firms to undergo due diligence which is not required for going public on Nasdaq First North, however strongly recommended (Advokatfirman Lindahl, 2013).

Despite these differences we choose to include IPOs made on Nasdaq First North in our data sample. This is for two reasons. Firstly, we included Nasdaq First North in order to give a fairer picture of the typical IPO firm. In 2016, Nasdaq First North had the most IPOs, as there were 25 initial public offerings made on Nasdaq OMX, while 54 on Nasdaq First North (Svenska Dagbladet, 2016). Secondly, we included Nasdaq First North in order to increase the sample size and therefore make for more accurate estimations. If Nasdaq First North were to be excluded, we would be confronted with a significant loss of IPO firms partly due to a smaller

initial selection, but also due to a reduction of firms in the peer group, which are needed in the estimation of the discretionary accruals for the IPO firms. We aim to mitigate the possible differences in characteristics between firms going public on Nasdaq OMX and firms going public on Nasdaq First North by scaling the variables used in the Modified Jones Model with total assets and by using our control variables *ROA*, *LnMVEquity* and *RevGrowth.*

4.5 Descriptive statistics

Table 5 and Table 6 present the mean, standard deviation and the minimum and maximum value of the discretionary accruals for the sample of the 133 IPO firms and the sample of 276 peer group firms respectively. The peer group exhibit lower absolute discretionary accruals with a lower standard deviation, compared to the sample of IPO firms. The influence of extreme values will be discussed in section 6.4.3.

Table 5.

Descriptive statistics IPO firms used in hypothesis 1. 133 firms.

Variable	Mean	STD	Min	Max
DiscrAccruals	-0.045	0.764	-9.179	3.954
AbsDiscrAccruals	0.230	0.730	0.000	9.179

Table 6.

Descriptive statistics peer group firms. 276 firms.

Variable	Mean	STD	Min	Max
DiscrAccruals	-0.017	0.131	-2.130	1.037
AbsDiscrAccruals	0.078	0.107	0.000	2.130

Table 7 presents the descriptive statistics for the 84 firms used in the test of hypothesis 2. The influence of the potential outliers with regards to *LaggedDA* and *Leverage* will be discussed in section 6.4.3. The results are at large consistent with our expectations.

Table 7.

Descriptive statistics, variables used in the test of hypothesis 2. 84 firms.

n = 84

Variable	Mean	STD	Min	Max
DiscrAccruals	-0.031	0.378	-2.263	1.334
CEOSells	0.238	0.428	0	1
LaggedDA	-0.165	1.035	-9.144	0.789
ROA	-0.138	0.657	-4.125	1.181
LnMVEquity	6.371	1.700	2.588	9.741
Leverage	3.834	12.400	0.004	108.778
AQ	0.833	0.375	0	1
RevGrowth	0.412	0.980	-1	5.222

Table 8 presents an overview of the 2720 firm year observations used in the Modified Jones Model for the estimation of the discretionary accruals. The observations pertaining to the years 2006 and 2007 in the industry "Consumer Staples" are excluded due to not having at least 10 firm-industry observations. A majority of the IPOs in the sample take place in the years 2014-2016.

Table 9 presents the Pearson correlations between our independent variables for the regression used to test hypothesis 2. We observe significant correlations between some of our independent variables, signalling that multicollinearity is a potential issue. We test for multicollinearity in section 6.4.2.

Table 8.

Industry-year table.

Sector Code	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
15 - Materials	10	11	12	13	15	16	17	17	18	19	13	**161**
20 - Industrials	61	66	70	71	77	77	82	90	94	99	81	**868**
25 - Consumer Discr.	30	34	40	41	44	49	51	52	56	58	52	**507**
30 - Consumer Staples			10	10	10	10	10	10	12	13	10	**95**
35 - Healthcare	25	26	32	34	36	39	48	54	61	68	54	**479**
45 - Information Technology	46	49	51	51	50	53	56	61	68	71	61	**617**
Total	**172**	**186**	**215**	**220**	**232**	**244**	**264**	**284**	**309**	**328**	**271**	**2720**
Number of IPOs	3	11	6	2	6	10	2	7	27	32	27	**133**

Table 9.

Pearson correlations.

	CEOSells	***LaggedDA***	***ROA***	***LnMVEquity***	***Leverage***	***AQ***	***RevGrowth***
CEOSells	1.000						
LaggedDA	0.059	1.000					
ROA	0.286***	-0.018	1.000				
LnMVEquity	0.270	0.002	0.350***	1.000			
Leverage	-0.030	0.000	0.046	0.146	1.000		
AQ	0.025	-0.055	0.150	0.299***	0.067	1.000	
RevGrowth	-0.094	0.022	-0.272**	-0.160	0.018	-0.074	1.000

5. RESULTS

In this section we present the results from the empirical tests of our two hypotheses.

5.1 Test of hypothesis 1 – the existence of earnings management

For the univariate analysis of the existence of earnings management in connection to the IPO, we compare the mean of the absolute discretionary accruals in each of the respective years defined as the IPO period to the mean of a peer group consisting of non-issuing peer firms in which we hypothesise there will be no earnings management present. The mean value of the absolute discretionary accruals for the peer group was 0.078. It is against this value that we do the inference tests. We present the results from the tests in Table 10.

Table 10.

t-test of absolute discretionary accruals for the IPO firms against the mean value of non-issuing firms (0.078).

Year	-2	-1	0	+1	+2
Mean	0.240*	0.407**	0.228***	0.135*	0.103
t-stat	1.986	2.490	4.185	1.906	1.190
p-value	0.051	0.014	0.000	0.060	0.238
n	63	103	127	99	70

*, **, and *** represent statistical significance at the 10%, 5%, and 1% levels, respectively.

The mean values of the absolute discretionary accruals exceed those of the peer group during all of the years in the IPO period. The absolute discretionary accruals follow a pattern where the level of earnings management builds up during the years prior to the IPO and subsequently dwindle after the issue year. The mean value for the year -1 is particularly large and significant at the 0.05 level, suggesting that firms manage their earnings to a great extent during the year prior to going public. The mean value during year 0 is statistically significant to the 0.01 level, indicating that the effect of earnings management is still present during the issue year. We conclude that we find clear support for hypothesis 1.

5.2 Test of hypothesis 2 – the effect of a CEO selling shares in the IPO

For the multivariate analysis of the issue year, we regress the discretionary accruals on our independent variable *CEOSells* together with our control variables. We present the results from the regression in Table 11.

Table 11.

OLS regression of hypothesis 2.

Dependent variable: Discretionary accruals

	Coefficient	**Robust Std. Err.**	**t-stat**	**p-value**
CEOSells	-0.260***	0.091	-2.82	0.006
LaggedDA	0.030	0.019	1.53	0.131
ROA	0.397***	0.092	4.33	0.000
LnMVEquity	-0.024	0.025	-0.99	0.328
Leverage	-0.000	0.002	-0.28	0.782
AQ	0.104	0.116	0.90	0.372
RevGrowth	0.021	0.048	0.44	0.664
Intercept	0.420	0.267	1.57	0.120
Industry fixed effects:	Yes			
Year fixed effects:	Yes			
n	84			
R-squared	0.62			

*, **, and *** represent statistical significance at the 10%, 5%, and 1% levels, respectively.

The independent variable *CEOSells* has a negative coefficient and is significant at the 0.01 level. This implies that having a CEO who sells shares in the firm in the IPO, decreases the amount of discretionary accruals estimated at the end of the issue year. The coefficient for the control variable *ROA* is positive and significant at the 0.01 level. None of the coefficients for the other control variables are significant. We therefore do not find support for hypothesis 2, but rather the contrary. The R^2 of the model is 0.62.

6. ANALYSIS

In this section, we analyse the results from the tests of our two hypothesis. We then perform a number of robustness tests and move on to discuss possible biases that might have affected our results. We end this section by discussing the reliability, validity and comparability of our study.

6.1 Analysis of the univariate test for hypothesis 1

In the univariate test, we wanted to establish whether there is a statistically significant difference in the mean values of the absolute discretionary accruals between the sample of IPO firms currently being in a given year during the IPO period, and the non-issuing firms. The results, provided through inference testing, proved a statistically significant deviation for several of the years in the IPO period, especially for the issue year and the year prior to the IPO. These results indicate that firms manage their earnings in connection to going public. Our results are consistent with the findings of Rosenboom, van der Goot & Mertens (2001), Cormier & Martinez (2006) and Armstrong Foster & Taylor (2008).

Furthermore, our results indicate that the earnings quality is reduced in connection to the IPO indicating that firms deceive the market by engaging in earnings management (Mulford et al., 2002). When managers and shareholders are asymmetrically informed, firms engage in earnings management (Chaney et al., 1995 and Kazemian et al., 2015). This is consistent with our results. Since we use the absolute values of the discretionary accruals, we are not able to determine if the earnings were managed upwards or downwards. Upwards earnings management *prior* to the IPO would indicate that the management was keen to inflate the presented earnings figure, to influence investors perception of the firm positively (Chaney et al., 1995). Upwards earnings management *post* the issue year would indicate that the firm has incentives to present a high share price in the years following the IPO, possibly due to lockup agreements or verbal commitments made by the underwriters (Teoh et. al, 1998). Downwards earnings management *prior* to the IPO might signal that the management has alternative compensation schemes in place, incentivising the management to manage the earnings downwards (McAnally et al., 2008). Downwards earnings management *post* the issue year might be a consequence of reduced equity ownership resulting from a sale in the IPO (Fama, 1980; Fama et al, 1983; Jensen et al, 1976).

However, regardless of the possible motivations of the management to manage earnings in either direction, firms going public seem to engage more in accrual based earnings management than their non-issuing peers. Therefore, we are able to find support for hypothesis 1.

6.2 Analysis of the multivariate test for hypothesis 2

In hypothesis 2, we wanted to analyse the various incentives that a CEO selling shares in the firm going public might have to manage the earnings. We find that having a CEO selling shares in the firm has a significantly *negative* effect on the discretionary accruals estimated at the end of the issue year. Our results imply that if the CEO of a firm reduces their number of shares in the IPO, the management will not be as enticed to manipulate earnings upwards in the financial reports. Therefore, we are not able to find support for hypothesis 2. There are several possible conclusions to be drawn from these results.

One explanation to these results is that if the CEO sells shares in the firm and consequently decrease their equity ownership, the incentives of the CEO to encourage management to manipulate earnings upwards will also decrease post the IPO. This is in accordance with the *convergence of interest hypothesis* (Morck et al., 1988) stating that equity ownership is positively correlated with acting in the interest of the shareholders. This line of argumentation entails that the interest of the shareholder is for the firm to regardless of the situation present the best possible earnings figure.

However, depending on one's perception regarding the time it takes for the abnormal accruals to reverse, one might be more inclined to draw other conclusions. The time it takes for the accruals to reverse is a divisive matter, with estimates ranging from within a year to a longer period, as illustrated by the claims by Dechow, Hutton, Kim & Sloan (2012) and Allen, Larson & Sloan (2010). For this reason, we included the lagged discretionary accruals in the regression model. While the estimate of the lagged discretionary accruals is not significant, the small positive coefficient leads us to conclude that the discretionary accruals in the issue year are largely unrelated to the discretionary accruals in the year prior to the IPO. If anything, the positive coefficient indicates that the direction of the earnings management is consistent between the year prior to the issue year and the issue year. The intuition that negative discretionary accruals during the issue year might be due to reversals of opportunistic positive discretionary accruals in the year prior to the issue year, therefore, seems unlikely. This indicates that the nature of reversals is likely more complicated than the research presented by Dechow, Hutton, Kim & Sloan (2012).

The CEO selling shares chooses to forego the immediate increase in personal wealth that they can expect as a consequence of the IPO. This might lead us to assume that there is no principal agent problem and that the CEO is not driven by extrinsic motivations such as short term wealth maximisation. However, Nyberg, Fulmer, Gerhart & Carpenter (2010) find that it is almost impossible to eliminate the principal-agent-dilemma between the CEO and shareholders. Thus, given that the principal-agent conflict still exists, the negative discretionary accruals that result from having a CEO who sells shares in connection to the IPO are most likely due to some other incentive program than equity ownership. It is for instance common for the firm to include a lock-up agreement in the issuing, to prevent the major shareholders from selling their shares shortly after the IPO. If the fraction of shares included in the lock-up agreement represents a large fraction of the CEO's total holdings of shares in the firm, this might make the CEO more inclined towards managing the earnings downwards during the issue year to be able to manage them upwards later, when the lockup has expired (Teoh et al., 1998; Chaney et al., 1995). The issuing of granted stock options post the IPO might also incentivise the CEO to manage the earnings downwards for a period post the IPO in order enable a lower strike price, increasing the potential future value of the options (McAnally et al., 2008; Anthony et al., 2014). The existence of post IPO incentives such as lockup agreements and granted stock options might therefore be important extrinsic motivations that will cause the CEO to manage the earnings downwards rather than upwards during the issue year. This line of argument entails that other incentive programs are independent variables not included in our research.

6.3 Analysis of control variables

We will now discuss the estimated coefficients of our control variables. For many of our control variables we were unable to estimate a statistically significant coefficient.

LaggedDA has a positive and insignificant coefficient estimate. This indicates that the reversals of accruals made in previous years do not explain a significant part of the results. This opposes previous findings by DeFond & Park (1997).

ROA has a positive coefficient, and is highly significant at the 0.01 level, as expected. This is consistent with the theory presented by Kothari, Leone & Wasley (2005) where *ROA* captures the performance of the firm (Kothari et. al., 2005). Firms experiencing abnormal performance, will on average use discretionary accruals to a greater extent. This is consistent with our results.

LnMVEquity is not significant but has a negative coefficient. The negative coefficient is in line with our expectations as we would expect that large firms, measured by their market capitalisation, are watched more closely by capital market actors. This leaves less room for management to manage the earnings upwards.

We find no statistically significant estimate of the coefficient of *Leverage*. This lends no support for our theory that a high debt-to-equity ratio in the beginning of the year would incentivise the managers to manage earnings upwards in the subsequent earnings report so as to avoid further scrutiny by the debtors. The coefficient estimate of *Leverage* is likely affected by outliers. We will discuss this further in 6.4.3.

AQ has a positive coefficient in the regression, although not statistically significant. The positive coefficient would imply that firms with IPO prospectuses audited by an auditor employed by one of the firms belonging to the Big 4 within auditing would actually increase the level of earnings management, rather than decrease it. This is likely due to a low variation in the sample size with regards to the auditor being used as 83% of the firms in the sample used an auditor from Big 4.

RevGrowth has a positive coefficient, though not significant. The positive coefficient is in line with our expectations, as we would have expected to find a positive relationship between firms with growing revenues and their estimated discretionary accruals (Hribar & Nichols, 2007).

6.4 Robustness tests

6.4.1 Heteroscedasticity

The standard errors reported from OLS regressions rely on the key assumption that the variance of the error term is, conditional on the independent variables, constant (Wooldridge, 2013). This means in effect that the error term should be uncorrelated with our independent variables. When this cannot be said to be true of the data sample at hand, there is heteroscedasticity present in the data sample. Heteroscedasticity leaves the estimated coefficients and the R^2 unaffected, but leads to unreliable standard errors and often higher reported significance levels than what is empirically motivated (Wooldridge, 2013). In order to test for heteroscedasticity in the sample of IPO firms used in the test of hypothesis 2, we conduct a Breusch-Pagan / Cook-Weisberg-test for heteroscedasticity as presented in Appendix A. We find a χ^2-statistica of 43.96, indicating that we can reject the null hypothesis of homoscedasticity at the 0.002 level. We also compute a White-test, generating a p-value of 0.0157. We can therefore conclude that there are strong indications of heteroscedasticity in the data sample. In order to correct for the effect of heteroscedasticity, we use robust standard errors in all regressions.

6.4.2 Multicollinearity

Multicollinearity is when there are substantial correlations between two or more independent variables. This can cause the variance of coefficients to be inflated, possibly leading to unstable and unreliable estimates of the regression coefficients (Allison, 2012). The problem of multicollinearity is debatable, as high levels of correlation between the independent variables may result from the design of the study and not indicate a problem (Wooldridge, 2013). The most common way of estimating the multicollinearity in a sample is by calculating the variance inflation factor (VIF) for the independent variables. Previous research is divided regarding how high the VIF has to be for the variables in order for it to constitute a problem. A commonly cited value is 10 (Wooldridge, 2013). Calculating the VIF estimate for our sample used in the regression in hypothesis 2 generates the results presented in Appendix B. We find a mean VIF value for our variables of 3.09, with the highest value being that of a dummy year variable at 8.87. The highest value for a continuous independent variable in our sample is 1.83. With this background, we conclude that we do not have a problem with multicollinearity among our independent variables in the sample.

6.4.3 The influence of outliers and extreme values

As OLS minimises the sum of the squared residuals in the model, observations with large residual values may end up receiving biasing the estimates of the model. The results obtained by OLS therefore run a risk of being highly influenced by one or a few extreme observations, potentially leading to a misstatement of the regression coefficients and overstatement of the R^2 (Walfish, 2006). The fact that the accrual based models are known to have a problem with misspecification when applied to firms with extreme performance (Kothari, 2005), makes us particularly worried that a few observations of our independent variables measuring firm performance such as *ROA* and *RevGrowth* are leading us to draw false conclusions regarding their respective coefficients in the regression used to test hypothesis 2.

For hypothesis 1, we decide to conduct two additional t-tests with slightly attenuated estimates of the key dependent variable, the absolute discretionary accruals. We decide to winsorize the values of absolute discretionary accruals at the 1% level and at the 5% level. We present the results the robustness tests in Appendix C. Our estimates of the absolute discretionary accruals remain robust towards these tests.

In order to identify potential outliers in the data sample used in the test of hypothesis 2, we plot the continuous independent variables against our dependent variable discretionary accruals. We present the plots in Appendix D. We find two observations with seemingly abnormal values of *ROA*. These observations relate to the firms Odd Molly (*ROA* of 1.18) and Pled Pharma (*ROA* of -4.125). We cross-reference these values to the annual reports corresponding to the respective firms. We are able to conclude that the abnormal values are not a consequence of a measurement error, but find it likely that especially the abnormally negative value of Pled Pharma will drive our significantly positive relationship between the discretionary accruals and *ROA*. We therefore exclude Pled Pharma in our additional regression, as presented in Appendix E. The exclusion of Pled Pharma also removes a potential outlier of *RevGrowth*. Furthermore, we decide to exclude the observation relating to Qliro Group, as their measure of *Leverage,* with a debt-to-equity-ratio of 108.71 together with the estimate of discretionary accruals of -0.028 is likely to bias the estimated coefficient of *Leverage* towards zero. We also exclude Ages Industri as their combination of *LaggedDA* of -9.140 and discretionary accruals of 0.033 is likely to bias the coefficient estimate of *LaggedDA* towards zero. Rerunning the regression on the new data set yields the results presented in Appendix E. The number of observations drop from 84 to 81. In this regression, the coefficient estimates of our research variable *CEOSells* and *ROA* become

slightly less significant at a 5% level. The independent power of the model is reduced, from an R^2 of 0.62 to a new R^2 of 0.46. This is expected, as outliers frequently have the effect of causing the R^2 to be overestimated. Most of the control variables retain their sign, with the exception of *Leverage*, which changes from slightly negative to slightly positive. At large, the coefficient estimates seem robust towards excluding these three abnormal observations.

6.5 Sample selection bias

A possible issue relating to our study is the presence of a sample selection bias. In our data selection process, we reduce the original sample of IPO firms from 409 to 133 firms in the test of the first hypothesis and to 84 firms in the second. We made similar adjustments to the sample of firms that were collected only for the purpose of being part of the reference peer group and reduced the initial sample of 846 firms to a final sample of 276 firms. As the data collection of the firms in the peer group started with a list of the firms *currently* listed on Nasdaq OMX and Nasdaq First North, we might run the risk of having a survivorship bias in our peer group sample which would likely bias the estimates of discretionary accruals upwards. Furthermore, the inclusion of Nasdaq First North might cause our samples to include firms with substantially different characteristics, creating problems in the estimation of the discretionary accruals. This is a relevant criticism and something that should be taken into account when drawing conclusions primarily from the tests of hypothesis 2.

6.6 Omitted variable bias

Another concern related to OLS estimates is omitted variable bias. (Wooldridge, 2013) In our case, this would mean that the variable *CEOSells* is correlated with an important independent variable that has been omitted from the model. We have tried to mitigate this problem by including the control variables that we deem likely to affect the level of discretionary accruals. It is however possible that the *CEOSells* variable in reality is correlated with another omitted variable that is crucial for the model. For instance, one could argue that the *CEOSells* variable is correlated with the CEO having a substantial ownership in the firm. It seems likely that only CEOs with a large stake in the firm would even be offered the opportunity to sell some of their shares in the IPO. Excluding additional variables such as the pre-IPO ownership might therefore bias our results towards a greater statistical significance of *CEOSells* than what is really true. This is also a relevant criticism towards our model and we believe that future studies on CEO equity ownership in connection to an IPO should strive towards including more than one variable from the IPO prospectus.

6.6 Reliability, validity and comparability

Reliability

We believe that the *reliability* of our study is high as our results are replicable in terms of statistical tests and robustness checks. The data has been collected from reliable sources such as WRDS, Retriever Business and Nasdaq Nordics. The reliability of the study is impacted negatively by the fact that a fairly large amount of data on the IPO firms needed to be collected manually from Retriever Business and the IPO prospectuses. The data collected manually was not of an advanced character, however the manual process still adds a layer of uncertainty. The reliability is arguably affected negatively by the fact that we have chosen to include firms from two separate exchanges. We have limited insight into whether the accounting data collection procedure on the part of the data bases differ for the two exchanges.

Validity

The *validity* of our study has been an overarching consideration throughout. We have been careful with being consistent during the sample selection process and have strived towards making informed decisions regarding which control variables to use in order to mitigate potential omitted variable bias. By using a cross-sectional version of the Modified Jones Model, we have also taken the seasonality and external economic factors into account. The results have been tested and are robust towards heteroscedasticity as well as multicollinearity. We also feel confident that the results are not driven by potential outliers. Despite this, we still have some reason to believe that the conclusions one is able to draw from the tests of primarily hypothesis 2 might be distorted as a consequence of the possible sample selection bias as discussed in 6.5. and the omitted variable bias as discussed in 6.6.

Comparability

With regards to comparability, several studies have been conducted in the past concerning the existence of earnings management in an IPO setting, as presented in Table 1. The number of studies made with regards to CEO ownership in an IPO setting is, however, limited. The comparability of our study is enhanced by the fact that we have chosen the most frequently used model when estimating the discretionary accruals in an IPO setting (Kothari et al., 2005), the Modified Jones Model. We have chosen similar control variables as previous studies, which increases the comparability of our study. Additionally, we believe that the simplicity of our *CEOSells* variable further increases the future comparability of our study.

7. CONCLUSION

In this thesis we have conducted two studies, both relating to earnings management in an IPO setting. In the first study, our aim was to investigate whether firms exploit the IPO setting to engage in earnings management in the years surrounding the offering. We find significant evidence that firms going public do engage in earnings management during the years leading up to the IPO as well as during the issue year. We are, however, due to our decision to use the absolute measures of earnings management, not able to draw any conclusions regarding the general direction of the earnings management. Conclusively, our findings are consistent with the majority of previous studies relating to earnings management in an IPO setting.

In the second study, we sought to answer the question whether having a CEO who is selling shares in the IPO would incentivise the management to manage their earnings upwards in the financial reports at the end of the issue year. Here, our results suggest that firms where the CEO is selling shares in the IPO are more inclined to manage earnings downwards rather than upwards in the issue year. Assuming that the discretionary accruals take longer than a year to reverse and that it is in the interest of shareholders that the firm presents high earnings, our results are consistent with the *convergence of interest hypothesis*. Another possible explanation for our results is that the CEO has some other form of compensation structure in place such as a lockup agreement or granted stock options, which would incentivise the CEO to manage the earnings downwards during the issue year in order to be able to release the earnings effect in future years. We believe that the area of alternative compensation structures would serve as a good topic for future research.

Our study adds to the existing earnings management literature in two ways. Firstly, we have presented evidence that firms going public on Nasdaq OMX and Nasdaq First North manage their earnings both in anticipation of going public as well as during the issue year. Secondly, we find interesting evidence suggesting that having a CEO selling shares in the firm could have a negative effect on the level of earnings management exercised in connection to the IPO. Our findings suggest that the Swedish stock market is not liberated from excessive earnings management by firms going public and that users of financial reports in these settings should be critical of the presented information.

8. APPENDIX

Appendix A.

Tests for heteroscedasticity.

Dependent variable: Discretionary accruals

Breusch Pagan / Cook Weisberg	
H0: Constant Variance Variables: *CEOSells, LaggedDA, ROA, LnMVEquity, Leverage, AQ, RevGrowth*	
chi2(20)	43.96
Prob > chi2	0.002
White	
F(2.81)	4.37
Prob > F	0.0157

Appendix B.

VIF estimates of independent variables used in hypothesis 2. Note that the control variables for year 2007 and 2009 as well as industry 15, materials, are excluded in the regression used for the estimation due to collinearity.

Dependent variable: Discretionary accruals

Variable	**VIF**	**1/VIF**
CEOSells	1.66	0.603
LaggedDA	1.09	0.915
ROA	1.53	0.655
LnMVEquity	1.72	0.580
Leverage	1.34	0.746
AQ	1.44	0.696
RevGrowth	1.83	0.547
Industry		
20	8.87	0.112
25	6.58	0.152
30	2.01	0.498
35	7.03	0.142
45	5.75	0.173
Year		
2008	2.05	0.486
2010	2.20	0.454
2011	2.36	0.423
2012	1.53	0.654
2013	1.46	0.685
2014	3.86	0.259
2015	4.10	0.243
2016	3.46	0.288
Mean VIF	3.09	

Appendix C.

t-test of absolute discretionary accruals for the IPO firms winsorized at the 1% level against the mean value of non-issuing firms (0.078).

Year	-2	-1	0	+1	+2
Mean	0.118**	0.167***	0.150***	0.103**	0.090
t-stat	2.398	5.730	5.350	2.183	1.215
P-value	0.020	0.000	0.000	0.031	0.229
n	63	103	127	99	70

*, **, and *** represent statistical significance at the 10%, 5%, and 1% levels, respectively.

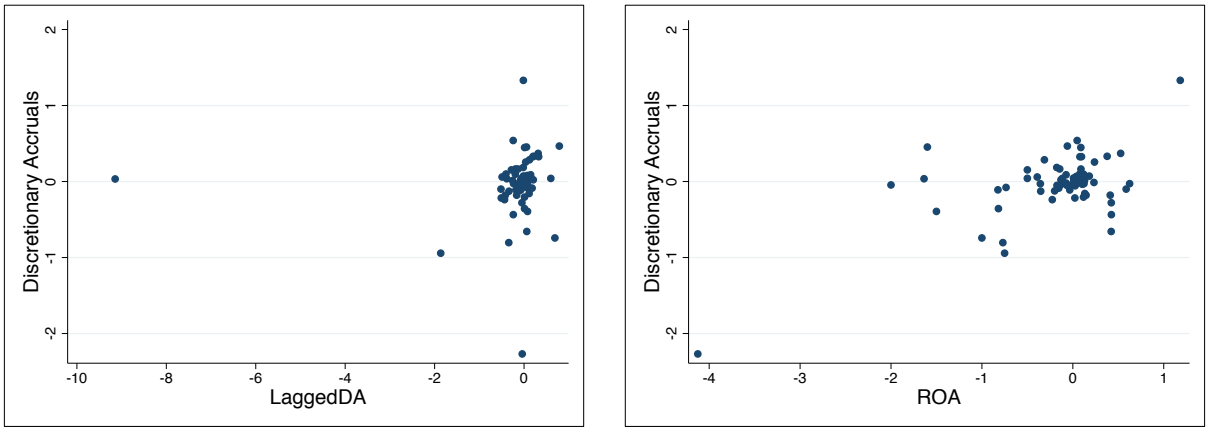
t-test of absolute discretionary accruals for the IPO firms winsorized at the 5% level against the mean value of non-issuing firms (0.067).

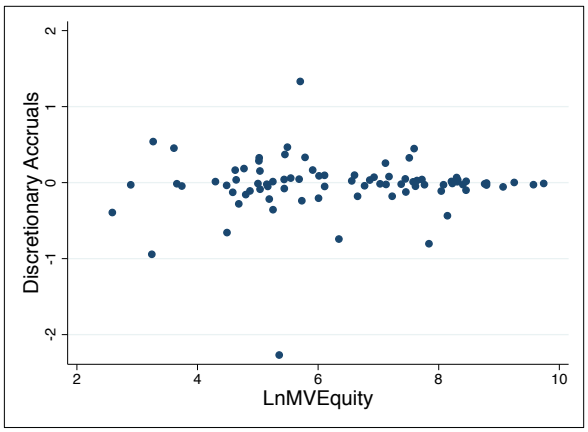
Year	-2	-1	0	+1	+2
Mean	0.086*	0.112***	0.102***	0.078	0.077
t-stat	1.985	5.852	4.922	1.487	1.247
P-value	0.052	0.000	0.000	0.140	0.217
n	63	103	127	99	70

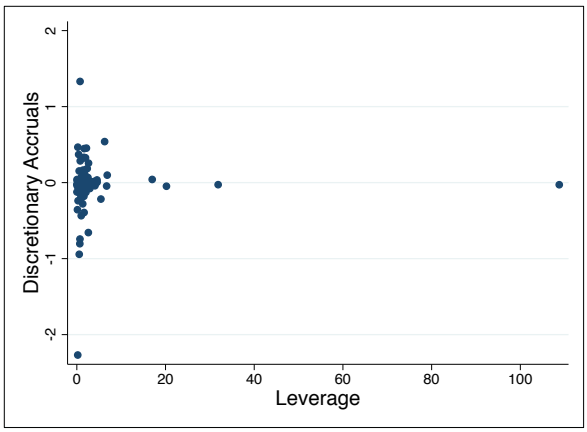
*, **, and *** represent statistical significance at the 10%, 5%, and 1% levels, respectively.

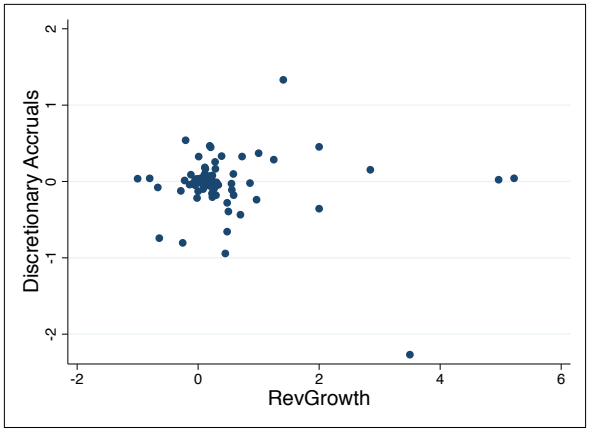
Appendix D.

Scatter plot of continuous independent variables against the dependent variable discretionary accruals.









Appendix E.

OLS regression of hypothesis 2 after excluding potential outliers Pled Pharma, Qliro Group and Ages Industri.

Dependent variable = Discretionary accruals

	Coefficient	**Robust std. Err.**	**t-stat**	**P-value**
CEOSells	-0.243**	0.099	-2.46	0.017
LaggedDA	0.227	0.151	1.50	0.139
ROA	0.237**	0.098	2.42	0.019
LnMVEquity	-0.011	0.019	-0.58	0.567
Leverage	0.003	0.004	0.91	0.367
AQ	0.042	0.095	0.44	0.659
RevGrowth	0.044	0.034	1.29	0.203
Intercept	0.311	0.279	1.12	0.268
Industry fixed effects:	Yes			
Year fixed effects:	Yes			
n	81			
R-squared	0.46			

*, **, and *** represent statistical significance at the 10%, 5%, and 1% levels, respectively.

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