

Accounting Quality in Private Firms: The Impact of Professional Directors

Daniel Hättöy[♦]

John Åkesson[♠]

This paper studies the impact professional directors have on accounting quality in private firms, where a professional director is defined as a director with board experience in public firms. We hypothesize that board experience in a public firm is a sign of quality. Further, directors in public firms should be more exposed to monitoring activities due to the more dispersed ownership structure in those firms. Employing three accounting quality measures and using regression analysis, we test the relationship between director professionalism and accounting quality. In general, we do not document a higher level of accounting quality in firms with professional directors. Our results suggest that board expertise is less related to accounting quality in private firms than has previously been found for public firms. Moreover, we contribute to the scant literature on corporate governance and accounting quality in private firms. In addition to providing initial results on board expertise and accounting quality in these firms, we also study the association of an additional set of corporate governance factors and accounting quality in private firms.

Keywords: Accounting Quality, Earnings Management, Corporate Governance, Board Expertise, Private Firms

Tutor: Henrik Nilsson

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[♦] 22133@student.hhs.se

[♠] 21845@student.hhs.se

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Daniel Hättö

John Åkesson

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1. Introduction

In Sweden there are around 400,000 private firms, which together employ more than 3.4 million people and generate some SEK 100 billion in tax revenues annually¹. Given these numbers, the amount of research produced on private firms is astonishingly low. Indeed, the large amount of research conducted on public firms cannot compensate for the lack of research produced on private firms since there are differences between these types of companies. For example, empirical evidence suggests that accounting quality is one dimension in which private firms differ from their public counterparts, with one stream of research finding that accounting quality is higher in public firms (Ball and Shivakumar, 2005; Burgstahler et al., 2006; Hope et al., 2013). In contrast, other research provides contradictory evidence, suggesting that accounting quality is actually higher in private firms (Penno and Simon, 1986; Beatty et al., 2002; Givoly et al., 2010). Hence, thus far most research has found a difference in accounting quality between public and private firms, but there is mixed evidence regarding which type of firm exhibits higher accounting quality. Since public and private firms differ in the level of accounting quality one cannot apply research results on accounting quality derived from public firms to private firms.

Research focusing on public firms has identified a number of drivers of accounting quality. One such driver is corporate governance factors such as board independence, board size, CEO-duality and audit committee structure (e.g. Dechow et al., 1996; Klein, 2002; Xie et al., 2003; Davidson et al., 2005). Another component of corporate governance that has been studied in relation to accounting quality is board expertise. Not surprisingly, previous research has found that the level of expertise among directors, such as financial expertise of audit committee members, is associated with higher accounting quality (e.g. Chtourou et al., 2001; Carcello et al. 2002; McDaniel et al., 2002; Dhaliwal et al., 2010). This stream of research thus provides initial evidence suggesting that directors' individual levels of experience and skills are associated with accounting quality. We therefore aim to extend these results in the context of private firms. In fact, our dataset allows us to identify directors who serve on boards of private firms and have experience as directors of public firms, defined as professional directors.

We believe that professional directors are distinctively more skilled at monitoring than directors who lack experience with public firms for a number of reasons. First, simply making it into the board

¹ According to the Serrano database, as per year end 2012.

room of a public company should be a sign of quality. Second, research has suggested that directors of public firms are involved in monitoring activities to a greater extent than directors of private firms, leading us to predict that professional directors are relatively more skilled in monitoring (Long et al., 2005). Hence, we hypothesize that the presence of professional directors in private firms makes a positive contribution to accounting quality in these firms. More specifically, this study aims to answer the following research question:

Is director professionalism of private firms associated with higher accounting quality?

The importance of our research is twofold. First, to the best of our knowledge, previous research on the relation between corporate governance and accounting quality has prominently focused on public firms. Hence, this study contributes to the understanding of the determinants of accounting quality in private firms and might also provide initial insight into what drives the difference in accounting quality between public and private firms. Second, our research has the potential to contribute with normative results. A firm's internal and external stakeholders are interested in accounting quality as well as its relation to director professionalism.

Based on our empirical results, we reject a relationship between director professionalism and accounting quality in private firms. We thus offer initial evidence suggesting that directors' individual expertise, prominently related to monitoring, does not impact on accounting quality. Our findings suggest that directors' experience gained in public firms do not contribute to the level of accounting quality in private firms. Estimating the relationship between accounting quality and director professionalism, we control for a number of corporate governance factors, as has been suggested in previous research on public firms. Our findings relating to these control variables are both in line with and contradictory to previous literature, suggesting that the impact of corporate governance on accounting quality differs between private and public companies.

In an attempt to explain our results, we argue that professional directors take on different roles in private and public firms. Private firms, which on average are considerably smaller and might be characterized by uncertainty, require more advice and less monitoring than public firms do. Through their advising role, professional directors might have a positive contribution on firm performance or firm value, but not on accounting quality. Furthermore, another alternative explanation of our

results is that professional directors are likely to serve on several boards making them too time constrained to perform time consuming monitoring activities.

1.1. Scope

This study is based on data from the Swedish Firms Registration Office that was compiled into the Serrano Database. Hence, we test our hypotheses on Swedish data and do not aim to make any conclusions about director' professionalism and accounting quality outside the borders of Sweden.

We only consider directors' expertise in the form of experience from public firms. Including other forms of expertise, such as financial expertise or foreign experience, would be interesting but is beyond the scope of this study.

Finally, we base our inferences on accrual-based earnings management models. Thus, we only consider how accounting quality is affected by the degree of earnings management exercised through the use of accruals. This study does not consider other facets of accounting quality, such as real earnings management, market responsiveness or accounting frauds.

2. Previous literature

In this section we present a definition of accounting quality with a particular focus on earnings management. Further, we explain the underlying driver of accounting quality in private firms, identified as the stakeholder problem. Subsequently, we explore the link between corporate governance characteristics and earnings management as well as firm characteristics and monitoring expertise. Finally, we formulate our hypotheses and review methods for measuring accounting quality.

2.1. Accounting quality

Numerous researchers have covered the accounting quality area throughout the years, resulting in a vast previous literature comprising subjects such as accounting frauds and earnings management. What is true for both frauds and earnings management is that they cause poor earnings quality since the reported earnings are no good indicators of future earnings. On the contrary, what differentiates earnings management from fraud is that fraud violates GAAP, whereas earnings management does not (Park and Shin, 2004). Healy and Wahlen (1998) define the occurrence of earnings management as "when managers use judgment in financial reporting and in structuring transactions to alter

financial reports to either mislead some stakeholder about the underlying economic performance of the company, or to influence contractual outcomes that depend on reported accounting numbers”.

Firms which are reporting in accordance with GAAP prepare financial statements on the accrual basis of accounting (BNFAR 2012:1, 3). Hence, different adjustments, collectively called accruals, are made to cash flows in order to more accurately reflect the firm’s actual business conditions (Teoh et al., 1998). However, according to Teoh et al. (1998) the adjustments inherent in the accrual accounting system in turn enable managers to engage in earnings management. More specifically, managers have leeway to manipulate accruals in order to advance or delay revenues and expenses. The manipulation is done through the management of accruals under which revenues and expenses are advanced or delayed. Thus, earnings can be either inflated or deflated, i.e. the manipulation can be done in two directions. In line with Ball and Shivakumar (2005) we define accounting quality as the usefulness of the financial statements to the firm’s stakeholders, where a higher accounting quality results in greater usefulness. Earnings subject to earnings management are hence less decision useful since they fail giving stakeholders correct information about the performance and financial position of the firm.

2.2. Earnings management and the stakeholder theory

As noted above, the nature of accrual accounting gives managers opportunity to exercise discretion over the financial reporting. Below we present incentives for managers to use this discretion opportunistically.

The separation of the firm’s managers and the firm’s stakeholders, the stakeholder problem, plays a central role in the motivation of earnings management. The stakeholder problem can further be decomposed into two parts. The first part constitutes the agency problem which is the separation of managers (agent) and shareholders (principal) and can be viewed as a narrower form of the stakeholder problem (Shankman, 1999). The second part is hence defined as the separation of managers and the firm’s other stakeholders, referred to non-equity stakeholders.

In the case of private firms² it is argued that the agency problem is less prevalent (Long et al., 2005). Beatty et al. (2002) argues that in relation to public firms, ownership in private firms is concentrated. Private firms thus have a smaller number of shareholders who each holds a greater share of the firm. These shareholders typically take a more active role in the management of the firm, either as directors or managers, and hence have a lower cost of acquiring information about the firm's performance. However, despite the fact that shareholders are able to exercise a high degree of monitoring in the private firm, shareholders cannot be expected to decrease earnings management which arises due to a misalignment between the interests of management and non-equity stakeholders. On the contrary, earnings management directed to mislead non-equity stakeholders, favours shareholders, at least in the short term. For example, the use of earnings management can improve the financial position of the firm, which in turn could give rise to better terms from creditors. The better terms in turn favour shareholders at the expense of the creditor. Hence, the stakeholder problem, with regards to non-equity stakeholders, is still expected to be as present in private as in public firms. In the following section we describe how management exercise earnings management in relation to different types of non-equity stakeholders.

2.2.1. Earnings management and external stakeholders

Freeman (1984) divides stakeholders into two groups, external and internal. The external stakeholders comprise, among others, the government which introduce different set of rules and regulation to which the firm has to adapt. Such regulation can give rise to incentives to engage in earnings management, where one example is industry specific regulation. Indeed, previous literature has found evidence of earnings management in the banking industry, as it is subject to certain capital requirements (e.g. Moyer, 1990).

2.2.2. Earnings management in connection to *explicit* contracts with internal stakeholders

The internal stakeholders comprise parties such as customers, employees and suppliers with whom the firm enter into both explicit and implicit contracts (Freeman, 1984). Previous literature has shown that explicit contracts can give rise to stakeholder problems which in turn might cause managers to exercise earnings management. One example of such contracts is lending contracts, which purpose is to control managers not to take actions favouring shareholders at the expense of

² Throughout this study we refer to private firms as firms having private equity which is not traded on any stock-exchange. Conversely, we refer to public firms as firms having public equity which is traded on at least one stock exchange.

the creditors (Healy and Wahlen, 1998). Such contracts often include accounting based debt covenants which specify values of certain ratios which the firms should reach. Since violation of debt covenants is costly, firms manage earnings in order not to violate the debt covenants agreed upon with their creditors (e.g. Defond and Jiambalvo, 1994).

2.2.3. Earnings management in connection to *implicit* contracts with internal stakeholders

Although the firm and its stakeholders often enter into explicit contacts, Bowen et al. (1995) argue that many relations between firms and their stakeholders are based on implied commitments. An example of such a commitment is the ongoing availability of parts and services to customers that purchase durable goods. The extent to which the firm is expected to fulfil its implied commitments, viewed as the firm's reputation, has an impact on the terms of trade with its stakeholders. For example, suppliers will offer better terms if the buyer is expected to make payments due and if the buyer is expected to make additional purchases in the future (Burgstahler and Dichev, 1997).

Hence, it is of utter importance that the firm is able to maintain its reputation in order to get favourable terms of trade also in the future. Indeed, stakeholders are likely to continuously assess the reputation of the firm using various measures. One evident measure is the firm's past and current performance of implicit commitments. Another measure which is likely to be important to stakeholders when assessing a firm's reputation is reported accounting numbers (e.g. Bowen et al., 1995; Cornell and Shapiro, 1987; Maksimovic and Titman, 1991). Bowen et al. (1995) further argue that at least some stakeholders are unable to entirely adjust for differences in accounting methods. Thus, managers have incentives to manage earnings since they wish to increase reputation by reflecting a well-run business at the same time as stakeholders can be expected not to detect earnings management. Hence, as in the case of public firms, the private firm is in need of a board that is effective in monitoring the management to safeguard the interests of non-equity stakeholders by ensuring high accounting quality.

On the topic of safeguarding the interests of non-equity stakeholders by ensuring high accounting quality, previous research have examined the determinants of accounting quality focusing on areas such as capital market incentives, auditors, firm characteristics and corporate governance variables (Dechow et al., 2010). Within the research focusing on corporate governance and accounting quality,

one stream of research which lies close to our field of study is the relation of board characteristics and accounting quality. Hence, this research is discussed in the following section.

2.3. Boards characteristics and accounting quality

In this section we present a set of different board characteristics that in previous research have been studied in connection to accounting quality, namely director independence, board size, CEO-duality, the presence of an audit committee and director expertise.

A large set of studies in previous research argues that the efficiency of a board depends on its independence³ (e.g. Beasley, 1996; Dechow et al., 1996). Independent directors are expected to be better positioned to monitor the firm. As monitoring efforts are expected to increase accounting quality, independent directors can be expected to positively contribute to accounting quality. However, previous findings on the relation between accounting quality and board independence are mixed. For example, Davidson et al. (2005), find empirical evidence from the Australian market suggesting that firms having a majority of non-executive board members are less likely to engage in earnings management. In addition, a study made on the Singaporean market does not find any association between accounting quality and board independence (Bradbury et al., 2006).

Another factor which in previous research often has been suggested to impact the board's ability to exercise monitoring is board size, defined as the total number of board seats. Previous literature suggests that boards tend to exercise less effective monitoring as the board size increases. An increased board size results in amplified problems regarding coordination and communication (Jensen, 1993; Beasley, 1996). However, there is research contradicting these results. In fact, Xie et al. (2003), among others, find evidence of a positive relation between board size and accounting quality. In addition to this research, Bradbury et al. (2006) reject such a relationship altogether. Furthermore, ability of boards to monitor firms has also been studied in the light of CEO-duality. CEO-duality occurs when the CEO also holds the position as chairperson of the board. A general idea in the corporate governance theory is that CEO-duality results in less effective monitoring of managers' activities and behaviour. However, most of the previous accounting quality research has

³ Different definitions of director independence have been suggested. A common definition of an independent director is a director who does not hold any executive position in the firm, has no relationship to the firm, and has no related party transaction with the firm (e.g. Jaggi et al., 2009).

found no empirical evidence supporting the idea of CEO-duality impeding the monitoring role of the board (Cornett et al., 2006; Davidson et al., 2005).

Moreover, the presence of an audit committee and its relation to accounting quality has also previously been researched. The audit committee has the potential of protecting stakeholders by providing them with credible financial statements. The results on whether audit committees and accounting quality are associated are mixed. García-Osma and Gill-de-Albornoz (2007) find no relation between the existence of audit committee and accounting quality whereas Klein (2002) finds a negative relation.

Yet another board characteristic which has been identified as an important driver of accounting quality, and which we also examine in this particular study, is board expertise. Board expertise is considered an important factor for the efficiency of the monitoring performed by the board (Alzoubi and Selamat, 2012). The level of expertise a director holds is related to, among other things, the director's level of experience (Chtourou et al., 2001), as experience is essential in the development of superior competency (Bédard and Chi, 1993). Indeed, Chtourou et al. (2001) find that accounting quality is positively associated with the average tenure of directors. In addition, a study by Carcello et al. (2002) finds that directors with more experience in terms of a greater number of directorships require high-quality audit work and which in turn leads to higher accounting quality. Both studies reach the conclusion that a higher level of expertise among directors results in greater monitoring incentives.

The reason for greater monitoring incentives among directors in public firms might in turn be related to the dynamics on the labour market which directors are actors on. Srinivasan (2005) finds evidence that directors who have suffered reputation losses from accounting restatements, experience severe labour market penalties. Relatedly, directors who serve on the board of firms which are experiencing hostile takeovers are found to hold fewer board seats, indicating that they are less reputed monitors (Shivdasani, 1993). On the contrary, directors which are good monitors will be rewarded with additional directorships (Fama 1980; Fama and Jensen, 1983), which in turn bring prestige, visibility and contacts. Hence, reputation can be assumed to proxy for monitoring effectiveness as directors with high reputation have been successful monitors when building and maintaining their reputation.

2.3.1. Association between firm characteristics and monitoring expertise

Related to the topic of board expertise, there is academic evidence suggesting that there are differences in monitoring experience between directors depending where they gained experience. For example, Long et al. (2005) study how the roles and responsibilities of directors differ in public and private firms. The findings of Long et al. (2005) suggest that directors in public firms have a higher involvement in executive monitoring, whereas directors in private firms are less involved in solving agency problems and more involved in advising management on strategic and financial matters. From these findings, it is reasonable to expect directors with experience from board work in public firms to have accumulated skills and experience in monitoring executive management, making them more effective monitors than directors without experience from public firms.

Another firm characteristic which has a bearing on the monitoring activities performed in the company is firm size. More specifically, Barnhart and Rosenstein (1998) argue that firm size is positively associated with the monitoring complexity of the firm. As larger firms are subject to more complex governance conditions it is likely that directors active in larger firms have a different set of monitoring skills than do directors appointed to boards of smaller firms which less governance complexity.

2.4. Hypothesis formulation

Based on evidence and theory from the previous research presented above, in this section we will outline the hypotheses that are tested in this study. We expect professional directors to be more skilled in monitoring for two reasons. First, being on a public board is itself a sign of quality. Second, directors of public firms acquire experience that makes them efficient monitors. Both of these reasons will be explained in more detail below.

2.4.1. Board assignments in public firms – a sign of quality

As discussed in the previous section, reputation is related to the monitoring efficiency of directors. As reputation is gained through a strong track-record of monitoring capability in previous directorships, a well-reputed director should have performed high quality monitoring services in the past. As directorships in public firms are highly desired positions among directors, due to the prestige and network they offer, one can hence assume fierce competition between potential candidates. Thus, the directors chosen to be on boards of public firms can be expected to have high

reputations and hence be better monitors than directors who are appointed exclusively to private firms. The fact that the professional director has been accepted to a public firm is thus a sign of high monitoring capability.

2.4.2. Experience gained through board work in public firms

Furthermore, as discussed in section 2.3.1, board work in public firms involves more monitoring activities than that in private firms. One might therefore expect that directors with experience gained in public firms are better monitors because they have more actual experience of monitoring work. One can hence expect a director who has extensive experience with public firms to have developed relatively more monitoring expertise than a director with less experience in public firms. Thus, it seems possible to differentiate professional directors based on their level of experience of board work within public firms.

We further believe that the level of monitoring experience of a director is based on two factors. First, we believe that a longer tenure as a director in public firms gives rise to higher monitoring experience and, in turn, greater expertise. Second, we anticipate that the number of assignments held by a director has a positive impact on that director's expertise. More specifically, different firms most likely have different monitoring needs. Therefore, a director with experience of several board assignments should most likely also have broader monitoring expertise.

To conclude, we expect directors with experience gained in public firms, i.e. professional directors, to be better monitors than directors with no experience of public firms. We further believe that the tenure as well as the number of assignments held by professional directors indicates their level of professionalism. Hence, we expect that the level of director professionalism within a private firm is determined by the share of board seats held by professional directors as well as the average tenure and number of assignments with public firms held by those directors. As the level of director professionalism indicates the level of monitoring expertise among the directors on the board of a private firm, we suggest the following hypothesis:

H1₁: Director professionalism is positively correlated with accounting quality in private firms

2.4.3. Sub-hypotheses: Highly leveraged firms, retail firms and large firms

One can further expect that professional directors' impact on accounting quality differs between firms depending on both industry membership and firm characteristics. More specifically, it is reasonable to assume that the effect of professional directors on accounting quality is more significant in samples of firms that are more prone to engage in earnings management. As mentioned in section 2.2.2, firms with high leverage are more likely to engage in earnings management in order to reach debt covenants. We therefore test professional directors' impact on accounting quality among the top 10% of the firms by Debt-to-Equity ratio and propose the following hypothesis:

H1₂: Director professionalism is positively correlated with accounting quality in highly leveraged private firms

Furthermore, as mentioned in section 2.2.3, firms might engage in earnings management in order to gain favourable terms of trade with certain stakeholders. The relation between the firm and its suppliers gives rise to one such example. We expect a firm that is especially sensitive to the terms of trade with its suppliers to be more likely to engage in earnings management. Further, one industry that we expect to be particularly sensitive to its terms of trade with suppliers is the retail sector, as this industry is known to have high accounts payables (Niskanen and Niskanen, 2000). We therefore expect firms in the retail sector to be especially prone to engage in earnings management. In line with our previous reasoning, we expect the impact of board professionalism to be more distinct in these firms. Thus we investigate the impact of board professionalism on accounting quality in private retail firms⁴ and propose the following hypothesis:

H1₃: Director professionalism is positively correlated with accounting quality in private firms within the retail sector

Yet another firm characteristic which might affect the impact of professional directors on accounting quality in private firms is firm size. As above mentioned, the monitoring complexity is greater in larger firms. The average turnover among Swedish public firms during 2012 was around SEK 9,800⁵ million whereas the corresponding figure for private firms was around SEK 30⁶ million. Hence, in general private firms are smaller than public firms. Further, as professional directors have experience from public firms they thus also have experience from large firms and should be more

⁴ The retail sector is categorized as SNI code 46 and 47

⁵ Calculated using data obtained from the Retriever database

⁶ Calculated using data obtained from the Serrano Database

efficient monitors in firms with complex governance systems than directors with experience solely from private firms. Thus, we expect the relation of professional directors and accounting quality to be more distinct in larger private firms. Therefore, we test the relation among the top 10% of the private firms by turnover and suggest the following hypothesis:

H14: Director professionalism is positively correlated with accounting quality in large private firms

2.5. Measures of accounting quality

In order to test the hypotheses outlined in the previous section we adopt several measures of accounting quality. We now focus on how earnings management can be measured and review a number of accounting quality measures which have been widely used in previous research and also motivate our choice of accounting quality measure.

Research has consistently found evidence of the occurrence of earnings management, but problems arise in measuring earnings management in a reliable way. Healy and Wahlen (1998) note: "Despite the popular wisdom that earnings management exists, it has been remarkably difficult for researchers to convincingly document it." Driven by the difficulties in documenting earnings management, previous literature within the area has employed a number of approaches for identifying earnings management. Dechow et al. (2010) provide a comprehensive review of different proxies for earnings management used in previous studies. They divide the proxies into three broad categories; properties of earnings, investor responsiveness to earnings and external indicators of earnings misstatement. For the purpose of this study, properties of earnings measures are most suitable as we investigate private firms and do not have data on earnings misstatements.

Measures based on the properties of earnings focus on proxying accounting quality through studying the quality of earnings. These measures comprise proxies such as earnings persistence, earnings smoothness, timely loss recognition, target beating and abnormal accruals (Dechow et al., 2010). The following section gives a brief overview of the different proxies as well as motivating the selection of accounting quality proxies adopted in this study.

2.5.1. Earnings persistence and smoothness measures

Measures of earnings persistence indicate how sustainable earnings are. To a large extent, previous research on earnings persistence focuses on the usefulness of earnings to equity investors. When earnings are persistent, they are considered to be more compatible with equity valuation models

such as the discounted cash flow model (Dechow et al., 2010). As we consider earnings quality from a non-equity stakeholders' point of view, measures on earnings persistence fall short on their focus on equity investors. A related measure of earnings persistence is that of smoothness. These measures typically try capturing the smoothness of earnings in relation to the smoothness of cash flows. The underlying logic behind the measure is that smooth earnings can improve earnings persistence and predictability of future performance and hence, accounting quality. There are two reasons making measures of earnings smoothness an unsuitable proxy for accounting quality in this study. Firstly, as for measures of earnings persistence, smoothness is foremost a measure of the accounting quality from the perspective of equity investors. Secondly, it is hard to disentangle what is smoothness of the fundamental performance with the purpose of better depicting future performance and what is smoothness with the intention to manipulate performance (Dechow et al., 2010). Earnings smoothness without the intention of manipulating performance, is the outcome of accrual accounting and assumed to increase decision usefulness and hence earnings quality. As a consequence of the inherent problems with the earnings smoothness measure, there are a rather limited number of studies using smoothness as proxy for earnings quality (Dechow et al., 2010).

2.5.2. Timely loss recognition measures

Timely loss recognition measures investigate whether bad news is reflected more quickly than good news in earnings. The most frequently used measure of timely loss recognition is the reverse earnings return regression as developed by Basu (1997). In this approach one-year ahead earnings are regressed on current market return (Dechow et al., 2010). Basu (1997) also proposes a measure of timely loss recognition which is not based on market returns, and which hence is of greater interest to this study. The second model proposed by Basu (1997) instead regresses current change in net income on previous year's change in net income. Basu (1997) argues that the model is a measure of accounting quality since timely loss recognition increases the usefulness of financial statements. If losses are recognized on a more timely basis than gains, negative earnings changes will, in the future, tend to reverse at a higher rate than positive earnings changes resulting from gains. The fact that negative earnings changes reverse at a higher rate than positive earnings changes in the case of timely loss recognition is used in the model to assess accounting quality. Unfortunately, the model first introduced by Basu (1997) does not differentiate between transitory items caused by conservatism and those caused by earnings management as these items are all transitory (Ball and Shivakumar, 2005). In order to mitigate the weakness inherent in the Basu (1997) model, Ball and Shivakumar 2005 introduces a developed model in which they regress working

capital accruals on cash flow from operations. Nevertheless, critique has been raised towards timely loss recognition models. For example, Guay and Verrecchia (2006) question the underlying assumption that firm's contracting parties have a higher demand for timely loss recognition than for timely recognition of gains. This critique in combination with difficulties in using instrumental variables⁷ in these models, make this approach inappropriate to this study.

2.5.3. Target beating measures

There are two types of "target beating" studies, one examining the distribution of earnings around zero and the second investigating the distribution of earnings around some external target, prominently analyst forecasts (Dechow et al., 2010). Studies have found a relatively large number of firms reporting earnings just above zero (Hayn, 1995; Burgstahler and Dichev, 1997). This would suggest that firms manage earnings to avoid reporting losses. However this conclusion is controversial. In fact, alternative explanations for the dense distribution of earnings around zero or some external target have been given such as asymmetric taxes (Beaver et al., 2007). Furthermore, Dechow et al. (2002) find that the level of discretionary accruals is no different for small profit firms compared to large profit firms. Regarding the distribution around other external targets the evidence is somewhat more convincing (Dechow et al., 2010). However, it is not motivated to use target beating measures as an indicator of earnings management in this study since research has not produced convincing evidence of its effectiveness, and secondly as our study focus on private firms, external targets such as analysts forecast are absent.

2.5.4. Accrual-based models

Measures of accounting quality covered up to this point is for abovementioned reasons unsuitable for this study. In the following section we review accrual-based models which are the technique used in this study. We present the most acknowledged models as well as models included in Hope et al. (2013). Presenting the models employed in Hope et al. (2013) is motivated by the fact that Hope et al. (2013) also focus on accounting quality in private firms.

A vast amount of previous research examining earnings management separates total accruals into normal and discretionary accruals (Dechow et al., 2010). Normal accruals should depict accruals that are related to the operations and performance of the company. Discretionary accruals, on the other hand, are accruals induced as a result of management's use of the accounting system in a decisive

⁷ The endogeneity problem inherent in this study and the instrumental variable used to mitigate the problem, is explained in section 3.3.2.1

way. Hence, management can use discretionary accruals to manipulate earnings leading to financial statements not being a credible signal of a firm's financial performance (Kepsu, 2012). Five models have been particularly well used in previous research to estimate normal and abnormal accruals. Each of these models will be discussed below and are specified in Table 1.

Table 1. Accrual-based models

Jones Model (1991)

$$TA_{i,t} = \alpha_1 (1/A_{i,t-1}) + \beta_1 \Delta REV_{i,t} + \beta_2 PPE_{i,t} + \varepsilon_{i,t} \quad (1)$$

Modified Jones Model (1995)

$$TA_{i,t} = \alpha_1 (1/A_{i,t-1}) + \beta_1 (\Delta REV_{i,t} - \Delta REC_{i,t}) + \beta_2 (PPE_{i,t}) + \varepsilon_{i,t} \quad (2)$$

Performance matched approach (2005)

$$DA_{i,t} - \text{Matched firm's } DA_{i,t} \quad (3)$$

Francis et al. approach (2005)

$$TCA_{i,t} = \alpha_1 + \beta_1 CFO_{i,t-1} + \beta_1 CFO_{i,t} + \beta_1 CFO_{i,t+1} + \beta_4 \Delta REV_{i,t} + \beta_5 PPE_{i,t} + \varepsilon_{i,t} \quad (4)$$

$$\delta(\varepsilon_t) = \alpha_1 + \lambda_1 SIZE_{i,t} + \lambda_2 \delta CFO_{i,t} + \lambda_3 \delta REV_{i,t} + \lambda_4 \log OPERCYCLE_{i,t} + \lambda_5 NEGEARN_{i,t} + v_{i,t} \quad (5)$$

Stubben (2010)

$$\Delta AR_{i,t} = \alpha_1 + \beta_1 \Delta REV_{i,t} + \varepsilon_{i,t} \quad (6)$$

Where TA equals total accruals; A equals total assets; REV equals revenues; REC_{it} equals net receivables; DA equals discretionary accruals; TCA equals working capital accruals; CFO equals cash flow from operations; SIZE equals log of asset, OPERCYCLE equals the sum of days accounts receivables and sum of days inventory; NEGEARN equals the number of years, out of ten past, where the firm reported negative net income before extraordinary items.

2.5.4.1. Jones (1991) and Modified Jones (1995) models

Compared to earlier accrual models such as the one brought forward in DeAngelo (1986), Jones (1991) develops a model which does not assume that non-discretionary (i.e. normal) accruals are constant. Instead the model controls for the effect of different economic circumstances (Dechow et al., 1995), by estimating normal accruals using regression analysis and controlling for level of revenues (1). On the other hand, the Jones model implicitly assumes that revenues are non-discretionary, implying that the model does not capture earnings management which is exercised through the management of revenues. Hence, the Jones model might underestimate the level of earnings management.

In order to mitigate the weakness of the original Jones model, Dechow et al. (1995) make a modification in that the model also should recognize manipulation exercised through revenues. The Modified Jones model therefore includes a net receivables component when estimating normal accruals (2). Hence, the only adjustment compared to the original Jones model is that change in revenues is adjusted for change in receivables (Dechow et al., 1995). Whereas this modification eases the assumption that revenues are non-discretionary, it imposes a new assumption, that any change in credit sales is an effect of discretionary accruals.

According to Dechow et al. (2010) it has been seen that the Jones model only explains about 10% of the variation in accruals and the model can be expected to suffer from both Type I and Type II errors. The Modified Jones model was later constructed to mitigate the Type II errors. Although this aim to some extent has been fulfilled the model still suffers from Type I errors, perhaps to a larger extent than the original Jones model. However, since the modified version suffers less from Type II errors and also considers discretion exercised through revenues, we choose to employ the modified version in this study.

2.5.4.2. Performance matched approach, Kothari et al. (2005)

Kothari et al. (2005) argue that extreme growth gives rise to accruals. They refer to the model in Dechow et al. (1998) which shows that working capital increase when a firm's revenue and earnings grow as the firm has to invest in working capital in order to support the growth. Hence, firms which undergo rapid growth will have higher levels of normal accruals. Such a correlation between performance and accruals is not controlled for in the Jones and Modified Jones models. Thus, those models might erroneously classify growing working capital as discretionary accruals. Instead Kothari et al. (2005) argue that discretionary accruals of a firm with extreme performance should be compared to discretionary accruals of a firm with similar performance (3). One is thus investigating if the firm is managing earnings to a higher extent than does the firm one is comparing with. Kothari et al. (2005) propose researchers to use the Jones or Modified Jones model to estimate discretionary accruals and then match firms based on return on assets. In addition, they argue that including return on assets as an additional component in the Jones and Modified Jones models is a viable option. However, they also claim that performance is most likely not linear which decreases the motivation of including performance as an explanatory variable in the regression.

As the performance matched model developed by Kothari et al. (2005) is based on the Jones model it also suffers from low explanatory power. In addition, the matching procedure is likely to add further noise to accrual estimation and the model should hence only be used in cases of extreme performance (Dechow, 2010) and is thus not used in this study.⁸

2.5.4.3. Dechow and Dichev (2002) and Francis et al. (2005) approaches

Dechow and Dichev (2002) introduce a new model investigating quality of working capital accruals focusing on the matching function of current accruals to cash flows. Accruals are regularly based on assumptions and estimates and when the estimates prove to be wrong (e.g. when the amount of cash collected/paid differs from the previously recorded accrual) subsequent corrections have to be undertaken. Dechow and Dichev (2002) argue that such corrections decrease the quality of accruals and in turn accounting quality. In order to determine quality, their model measures the extent to which working capital accruals are aligned with operating cash flow realization. A greater alignment indicates higher accrual quality and in turn accounting quality. Corrections of working capital accruals are measured as the residuals from firm specific regression of changes in working capital on last year, current year and next year cash flows from operations. The residuals in such a regression constitute changes in working capital which is not explained by cash flow realizations. The standard deviation of the residuals is used as a proxy for accrual quality, where a higher standard deviation reflects lower accrual quality. However, Dechow and Dichev (2002) do not focus on the intention of the estimation errors and do hence not differentiate between intentional and unintentional estimation errors.

Francis et al. (2005) develop and extend the Dechow-Dichev model by combining the model with components from the Modified Jones model as suggested by McNichols (2002), hereafter referred to as the Modified Dechow-Dichev model. McNichols (2002) argues that, in addition to operating cash flows, changes in revenues and property, plant and equipment also explain current accruals. In fact, she finds that the explanatory value of the Dechow-Dichev model increases significantly by the addition of the Modified Jones components. As in the case of the Dechow-Dichev model the standard deviations of the residuals in Francis et al. (2005) reflect the estimation errors of accruals. In contrast to the Dechow-Dichev model, Francis et al. (2005) further divide the standard deviations

⁸ As our sample contains a large number of firms in different business cycles and in different industries, there is little reason to believe that our sample as a whole is characterized by extreme growth.

into innate estimation errors and discretionary estimation errors. This is done by regressing the standard deviations of the residuals calculated in the firm specific regression (4) on a set of firm characteristics. The part of the standard deviation of the residuals in (4) which is not explained by the firm characteristics is considered discretionary accrual quality.

The model brought forward in Dechow and Dichev (2002) has a higher explanatory power compared to the Modified Jones model (Dechow et al. 2010), this is especially true for the modified Dechow-Dichev model. However, this latter model might on the other hand suffer from other problems. Dechow et al. (2010) describe that the firm characteristics used in (5) might not truly proxy innate estimation errors but rather reflect discretionary estimation error and corrections. Such a scenario would reduce the power of the test since it then would not reflect only errors originating from intentional estimation errors, resulting in a Type I error. Nevertheless, limitation in our data set resulting in too few observations of firms with professional directors restricts us from applying the second part (5) of the model outlined in Francis et al. (2005). However, we have decided to use the first part of the model due to its rich explanatory power. One clear disadvantage of the model in the context of this study is that it does not differentiate between intentional and unintentional estimation error.

2.5.4.4. Revenue accrual model, Stubben (2010)

Several studies suggest that one way to provide more precise and reliable estimates of discretionary accruals is to focus on one component of earnings (McNichols and Wilson 1988; Bernard and Skinner 1996; Healy and Wahlen 1998; McNichols 2000). Stubben (2010) develops a measure focusing on detecting earnings management through discretionary revenues. This measure is designed to detect premature revenue recognition, i.e. recognizing revenues before collecting cash, in an aggressive manner through an incorrect application of GAAP (Stubben, 2010). The model is conceptually similar to other accrual-based earnings management models but differ in several ways. Instead of modelling total or working capital accruals to isolate a discretionary part of accruals, as other popular measures of earnings management (e.g. Jones 1991; Dechow et al. 1995), this approach focuses solely on modelling accounts receivables. Modelling other working capital accruals on revenues add noise in the discretionary accrual estimation process since these accruals do not have such a direct relation to revenues as accounts receivables (Stubben, 2010). Further, as opposed to some models (e.g. the Modified Jones model), this model is based on reported revenues instead of

cash revenues as a function of accruals. Using cash revenues is likely to overstate earnings management as all changes in credit sales are assumed to result due to earnings management, a problem which is not inherent in the model developed by Stubben (2010).

2.5.4.5. Choice of accrual-based model

Despite the vast number of different approaches for detecting earnings management, there is a lack of a universally accepted measure (Dechow et al., 2010). This motivates employing several approaches to make results more reliable and hence more generalizable. Further, earnings management in private firms is to date a relatively unexplored area and hence, from a research point of view, it is motivated to present evidence based on various earnings management measures. In addition, employing several approaches for identifying earnings management mitigates endogeneity problems i.e. that one specific approach capture factors not related to earnings management (Hope et al., 2013).

Hope et al. (2013), a recent published paper focusing on accounting quality in private firms adopt Kothari et al. (2005), Dechow-Dichev (2002), Stubben (2008) and Ball and Shivakumar (2005). Consistent with Hope et al. (2013) we employ several proxies for earnings management but do not use the full set of proxies used in Hope et al. (2013). In fact, we have decided not to adopt Kothari et al. (2005) and Ball and Shivakumar (2005) due to the reasons brought forward when accounting for the models in the above section. However, in line with Hope et al. (2013) we use Stubben (2008) and Dechow-Dichev (2002) (as modified by McNichols, 2002). In addition to the measures used by Hope et al. (2013) we also include the Modified Jones model, as the model enables comparison of our results with other studies due to its widespread adoption in the earnings management research (Kothari et al., 2005).

3. Method

3.1. Empirical method

In this study we employ a deductive approach, meaning that we deduce hypotheses from previous theory, which we test on empirical data. Hence, in our specific case, we use theories from the corporate governance and accounting quality field and test if these are applicable in our research setting with private firms.

We use a quantitative approach to answer our research question as this makes our results more generalizable (e.g. Verschuren, 2003; Alvesson and Sköldbberg, 1994). A quantitative approach is particularly suitable to the study at hand as our research question has not been previously tested, and we are interested in results that are as generalizable as possible regardless of firms size, industry membership and directors expertise.

3.2. Methods for estimating accounting quality

3.2.1. Operationalization of the Modified Jones model

We employ the Modified Jones model cross-sectionally, meaning that in order to predict non-discretionary accruals we normalize accruals based on industry membership.

To start with, total accruals are derived for each firm year. Pioneering studies of earnings management (Healy, 1985; Jones, 1991) recommend computing total accruals from successive balance sheet accounts. The balance sheet approach rests upon an articulation between the change in working capital accounts and the accrual component of revenues and expenses (Collins and Hribar, 2002). This articulation can result in biased estimates of discretionary accruals when the income statement contains non-operating events such as reclassifications, acquisitions and divestitures and foreign currency translations (Collins and Hribar, 2002). More recent studies therefore compute total accruals directly from the statement of cash flows (Collins and Hribar, 2002). However, as our data does not comprise any cash flow statements, we use the balance sheet approach to calculate total accruals:

$$TA_{i,t} = \Delta CA_{i,t} - \Delta CL_{i,t} - \Delta CASH_{i,t} + \Delta STD_{i,t} - DEPR_{i,t} \quad (8)$$

Where: $TA_{i,t}$ equals total accruals. $\Delta CA_{i,t}$ equals change in current assets. $\Delta CL_{i,t}$ equals change in current liabilities. $\Delta CASH_{i,t}$ equals change in cash and cash equivalents. $\Delta STD_{i,t}$ equals change in short term debt included in current liabilities. $DEPR_{i,t}$ equals depreciation and amortization expense.

For each industry year we estimate the following model to normalize accruals for industries with at least 30 observations during period $t = 2001-2010$. All variables are scaled by lagged total assets. In line with prior research we also scale the intercept in order to control for heteroskedasticity (Dechow et al., 2002).

$$TA_{i,t} = a_1(1/A_{i,t-1}) + a_2(\Delta REV_{i,t} - \Delta REC_{i,t}) + a_3(PPE_{i,t}) \quad (9)$$

Where: $NDA_{i,t}$ equals estimated non-discretionary accruals. $A_{i,t-1}$ equals total asset at t-1. $\Delta REV_{i,t}$ equals change in revenues. $\Delta REC_{i,t}$ equals change in net receivables. $\Delta PPE_{i,t}$ equals change in gross property, plant and equipment.

The estimated industry-specific parameters, from equation (9) are used to predict non-discretionary accruals for each firm:

$$NDA_{i,t} = \alpha_1(1/A_{i,t-1}) + \alpha_2(\Delta REV_{i,t} - \Delta REC_{i,t}) + \alpha_3(PPE_{i,t}) \quad (10)$$

Finally, discretionary accruals are calculated as the difference between actual accruals and predicted non-discretionary accruals:

$$DA_{i,t} = TA_{i,t} - NDA_{i,t} \quad (11)$$

In our final test of the association between accounting quality and director professionalism we, in line with other studies employing the Modified Jones model, convert the measure of discretionary accruals into accounting quality by multiplying the square of discretionary accruals by (-1) to make higher values of discretionary accruals represent higher accounting quality.

3.2.2. Operationalization of Dechow-Dichev (2002) as modified proposed by McNichols (2002)

When estimating accrual quality using the extended version of Dechow-Dichev (2002) as suggested by McNichols (2002) and outlined in Francis et al. (2005) we start with calculating total current accruals.

$$TCA_{i,t} = \Delta CA_{i,t} - \Delta CL_{i,t} - \Delta CASH_{i,t} - \Delta STINV_{i,t} + \Delta STDEBT_{i,t} \quad (12)$$

Where: $TCA_{i,t}$ equals total current accruals. $\Delta CA_{i,t}$ equals change in current assets. $\Delta CL_{i,t}$ equals change in current liabilities. $\Delta CASH_{i,t}$ equals change in cash and cash equivalents. $\Delta STINV_{i,t}$ equals short term investment. $\Delta STDEBT_{i,t}$ equals change in short term debt included in current liabilities.

In a second step we calculate total accruals and use the results to calculate cash flow from operations.

$$TA_{i,t} = \Delta CA_{i,t} - \Delta CL_{i,t} - \Delta CASH_{i,t} - \Delta STINV_{i,t} + \Delta STDEBT_{i,t} - DEPR_{i,t} \quad (13)$$

$$CFO_{i,t} = NIBE_{i,t} - TA_{i,t} \quad (14)$$

Where: $TA_{i,t}$ equals total current accruals. $DEPR_{i,t}$ equals depreciation and amortization expense. $CFO_{i,t}$ equals cash flow from operations. $NIBE_{i,t}$ equals net income before extra-ordinary items.

Thirdly, we estimate the model cross-sectionally for each SNI industry group with at least 30 observations for the period $t = 2001-2010$. All variables in the regression are scaled by lagged assets.

$$TCA_{i,t} = \alpha_1 + \beta_1 CFO_{i,t-1} + \beta_2 CFO_{i,t} + \beta_3 CFO_{i,t+1} + \beta_4 \Delta REV_{i,t} + \beta_5 PPE_{i,t} + \varepsilon_{i,t} \quad (15)$$

Where: $\Delta Rev_{i,t}$ equals change in revenues. $PPE_{i,t}$ equals property plant and equipment.

The residuals in (15) reflect the part of accruals which is not explained by any of the independent variables. They hence constitute estimation errors of the accruals made when the accruals were recorded. Thus, the residuals are an inverse measure of the accounting quality. We further multiply the square residuals by (-1) to create a variable which indicates quality, i.e. a higher value representing higher quality.

In contrast to Dechow and Dichev (2002) and Francis et al. (2005) we, in line with Lee et al. (2015), use the residual values as a measure for accounting quality instead of the standard deviation of residuals calculated over year $t-4$ to t . The reason is that calculating standard errors of the residuals over a five year period requires seven subsequent years of data for each firm which reduces our sample significantly. Although the implication of using the value of the residuals is the same as their standard error, the relation to firm characteristics and earnings persistence is weaker (Dechow and Dichev, 2002). On the contrary, the data requirement imposed when calculating the standard errors of the residuals can be expected to create a survivorship bias which is not as apparent when proxying accounting quality using simply the residuals.

3.2.3. Operationalization of Revenue accrual model, Stubben (2010)

We regress change in account receivables on change in revenues with the following model:

$$\Delta AR_{i,t} = \alpha_1 + \beta_1 \Delta REV_{i,t} + \varepsilon_{i,t} \quad (16)$$

Where: $\Delta AR_{i,t}$ equals change in accounts receivables. $\Delta REV_{i,t}$ equals change in revenues.

We estimate the model cross-sectionally for each SNI industry group with at least 30 observations for the period $t = 2001-2010$. Each variable is scaled by lagged total assets. We use the estimated model to compute the residuals for each firm year, which constitute discretionary revenues. Moreover, we multiply the square residuals by (-1) to create a variable which indicates quality, i.e. a higher value representing higher quality.

3.3. Determining the effect of director professionalism

3.3.1. Measuring director professionalism

As described in section 2.4 we argue that professional directors are more skilled due to two reasons. First, we believe it is a sign of quality to be on the board of a public firm. Second, directors in public firms acquire experience that is expected to make them efficient monitors. In this section we bring forward how these two dimensions are measured in the estimation of director professionalism in the board of the private firm.

As getting appointed to the board of a public firm is a sign of quality, one factor indicating the level of director professionalism of a private firm is the share of the total number of board seats which is assigned to professional directors. We define a professional director as a director who, simultaneously or previously to the assignment in the private firm, holds or has hold at least one directorship in a public firm.^{9, 10} Furthermore, a director is considered responsible for earnings

⁹ Individuals who have acted as deputy directors or employee representatives are not considered professional when assigned as directors in private firms. Neither are any deputy directors or employee representatives in the private firm taken into consideration in this study. Deputy directors are not included since their actual involvement in the board is unsure. Employee representatives on the other hand have comparatively the same commitments as a regular director (SFS 1987:1245). Yet, we expect them to possess less knowledge of accounting. We also expect them to, consciously or not, focus more on the well-being of the employees rather than on all non-equity stakeholders and are hence seen as less efficient monitors in terms of accounting quality.

¹⁰ Our data covering records of listed firm's directors only dates back to 1999. If a director who has been active in a private firm during our research years 2001-2010 was assigned a board seat in a listed firm previously to 1999 but not afterwards, this director will hence not be regarded a professional director in the private firm. This is considered a disadvantage caused by limited data which might bias our result, especially in the earlier years of our research period.

management during the current year as long as he or she is holding the board seat at the end of the year and hence approve the financial statements.

The second component impacting the level of director professionalism is the experience of the professional director. As mentioned in section 2.4.2, we believe that the experience of professional directors is based on two factors. First, one can expect that the length of the professional director's tenure in a public firm is associated with the director's monitoring experience and in turn expertise. Hence, we calculate the length of tenure in public firms of each professional director. The experience of a professional director is measured as the sum of years in each of the firms the individual has acted as a director, e.g. if one individual has acted as director for two years in two public firms (simultaneously or not), the individual has 4 years of experience. In a second step we calculate the average tenure of the professional directors who are seated in the private firm which is currently being studied.

The second factor contributing to the experience of professional directors is the number of assignments in public firms the professional director holds and previously has held. We hence calculate this number and in a second step compute the average number of assignments in public firms held by the professional directors in the private firm.

The level of director professionalism in the private firm is hence based on three components: the share of the total number of board seats in a private firm which is assigned to professional directors, these professional directors' average tenure in public firms and their average number of board assignments in public firms. However, basing the level of director professionalism on several components causes some problem.

As will be described in more detailed in section 3.3.2.1 below, our study suffers from endogeneity problems. In fact, we argue that all of the three components indicating director professionalism are endogenous. As will also be described below, we aim at resolving the endogeneity problem by introducing instrumental variables. Since each endogenous variable requires one specific instrumental variable, we would be required to introduce three instruments. However, our data only

More specifically, the effects of director professionalism on earnings management might be less visible in the earlier years as firms which are considered not having a professional director on their board in the study might actually have one in reality.

allows us to construct one valid instrument and as a result, the three components indicating director professionalism cannot be included separately into our analysis.

As a means of solving this issue we create a joint variable (FACTPROF) using principal component analysis of the three components of director professionalism discussed above. Principal component analysis is a data reduction method used to re-express multivariate data with fewer dimensions.¹¹ The implication of the use of a factor variable instead of three separate variables is that we cannot single out the effect of each variable and we can hence not make any inference about how the fraction, experience and number of assignments of professional directors in a private firm are individually associated with accounting quality. However, we argue that the use of instrumental variables is necessary for making any inference at all, and therefore we believe that the use of a factor variable is justified. We test the appropriateness of the director professionalism factor using the KMO-test and report the results in Appendix I.

3.3.2. Establishing a model for investigating the relation between director professionalism and accounting quality

After having estimated the different measures of accounting quality which we have chosen to include in the study, we examine how the calculated levels of accounting quality are related to the director professionalism factor.

In order to perform an initial test of the relation between director professionalism and accounting quality we conduct a univariate analysis. In this analysis we calculate the mean of accounting quality among firms which have a level of FACTPROF *lower* than the median of the FACTPROF variable of the total sample. Further, we calculate the mean of accounting quality among firms with *higher* level of FACTPROF than the median of the total sample. We test if the difference between two means is statistically less than 0 which would indicate a positive relation between accounting quality and director professionalism.

In order to perform a more thorough statistical analysis, we further conduct a multivariate analysis. In the multivariate analysis we regress the levels of accounting quality on the director

¹¹ Principal component analysis is chosen over other factor analysis methods since it intends to summarize many variables into fewer components rather than identify structures underlying such components (Henson and Roberts, 2006).

professionalism variable and a set of control variables. The regression is run using all observations during the period of study.

$$\text{ACCOUNTING QUALITY}_{i,t} = \alpha_0 + \beta_1 \text{FACTPROF}_{i,t} + \text{CONTROL VARIABLES}_{i,t} + \varepsilon_{i,t} \quad (17)$$

The following sections will discuss the need of instrumental variables and the choice of control variables. Since we test our hypothesis on panel-data, a fixed effect model is suitable (Nickell, 1981).¹² Using a fixed effect model, we control for effects that are unobservable and time-constant but that potentially could bias the relationship between FACTPROF and our accounting quality variables.

3.3.2.1. Statistical concerns caused by endogeneity problems

Introducing an instrumental variable

Much of the research on the relation between corporate governance and accounting quality or firm performance has been subject to endogeneity problems (Larcker and Rusticus., 2010). There is strong reason to believe that also our study suffers from these problems. More specifically, director professionalism may affect accounting quality, but at the same time, accounting quality may influence the level of director professionalism of the board. Directors with experience from public firms are likely to be highly attractive candidates for board assignments in private firms and as result, can be selective when choosing board assignments. It is reasonable to assume that professional directors choose well-run firms which are also likely to exhibit high accounting quality. This selection bias is hence likely to cause a positive relation between director professionalism and accounting quality which results in an upward biased in the OLS regressor of director professionalism. Such a bias obstructs any cause-effect assumptions about the relationship between director professionalism and accounting quality. This issue can however be resolved by controlling for the tendency of professional directors being selective when choosing board assignments.

As there is no observable variable reflecting how attractive a firm is to work for, we employ an instrumental variable to account for this endogeneity and adopt a 2SLS regression approach. We use proximity to Stockholm as an instrumental variable and generate a dummy variable (PROXSTHLM) using postal codes which indicates if the private firm is headquartered in proximity to Stockholm. If

¹² For results on the Hausman test see Appendix II.

the first two digits in the postal code equal 10-19, we consider the firm to be in close proximity to Stockholm¹³. Professional directors are likely to hold several board assignments, of which several are in public firms. A majority of the public firms are headquartered in Stockholm¹⁴. The choice of proximity to Stockholm as an instrument is motivated by the fact that time-constrained professional directors are assumed to be more prone to select assignments where time of transportation to board meetings is limited. This reasoning is in line with that of Field et al. (2013), which encounters a similar endogeneity problem and defines an instrument based on if a firm is located within 100 kilometres from Silicon Valley. The authors argue that such firms are more likely to have busy directors.

For proximity to Stockholm to be a suitable instrument two conditions must be satisfied (Roberts and Whited, 2011). First, instrument exogeneity must apply, meaning that PROXSTHLM may not be correlated with the error term. Secondly, PROXSTHLM should be correlated with our factor variable. We cannot test for the first condition to be satisfied, but intuitively it is reasonable to assume proximity to Stockholm not to be correlated with the error term of accounting quality. In other words, it is unlikely that the location of a firm's head quarter is related with accounting quality other than through the indirect impact caused by professional directors. On the contrary, the second condition can be tested and in section 4.3.1 we show that PROXSTHLM is correlated with FACTPROF. However, the correlation has to be considered low.

Weakness of the instrumental variable

In the case of a low correlation between the instrumental variable and the endogenous variable, it is of the outmost importance that the instrument is exogenous. In fact, a slightly endogenous instrumental variable which is only loosely correlated with the endogenous regressor which is being instrumented might produce highly biased estimates. Previous research has found that such estimates can be even more biased and hence more likely to give incorrect statistical inference than the standard OLS estimates in which endogeneity is not controlled for (Larcker and Rusticus, 2010). Although we anticipate that the instrumental variable employed in this study is exogenous, it can, as abovementioned, not be tested. We can however test if the correlation between the instrument and our dependent variable, which can be considered as weak. As suggested by Stock et al. (2002), we

¹³ We use postal codes as determined by Postnummerrådet (2013).

¹⁴ Using the same definition as for PROXSTHLM, we find that 149 out of 280 firms traded on the Stockholm Stock Exchange, are located in Stockholm.

perform a partial F-test in the first stage of the 2SLS to test if the instrument is weak. We report an F-statistic of 9.1. Stock et al. (2002) provide some guidance for the necessary size of the F-statistic and suggest that when it is lower than 8.96, the correlation can be considered as loose and the instrument is weak. Hence, we conclude that our instrument merely fulfills the required levels for an instrument not to be considered as weak.

As our instrument is only merely above the threshold not to be considered weak, it is not evident that the 2SLS instrumental variable approach produces less biased results than the OLS approach. Larcker and Rusticus (2010) provide a decision rule for selecting the best approach. The 2SLS approach will produce the smaller bias if the following is true:

$$| \text{corr}(\text{PROXSTHLM}, \epsilon) | < | \text{corr}(\text{PROXSTHLM}, \text{FACTPROF}) | \times | \text{corr}(\text{FACTPROF}, \epsilon) | \quad (18)$$

In this study $| \text{corr}(\text{PROXSTHLM}, \text{FACTPROF}) |$ yields, for the full sample, a value of 0.0322 (see Table 6). The other components of equation (18) cannot be calculated as the error term is unobservable. However, the equation implies that the correlation between FACTPROF and ϵ has to be 31 times the correlation of PROXSTHLM and ϵ for equation (18) to be true. If this is not the case, the OLS regression would provide less biased results.

To conclude, although it is unlikely that PROXSTHLM is endogenous, this is not something we can statistically prove. In addition, our F-statistic is just above the benchmark for a weak instrumental variable. As our instrument is weak and we cannot prove its exogeneity, we also calculate and present standard OLS estimates. In order to more easily compare the results obtained from the OLS and the 2SLS regressions we will calculate the OLS regression based on the factor variable, FACTPROF, rather than for each of the three components.

3.3.2.2. Control variables

In order to control for confounding factors we include several control variables in our final regression (17). The following section will describe and motivate the use of each control variable included in the regression. We base our selection of control variables on previous studies in the field of corporate governance and accounting quality. The variables can be divided into corporate

governance variables as well as financial and other control variables. We also present the control variables in tabular format in Appendix III.

Corporate governance control variables

One control variable which is commonly used in previous research (e.g. Peasnell et al., 2005) is board size. To control for the effect of board size on the level of accounting quality, we therefore include a variable defined as the total number of seats on the board (BRDSIZE), including both professional and nonprofessional directors but excluding employee representatives and deputy directors.¹⁵ The results brought forward in previous research regarding the impact of board size on monitoring efficiency are previously discussed in section 2.3.

In line within our reasoning in section 2.4.2 of how the number of assignments held by professional directors might be correlated with accounting quality, it could be the case that the number of board assignments held in private firms also has a bearing on accounting quality. In other words, holding several board seats in private firms might also lead to superior skills in monitoring. It is hence possible that it is the monitoring capability gained in private firms, rather than the one gained from board work in public firms that impacts accounting quality. Thus, we introduce a control variable measured as the average number of board assignments in private firms held by the directors in the private firm (NOBRDASS).

Another corporate governance variable which is of interest when investigating Swedish private firms is CEO-duality. In contrast to public firms, the CEO of a private firm can also act as the chairperson of the board (SFS 2014:539). In line with a large number of studies (e.g. Peasnell et al., 2005) we control for the effect of the presence of CEO-duality (DUAL) on accounting quality as the phenomenon is thought to impede the monitoring role of the board, see section 2.3.

Other corporate governance variables that have been commonly used in previous research are related to ownership structure, board independence, audit committees and auditors. Unfortunately, the data set used in this study does not provide any such information and we are hence not able to control for any potential effect of these corporate governance factors on accounting quality. These variables have previously been widely researched, although with mixed results. Despite mixed

¹⁵ Following the same reasoning as outlined in footnote 9.

evidence it can in previous studies be seen that all these factors might have a bearing on accounting quality (e.g. García-Meca and Sánchez-Ballesta, 2009) and we hence recognise this as a weakness inherent in this study. On the contrary, to the best of our effort, we have only been able to identify one previous study focusing on accounting quality in private firms which include corporate governance control variables. This study, Burgstahler et al. (2006), controls for audit quality as well as ownership concentration.

Financial and other control variables

In line with numerous studies on the relation of corporate governance and earnings management (e.g. Park and Shin, 2004; Hazarika et al., 2012) we include an industry variable to control for variation in earnings management which is dependent on industry membership. Industry is indicated by each firm's SNI code. As we study a ten year period and use cross-sectional data, each firm can be included as an observation in several years, and since industry membership is constant for each firm, we use fixed effects when controlling for industry. Also, we include year dummies in order to control for year effects on the levels of accounting quality.

To control for a firm's incentive to manage earnings in order to meet debt covenants, we include a leverage variable (LEV) in line with Klein (2002) which we measure as opening Debt-to-Equity ratio.¹⁶ Further, to control for a firm's incentive to engage in income smoothing, we include a variable (BELOWIND) which takes the value 1 if the firm's earnings prior to abnormal accruals is less than the industry median reported earnings scaled by beginning assets.¹⁷ Firms which anticipate that they have lower earnings than that of their competitors are more likely to engage in earnings management (Peasnell et al., 2005). As both LEV and BELOWIND are expected to increase incentives to exercise earnings management, they are predicted to be negatively associated with accounting quality.

Since previous research has found evidence of firm size being negatively correlated with earnings management and positively related to internal audits (Davidson et al., 2005), we include the log of lagged assets (SIZE) as a variable to control for the effect of size on accounting quality. Also, firm size has been seen to be correlated with corporate governance effectiveness. For example Aggarwal

¹⁶ Debt is defined as the sum of all interest bearing liabilities.

¹⁷ Earnings prior to abnormal accruals are calculated as net income scaled by lagged asset less discretionary accruals scaled by lagged assets.

et al. (2009) show that size on U.S. firms is highly correlated with their corporate governance index. Since this study suffers from limitations of not being able to control for the full set of theoretically motivated corporate governance control variables, including firm size as a control variable is regarded as a means of mitigating this problem. Another variable which also has been found to be negatively correlated with earnings management (Dechow et al. 1995) is cash flow from operations, and is hence also included as a control variable (CFO).

As previously discussed, the Modified Jones model suffers from low explanatory power in the case of extreme performance (Dechow et al. 1995). As we have disregarded Kothari et al. (2005):s model using a performance matched approach to resolve this problem, we instead include a performance variable (XPERF) in the regression in line with Davidson et al. (2005). This variable indicates if the firm exhibits extreme financial performance and takes the value 1 if the firm is within in the top or bottom 10 percent of the sample in terms of the performance measure (income before interest expenses divided by average total assets). As firms with extreme performance might be erroneously modelled to have high discretionary accruals when using the Modified Jones model, the expected sign of XPERF is predicted to be positive.

Furthermore, some previous earnings management studies have included change in absolute earnings, or measures thereof, as control variables (e.g. Davidson et al., 2005). We do however not, in line with Becker et al. (1998), include any control variables of that nature since discretionary accruals are in themselves a component of earnings. Nevertheless, the control variables included into the final regression (17), depends on which model has been used to estimate the accounting quality measure. More specifically, there are two control variables dependent on the accounting quality measure being studied. First, XPERF is only included in the regression where the accounting quality measure has been estimated using the Modified Jones model. The reason is that its purpose is to mitigate the problems inherent in the Modified Jones model brought forward by Kothari et al. (2005) (as mentioned above). Secondly, BELOWIND cannot not be employed in the final regression when the accounting quality measure being studied is estimated using the Modified Dechow-Dichev model. The reason is that the residuals from the Modified Dechow-Dichev model cannot be used to calculate earnings priors to abnormal accruals in the current year since the residuals reflect corrections of accruals which have been recorded at time other than the current

year. Apart from these two exceptions, all the other control variables are included in the final regression (17) regardless of accounting quality measure.

3.4. Data and sample selection

This study is based on data obtained from several sources. First, from the Swedish Financial Supervisory Authority (Finansinspektionen) we have received records of all insiders in firms traded on the Stockholm Stock Exchange between 1999 and 2011. Second, from the Serrano Database we obtain record of all directors in all Swedish organizations between 1999 and 2012. Third, we also obtain financial data for each firm during 1999 and 2012 from the Serrano Database. The Serrano Database is based on financial information on company level from the Swedish Firms Registration Office (Bolagsverket). The database is built on a framework which transforms and modifies the data into comparable calendar year values.

In the selection of our final sample we have made certain exclusions. First, our data contains record of several types of organizations. Although one cannot completely trace a firm's legal form by its firm code, most of the organizations with a firm code starting with the digit 5 are limited companies (aktiebolag) (Bolagsverket, 2012), hence we have removed all firms which do not have a firm code which first digit is 5. Secondly, we exclude firms defined as microenterprises by the European Commission (2003/361/EC). A microenterprise employs fewer than 10 persons and has annual turnover and balance sheet total not exceeding EUR 2 million¹⁸. We exclude microenterprises as these firms require a less complex governance function than larger firms do. Hence, the impact of a professional director is likely to be greater in the somewhat larger firms as these firms are more difficult to govern. Thirdly, we exclude all firms operating within the financial sector¹⁹ as the nature of the accruals used in these firms is different (Othman and Zeghal, 2006). Also, prior studies evaluating earnings management in the financial sector have traditionally used other methods for measuring accounting quality (e.g. Beatty et al. 1995).

Moreover, all subsidiaries are excluded from the sample as earnings management exercised in subsidiaries will be transferred into the consolidated group accounting. Hence if subsidiaries would not be excluded, earnings management which is undertaken in these firms would be accounted for

¹⁸ In order to convert the threshold into SEK we use a EUR/SEK exchange rate of 9.3278 as of March 31, 2015 (Oanda).

¹⁹ The financial industry is categorized as SNI codes 64-66.

twice. The same reasoning applies for cases where the firm code of the parent company does not equal that of the group. After these exclusions, our sample consists only of groups and independent firms, i.e. firms that are not part of a group. Further, all firms which do not have available data on any of the variables used in the employed models have also been excluded. In addition, as abovementioned, all firms categorised into an industry with less than 30 observations in a specific year have been dropped.

The Modified Jones and Stubben models require two years of subsequent data for each included observation, whereas the Modified Dechow-Dichev model requires three years of subsequent data for each observation. This implies that for Dechow-Dichev we use a slightly condensed sample. The sample is reduced when testing Hypothesis 2, 3 and 4 since these are based only on highly levered firms, firms operating within the retail industry and firms characterised as large, respectively. The number of firm-year observations used in each test is presented in Table 2. The number of firms included in the final sample for Hypothesis 1 is 40,758 and each firm is included in 3.5 years on average. For information on how many firms are included in each year of the sample and the number of firms having at least one professional director, see Appendix IV.

Table 2. Number of firm-year observations

	Final sample	Dechow-Dichev sample
Hypothesis 1	144,096	96,652
Hypothesis 2	14,382	9,647
Hypothesis 3	28,432	18,911
Hypothesis 4	14,411	9,651

Table 2 presents the number of firm-year observations used in the hypothesis-tests. The final sample is used in the Modified Jones model and the Stubben model. The Dechow-Dichev sample is used the Dechow-Dichev model.

We use the Swedish Standard Industrial Classification (SNI) codes to divide the sample into different industry groups.²⁰ Further, we winsorize all variables at 98 percent, meaning that data below the 1th percentile is set to the 1st percentile and data above the 99th percentile is set to the 99th percentile. Winsorizing the data limits the effect of spurious outliers and increases the

²⁰ Swedish Standard Industrial Classification (SNI) comprises 99 industry groups.

robustness of our estimated models. Table 3 shows descriptive statistics of the variables in the final sample used in Hypothesis 1 after winsorizing and calculated from the total sample.

Table 3. Descriptive statistics of independent variables

	Mean	Std. Dev.	Min	Max
FACTPROF	-0.05	1.03	-0.22	7.69
BRDSIZE	2.13	1.53	1.00	8.00
NOBRDASS	4.41	3.80	1.00	20.00
DUAL	0.06	0.23	0.00	1.00
LEV	2.32	6.75	-3.38	47.02
BELOWIND	0.46	0.50	0.00	1.00
SIZE	15.52	1.52	10.80	18.47
CFO	0.10	0.28	-0.86	1.45
XPERF	0.19	0.40	0.00	1.00

Table 3 presents descriptive statistics on the independent variables used in the equation (17). The descriptive statistics is for each variable based on the final sample used in hypothesis test 1 corresponding to 144,096 firm-years.

3.4.1. Data quality checks

We perform several data quality checks to ensure that we apply suitable statistical methods and that we avoid biased as far as possible. More specifically, we test for autocorrelation and multicollinearity and heteroskedasticity. Further, we suspect autocorrelation to be present which we account for by running robust regressions. For a more detailed explanation of the tests and corresponding results we refer to Appendix V.

4. Results and analysis

In this section we provide an overview of the accounting quality levels as estimated using the three accounting quality models. Further, results from the univariate analysis as well as the multivariate analyses are presented. Subsequently, we will interpret our results and compare them with previous adjacent literature in the corporate governance and accounting quality field. We finalize this section by discussing the robustness of our results.

4.1. Accounting quality levels among sample firms

In Table 4 we report descriptive statistics of our accounting quality variable. For the Modified Jones model and the Stubben model, we calculate our accounting quality measure as the square of discretionary accruals multiplied by (-1) and the square of discretionary revenues multiplied by (-1), respectively. Similarly, for the Dechow-Dichev model, we square the residuals and multiply by (-1).

As in previous studies using the Modified Jones and Stubben models we report mean values of our accounting quality measures close to zero (e.g. Subramanyam, 1996; Xie, 2001; McNichols and Stubben, 2008).²¹ For the Modified Dechow-Dichev model, we also report a mean of our accounting quality measure close to zero, in line with the values reported in Francis et al. (2005).

Table 4. Accounting quality levels in the non-reduced sample

	Mean	Std. Dev.	Min	Max
Modified Jones	-0.0470	0.1233	-0.7927	0.0000
Modified Dechow-Dichev	-0.0250	0.0994	-0.8177	0.0000
Stubben	-0.0361	0.1014	-0.7105	0.0000

Notes:

Table 4 presents descriptive statistics regarding the level of accounting quality calculated based on the three models employed in the study. The levels are based on the non-reduced sample used for Hypothesis 1.

4.2. Univariate results

Table 5 reports univariate results of the mean difference in accounting quality between firms with below median director professionalism and firms with above median director professionalism, based on the non-reduced sample used in Hypothesis 1. All models show that the level of accounting quality among firms with high director professionalism is not statistically greater than among firms with low director professionalism.²² On the contrary, we report a statistically significant difference greater than zero. Hence, the univariate analysis suggests that accounting quality is higher among firms with lower level of director professionalism. The univariate analysis provides some evidence on our research question. However, in order to draw any further conclusions and control for

²¹ We define accounting quality as the square of discretionary accruals multiplied by (-1), which differ slightly compared to the definition used in the referenced studies. However, after considering the slightly differing definitions, our results are in line with those reported in previous studies.

²² Unless anything else stated, we consider significance to be present for all p-value below 5 percent.

endogeneity, we conduct a multivariate analysis including the previously identified control variables.

Table 5. Univariate results

	Mean of accounting quality		Diff of means	p-value
	FACTPROF <Median(FACTPROF)	FACTPROF >Median(FACTPROF)		
Modified Jones	-0.0466	-0.0606	0.0140	1.0000
Modified Dechow-Dichev	-0.0247	-0.0342	0.0095	1.0000
Stubben	-0.0359	-0.0421	0.0062	1.0000

Notes:

Table 5 presents univariate results. The p-values regards the test Diff of means < 0 , i.e. if accounting quality is less in firms with below median director professionalism.

4.3. Multivariate results

4.3.1. Results from the 1st stage of 2SLS regression

In the first stage of the 2SLS regression, we predict the value of FACTPROF by introducing an instrumental variable, PROXSTHLM. As can be seen in Table 6, 7 and 8, PROXSTHLM is positively and significantly correlated with FACTPROF for all models in the test of Hypothesis 1.²³ This is in line with our reasoning that professional directors, tend to select assignments in proximity to Stockholm. As the significance of the control variables is not critical for the validity of the instrument we do not further comment on their significance or sign. The R-squared levels hover around 13 percent for the models, which all have to be considered low since FACTPROF is used as an explanatory variable in the second stage regression. However, in all sub-hypothesis tests, the instrumental variable, PROXSTHLM, is not significantly correlated with the endogenous variable, FACTPROF²⁴. As the instrument does not fulfill one of the two requirements of the 2SLS approach, we base these analyses solely on the OLS regression.

²³ When we in the results and analysis section mention the different models (i.e. the Modified Jones, the Modified Dechow-Dichev and the Stubben models) we refer to regression (17) based on the accounting quality measure as estimated by the accounting quality model mentioned.

²⁴ In the sub-hypothesis tests we receive p-values on the instrumental variable in the first stage of the 2SLS regression ranging from 6 to 14 percent.

Table 6. Results Hypothesis 1 (Modified Jones)

	Modified Jones		
	2SLS		OLS
	1st stage	2nd stage	
	FACTPROF	AQ	AQ
FACTPROF	-	-0.0872 (0.893)	-0.0002 (0.5775)
PROXSTHLM	0.0322 (0.042)**	-	-
BRDSIZE	0.0767 (0.000)***	0.0049 (0.362)	-0.0017 (0.012)**
NOBRDASS	0.0776 (0.000)***	0.0050 (0.349)	-0.0016 (0.002)***
DUAL	-0.0488 (0.026)**	-0.0064 (0.148)	-0.0023 (0.444)
LEV	-0.0006 (0.157)	0.0005 (0.000)***	0.0006 (0.000)***
BELOWIND	0.0026 (0.308)	0.0072 (0.000)***	0.0070 (0.000)***
SIZE	0.0217 (0.003)***	0.0160 (0.000)***	0.0145 (0.000)***
CFO	0.0011 (0.861)	-0.0644 (0.000)***	-0.0645 (0.000)***
XPERF	0.0044 (0.259)	-0.0216 (0.000)***	-0.0220 (0.000)***
CONS	-0.9100 (0.000)***	-0.3290 (0.000)***	-0.2513 (0.000)***
No of firm year observations	144,096	144,096	144,096
R-square	0.1269	0.1000	0.0993

Notes:

*** p<0.01 ** p<0.05 * p<0.10. p-value in parenthesis. Table 6 presents regression results concerning Hypothesis 1 based on the Modified Jones model using 2SLS and OLS approach. FACTPROF is evaluated using a one-sided test, investigating whether FACTPROF>0 and the p-values are presented accordingly. A two-sided test is performed regarding all other variables. See Appendix III for variables definition.

Table 7. Results Hypothesis 1 (Dechow-Dichev)

	Modified Dechow-Dichev		
	2SLS		OLS
	1st stage	2nd stage	
	FACTPROF	AQ	AQ
FACTPROF	-	-0.0590 (0.863)	0.0010 (0.213)
PROXSTHLM	0.1002 (0.039)**	-	-
BRDSIZE	0.0754 (0.000)***	0.0043 (0.298)	-0.0002 (0.774)
NOBRDASS	0.0928 (0.000)***	0.0052 (0.297)	-0.0002 (0.658)
DUAL	-0.0364 (0.091)*	-0.0012 (0.704)	0.0009 (0.711)
LEV	-0.0007 (0.078)*	0.0001 (0.355)	0.0001 (0.173)
BELOWIND	-	-	-
SIZE	0.0191 (0.042)**	0.0119 (0.000)***	0.0108 (0.000)***
CFO	0.0088 (0.239)	-0.0322 (0.000)***	-0.0327 (0.000)***
XPERF	-	-	-
CONS	-0.9420 (0.000)***	-0.2297 (0.000)***	-0.1754 (0.000)***
No of firm year observations	96,652	96,652	96,652
R-square	0.1338	0.0516	0.0497

Notes:

*** p<0.01 ** p<0.05 * p<0.10. p-value in parenthesis. Table 7 presents regression results concerning Hypothesis 1 based on the Modified Dechow-Dichev model and 2SLS and OLS approach. FACTPROF is evaluated using a one-sided test, investigating whether FACTPROF>0 and the p-values are presented accordingly. A two-sided test is performed regarding all other variables. See Appendix III for variables definition.

Table 8. Results Hypothesis 1 (Stubben)

	Stubben		
	2SLS		OLS
	1st stage	2nd stage	
	FACTPROF	AQ	AQ
FACTPROF	-	-0.0049 (0.533)	0.0014 (0.135)
PROXSTHLM	0.0322 (0.043)**	-	-
BRDSIZE	0.0767 (0.000)***	-0.0011 (0.817)	-0.0016 (0.019)**
NOBRDASS	0.7761 (0.000)***	-0.0006 (0.896)	-0.0011 (0.019)**
DUAL	-0.0490 (0.026)**	0.0007 (0.866)	0.0010 (0.703)
LEV	-0.0002 (0.163)	0.0046 (0.000)***	0.0005 (0.000)***
BELOWIND	-0.0048 (0.035)**	-0.0149 (0.000)***	-0.0149 (0.000)***
SIZE	0.0211 (0.004)***	0.0058 (0.007)***	0.0057 (0.001)***
CFO	0.0003 (0.961)	-0.0215 (0.000)***	-0.0215 (0.000)***
XPERF	-	-	-
CONS	-0.8960 (0.000)***	-0.1126 (0.060)*	-0.1071 (0.000)***
No of firm year observations	144,096	144,096	144,096
R-square	0.1267	0.0461	0.0457

Notes:

*** p<0.01 ** p<0.05 * p<0.10. p-value in parenthesis. Table 8 presents regression results concerning Hypothesis 1 based on the Stubben model and 2SLS and OLS approach. FACTPROF is evaluated using a one-sided test, investigating whether FACTPROF>0 and the p-values are presented accordingly. A two-sided test is performed regarding all other variables. See Appendix III for variables definition.

4.3.2. Is director professionalism related to accounting quality in private firms?

Results Hypothesis 1: Non-reduced sample

Based on the 2SLS approach we find FACTPROF not to be significant for any of the models, implying a rejection of Hypothesis 1. The R-squared levels of the second stage of the 2SLS are low across all models ranging from 4.6 to 10.0 percent. Based on the OLS regression, FACTPROF is found insignificant across all models which reinforces the findings in the 2SLS approach. In line with the second stage 2SLS regression the R-squared levels of the OLS regression are low, ranging from 4.6 to 9.9 percent. In the subsequent sections we put forward results concerning our sub-hypotheses.

Results Hypothesis 2: Highly leveraged firms

As can be seen in Table 9, FRACPROF is insignificant based on all models, hence suggesting that there is no correlation between director professionalism and accounting quality in highly leveraged firms. Based on these findings we reject Hypothesis 2. Thus, our reasoning that highly leveraged firms are more likely to engage in earnings management in order to meet restrictions outlined in debt covenants does not result in a relation between director professionalism and accounting quality. However, the R-squared levels are below 3 percent for all models, which has to be considered exceptionally low.

Results Hypothesis 3: Retail firms

The results in Table 10 show that FRACPROF is insignificant based on the Modified Jones and Modified Dechow-Dichev models. On the contrary, FACTPROF is significant based on the Stubben model. Hence, our findings are mixed regarding the significance of FACTPROF in retail firms. Thus, our prediction that firms in the retail industry are likely to have a greater stakeholder problem and in turn be prone to engage in earnings management at a higher level does not provide consistent results of an effect of director professionalism on accounting quality. Nevertheless, all models have low ability to explain accounting quality, indicated by the R-squared levels below 4 percent.

Table 9. Results Hypothesis 2: Highly leveraged firms

	Modified Jones	Modified Dechow-Dichev	Stubben
	AQ	AQ	AQ
FACTPROF	-0.0091 (0.908)	-0.0023 (0.712)	-0.0035 (0.840)
BRDSIZE	-0.0005 (0.707)	0.0021 (0.158)	0.0007 (0.538)
NOBRDASS	-0.0012 (0.173)	-0.0028 (0.171)	-0.0004 (0.691)
DUAL	0.0051 (0.179)	-0.0011 (0.689)	-0.0045 (0.330)
LEV	0.0003 (0.005) ^{***}	0.0002 (0.160)	0.0000 (0.551)
BELOWIND	0.0072 (0.000) ^{***}	-	-0.0002 (0.789)
SIZE	-0.0036 (0.492)	-0.0027 (0.635)	-0.0039 (0.320)
CFO	-0.0443 (0.040) ^{**}	-0.0180 (0.320)	0.0206 (0.107)
XPERF	-0.0217 (0.000) ^{***}	-	-
CONS	0.0455 (0.588)	0.0485 (0.598)	0.0525 (0.398)
No of firm year observations	14,382	9,647	14,382
R-square	0.0242	0.0224	0.0011

Notes:

***p<0.01 **p<0.05 *p<0.10. p-value in parenthesis. Table 9 presents regression results concerning Hypothesis 2 based on OLS regressions. FACTPROF is evaluated using a one-sided test, investigating whether FACTPROF>0 and the p-values are presented accordingly. A two-sided test is performed regarding all other variables. See Appendix III for variables definition.

Results Hypothesis 4: Large firms

As can be seen in Table 11 we receive mixed results when investigating the association between director professionalism and accounting quality in large firms. The Modified Jones and Stubben models both suggest FACTPROF to be significant on the 10 percent level. On the other hand, the Modified Dechow-Dichev model finds no significance of FACTPROF. Hence, our reasoning that professional directors could utilize their superior monitoring skills in firms with more complex

governance conditions does not seem to consistently apply. In line with the other sub-hypothesis tests, we report low R-squared levels, in fact below 4 percent.

Table 10. Results Hypothesis 3: Retail firms

	Modified Jones	Modified Dechow-Dichev	Stubben
	AQ	AQ	AQ
FACTPROF	-0.0037 (0.673)	-0.0059 (0.923)	0.0153 (0.015)**
BRDSIZE	0.0000 (1.000)	0.0005 (0.751)	-0.0026 (0.096)*
NOBRDASS	-0.0018 (0.211)	0.0003 (0.846)	-0.0034 (0.007)***
DUAL	-0.0063 (0.313)	0.0057 (0.291)	-0.0015 (0.721)
LEV	0.0009 (0.002)***	0.0006 (0.114)	0.0006 (0.001)***
BELOWIND	0.0120 (0.000)***	-	-0.0117 (0.000)***
SIZE	0.0108 (0.041)**	0.0068 (0.286)	0.0046 (0.320)
CFO	-0.0515 (0.000)***	-0.0240 (0.020)**	-0.0050 (0.442)
XPERF	-0.0281 (0.000)***	-	-
CONS	-0.2022 (0.014)**	-0.1187 (0.236)	-0.0782 (0.279)
No of firm year observations	28,432	18,911	28,432
R-square	0.0356	0.0216	0.0323

Notes:

***p<0.01 **p<0.05 *p<0.10. p-value in parenthesis. Table 10 presents regression results concerning Hypothesis 3 based on OLS regressions. FACTPROF is evaluated using a one-sided test, investigating whether FACTPROF>0 and the p-values are presented accordingly. A two-sided test is performed regarding all other variables. See Appendix 10 for variables definition.

Conclusion of results regarding the impact of director professionalism on accounting quality in private firms

As can be seen in Table 12, FACTPROF is found insignificant in most of the hypothesis tests. In fact, the variable is only found significant in 3 of 15 tests. In two of those tests FACTPROF is

Table 11. Results Hypothesis 4: Large firms

	Modified Jones	Modified Dechow-Dichev	Stubben
	AQ	AQ	AQ
FACTPROF	0.0031 (0.078)*	0.0005 (0.632)	0.0022 (0.062)*
BRDSIZE	-0.0026 (0.144)	0.0026 (0.065)*	-0.0003 (0.785)
NOBRDASS	-0.0016 (0.243)	0.0003 (0.818)	-0.0001 (0.913)
DUAL	-0.0136 (0.113)	0.0040 (0.551)	-0.0048 (0.378)
LEV	0.0005 (0.169)	0.0002 (0.358)	0.0003 (0.137)
BELOWIND	0.0010 (0.653)	-	-0.0107 (0.000)***
SIZE	0.0235 (0.000)***	0.0046 (0.558)	0.0303 (0.000)***
CFO	-0.0135 (0.385)	-0.0107 (0.495)	0.0168 (0.089)*
XPERF	-0.0254 (0.000)***	-	-
CONS	-0.4181 (0.000)**	-0.0990 (0.447)	-0.5508 (0.000)***
No of firm year observations	14,411	9,651	14,411
R-square	0.0272	0.0374	0.0172

Notes:

***p<0.01 **p<0.05 *p<0.10. p-value in parenthesis. Table 11 presents regression results concerning Hypothesis 4 based on OLS regressions. FACTPROF is evaluated using a one-sided test, investigating whether FACTPROF>0 and the p-values are presented accordingly. A two-sided test is performed regarding all other variables. See Appendix III for variables definition.

significant on the 10 percent level. As a result, both Hypotheses 1 and 2 are rejected. On the other hand, mixed results are found in the case of Hypotheses 3 and 4 where the hypotheses are not consistently rejected across all models. As we fail to reject hypotheses 3 and 4 in all models, it is hard to draw any definite conclusions about the relation between director professionalism and accounting quality in retail and large firms. However, in general our results suggest no association between director professionalism and accounting quality.

Table 12. Summary of Hypotheses 1-4

	Modified Jones		Modified Dechow-Dichev		Stubben	
	2SLS	OLS	2SLS	OLS	2SLS	OLS
Hypothesis 1	Insign.	Insign.	Insign.	Insign.	Insign.	Insign.
Hypothesis 2	-	Insign.	-	Insign.	-	Insign.
Hypothesis 3	-	Insign.	-	Insign.	-	Sign.**
Hypothesis 4	-	Sign.*	-	Insign.	-	Sign.*

Notes:

***p<0.01 **p<0.05 *p<0.10. Sign. implies a positive and significant coefficient of FACTPROF. Insign. implies no significance of the FACTPROF variable.

Given that professional directors possess superior monitoring capabilities, our results contradict those presented in Chtourou et al. (2001) and Carcello et al. (2002), which both suggest that board expertise is an important factor for the efficiency of the board's monitoring ability. Although these studies also measure expertise as the tenure and number of directorship held by a director, they do not provide evidence of superior expertise among directors with experience from public-firms.

As mentioned above, the R-squared levels of the sub-hypotheses tests are exceptionally low. Due to the low R-squared levels we do not make any inference regarding these hypothesis tests other than discuss the significance of FACTPROF. However, regarding Hypothesis 1 we will discuss the corporate governance variables as well as briefly comment on the financial and other control variables.

4.3.3. Commenting on the control variables

Results on control variables put in relation to previous literature

Regarding the CEO-duality control variable we receive consistent results across all models. In previous literature on the other hand, there has been some inconsistency. In fact, while there has been evidence suggesting CEO-duality to be negatively associated to accounting quality, most previous literature has rejected any association with accounting quality at all (Cornett et al., 2006; Davidson et al., 2005). As we consistently report no significance on DUAL our results are in line with the main stream of research.

Regarding BRDSIZE, we find mixed evidence. Based on the Modified Jones and the Stubben models using OLS regression, BRDSIZE is significant and negatively correlated with accounting quality. This is in line with Jensen (1993) and Beasley (1996) which argue that an increased board

size results in amplified coordination and communication problems. On the contrary, all 2SLS results as well as the OLS regression results from the Modified Dechow-Dichev suggest no relation between board size and accounting quality in private firms which is in line with Bradbury et al. (2006).

Regarding NOBRDASS we find evidence both in line with and contradictory to previous research. Field et al. (2013) find that busy directors²⁵ have a positive contribution on firm value, but argue that they are lax monitors which could potentially lead to decreased accounting quality. Our OLS regression results from the Modified Jones and Stubben models which propose a negative correlation between NOBRDASS and accounting quality are thus in line with the findings of Field et al. (2013). On the other hand, our other results indicate no relation between NOBRDASS and accounting quality hence contradicting the findings of Field et al. (2013).

Results financial and other control variables

Regarding the financial and other control variables our results are consistent across the 2SLS and OLS regressions. We find instances where the sign of the significant control variable aligns with the predicted sign as well as instances where it does not. More specifically, LEV does not have the predicted sign for any of the models whereas BELOWIND shows the predicted sign for the Stubben model and SIZE shows the predicted sign based on all models. Furthermore, CFO does not show the predicted sign for any of the models whereas XPERF does.

4.4. Interpretation of results

As abovementioned, in general we find no relation between director professionalism and accounting quality in private firms. In the following section we interpret our results and present explanations of why we find no association between director professionalism and accounting quality.

4.4.1. Priorities on director agenda and the appointing process in private firms

One factor that might affect our results is the difference in the utilisation of directors in public and private firms. Long et al. (2005) study how the involvement of directors in private and public firms differ, and in line with prior literature (e.g. Whisler, 1988; Forbes and Milliken, 1999; Fiegenger et al., 2000) find a difference in the agenda of directors in public and private firms. This difference is due to contingent factors such as shareholder power and presence. These studies argue that directors in

²⁵ A busy director is defined as a director serving on three or more boards.

public firms to a greater extent are involved in monitoring activities whereas directors in private firms to a greater extent are involved in advising management. Supported by these findings, we argue that directors with experience from public firms are more skilled at monitoring. However, for professional directors to have a positive contribution on accounting quality, it is required that they actually exercise monitoring. Thus, if the main focus of the board in private firms is on advising activities, the professional directors' superior monitoring skills might not be fully utilized. To conclude, our results may be explained by the fact that professional directors, although being relatively more skilled in monitoring, take on an advising role in private firms at the expense of the monitoring role.

The different focus of the board in a private firm compared to that of a public firm would not only explain the insignificance of professional directors' impact on accounting quality, but also the cases where the corporate governance control variables are found insignificant. As all these variables (i.e. board size, CEO-duality and the average number of directorships held by the directors in the private firm) constitute board characteristics and the board might adopt a relatively low monitoring role in the private firm, these characteristics' association to accounting quality can also be expected to be limited.

Another difference between public and private firms which might have a bearing on our results is the process of appointing directors. According to Long et al. (2005) public firms have a more formal process which is highly transparent and structured. On the contrary, the authors argue that the appointing process in private firms is based on personal and emotional relations. Hence, it seems as if the professional directors have personal ties with the shareholders who have appointed them. Thus, professional directors might, in order to maintain their personal relations, be reluctant to exercise their superior monitoring skills to protect non-equity stakeholders as this would potentially hurt the shareholders who appointed them. Thus, the appointing process of directors in private firms might to a certain extent explain the insignificance of our results.

4.4.2. Potential negative effects of professional directors being “overboarded”

Field et al. (2013) find that busy directors have a positive effect on firm value among public and private firms, especially being true for small firms. The reason busy directors are able to make a positive contribution to firm value is that they are relatively more experienced and have a greater

network and hence make excellent advisers to management (e.g. Coles et al., 2012; Hellmann and Puri, 2002). Field et al. (2013), argue that while busy directors are efficient advisers, their busy schedule make them lax monitors, as monitoring is more time consuming than advising.

We believe that the findings of Field et al. (2013) can shed some light on and explain our results. As previously argued for in our study, professional directors are likely to be attractive on the labour market and thus serve on several boards. Since busyness make professional directors excellent advisers but too time constrained to be efficient monitors, they might hence fail to contribute to higher accounting quality. This would help explain why we do not find an association between director professionalism and accounting quality.

4.4.3. Narrow definition of director professionalism

Throughout this study we have argued for professional directors being distinctly more skilled, experienced and better positioned to monitor firms successfully compared to directors active only in private firms. In fact, we have based the level of director professionalism in a private firm on three components; the share of professional directors of the total number of directors in the private firm, the average tenure as professional directors among the professional directors in the private firm and their average number of directorships in public firms. We now critically discuss this definition and elaborate on how our results potentially are affected by this narrow definition of director professionalism.

Although we believe that experience gained from directorship in public firms results in higher monitoring expertise, it might be the case that there are other characteristics among professional directors that are equally important in explaining their level of monitoring expertise. Indeed, financial expertise among directors present on the audit committee has previously been found to be associated with accounting quality (Chtourou et al., 2001). Hence, one would expect professional directors with financial expertise to be better monitors than professional directors without such skills. Yet, one would also expect that professional directors with financial expertise to be superior non-professional directors with financial expertise as it is still a sign of quality being on the board of a public firm. Thus, it might be the combination of being a professional director and possessing financial expertise that is important for accounting quality. As this study investigates the impact of

all professional directors, with or without financial expertise, on the accounting quality in private firms, the effect of professional directors with financial expertise could be blurred.

Hence, it might be the case that the experience of being a director on the board of a public firm not in itself explains accounting quality but rather, it is the combination of being a professional director *and* possessing some additional trait or expertise. If such reasoning holds true, it can partly help explaining our results as this reasoning would diminish the relationship between director professionalism and accounting quality.

To conclude, we find no evidence of a positive relation between director professionalism and accounting quality in private firms. The absence of such a relation might however be explained by the alternative reasoning described above. On the other hand, the insignificant results of this study might not be a result of the alternative explanations offered, rather it can also be the case that the models and methods employed in this study fail to document a potential relationship between director professionalism and accounting quality. The following section will discuss measurement issues which might have distorted our results as well as robustness of our results.

4.5. Discussion

4.5.1. Accounting quality measures

One obvious source of error is the measurement of the dependent variable, accounting quality. As described above, measurement of accounting quality, proxied through earnings management models, is a widely debated subject in previous research. Since there is no universally accepted measure, we decided to adopt several models in order to mitigate the problem of weak accounting quality models. However, all the models employed are accrual-based models²⁶. Two of the models also assume a correct calculation of total accruals, namely the Modified Jones and the Modified Dechow-Dichev models. Hence, despite our effort to eliminate problems inherent in accounting quality models, we cannot ensure that our results are excepted from errors in the process of measuring accounting quality.

4.5.2. Endogenous independent variable

As discussed in section 3.3.2.1, there is reason to believe that the director professionalism variable, FACTPROF, is endogenous. The reason for this is that the dependent variable, accounting quality,

²⁶ See section 2.5 for an overview of different accounting quality measures and our choice of models.

is expected to impact the level of director professionalism in a firm. We have aimed at resolving this problem by introducing an instrumental variable. However, we cannot with convincingly strong evidence consider the instrumental variable as not being weak.²⁷ Indeed for the sub-hypotheses, the instrument is in fact insignificant and hence uncorrelated with FACTPROF. As previously mentioned, a slight endogeneity in an instrumental variable which is only loosely correlated with the endogenous variable it should estimate could lead to the 2SLS approach generating more biased estimates than the OLS regression. In order to mitigate the issue of obtaining more biased estimates using 2SLS than OLS regression, we base our analysis also on the OLS regression. However, although the 2SLS and OLS regression results are materially the same, one cannot conclude that there is no endogeneity problem. On the contrary, as the instrumental variable is weak, the 2SLS might also be biased, hence both the 2SLS results and OLS results might be biased causing the regressions to produce similar results (Larcker and Rusticus, 2010). Thus, we fear that despite our efforts of eliminating the potential endogeneity problem in the study we have not been successful in doing so.

4.5.3. Measurement of the director professionalism

As described in section 3.3.1 we employ principal component analysis as a means of reducing the number of variables proxying director professionalism from three to one. The reason for this is that all these variables are expected to be endogenous and each endogenous variable requires one valid instrument. As we only have identified one instrumental variable we hence need to reduce the number of director professionalism variables, which is done by applying principal component analysis. However, the adoption of principal components does not come without a cost. In fact, the Kaiser-Meyer-Olkin (KMO) measure gives a value of 0.66 which is characterized as rather low according to Kaiser (1974). This means that the factor explains only a moderate amount of the variation in the data it represents and has to be considered a weakness of this study. For a more detail explanation of the KMO measure please see the Appendix I.

Given the weak results from the KMO test, we also test Hypothesis 1 without constructing a factor. Instead, we rerun the regressions using only one of the three components which the factor consists of, namely the share of professional directors of the total number of directors on the board. Our

²⁷ An instrument is considered as weak when the correlation between the instrument and the endogenous independent variable is low. See section 3.3.2.1 for a discussion of the instrumental variable and its correlation with our endogenous independent variable.

results are robust to this alteration. In fact, we find no material difference regarding significance levels of the director professionalism variable as well as the reported R-squares for any of the models.

To conclude, our findings concerning Hypothesis 1 are robust to using only one component of director professionalism and contribute to the robustness of our results which are discussed in more detail below.

4.5.4. Robustness of results

Across all tests and models our results in general provide the same conclusion. We apply three different accounting quality models to four different sample sizes and employ OLS regression as well as a 2SLS approach. Interestingly, in 12 of the 15 regression outcomes we do not find any relation between director professionalism and accounting quality. We argue that this consistency mirrors the robustness of our results. Also, in addition to running the regressions on winsorized data, we further check robustness of our results by rerunning our regressions on raw data as well as on truncated data. We conclude that outlier treatment does not have any effect on our conclusions.

5. Conclusion and implications

Reviewing the literature on corporate governance and its relation to accounting quality, we find this area to be under-researched among private firms. With this paper, we aim to bridge this gap by studying how one component of corporate governance, board expertise, relates to accounting quality in private firms. We posit that directors with board experience from public firms are more efficient monitors than directors lacking such experience. These board members are referred to as professional directors. In order to assess their impact on accounting quality in private firms, we construct a director professionalism variable based on the share of professional directors on the board of the private firm, their average tenure as professional directors and their average number of directorships in public firms. Further, in our study we proxy accounting quality with three different accrual-based earnings management models. Using regression analysis, we reject any relation between director professionalism and accounting quality in private firms. Furthermore, we develop three sub-hypotheses to provide further insight into the relation between director professionalism and accounting quality. More specifically, we investigate this relation in highly leveraged firms, firms in the retail sector, and large firms. Based on stakeholder theory, we hypothesize that the relation

between director professionalism and accounting quality would be more distinct in retail and highly leveraged firms. Similarly, large firms put an especially high demand on the monitoring capabilities of directors, leading us to hypothesize that there is a clearer relation between director professionalism and accounting quality in these firms. However, also our sub-hypotheses are rejected. Returning to our research question, we find director professionalism in private firms not to be associated with higher accounting quality. These results contradict previous literature on board expertise and accounting quality in public firms, in which a positive relation has been documented.

In contrast to the majority of previous research studying corporate governance and accounting quality in private firms, we include corporate governance control variables in our analysis. This brings further insights into the determinants of accounting quality in private firms. Our findings consistently suggest no association between CEO-duality and accounting quality in private firms, which is in line with previous research at large. On the contrary, our results concerning board size and the number of assignments each director holds in private firms are mixed.

Our findings add to the scant literature on the relation between board expertise and accounting quality in private firms. Further, our insignificant results suggest that corporate governance has less impact on accounting quality in private firms than previously has been found in public firms. In addition, our contribution also goes beyond the academic world. We argue that our results benefit a number of stakeholders of private firms. For example, lenders, suppliers and governments would be interested in the fact that the presence of professional directors, although highly qualified, does not guarantee a higher level of accounting quality.

Regarding suggestion for further research we first offer our thoughts on how this study can be improved and secondly, provide the reader with suggestions on how our research can be extended. Relating to the former, this study could have benefited from a more developed definition of director professionalism. In this study we only consider different dimensions and degrees of experience from boards of public firms. Previous research has indicated that director expertise is multifaceted, and has brought forward skills such as financial expertise in relation to monitoring capabilities. By including more dimensions of director expertise in our study, results could have been different. Relating to how this initial research on the relation between corporate governance and accounting quality can be extended, we argue that it would be of interest to study how other corporate

governance factors which have been found to determine accounting quality in public firms are related to accounting quality in private firms. This also has the potential to provide further insights into what drives the difference in accounting quality between public and private firms.

Finally, another interesting avenue for further research is to investigate how director professionalism relates to firm performance and firm value in private firms. As advisers to management, professional directors could contribute with for example capital raising, facilitate adoption of efficient management practices and contribute to productivity gains.

6. References

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7. Appendix

Appendix I: Principal component analysis

There is an inherent trade off in principal components analysis between simplicity (i.e. to retain as few variables as possible) and completeness (i.e. explaining most of the variation in the original data). We follow the Kaiser Rule which states that one should only retain factors with eigenvalues above 1 (Henson and Roberts, 2006). Thus, as shown in the Table 13, we only retain Component 1. Using only one component was also our aim when applying principal component analysis due to the limitation of valid instrumental variables in our dataset. Component 1, which is referred to as FACTPROF, explains 78.7% of the total variation in the three original variables.

Table 13. Eigenvalues and cumulative proportion explained

	Final Sample		Dechow-Dichev Sample	
	Eigenvalue	Cumulative proportion explained	Eigenvalue	Cumulative proportion explained
Comp 1	2.357	0.786	2.361	0.787
Comp 2	0.514	0.957	0.513	0.958
Comp 3	0.130	1.000	0.126	1.000

Notes:

Table 13 presents the eigenvalues and cumulative proportion explained by each of the principal components generated by the principal component analysis. The values are presented for both the final sample used in the Modified Jones and Stubben models and the Dechow-Dichev model.

For principal components analysis to be suitable there has to be sufficient dependence between the variables included in the analysis. The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy test investigates whether the variables are satisfactory for principal components analysis, where a value of above 0.5 should be obtained in order for the factor variable to be reliable. Hence, as can be seen in Table 14, the principal components analysis conducted in this study generates a score above the minimum threshold. A score between 0.60 and 0.69 is by Kaiser (1974) labeled as “mediocre”, and the principal component analysis can hence not be regarded strong, but yet satisfactory.

Table 14. KMO Score

Variable	Final Sample	Dechow-Dichev Sample
SHARE	0.875	0.881
TENURE	0.618	0.617
ASSIGNMENTS	0.602	0.602
Overall	0.656	0.657

Notes:

Table 14 presents the KMO score based on both samples for each of the variables as well as the overall KMO score. Where SHARE is the share of director professionals on the board of the non-listed firm, TENURE is the professional directors' average tenure on boards in listed firms and ASSIGNMENTS is their average number of assignments in listed firms.

In table 15 the unexplained variation in the data when using one component is presented. As indicated by the KMO value, only a moderate amount of variation in the data is explained. FACTPROF is equally good at explaining the original variables in the Final Sample and the Dechow-Dichev Sample.

Table 15. Unexplained variation in the original variables

Variable	Final Sample	Dechow-Dichev Sample
SHARE	0.515	0.514
TENURE	0.602	0.601
ASSIGNMENTS	0.612	0.612

Notes:

Table 15 presents the unexplained variation in each of the original variables included to the principal component analysis and when they are factored into FACTPROF. Where SHARE is the share of director professionals on the board of the non-listed firm, TENURE is the professional directors' average tenure on boards in listed firms and ASSIGNMENTS is their average number of assignments in listed firms.

Appendix II: Hausman test

When controlling for unobserved effects in panel data, there are two common models which are applied, fixed effects and random effects model. The fixed effects model uses a transformation to remove the unobserved effects estimator prior to estimation. Along with the unobserved effects estimator, any time-constant explanatory variables are removed. Further, the random effects model is attractive when we believe that the unobserved effects estimator is uncorrelated with the independent variables. There is also a test investigating whether it is possible to use either models or only the fixed effects model, namely the Hausman test. As can be seen in Table 16 the test rejects the null that we could use both the random and fixed effects models, and we hence adopt a fixed-effects model. The test statistics shown in Table 16 regards the OLS regression based on the Modified Jones model and on the final sample used in Hypothesis 1. The test results imply the use of fixed effects also for the other Hypothesis tests in the study and these Hausman tests statistics are hence not presented.

Table 16. Hausman test

chi-square	Prob > chi-square
611.92	0.000

Notes:

Hausman test on the OLS regression of equation (17) where the accounting quality measure is based on the Modified Jones model.

Appendix III: Variables definition

Table 17. Variables Definition

Variable	Definition
AQ	Accounting quality as measured by defined accounting quality model
FACTPROF	Factor variable proxying the level of director professionalism in the non-listed firm
PROXSTHLM	Instrumental variable indicating if the non-listed firm is headquartered in proximity to Stockholm
BRDSIZE	The total number of seats on the board
NOBRDASS	Average number of directorships in non-listed companies held by the directors in a non-listed firm
DUAL	Dummy variable equal to 1 if the CEO also acts as the chairperson of the board
LEV	Opening Debt-to-Equity ratio, where debt is defined as the sum of all interest bearing liabilities
BELOWIND	Dummy variable equal to 1 if the firm's earnings prior to abnormal accruals is less than the industry median reported earnings scaled by beginning assets
SIZE	Log of lagged assets
CFO	Cash flow from operations scaled by lagged assets
XPERF	Dummy variable equal to 1 if the firm is within the top or bottom 10 percent of the sample in terms of performance measure (income before interest expenses divided by average total assets)
CONS	Constant term

Appendix IV: Sample statistics

Table 18. Number of firms included in the final sample

Year	Number of firms	<i>of which having no professional directors</i>	<i>of which having at least one professional director</i>
2001	11,324	11,037	287
2002	12,307	12,007	300
2003	12,862	12,535	327
2004	13,214	12,862	352
2005	13,446	13,085	361
2006	14,263	13,878	385
2007	15,352	14,890	462
2008	16,530	16,023	507
2009	17,078	16,536	542
2010	17,720	17,228	492
Total	144,096	140,081	4,015

Table 18 presents the number of firms and hence observations included in each of the investigated years, based on the final sample used in Hypothesis 1.

Appendix V: Data quality checks

Autocorrelation and heteroskedasticity

As we base this study on linear panel data, there is reason to believe autocorrelation to be present. Autocorrelation means that there is correlation between data of different points in time and it leads to biased standard errors. We correct for the potential problem caused by autocorrelation by running robust regressions.

Heteroskedasticity occurs as the variance of the error term, conditional on independent variables, is not constant. In regression analysis, heteroskedasticity becomes problematic as it can bias standard errors and hence also test statistics. Therefore, we control for the presence of heteroskedasticity by running robust regressions and hence relax the assumption of homoscedasticity.

Test for multicollinearity

A common way to test for multicollinearity is to compute the Variable Inflation Factor (VIF), however since our study is based on panel data, the VIF approach is not a valid option. Instead we investigate the pairwise correlation between our independent variables.

We report the pairwise correlation in Table 19. As can be seen from the table, the pairwise correlations are in general weak. The highest pairwise correlation exists between, FACTPROF and NOBRDASS but we still consider it as moderate. Thus, according to the correlation matrix presented in Table 19, our data does not seem to suffer from multicollinearity.

Table 19. Pairwise correlation matrix of the full set of independent variables used in the study

	FACT- PROF	BRD- SIZE	NOBRD- ASS	DUAL	LEV	BELOW- IND	SIZE	CFO	XPERF
FACTPROF	1.0000								
BRDSIZE	0.2027	1.0000							
NOBRDASS	0.3208	0.1604	1.0000						
DUAL	-0.0123	0.1376	0.0080	1.0000					
LEV	0.0013	0.0033	0.0872	-0.0053	1.0000				
BELOWIND	0.0094	0.0020	-0.0266	-0.0098	0.0204	1.0000			
SIZE	0.1918	0.2363	0.1959	0.0729	0.2008	-0.1048	1.0000		
CFO	-0.0280	-0.0243	-0.0204	0.0018	-0.0217	0.1618	0.0269	1.0000	
XPERF	0.0314	-0.0265	0.0100	-0.0192	-0.1135	0.0366	-0.2836	0.0763	1.0000

Notes:

See Appendix III for variables definition.