Essays on Earnings Quality in Private Firms

Charlotte Haugland Sundkvist

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Introduction

1. Motivation and Overview

This dissertation examines the earnings quality in Norwegian private firms. It investigates four main topics, each of which concerns earnings quality in private firms. Three of these focus on earnings quality in private family firms, investigating the role of family control, family ownership, and family identity (indicated by family name). The last topic concerns the effect of negative performance shocks on earnings quality in private firms.

Compared to the large body of research on financial reporting practices in public firms, relatively little is known about financial reporting in private firms. It is reasonable to believe that the financial reporting practices in private firms may differ significantly from the practices in public firms (e.g., Ball & Shivakumar, 2005; Beatty, Ke, & Petroni, 2002; Burghstahler, Hail, & Leuz, 2006; Givoly, Hayn, & Katz, 2010; Hope, Thomas, & Vyas, 2013; Kim & Yi, 2006). Public firms are listed on a stock exchange, while private firms do not have publicly traded stocks (Hope, 2015). Compared to public firms, private firms have more concentrated ownership, more managerial ownership and less formal corporate governance mechanisms, they are more reliant on bank financing and major capital providers, such as controlling shareholders, generally take a more active role in management (Asker, Farre-Mensa, & Ljungqvist, 2014; Bar-Yosef, D'Augusta, & Prencipe, 2019; Hope & Vyas, 2017). Private firms are typically smaller and are characterized by a higher concentration of insider ownership and family ownership (Berzins, Bøhren, & Rydland, 2008).[1]

[1] If a single family holds more than 50% of the shares, the firm is defined as a private family firm, otherwise it is defined as a private non-family firm.

In recent years, the accounting research literature has paid increasing attention to private firms, but the private firm setting still remains relatively unexplored (Bar-Yosef et al., 2019). The limited focus on private firms in accounting research is probably due to data accessibility, rather than private firms lacking economic significance (Bar-Yosef et al., 2019; Hope, 2015; Hope & Vyas, 2017). In Norway, private firms constitute more than 99% of limited liability firms, their aggregated revenues are four times higher, they hold twice as much assets and employ four times more people than public firms (Berzins et al., 2008). This picture is probably the same in most countries (Berzins et al., 2008; Hope, 2015). Given the economic significance of private firms, in a recent comprehensive review of the state of the art of accounting research in private firms, Bar-Yosef et al. (2019) call for more research into this field in order to better understand the accounting practices of private firms.[2]

Hope and Vyas (2017) argue that financial accounting information may be especially important for stakeholders of private firms. The information environment in private firms is typically not as rich as that of public firms. For instance, private firms are on average less exposed to media coverage, they are not required to file additional filings and updates required by the securities regulators as they are not listed on a stock exchange, and coverage by financial analysts is limited or non-existing (Hope & Vyas, 2017). All these sources of information are likely to provide new information to stakeholders beyond merely accounting information (Hope & Vyas, 2017). Since private firms disclose less non-accounting information compared to public firms, financial accounting information may become especially important for stakeholders (e.g., capital

[2] The increased interest in financial reporting practices in private firms is also demonstrated by the regulation initiatives taken by financial accounting regulators. In 2009, the international standard setter, IASB, issued IFRS for SMEs, which is a separate set of financial reporting requirements for small and medium sized private firms. Some years later, in 2013, the European Union (EU) Parliament issued a new accounting directive for all EU/EAA member states, with emphasis on the accounting regulation of private firms.

providers) of private firms to monitor managers and make decisions (Hope, Thomas, & Vyas, 2017; Hope & Vyas, 2017).

High earnings quality is important for stakeholders so that they can make well-informed decisions based on accounting information. For instance, financial accounting information is important for creditors' decision-making, both for setting terms and conditions when initiating a loan and for supervising managers after a loan is initiated (Gassen & Fülbier, 2015; Hope & Vyas, 2017). Ding, Liu, and Wu (2016) document that private firms have better access to debt financing and lower costs of debt if they provide accounting information of high quality. Accounting information is important for internal decision-making as well (McNichols & Stubben, 2008), especially in smaller firms, as they are less likely to have a management accounting system (Drury & Tayles, 1995; Feng, Hope, Qingyuan, & Xin, 2011).

A particularly interesting feature of private firms is that many of them are controlled by one single family (Berzins et al., 2008). Family controlled firms differ from non-family controlled firms in that socioemotional wealth concerns, driven by personal attachment, strong identity to the firm and the risk of losing control, play a significant role when family owners make decisions (Berrone, Cruz, & Gomez-Mejia, 2012). These decisions may involve financial reporting decisions, such as earnings management, made in order to preserve socioemotional wealth. Even though most family firms are private firms (Berrone et al., 2012; Hope, 2013), most research on family firms has investigated public firms (Hope, 2013; Miller, Le Breton-Miller, & Lester, 2011; Paiva, Lourenço, & Branco, 2016; Salvato & Moores, 2010; Stockmans, Lybaert, & Voordeckers, 2010). Since private firms have a greater variation in family ownership and typically more family ownership and control compared to public firms, the socioemotional wealth concerns may play an even

stronger role here than in public firms (Berrone et al., 2012; Hope, 2013), demonstrating the importance of investigating private family firms in particular (Miller et al., 2011).

The earnings quality of Norwegian private firms is examined using archival data, employing a unique dataset from the Centre for Corporate Governance Research (CCGR) database at the BI Norwegian Business School. Earnings quality is measured using well-established models to measure abnormal aggregated accruals, specific accrual (impairment) and real earnings management (e.g. Dechow & Dichev, 2002; Dechow, Sloan, & Sweeney, 1995; Francis, LaFond, Olsson, & Schipper, 2005; Kothari, Leone, & Wasley, 2005; McNichols, 2002; Riedl, 2004; Roychowdhury, 2006). (See further discussion of earnings quality measures in Section 3.1.)

The dissertation examines the earnings quality of private firms through a series of four research papers. Paper 1 examines whether various ownership structures, such as the level of family ownership, the size of the second largest shareholder and the number of family owners, are associated with earnings quality in private family firms. Different ownership structures may cause variations in agency conflicts and emphasis on socioemotional wealth in private family firms. We hypothesize and find that firms fully owned by the controlling family have higher earnings quality than firms that are only partly owned by the controlling family, and that earnings quality increases with the size of the second largest shareholder. We also find some evidence that earnings quality decreases with the number of family owners, though this evidence is less robust and should be interpreted with caution.

Paper 2 examines the role of family identity in private family firms. Socioemotional wealth theory predicts that some family owners may identify very strongly with the firm, making them especially sensitive to reputational concerns. We use family name congruence (i.e., the family name is included in the firm name) as a proxy for family owners' identification with the firm. Since

accrual-based earnings management has a higher detection risk than real earnings management, family owners who are sensitive to reputational costs are likely to avoid accrual-based earnings management, and manage earnings through real activities instead (Gomez-Mejia, Cruz, & Imperatore, 2014). We hypothesize and find that family-named family firms have less accrual-based earnings management and are more likely to select real earnings management over accrual-based earnings management, compared to non-family-named family firms.

Paper 3 examines the reporting practices of impairment losses in the private firm segment. We hypothesize and find that family controlled firms are less likely to report impairment losses, and report lower impairment losses, compared to firms that are not family controlled. Socioemotional wealth theory predicts that family owners are more sensitive to reputational concerns than owners and managers of non-family controlled firms. Since impairment losses reflect poor performance, family owners are likely to be more reluctant to report large impairment losses. We further find that having non-family board members to some extent mitigates these accounting practices in family controlled firms. We find that when the ratio of non-family board members increases, family firms are more likely to report impairment losses and typically report higher impairment losses. There is also some evidence suggesting that family firms with a family CEO report lower impairment losses, though this finding is less robust.

Paper 4 examines how private firms respond to a negative shock to performance. Poor performance, or a decline in performance, may result in incentives to alter the reported performance number through earnings management (Balsam, Haw, & Lilien, 1995; DeFond & Park, 1997; Keating & L. Zimmerman, 1999; Kirschenheiter & Melumad, 2002). Using a difference-in-differences design, we find that a negative shock to performance lowers earnings quality, and that

firms subject to such a shock may respond by managing earnings upwards to mitigate the effect on reported earnings.

This dissertation contributes to earnings quality research by exploring variations in earnings quality in the private firm segment. There is limited research on financial reporting in private firms, especially in private family firms. We find evidence suggesting that owners and managers in private family firms manage earnings in an attempt to conceal true performance. This dissertation also makes several contributions to the earnings quality and family business literature by documenting that the accounting practices and earnings quality of private family firms vary with ownership structure, family control and family identity. For instance, we find that private family firms fully controlled by a single family have less accrual-based earnings management and consequently higher earnings quality compared to private family firms that are partly owned by a single family. Furthermore, family named family firms (our proxy for strong family identification with the family firm) exhibit less accrual-based earnings management and more real earnings management compared to non-family named family firms. Finally, we document that family controlled private firms are less likely to report impairment losses and report lower impairment losses compared to non-family controlled private firms, suggesting a reluctance to report impairment losses in family controlled family firms. These results should also be of interest to stakeholders entering into contracts with private firms, such as debt holders, minority owners and others, as they can use these observable indicators (i.e., family control, ownership structure, and family identity) to assess the risk of private family firms with low earnings quality.

The remaining part is structured as follows. First, I will establish the theoretical framework and define the concepts of earnings quality and earnings management, and relate them to the private firm setting. Then, I will briefly review common theories used in earnings management research

and relate them to the private firm and family firm setting. This section is followed by a review of prior literature on earnings quality with emphasis on private firms and family firms. Finally, I will briefly review commonly used earnings quality measures before I outline the papers of the dissertation.

2. Definition, Theoretical Framework and Prior Evidence

*2.*1. Earnings Quality Defined

The earnings quality literature is voluminous (for review, see Dechow, Ge, and Schrand (2010)), and several definitions of earnings quality can be found in the literature. Earnings quality might be seen as a dimension of the broader concept of accounting quality. While accounting quality typically refers to the quality of financial statements as a whole, earnings quality concerns the quality of the reported earnings figure.[3] Since accounting quality includes earnings quality, any reduction (improvement) in earnings quality will also reduce (improve) accounting quality, ceteris paribus.[4] In this review, I will primarily discuss two widely used definitions of earnings quality, i.e., (1) the extent to which accounting earnings reflect true economic performance (e.g., Barth, Landsman, & Lang, 2008; Schipper & Vincent, 2003), and (2) the extent to which accounting earnings are decision-useful for the users of accounting information (e.g., Ball & Shivakumar, 2005; Dechow et al., 2010; Schipper & Vincent, 2003).

Barth et al. (2008, p. 468) define accounting quality as accounting information depicting economic fundamentals, i.e., economic position and performance. A definition of earnings quality derived from the above definition of accounting quality will suggest that an earnings figure has high earnings quality if that figure provides an accurate depiction of economic performance (e.g.,

[3] I use the term accounting quality, but similar concepts such as financial reporting quality (e.g., Biddle, Hilary, & Verdi, 2009; Feng et al., 2011; Schipper & Vincent, 2003) or merely reporting quality (e.g. Ball & Shivakumar, 2005) can also be found in the literature.

[4] This assumes that the quality of the other parts of the financial report remain unchanged.

Barth et al., 2008; Schipper & Vincent, 2003). Based on this interpretation of earnings quality, any reported earnings figure that deviates from an accurate depiction of economic performance would impair that figure's earnings quality. Any deviation from economic performance can be attributed to the accounting regulation of earnings or the application of that regulation when preparing earnings (Barth et al., 2008). Accounting regulation restricts the recognition of economic fundamentals in the financial statements, such as the recognition of internally generated intangibles and the measurement of assets and liabilities at their fair values. These restrictions will also affect the earnings figure's ability to depict economic performance, since changes in assets and liabilities (that are not attributed to capital contributions or capital distributions) should be recorded in earnings.[5]

The accounting regulation often requires the accounting preparer to use estimation and judgment when applying accounting principles and rules. Even if the intention of the accounting preparer is to use unbiased accounting estimates, lack of estimation skills, resources and information necessary to perform a high-quality estimation can introduce estimation errors. These are unintentional estimation errors. However, this flexibility may also provide opportunities for intentional errors, which I will later consider as earnings management (Dechow & Dichev, 2002).

An alternative approach is to define accounting quality and earnings quality with reference to decision-usefulness (e.g., Ball & Shivakumar, 2005; Dechow et al., 2010; Schipper & Vincent, 2003). This approach corresponds with the overriding objective of financial reporting as stated in conceptual frameworks of financial reporting, such as the Conceptual Framework of International

[5] Norwegian Generally Accepted Accounting Principles (GAAP) is to a large extent based on principles of historical cost and conservatism. Increases in fair value are only allowed to be recognized in earnings for certain well-liquid financial instruments held for sale (cf. Norwegian Accounting Act paragraph 5-8) or foreign currency monetary items (cf. Norwegian Accounting Act paragraph 5-9).

Accounting Standards Board (IASB), saying that it shall provide decision-useful information to users of accounting information (IASB, 2018, paragraph 1.2). According to the Conceptual Framework (IASB, 2018, paragraph 2.4), the accounting information must be relevant and it must faithfully represent what it purports to represent, in order to be useful. For information to be faithfully represented, it must be complete, neutral and free from error (IASB, 2018, paragraph 2.13).

The main difference between the two above-mentioned definitions of accounting quality (earnings quality) seems to be that the second requires that the accounting information be relevant, and thus decision-useful, to have high quality. The first definition only requires that the accounting information provides an accurate depiction – that it faithfully represents economic fundamentals.

Dechow et al. (2010) emphasize that earnings quality is decision-specific, i.e., it depends on both the specific decision to be made and the specific decision maker (Dechow et al., 2010). Consequently, if decision makers and decisions made by these decision makers differ between private and public firms, what is considered as high earnings quality, and how earnings quality should be assessed will differ between public and private firms as well. The earnings quality literature has to a large extent focused on the usefulness of earnings in equity valuation (Dechow et al., 2010), which has generally considered earnings to have high quality if it represents some sort of "persistent" or even "permanent" earnings, as earnings with these qualities is more useful in a valuation model (Dechow et al., 2010).

The concept of earnings quality should, however, not only be interpreted as the extent to which earnings are useful for equity valuation (Dechow et al., 2010). Other uses of accounting information should also be emphasized, such as the demand for accounting information for stewardship purposes (Gjesdal, 1981). This may be of special relevance to private firms. Stocks

are not publicly traded and are thus traded less frequently in private firms, which suggests that the need for information for equity valuation becomes less prominent, and information for stewardship and accountability purposes may assume a more dominant role. For instance, accounting information plays a role when assessing the quality of the management, in monitoring debt covenants, and when determining dividend payments (Ball & Shivakumar, 2005; Feng et al., 2011; Habib, Ranasinghe, & Huang, 2018).

The arguments above suggest that the objectives of accounting information might be different in public and private firms. These differences in objectives are also reflected in the accounting regulation of private and public firms. While equity valuation is described as a primary objective of financial reporting in public firms (e.g., IASB, 2018, paragraph 1.2), this objective is not explicitly mentioned as an objective for private firms (e.g., IFRS for SMEs). As stated in IFRS for SMEs paragraph 2.2 (IASB, 2015), the objective is to *"provide information about the financial position, performance and cash flows of the entity that is useful for economic decision-making for a broad range of users of the financial statements who are not in a position to demand reports tailored to meet their particular information needs."* Owners not involved in managing the business, creditors (both existing and potential creditors) and credit rating agencies are mentioned as potential external accounting users in private firms (cf. IFRS for SMEs, paragraph 1.2). The standard also emphasizes the stewardship objective, i.e., financial statements should be useful to assess the results of the stewardship of management, as an important objective of financial reporting in private firms (cf. IFRS for SMEs, paragraph 1.3).

Earnings are probably the single most important accounting figure in the financial statement because the earnings figure, as well as metrics derived from that figure, are used for contracting purposes, i.e., as important determinants in compensation and debt contracts (Schipper & Vincent,

2003), which highlights the importance of earnings quality. Thus, low earnings quality may lead to unintended and possibly sub-optimal wealth transfers (Schipper & Vincent, 2003). Economic performance as measured by accounting earnings is also indicative of management performance, suggesting that information about earnings can be used for stewardship purposes to assess the management's strategic investment and financing decisions. Given that accounting earnings truly reflects economic performance, the earnings figure will be relevant to use as a basis for an assessment of the management's performance, e.g., whether the management performs above expectations, meets expectations or performs below expectations. Decisions can then be made on whether the management should be retained or replaced, or whether the management should be given further instructions. Earnings are also used as a basis for determining the technical limit of dividend payments. Overstated earnings can lead to dividend payments that can potentially hurt other stakeholders', such as creditors', claims on the firm's resources.

Dechow et al. (2010) argue that earnings quality is a function of both fundamental performance and the accounting systems' ability to accurately report that fundamental performance. Information on all aspects of fundamental performance are not equally relevant to all decision makers. For instance, some decision makers may be more concerned with the aspect of fundamental performance that can be attributed to the management, i.e., relevant from a stewardship perspective. From an equity valuation perspective, however, the relevance of fundamental performance is not limited to the part of performance reflecting managers' contribution to the firm's performance.

Earnings quality is a multidimensional concept, including dimensions such as earnings management, conservatism, persistence, and other properties of earnings (see Section 3.1 for a brief review of various earnings quality measures). This dissertation mostly focuses on the earnings

management dimension of earnings quality. The reasoning behind this choice is that stewardship is likely to be the main concern in private firms (as opposed to equity valuation where earnings persistence may be of high relevance), and that earnings management is a major threat to the quality of stewardship. If earnings management is undetected, managers and/or majority shareholders may be able to conceal true performance from other stakeholders, potentially causing sub-optimal decisions and wealth transfers as discussed above. One of the papers (Paper 3) also partly explores the concept of conservatism by examining impairment losses. Reporting impairment losses that are lower than the economic impairment indicates less conservative earnings, which we interpret as more earnings management and lower earnings quality. Since the main focus in the dissertation is the earnings management dimension of earnings quality, the definition of earnings management is outlined in the next subsection.

2.1.1. Earnings Management Defined

Earnings management is generally understood as opportunistic decisions made by management to alter the earnings figure in order to obtain some private gain (e.g., increased bonus, job security, debt financing, or minority exploitation). Earnings can be managed through real activities (real earnings management) or by altering accruals (accrual based earnings management). Both types of earnings management will be discussed in this section.

If earnings are managed by real economic decisions that affect current or future cash flows, this is typically called real earnings management or real activities manipulation (e.g. Ewert & Wagenhofer, 2005; Kothari, Mizik, & Roychowdhury, 2016; Roychowdhury, 2006; Zang, 2012). With real earnings management, earnings are affected by sub-optimal timing or structuring of real transactions and events (Ewert & Wagenhofer, 2005). Examples of real earnings management include postponing research and development costs or other necessary costs such as maintenance

work, temporary increasing sales or affecting the timing of sales through increased price discounts or favorable credit terms, or increasing production to report lower cost of goods sold (COGS) and higher earnings (Ewert & Wagenhofer, 2005; Roychowdhury, 2006).

Earnings management will typically involve accounting decisions that exploit the flexibility within accounting regulation (within GAAP) or that violate accounting regulation (beyond GAAP). Such earnings management will affect the accrual component of earnings and is therefore often labeled accrual-based earnings management or accounting earnings management (Achleitner, Günther, Kaserer, & Siciliano, 2014; Ewert & Wagenhofer, 2015). Healy and Wahlen (1999, p. 368) argue that earnings management occurs when *"managers use judgment in financial reporting in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers".*

The preparation of financial statements leaves the management with significant discretion when determining accounting estimates (e.g., estimating economic lives or recoverable amounts in impairment tests). The management is also left with significant flexibility when selecting between alternative accounting methods (e.g., inventory valuation methods such as first-in, first-out (FIFO) or weighted-average) (Healy & Wahlen, 1999). Managers can use this accounting flexibility to better inform accounting users of the underlying economic performance of the firm, or they can use this reporting freedom to mislead accounting users (e.g. Dechow, 1994; Scott, 2012, p. 423). An important element of the earnings management definition of Healy and Wahlen (1999) is that it rules out non-opportunistic accounting decisions, i.e., decisions made to better inform stakeholders of the firm's underlying economic performance. Earnings management is instead understood as accounting decisions made by the management to mislead users of accounting information.

Earnings management will erode earnings quality (Dechow et al., 2010), and when present in the preparation of earnings figures it can be seen as the inverse of earnings quality (Schipper & Vincent, 2003). Accrual-based earnings management will, if not detected by the users of accounting information, reduce the decision-usefulness of earnings and potentially cause accounting users to make sub-optimal decisions. For instance, due to managed earnings, poor performing managers remain in their positions, unprofitable firms obtain new loans on favorable terms and debt covenant violations remain undetected. Thus, accrual-based earnings management will negatively affect earnings quality defined in terms of decision-usefulness. Accrual-based earnings management will also introduce noise in accounting earnings, causing those earnings figures to deviate from economic performance, which will impair earnings quality in terms of depicting economic performance.

The relationship between real earnings management and earnings quality, however, is not straightforward. The management's engagement in real earnings management may not affect earnings quality when defined as the earnings figure's ability to depict economic performance. In the case of real earnings management, the economic performance is altered, yet the earnings figure may perfectly depict economic performance.

As mentioned earlier, Dechow et al. (2010) argue that earnings quality is a function of both economic performance and the accounting systems' ability to report that economic performance. Real earnings management will cause economic performance to be sub-optimal and erode the decision-usefulness of earnings if not detected.

2.2. Theoretical Foundations

The theoretical foundation of earnings management research and the contracting role of financial statements is found in positive accounting theory and agency theory (e.g. Jensen & Meckling, 1976; Watts & Zimmerman, 1978, 1986, 1990). Positive accounting theory originated with Watts and Zimmerman. The theory aims to predict and explain accounting choices (e.g. Watts & Zimmerman, 1978, 1979, 1986, 1990). The firm can be viewed as a nexus of contracts. These contracts can be formal and explicit contracts such as remuneration contracts and debt contracts, or they can be informal and implicit contracts such as the relations between the firm and society. Positive accounting theory recognizes that accounting choices may have real economic consequences because they can affect the outcome of such contracts, thus causing incentives to manage earnings to affect the outcome of these contracts (Watts & Zimmerman, 1986, 1990). Managers, and others with significant influence and involvement in the firm (e.g., large shareholders), typically have an information advantage compared to other stakeholders. This information asymmetry among the contracting parties creates information and contracting costs. Positive information and contracting costs is an important assumption, otherwise the users of accounting information could simply adjust the accounting figures to reflect the economic fundamentals they purport to reflect, and accounting choices would not matter (Fields, Lys, & Vincent, 2001).

2.2.1. Agency Theory

Agency theory has been extensively used to predict and explain earnings management behavior, and it might be seen as the theoretical underpinning of positive accounting theory. A principal-agent relationship exists if *"one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent"* (Jensen & Meckling, 1976, p. 5). The agent and the principal may have conflicting interests, and the agent may not act in the best interests of the principal (Jensen & Meckling,

1976). A classical principal-agent relationship identified in the literature is that between shareholders and managers. Shareholders (principals) and managers (agents) are assumed to have different interests, risk attitudes and time horizons (Denis, 2001; Ronen & Yaari, 2008). Since owners cannot limit all managerial actions, there will be a risk that managers act in pursuit of their own interests, possibly behaving opportunistically towards the owners.

Agency conflicts between shareholders and managers are sometimes referred to as type I agency conflicts or vertical agency conflicts (e.g. Ali, Chen, & Radhakrishnan, 2007; Hope, 2013). This form of agency conflicts are probably most pronounced in large, public firms characterized by high ownership dispersion and little or no involvement of owners in managing the firm. The situation in private firms, however, is different. Shareholders of private firms are typically more actively involved in managing the firms, hold less diversified portfolios, have a larger ownership stake and family relationships are more common (Asker et al., 2014; Bar-Yosef et al., 2019; Hope, 2013; Hope et al., 2013). Private firms are characterized by a concentrated ownership structure. Large shareholders, i.e., shareholders with a large ownership stake, are generally believed to be better monitors of managers compared to smaller shareholders (Hope, 2013). Monitoring activities are costly, and the potential benefits of monitoring must be greater than the costs if monitoring is to be a rational strategy. A larger shareholder will face greater potential benefits through monitoring managers compared to a smaller shareholder. Individual shareholders are therefore more willing to endure monitoring costs as their percentage of ownership increases. As a result, one would expect less type I agency costs (i.e., conflicts between owners and managers) when ownership concentration increases (Hope, 2013).

At the same time, shareholders are not a homogenous group with identical interests, risk attitudes and influence over the firm's decisions. Larger shareholders have more influence and

power over the firm compared to smaller shareholders, and may extract private benefits from minority shareholders or other stakeholders (e.g., creditors). Consequently, one would expect type II agency conflicts to increase as ownership concentration increases (Hope, 2013). This suggests that, as opposed to public firms which largely face type I agency conflicts, private firms are probably more susceptible to type II agency conflicts, i.e., owner-owner conflicts (Asker et al., 2014; Bar-Yosef et al., 2019).

A third type of agency conflicts described in the literature involves creditors as well as managers and shareholders (e.g. Jensen & Meckling, 1976). Debt financing is an important financing source for private firms, which makes private firms susceptible to potential agency conflicts between creditors on one side and shareholders and managers on the other (Bar-Yosef et al., 2019; Gassen & Fülbier, 2015; Hope & Vyas, 2017). Creditors provide the firm with capital and can be viewed as the principal, with managers and shareholders being the agents. To protect themselves from opportunistic actions conducted by the managers and/or shareholders, creditors often restrict the firm's investing and financing activities through debt covenants. A debt covenant is typically based on some accounting figures, for instance requiring the firm to be below a certain debt ratio. Such debt covenants may provide incentives to manage earnings to avoid a violation of these debt covenants restrictions or to improve the negotiation position if violated (e.g. Dichev & Skinner, 2002; Fields et al., 2001; Sweeney, 1994; Watts & Zimmerman, 1978, 1986, 1990). Managers and/or shareholders may also have incentives for managing earnings when obtaining new capital either from debtholders or shareholders.

2.2.2. Socioemotional Wealth Theory

In recent years, a new theory called the socioemotional wealth (SEW) theory has evolved within the field of family business research (e.g. Berrone et al., 2012; Berrone, Cruz, Gomez-Mejia, & Larraza-Kintana, 2010; Gomez-Mejia, Cruz, Berrone, & De Castro, 2011; Gomez-Mejia et al., 2014; Gómez-Mejía, Haynes, Núñez-Nickel, Jacobson, & Moyano-Fuentes, 2007; Gomez-Mejia, Patel, & Zellweger, 2018; Gomez-Mejia, Makri, & Kintana, 2010; Martin, 2016). SEW theory builds on both agency theory and behavioral decision theory such as prospect theory. The unique and innovative aspect of socioemotional wealth theory is that it predicts that family principals are loss averse to an affective component labeled socioemotional wealth. Socioemotional wealth refers to non-financial aspects that meet the affective needs of family members (Gómez-Mejía et al., 2007). SEW theory also differs from traditional agency theory in that it centers on loss aversion rather than risk aversion. If an agent is assumed to be risk averse, as in traditional agency theory (e.g. Fama & Jensen, 1983; Jensen & Meckling, 1976), risk preferences are assumed to be consistent, i.e., the agent will be equally risk averse to expected gains and expected losses. Prospect theory, on the other hand, predicts that decision makers are risk averse to potential gains, but risk seeking when it comes to potential losses (Kahneman & Tversky, 1979; Tversky & Kahneman, 1986, p. 149). This is called loss aversion, and placed in a principal agent context, it predicts that agents are more sensitive to a loss in wealth than to an increase in wealth, implying that they will accept a higher risk to avoid a loss (Tversky & Kahneman, 1986; Wiseman & Gomez-Mejia, 1998).

SEW is a multidimensional concept, and Berrone et al. (2012) develop a theoretical five-dimensional model of SEW (the FIBER-model). The dimensions are family control and influence, family identity, binding social ties, emotional attachment and dynastic succession. Family members often require control over the firm to preserve SEW, and this can be achieved through

high family ownership concentration and by controlling and influencing important strategic positions such as CEO and other management positions as well as board member positions. Family members may also identify strongly with the firm, and Gomez-Mejia et al. (2014) argue that the family firm may even become a projection of the family's core values, making family members especially sensitive to reputational concerns. Emotional concerns can also be an important aspect in family firms, and even affect their decision-making processes (Berrone et al., 2012). Typically, the time-horizon of family members is long. The firm becomes the family's heritage and saving for future generations can become an important goal. This goal can create incentives to reduce dividend payments and can be in conflict with the interests of other shareholders.

SEW theory does not exclude opportunistic behavior from family owners, but their motivations to behave opportunistically may differ from those suggested by agency theory (Gomez-Mejia et al., 2014; Kellermanns, Eddleston, & Zellweger, 2012). Gomez-Mejia et al. (2014) argue that family owners' incentives to engage in earnings management are mainly non-financial. Family owners are not indifferent to financial gain, but if SEW goals and financial goals are in conflict, family owners will typically sacrifice financial goals in pursuit of SEW goals, at least to some extent (Berrone et al., 2010; Martin, 2016). SEW and financial performance are likely to be correlated, so that an increase in financial performance also increases SEW and vice versa, especially if financial performance is extreme in terms of very high or very low performance (Martin, 2016). Poor performance may attract negative publicity and affect other stakeholders such as employees or creditors negatively, especially if the poor performance can be attributed to the performance of family members involved in the firm rather than some exogenous event. This in turn may have a negative impact on family reputation, family members' continued involvement in the firm (external stakeholders may require less family involvement) or dynastic succession (less

attractive to pass on a poor performing firm or there might even not be a firm to pass on in the case of bankruptcy), which again will impact SEW negatively (Martin, 2016). Good performance is likely to have the opposite effect.

According to SEW theory, family owners consider the effect on their socioemotional wealth in addition to financial wealth when evaluating strategic decisions (Gomez–Mejia et al., 2014; Martin, Campbell, & Gomez-Mejia, 2016). The value they place on each dimension, however, may vary across firms, causing earnings management strategies to vary across family firms as well. Family owners may also differ regarding which dimension of socioemotional wealth they favor (Gomez-Mejia et al., 2014). For instance, for some family owners, enhancing and protecting their reputation is important, while for other family owners the main motivation may be to remain and enhance family control. Different emphasis on different socioemotional wealth components may be a source of heterogeneity in accounting practices across family firms as well (Gomez-Mejia et al., 2014). As different family owners will favor different dimensions of SEW, and the different dimensions predict different earnings management strategies, there is likely to be a substantial variation in earnings management among family firms.

2.3. Prior Evidence

2.3.1. Prior Research on Earnings Quality and Earnings Management in Private Firms

The literature on earnings quality and earnings management is substantial. This literature has investigated various approaches to uncover or indicate earnings quality and earnings management, and a significant number of factors which may affect earnings quality and the risk of earnings management have been investigated, such as earnings management incentives, corporate governance mechanisms (among these proxies of audit quality) and specific firm characteristics

(see Dechow et al., 2010 for review). Most prior research on earnings quality and earnings management, however, has been conducted on public firms.

As argued in the introduction of this dissertation, it is not evident that findings of earnings quality and earnings management in public firms can be generalized to private firms. Private and public firms differ greatly regarding important characteristics such as ownership concentration, capital structure and formal corporate governance mechanisms (Asker et al., 2014; Bar-Yosef et al., 2019; Hope & Vyas, 2017). A distinctive characteristic of public firms is that they rely more on equity capital than do private firms (i.e., the main reason for being listed in the first place). This provides public firms with stronger incentives than private firms to prepare high quality accounting information in order to attract equity investors. Lack of high quality information implies higher information risk and equity capital risk, which will reduce access to reasonably priced equity capital. As a result, public firms are probably more concerned with the usefulness of earnings for valuation purposes, i.e., the informativeness of earnings, than private firms. This suggests that if there are incentives to manage earnings in private firms, e.g., to affect dividend payments or to avoid debt covenant violations, they are probably less concerned that earnings management will distort the informativeness of earnings compared to public firms (Burghstahler et al., 2006).

An important line of accounting research on private firms has examined how accounting practices in public firms differ from those in private firms (Bar-Yosef et al., 2019). Two competing sets of arguments are found in the literature regarding whether earnings quality is higher or lower in public firms than in private firms. One set of arguments propones that earnings quality is higher in public firms because they are subject to stronger disciplinary market forces and more monitoring by market participants (Bar-Yosef et al., 2019; Burghstahler et al., 2006). The other set of arguments suggests that public firms face stronger incentives than private firms to manage earnings

to meet or beat earnings targets set by market participants (Bar-Yosef et al., 2019; Givoly et al., 2010; Hope et al., 2013). This suggests lower earnings quality in public firms compared to private firms. The empirical evidence on whether public firms have higher or lower earnings quality than private firms is inconclusive. Consistent with the notion of more demand for high quality earnings in public firms, multiple studies have found that private firms exhibit lower earnings quality than public firms (Ball & Shivakumar, 2005; Burghstahler et al., 2006; Hope et al., 2013). In support of stronger earnings management incentives, several studies find lower earnings quality in public firms than in private firms (Beatty et al., 2002; Givoly et al., 2010; Kim & Yi, 2006).

These studies all differ greatly in terms of sample and context, and may therefore not be directly comparable. Ball and Shivakumar (2005) examine timely loss recognition (i.e., the extent to which losses are incorporated in earnings in a timely manner) in private and in public firms using British data. They find that public firms incorporate losses into earnings in a more timely manner, suggesting higher earnings quality in public firms compared to private firms. Burghstahler et al. (2006) examine earnings management using data from 13 European countries, and find more earnings management and lower earnings quality in private firms than in public firms. Hope et al. (2013) compare the accounting quality of public and private United States (US) firms. US private firms are not required to file financial statements, thus the US setting of private firms is quite different from the European setting. Beatty et al. (2002) compare US public banks with US private banks. The banking industry is heavily regulated and it is thus not clear whether these results are generalizable to other industries (Burghstahler et al., 2006; Hope et al., 2013).

In a recent study, Bonacchi, Marra, and Zarowin (2019) find that the differences between public and private firms' earnings quality may depend on whether the reporting entity is structured as a group or as a stand-alone firm. Using data from several European countries, they demonstrate

that when using the whole sample of private firms, public firms exhibit higher earnings quality than private firms. However, if they exclude the firms with a lower demand for high earnings quality and strong incentives to manage earnings to minimize taxes (i.e., private stand-alone firms), this relationship reverses (i.e., lower earnings quality in public firms compared to private firms). It is questionable whether these results are relevant to a Norwegian setting. The book-tax alignment in Norway is very low (Nobes & Schwencke, 2006), which suggests weak tax-related incentives for managing reported earnings. Moreover, the Norwegian accounting regulation requires financial reports for all limited liability firms and external auditor for all but the very smallest firms.[6] This ensures that the accounting information of Norwegian private firms holds a certain quality regardless of demand, which questions whether the demand side of earnings quality is as profound as demonstrated by Bonacchi et al. (2019). To summarize, empirical results of differences in earnings quality between private and public firms yields mixed results, and may vary in different institutional settings.

A growing body of literature has established determinants of earnings management and earnings quality in private firms. Financial reporting in private firms is likely to be driven by dividends, compensation policies, taxation and debt financing (Ball & Shivakumar, 2005; Feng et al., 2011; Habib et al., 2018).

Dividend payments are to a large extent constrained by net income and retained earnings. This may induce incentives to increase reported earnings to maximize dividend payments, or reduce reported earnings to justify a lower dividend payment if desirable. Larger private firms are also likely to use some sort of bonus payment system based on accounting figures, creating incentives to manage earnings in order to maximize bonus payments. It has been documented in

[6] Cf. Norwegian Accounting Act paragraphs 1-2 and Act on Auditing and Auditors paragraph 2-1.

public firms that bonus contracts are associated with more earnings management (Healy, 1985; Holthausen, Larcker, & Sloan, 1995; Watts & Zimmerman, 1986, 1990). Earnings can be used in wage bargains as a proxy for performance. Labor unions or individual workers may use favorable accounting figures such as high earnings or earnings growth as an argument to secure higher wages. This may provide incentives to manage earnings downwards so as to reduce the pressure of a wage increase demand. Poor performance can be used as an argument by the principal to withhold raises (e.g., the firm cannot afford a raise at the moment because it is performing poorly).

Several studies report findings suggesting that private firms may be inclined to manage earnings downwards to minimize taxes (Garrod, Kosi, & Valentincic, 2008; Penno & Simon, 1986; Szczesny & Valentincic, 2013). Tax motivated earnings management incentives are likely to be less relevant in the setting of Norwegian firms, which is used in this dissertation, due to low book-tax alignment in Norway (Nobes & Schwencke, 2006).

Bank financing is an important source of financing in private firms, and is crucial for growth in these firms (Bar-Yosef et al., 2019; Gassen & Fülbier, 2015; Haw, Lee, & Lee, 2014; Hope et al., 2017). Financial statements can be used by banks to assess a firm's ability to generate future cash flows, the risk associated with these cash flows and determining assets that can be used as collateral (Feng et al., 2011). Since analysts, institutional investors, credit rating agencies, media and regulators typically focus more on public firms than private firms, accounting quality is even more important for creditors of private firms than public firms, due to fewer information channels (Ding et al., 2016).

Creditors' demand for accounting information will increase the demand for high quality accounting information in private firms, but can at the same time induce earnings management incentives as well (Hope & Vyas, 2017). Thus, the first order effect of debt financing on earnings

quality can be hard to predict and may vary among settings. Several studies have documented that debt financing is associated with earnings quality in private firms. However, empirical evidence regarding the direction of this association is mixed.

Some researchers find that creditors increase the demand for high quality earnings in private firms (Bigus & Hillebrand, 2017; De Meyere, Vander Bauwhede, & Van Cauwenberge, 2018; Ding et al., 2016), while others, such as Mafrolla and D'Amico (2017), find that more debt is associated with more earnings management. Gassen and Fülbier (2015) find that debt financing is associated with earnings smoothing in private firms. However, as noted by Hope (2015), there is limited discussion of the role of smoothing in Gassen and Fülbier (2015). Earnings smoothing has typically been viewed negatively and as a form of earnings management in prior research (Hope, 2015).

There might exist other incentives as well, such as incentives to avoid losing control or incurring reputational damage. These incentives were discussed in greater detail in Section 2.2.2 above.

2.3.2. Prior Evidence of Earnings Quality and Earnings Management in Family Firms

Private firms might have a characteristic that public firms typically do not have: a substantial portion of them are controlled by one single family (Berzins et al., 2008). A family controlled firm may differ from non-family controlled firms in that personal attachment, strong identity to the firm and risk of losing control may explain some of the decisions family owners make (Berrone et al., 2012). These decisions may also involve financial reporting decisions such as earnings management.

Financial reporting decisions have traditionally been explained by propositions found in positive accounting theory, which again are rooted in agency theory (e.g. Fields et al., 2001; Watts & Zimmerman, 1978, 1986; Watts & Zimmerman, 1990). Salvato and Moores (2010), however,

argue that agency theory may not be appropriate to explain accounting practices in private family firms. Rather, they proclaim that SEW theory, which has emerged in the family business literature, is more appropriate. Stockmans et al. (2010) find empirical support for this theory being appropriate as a reference point for making predictions on accounting practices in family firms.

Compared to non-family firms, family firms may face other motivations for decision-making, including financial reporting decisions (Gomez-Mejia et al., 2014). While incentives to manage earnings in non-family firms may be linked to personal wealth and gain, incentives to manage earnings in family firms are probably closer linked to personal attachment to the firm.

Most prior research on accounting practices in family businesses has been on public firms, and research on earnings quality in the context of private family firms is limited (Paiva et al., 2016). Hope (2013) encourages researchers to examine family ownership in private firms rather than public firms since private firms provide more variation in family ownership.

Evidence from public firms generally suggests that the accounting practices in family firms differ from those in non-family firms. Several studies suggest that family ownership is associated with higher earnings quality and better financial disclosure practices than non-family firms (e.g. Ali et al., 2007; Chen, Chen, & Cheng, 2014; Jiraporn & DaDalt, 2009; Tong, 2007; Wang, 2006). These studies have all been conducted using data from US public firms. Hope (2013) argues that the results from family ownership in US public firms may not be generalizable to other settings. Most of these studies employ a low threshold for classifying firms as "family firms" (often 5% ownership).

Results from public firm studies using data from other countries are not as conclusive (e.g., Achleitner et al., 2014; Cascino, Pugliese, Mussolino, & Sansone, 2010; Greco, Ferramosca, &

Allegrini, 2015; Ho & Shun Wong, 2001; Prencipe, Bar-Yosef, Mazzola, & Pozza, 2011; Prencipe, Markarian, & Pozza, 2008; Yang, 2010). For instance, using data from Italian listed firms, Cascino et al. (2010) find lower abnormal accruals in family firms and Prencipe et al. (2011) find less income smoothing in family firms, compared to non-family firms. Prencipe et al. (2008) find evidence suggesting that compared to non-family firms, family firms are less likely to smooth earnings, but more likely to manage earnings to avoid debt covenant violations. Another study by Greco et al. (2015), which also uses data from Italian listed firms, suggests that the reported impairment losses of family firms better reflect economic fundamentals than impairment losses in non-family firms. They attribute these findings to a higher propensity for big bath accounting in non-family firms. Achleitner et al. (2014) examine accrual-based and real earnings management differences between German listed family and non-family firms. Their results show that family firms engage in less real earnings management, but more income decreasing accrual-based earnings management than non-family firms.

Using data from private firms, both Kvaal, Langli, and Abdolmohammadi (2012) and Borralho, Gallardo Vázquez, and Hernández-Linares (2019) find a negative association between family firm status (i.e., whether or not the firm is a family firm) and earnings management, measured as signed abnormal accruals. Their interpretation of these results, however, differs. Borralho et al. (2019) interpret this negative coefficient as less earnings management in private family firms compared to private non-family firms. Kvaal et al. (2012) interpret the negative association as more income decreasing earnings management in family firms compared to non-family firms, consistent with the interpretation in Achleitner et al. (2014). Kvaal et al. (2012) further document that private family firms manage earnings upwards when leverage is high. This could suggest that family owners are reluctant to give up their control of the firm, e.g., to avoid

that creditors claim rights to the firms' assets, consistent with SEW theory which predicts that family control is important for family owners. A family CEO reinforces these earnings management tendencies in private family firms, while independent board members seem to attenuate them. These earnings management patterns in family firms seem to diminish over time (Kvaal et al., 2012), consistent with the generational effect observed in Stockmans et al. (2010).

While differences in accounting practices between family and non-family firms have been the subject of several studies, evidence of variations in accounting practices *among* family firms are more scarce (e.g. Paiva et al., 2016). Evidence from public family firms shows lower earnings quality for firms acquired by families in a market transaction compared to family firms that are founded or inherited by the family owners (Pazzaglia, Mengoli, & Sapienza, 2013). The authors attribute this finding to lower identification with the acquired firm, consistent with SEW theory. Yang (2010) finds evidence from the Taiwan Stock Exchange that more insider ownership is associated with more earnings management in family firms. Further, non-family CEOs have a greater tendency to manage earnings than family CEOs in family firms (Yang, 2010).

Evidence from private family firms suggests that first-generation family firms perform more income increasing earnings management than second- and third- (and later)-generation family firms, conditional on poor firm performance (Stockmans et al., 2010). Additionally, founder-led family firms engage in more income increasing earnings management than non-founder-led family firms when firm performance is poor (Stockmans et al., 2010). The authors attribute these findings to lower emphasis on SEW in later generations. Stockmans, Lybaert, and Voordeckers (2013) find a constraining effect of independent board members and CEO non-duality on earnings management in private family firms, but this is conditional on agency conflicts between controlling and non-controlling shareholders.

3. Methodology

3.1. A Measure of Earnings Quality

The concept of earnings quality is multidimensional, and Dechow et al. (2010) group earnings quality measures into the following three categories: properties of earnings, investors' responsiveness to earnings and external indicators of earnings misstatements (e.g., restatements). The first category, i.e., the properties of earnings, is likely to be most relevant in a private firm setting.[7] The properties of earnings include several features, such as earnings persistence, earnings smoothness, asymmetric timeliness and timely loss recognition, and abnormal accruals (Dechow et al., 2010). Both earnings persistence and smoothness will be affected by accounting rules and regulation, earnings management, and the volatility of the fundamental performance, and these effects can be difficult to disentangle (Dechow et al., 2010). Thus, it is difficult to interpret whether persistence and smooth earnings are of high or low quality. Persistent and smooth earnings have been viewed as favorable characteristics of earnings by equity investors especially, as these characteristics may be more useful in an equity valuation model (Dechow et al., 2010). However, as discussed is Section 2.1, equity valuation is of less importance for users of accounting information in private firms, suggesting that measuring earnings quality using persistence or smoothness may be less relevant in a private firm setting.

Asymmetric timeliness and timely loss recognition are measures of conservatism and reflect the extent to which managers incorporate losses in earnings in a timely manner (as opposed to postponing or minimizing reported losses to avoid the negative effect on earnings) (Dechow et al.,

[7] Investors' responsiveness to earnings is generally measured by a capital market benchmark such as the change in stock prices, and is thus not relevant for private firms. As opposed to public firms, private firms are not subject to the oversight by Security and Market Authorities, e.g. the Financial Supervisory Authority of Norway, which is often the cause of restatement in public firms. Consequently, restatements in private firms may be more rare and difficult to find.

2010). More timely loss recognition is typically interpreted as higher earnings quality, but this assumption is conditional on the prerequisite that asymmetric timeliness (i.e., incorporation of unrealized losses, but not unrealized gains, into earnings) is decision-useful (Dechow et al., 2010). In a public firm setting, this has typically been measured as the association between future earnings and current stock returns, dependent on the stock return being positive or negative (Basu, 1997; Dechow et al., 2010). Since private firms do not have observable stock prices, an alternative is to examine whether the time-serial properties of earnings differs between positive and negative earnings; the general idea being that the association over time should be weaker for negative earnings as they are less persistent (Ball & Shivakumar, 2005; Basu, 1997; Dechow et al., 2010). This dissertation does not employ this model directly, but it does to some extent explore the concept of conservatism by focusing on impairment losses in Paper 3. The recognition of impairment losses is a direct consequence of conservative accounting, and a reluctance to report impairment losses may indicate earnings management behavior.

The stewardship objective is the main objective of financial reporting in private firms, suggesting that earnings management measures may be especially relevant in a private firm setting, as managed earnings are a major threat to the quality of stewardship. Thus, the remaining discussion will focus on measuring earnings management as a proxy for earnings quality.

3.1.1. The Role of Accruals

Accounting earnings consists of two components: cash flows and accruals. The role of accruals is to render earnings a better measure of firm performance than cash flows (Dechow, 1994). The cash flow component of earnings is generally not subject to discretion. The accrual component, however, is determined, at least to some extent, by the managers' own discretion. Since accruals require the use of estimation and discretion, it might be difficult for outsiders to assess the

accuracy of these accruals. This gives the managers some flexibility to opportunistically report accruals in order to mislead stakeholders.

A conventional approach to indicate the extent to which reported earnings are subject to earnings management is to estimate the portion of accruals that is abnormal or discretionary (e.g. DeAngelo, 1986; Dechow et al., 1995; Healy, 1985; Jones, 1991). The amount of discretionary accruals is then used as a proxy for earnings management and as an inverse proxy for earnings quality.

Earnings management is generally investigated in terms of discretionary aggregated accruals or in terms of discretionary specific accruals. An advantage of using measures of discretionary aggregated accruals is that one can capture a wider range of manipulating strategies compared to specific accruals (Jones, 1991). A limitation of aggregated accruals, however, is that they do not provide information about which components of earnings firms actually manage (McNichols & Stubben, 2018; Stubben, 2010). Investigation of specific accruals, however, may provide accurate insights into the manipulation of a specific accrual, but at the cost of not detecting earnings management if earnings are managed through other items than those investigated (McNichols, 2000).

3.1.2. Aggregated Accruals

3.1.2.1. The Jones Model and the Modified Jones Model

The use of accruals to indicate earnings management creates the challenge of separating non-discretionary (normal) accruals from discretionary (abnormal) accruals. Early papers on earnings management made use of rather unrealistic assumptions concerning the time-series properties of non-discretionary accruals. Healy (1985) assumed that non-discretionary accruals would be similar to an arithmetic mean of the previous year's total accruals, whereas DeAngelo (1986) simply

assumed that the previous year's total accruals would be equal to the current year's non-discretionary accruals. Both these assumptions are unlikely to be valid.

Non-discretionary accruals will be affected by the firm's operational activities and economic circumstances, suggesting that the amount of non-discretionary accruals will be firm- and time-specific. The first attempt to estimate the amount of non-discretionary accruals based on determinants other than simply previous years' total accruals, was proposed by Jones (1991). The logic behind the Jones model is that the non-discretionary portion of total accruals can be predicted by changes in sales and the level of property, plant and equipment. Jones (1991) notes that changes in revenue are likely to be correlated with the portion of total accruals that is caused by changes in working capital accounts such as inventory and accounts payable. The level of property, plant and equipment is included in the model to control for non-discretionary depreciation charges included in total accruals (Jones, 1991). This model was later refined and today exists in many different versions (e.g. Ball & Shivakumar, 2006; Dechow et al., 1995; Francis, Nanda, & Olsson, 2008; Kothari et al., 2005; McNichols, 2002).

The original Jones model implicitly assumes that revenues are non-discretionary. If earnings are managed through discretionary revenues, the model will not be able to detect this as earnings management (Dechow et al., 1995). To alleviate this concern, Dechow et al. (1995) developed the modified Jones model by subtracting changes in receivables from changes in revenues, assuming that changes in receivables are discretionary. Dechow et al. (1995) find that this modified version of the Jones model outperforms the original Jones model in empirical tests. However, both models have relatively low power of detecting earnings management for magnitudes that are economically plausible (Dechow et al., 1995).

For each firm the authors determined a time period assumed to have no earnings management (the estimation period), and a time period believed to be subject to earnings management (the event period). The regression coefficients for changes in revenues and the level of property, plant and equipment are estimated based on observations from the estimation period. These coefficients are then used to estimate non-discretionary accruals in the event period. These predicted values of discretionary accruals are then subtracted from aggregated accruals to form estimates of discretionary accruals.

DeFond and Jiambalvo (1994) introduce a cross-sectional estimation of these models to obtain the estimates of discretionary accruals. A great advantage of the cross-sectional estimation is that it controls for time-and industry trends, and reduces the influence of particular instances of unobservable earnings management on the parameter estimates of non-discretionary accruals (Peasnell, Pope, & Young, 2000). However, these advantages come at the cost of ignoring the fact that firms in a single industry may be structurally different (Owens, Wu, & Zimmerman, 2017; Peasnell et al., 2000).

Peasnell et al. (2000) test the cross-sectional version of the Jones model and modified Jones model, and their findings suggest that the cross-sectional estimation may be more powerful in detecting earnings management. In contrast to Dechow et al. (1995), Peasnell et al. (2000) find that the models work relatively well at detecting earnings management at economically plausible magnitudes.

Cross-sectional estimation has become the standard estimation procedure today (McNichols & Stubben, 2018). Both the time-series version and the cross-sectional version of this model appear to be miss-specified for firms experiencing extreme performance in terms of very high or low earnings or cash flows (Dechow et al., 1995; Kothari et al., 2005; Peasnell et al., 2000). The

estimates of discretionary accruals obtained from these models tend to be abnormally high (low) for firms experiencing very high (low) earnings or cash flows performance, increasing the risk of a type I error, i.e., rejecting the null hypothesis of no earnings management when it is true (Dechow et al., 1995; Peasnell et al., 2000).

To alleviate these concerns, Kothari et al. (2005) suggest controlling for performance by either matching on return on assets (ROA) or adding ROA as an additional variable in the Jones or modified Jones model in those cases where performance is unimportant to the research question studied. The discretionary accrual measures will then capture the additional earnings management above what would be expected given their level of performance (Kothari et al., 2005). Kothari et al. (2005) demonstrate that performance adjusted discretionary accruals are less likely to suffer from type I errors for firms exhibiting unusually high or low performance, compared to discretionary accruals that are not performance adjusted. The model employed by Kothari et al. (2005) is specified below:

$$Accr_{i,t} = \propto_0 + \propto_1 \left(\frac{1}{Assets_{i,t-1}}\right) + \propto_2 \Delta Rev_{i,t} + \propto_3 PPE_{i,t} + \propto_4 ROA_{i,t} + \varepsilon_{i,t}$$

Where $Accr_{i,t}$ indicates total accruals, $\Delta Rev_{i,t}$ is annual changes in revenues less annual changes in receivables. $PPE_{i,t}$ is property, plant and equipment, and $ROA_{i,t}$ is return on assets. All variables are scaled by lagged total assets.

A potential problem with the performance adjusted model is that it might extract too much discretion from the discretionary accruals estimate (i.e., a portion of the discretionary accruals is classified as non-discretionary) when earnings are being managed (Dechow et al., 2010). ROA is a noisy proxy for fundamental performance, especially when earnings are being managed. Income increasing (decreasing) earnings management will increase (decrease) ROA, but will not affect

fundamental performance. This indicates that ROA's ability to reflect fundamental performance decreases with the level of earnings management. The extent of earnings management will then be correlated with both the dependent variable 'total accruals' and our proxy for fundamental performance – the independent variable ROA – so that an increase (decrease) in earnings management will increase (decrease) both total accruals and ROA. This leads to an omitted variable problem, where changes in total accruals are attributed to changes in performance (ROA), but are in reality caused by earnings management. Thus, the model will tend to underestimate the discretionary component of total accruals, leading to low power tests (Dechow et al., 2010).

3.1.2.2. The Dechow and Dichev Model

Dechow and Dichev (2002) develop a new model, frequently called the Dechow and Dichev model or simply the DD model, which uses accrual estimation errors to indicate earnings quality. They recognize that working capital accruals (*WCAccr*) should be realized in operating cash flows (*CFO*) in adjacent periods. These accruals are considered to be of high quality if they are realized in operating cash flows the previous year, the current year or the following year:

$$WCAccr_{i,t} = \alpha_0 + \alpha_1 CFO_{i,t-1} + \alpha_2 CFO_{i,t} + \alpha_3 CFO_{i,t+1} + \varepsilon_{i,t}$$

The original approach was to use the standard deviation of the residuals from this regression as a proxy for earnings quality. A higher standard deviation indicates higher variability in the residuals from year to year, i.e., more variation in the quality of working capital accruals mapping into cash flows. Wysocki (2009) demonstrates that using the standard deviation of the residuals may be problematic since firms that systematically engage in earnings management activities, such as income smoothing for instance, can be classified as having high earnings quality. A firm with a poor mapping of working capital accruals into cash flows will still have a low standard deviation of the residuals as long as the poor mapping is relatively constant over time. Later research has

typically used the absolute value of the residuals instead (e.g. Dou, Hope, Thomas, & Zou, 2018; Hope et al., 2013, 2017)

The original DD model does not separate discretionary from non-discretionary accruals. McNichols (2002) suggests combining the Jones and DD models to get a better calibrated measure of discretionary accruals than what can be obtained using the original Jones model alone. McNichols (2002) proposes the following model for estimating discretionary accruals controlling for the mapping of working capital accruals into cash flows:

$$WCAccr_{i,t} = \alpha_0 + \alpha_1 CFO_{i,t-1} + \alpha_2 CFO_{i,t} + \alpha_3 CFO_{i,t+1} + \alpha_4 \Delta REV_{i,t} + \alpha_5 PPE_{i,t} + \varepsilon_{i,t}$$

The residuals from this regression estimate discretionary (abnormal) working capital accruals.

Positive residuals from aggregated accruals models suggest income increasing discretionary accruals, while negative residuals suggest income decreasing abnormal accruals. The signed residuals are often used as a proxy for earnings management, while the unsigned residuals (i.e., the absolute value) is commonly used as a proxy for earnings quality (Hribar & Nichols, 2007; Owens et al., 2017). A higher value of unsigned residuals suggests more earnings management and lower earnings quality (e.g. Hope et al., 2013; Wang, 2006).

Hribar and Nichols (2007) demonstrate the importance of controlling for firms' operating volatility when using unsigned residuals. In the main test models we use several measures to proxy for the firms' operating volatility such as size (natural logarithm of total assets), growth (percentage change in revenues) and firm age. Younger firms, high-growth firms, and smaller firms are more likely to have more volatile operating environments (Hribar & Nichols, 2007).

The reported earnings figure is intended to reflect economic performance, but true economic performance is hard to measure and for most practical circumstances unobservable. This

makes it challenging to assess the extent to which reported earnings truly depicts economic performance. Since true economic performance is unobservable, the true amount of discretionary accruals will be unobservable as well, and the discretionary accruals proxy derived from these models will be a function of true discretionary accruals and measurement error in the proxy (Dechow et al., 1995; McNichols & Stubben, 2018; McNichols & Wilson, 1988). Consequently, all efforts to detect earnings management are joint tests of earnings management and the ability of earnings management proxies to accurately detect that earnings management (Kothari et al., 2005). The extent to which measurement error in the discretionary accruals proxy is a major concern will vary between studies. McNichols and Stubben (2018) note that this measurement error is of special concern if the error differs between the two groups being studied, or different factors contributing to earnings management differ between the groups, and is not properly controlled for. McNichols and Stubben (2018) suggest minimizing this concern through the use of control variables, propensity score matching, fixed effects and/or exploring exogenous events. This dissertation makes use of these techniques. All test models include control variables as well as industry and year fixed effects.[8] Several papers use propensity score matching as a robustness test and Paper 4 explores an exogenous event.

The discretionary accruals models have received a significant amount of criticism over the years, some of which have led to significant improvements in the models and researchers' test design (e.g., the need to control for performance and operating volatility as discussed above). Jackson (2018) criticizes the fact that the discretionary accruals estimates will be affected by industry peers. The cross-sectional estimation based on industry-years makes the discretionary

[8] Paper 4 also includes firm fixed effects in the robustness test. This is not done in the other papers because the variables of interest in these papers are relatively stable over time, and firm fixed effects requires variation over time in the variable of interest.

accruals estimate an estimate of discretion relative to the industry norm rather than a measure of absolute discretion employed by the firm. However, as McNichols and Stubben (2018) point out, this is not necessarily undesirable, as the incremental level of discretion relative to the industry norm might be an appropriate measure of earnings management in most settings.[9] McNichols and Stubben (2018) suggest that articulating the story (e.g., when, how and why would earnings management occur?) as well as additional cross-sectional tests will improve the validity of the results. This dissertation attempts to follow this advice through the use of additional analyses to test some of the theory and arguments underlying our hypotheses. For instance, in Paper 1 we argue that fully owned family firms will exhibit higher earnings quality than partly owned family firms, partly due to concerns relating to the fear of losing control or to avoid unpleasant questions and inquiries regarding the family's control over the firm. If this is true, we would expect that fully owned and partly owned family firms respond differently to situations with poor performance, as questions and concern regarding family control and influence may emerge in such situations. In additional analysis, we find that partly owned family firms have more positive discretionary accruals (suggesting income increasing earnings management) compared to fully owned family firms when performance is poor. Another example is from Paper 2. Here, we expect that family named family firms are more likely to choose real earnings management over accrual-based earnings management because of higher detection risk of accrual-based earnings management, which we believe is of higher concern in family named family firms. In additional analysis, we examine whether the difference in earnings management between the two groups is conditional on whether or not the firm is being audited by a Big 4 auditor (our proxy for detection risk).

[9] If the researcher is interested in the average level of discretion in an industry, on the other hand, the cross-sectional estimation procedure may wash away the effect (McNichols & Stubben, 2018).

We also use both the performance adjusted modified Jones model and the modified DD model, as described above, in all three papers on aggregated accruals in order to assess the validity of our results. The aggregated accruals models described in this section have been used for decades, and are still used in research published by high-quality journals (e.g. Bonacchi et al., 2019; Che, Hope, & Langli, 2020; Dou et al., 2018; Hope et al., 2017; Hope, Yue, & Zhong, 2019).

3.1.3. Real Earnings Management

Research on real earnings management has become increasingly popular in recent years. The models commonly used today to indicate real earnings management were developed by Roychowdhury (2006). He describes several methods for managers to manage earnings through real activities. First, managers can attempt to increase the level of sales in the current period by offering aggressive price discounts or lenient credit terms (sales manipulation). Second, managers of manufacturing firms can increase production to spread fixed costs over a larger number of units and consequently decrease cost of goods sold (COGS) per unit (overproduction). Third, managers can reduce discretionary expenditures such as research and development costs or advertising costs (discretionary expenditures).

These forms of real activities manipulation will have various effects on the level of operating cash flows (CFO), production costs and discretionary expenses relative to sales. Both sales manipulation and overproduction will increase production costs relative to sales, causing higher abnormal production costs. Reducing discretionary expenditures will reduce the level of discretionary expenditures relative to sales. The effect on abnormal CFO, however, is ambiguous, as all the three manipulation strategies will affect CFO relative to sales, though not necessarily in the same direction. Sales manipulation and overproduction will reduce abnormal CFO, while lowering discretionary expenses will increase abnormal CFO.

Financial reports prepared according to NGAAP (Norwegian Generally Accepted Accounting Principles) do not provide data on discretionary expenditures that are easily accessible, and Roychowdhury (2006) cautions against using abnormal CFO for cross-sectional predictions due to the ambiguous effects of the different real earnings management strategies on CFO. In this dissertation, we measure real earnings management as abnormal production costs. The model for abnormal production costs is presented below:

$$\frac{Prod_t}{Assets_{t-1}} = \beta_0 + \beta_1\left(\frac{1}{Assets_{t-1}}\right) + \beta_2\left(\frac{Sales_t}{Assets_{t-1}}\right) + \beta_3\left(\frac{\Delta Sales_t}{Assets_{t-1}}\right) + \beta_4\left(\frac{\Delta Sales_{t-1}}{Assets_{t-1}}\right) + \varepsilon_t$$

Where $Prod_t$ indicates production costs this period and is equal to the sum of COGS and change in inventory ($COGS_t + \Delta INV_t$), $Sales_t$ is sales this period, $\Delta Sales_t$ is change in sales this period and $\Delta Sales_{t-1}$ is change in sales previous period.

The residuals from this regression measures abnormal production costs. A higher value indicates abnormally high production costs given the level of sales (suggesting either overproduction to decrease COGS and/or sales manipulation) and hence more real earnings management (e.g. Achleitner et al., 2014; Cohen & Zarowin, 2010).

This dissertation uses the models described above to measure earnings quality in three of the papers, which is the outcome variable in the main test regressions (in the last paper the outcome variable is impairment losses/decisions). Most main test models are estimated using OLS, while one of the test models in Paper 2 uses logistic regression (here the outcome variable reflects the choice between real earnings management and accrual-based earnings management).

4. The Dissertation

4.1. Data

All four papers in this dissertation use data from the Center for Corporate Governance Research (CCGR) at BI Norwegian Business School. This center's database contains unique and detailed data on all private limited liability firms in Norway, including, but not limited to, financial accounting data as well as data related to ownership and governance. A special and unique feature of this database is that it contains data on family relationships among the firms' shareholders, board members and CEOs. BI Norwegian Business School has obtained these data from the Norwegian tax authorities, and all data on family relationships are anonymously presented to the users of the database. Family relationships are determined using both marriage and blood line, going back four generations and extending out to third cousins.[10]

The second paper of this dissertation also uses data from PROFF AS, a Norwegian firm providing financial data, such as accounting and credit data, on Norwegian firms. The main purpose of this paper is to investigate earnings quality in a private firm setting where there are strong family ties with the firm. To investigate this, we use a dummy variable signaling whether or not the family name is included in the firm name. This variable was constructed based on the family name of the shareholders, the board members and the CEO of each firm, in addition to the firm name. This information was provided by PROFF AS, and a data architect at BI Norwegian Business School matched this variable with data from the CCGR database.

[10] BI Center for Corporate Governance Research, with Professor Øyvind Bøhren, has granted access to the CCGR data.

4.2. Presentation of Papers

4.2.1. Paper 1

This paper investigates how earnings quality is associated with ownership structures in private family firms.[11] Extant research on earnings quality in family firms mainly compares family firms with non-family firms, and Prencipe, Bar-Yosef, and Dekker (2014) call for more research to assess differences in earnings quality among family firms. We focus on the association between ownership structures and earnings quality. Specifically, we examine the size of family ownership, the role of the second largest shareholder and the number of family owners. We use discretionary accruals as our proxy for earnings management, indicating earnings quality, where lower discretionary accruals are interpreted as higher earnings quality. Specifically, we use the absolute values of the residuals from the DD model, as modified by McNichols (2002), in our main tests, as well as the performance adjusted Jones model, as developed by Kothari et al. (2005), in robustness tests.

We hypothesize and find that family firms fully owned by the family have higher earnings quality compared to family firms partly owned by the family. Agency theory suggests that concentrated ownership may cause agency conflicts between the controlling and non-controlling owners. When family ownership is high, the family may exploit non-controlling owners and use firm resources to benefit family members (e.g., tunneling), causing incentives to manage earnings to cover up such activities. When the firm is fully owned by the family, there are no minority non-family owners, and agency conflicts and earnings management incentives are probably lower. SEW theory predicts that perceived threats to the controlling family's continued control may induce earnings management behavior in family firms (e.g. Berrone et al., 2012; Gomez-Mejia et al.,

[11] Private firms with more than 50% ownership are classified as private family firms.

2014). Any threats to family control, or unpleasant questions regarding the family's continued control, are likely higher when there are minority non-family owners present. Thus, SEW theory suggests less earnings management and higher earnings quality in fully owned family firms as well.

The second largest shareholder, whether family member or not, may monitor the largest shareholder and reduce earnings management. The incentives and ability for the second largest shareholder to monitor the largest shareholder will likely increase as the ownership stake of the second largest shareholder increases (Hope, 2013). We hypothesize and find a positive association between the second largest shareholder and earnings quality.

We hypothesize that the number of family owners is negatively associated with earnings quality. Intra-familial conflicts may increase as the number of family owners increases, thus increasing the potential for agency conflicts and incentives to manage earnings. Our findings suggest a negative association between the number of family owners and earnings quality in our main tests. However, we fail to find any significant association in robustness tests using either the performance adjusted Jones model, restricting the sample to multiple family owners, or in a subsample of larger firms. Thus, this finding should be interpreted with caution.

4.2.2. Paper 2

The second paper examines how family identity and reputational concerns are associated with earnings management in private family firms. SEW theory predicts that family members who identify strongly with the family firm are more sensitive to reputational concerns (Berrone et al., 2012), and more likely to choose an earnings management strategy with lower detection risk (Gomez-Mejia et al., 2014).

Family firms with the family name included in the firm name are probably more sensitive to reputational concerns (Deephouse & Jaskiewicz, 2013), and we use this family name congruence

as our proxy for family identity. We hypothesize and find that family named family firms exhibit less accrual-based earnings management, and are more likely to select real earnings management over accrual-based earnings management. Real earnings management are generally believed to have lower detection risk than accrual-based earnings management (e.g. Das, Kyonghee, & Patro, 2011; Kothari et al., 2016; Zang, 2012). We also find that these differences in earnings management strategies between family named and non-family named firms seem to increase as incentives to manage earnings increases (proxied by debt ratio), and when detection risk is higher (proxied by Big4 auditor).

4.2.3. Paper 3

In the third paper we use specific accruals (i.e., impairment losses) to indicate earnings quality. This study examines whether private family firms differ from private non-family firms in reporting impairment losses. Controlling for other economic factors believed to affect the reporting of impairment losses, any additional associations with impairment losses and family firm status (i.e., whether the firm is a family firm or not) may indicate differences in impairment reporting behavior. Drawing on SEW theory, we argue that family firms may be reluctant to report impairment losses – especially large impairment losses – as this may reveal poor performance. This may induce troublesome questions and concerns from stakeholders regarding the family's control over the firm, and potentially harm the family's reputation as well, ultimately resulting in a SEW loss. We hypothesize and find that private family firms are less likely to report impairment losses, and report lower impairment losses, compared to private non-family firms.

Whether or not the controlling family also holds the CEO position and the portion of non-family board members may influence family firms' ability to affect reporting decisions. We hypothesize that family firms with a family CEO are less likely to report impairment losses, and

report lower impairment losses, while non-family board members are positively associated with both the reporting of impairment losses and the reported amount. We do not find strong evidence regarding the relationship between family CEO and impairment losses. We find no significant differences in the likelihood of reporting impairment losses, but we find a negative association between family CEO and the reported figure. However, this negative association is no longer significant when we use tobit regression instead of OLS or when we use an alternative definition of family firms. Regarding non-family board members, our results suggest that the likelihood of reporting impairment losses, and the impairment amount, increases when the ratio of non-family board members increases.

4.2.4. Paper 4

The last paper examines the effect of a negative shock to performance on earnings quality in private firms. Fundamental performance is unobservable and therefore difficult to measure. Existing research has mainly been conducted on public firms and has used proxies that are subject to estimation errors and endogeneity concerns, or without a proper control group (e.g. Balsam et al., 1995; DeFond & Park, 1997). It is not clear that these findings from public firms can be generalized to private firms. Public firms are subject to capital market forces which private firms are not, and this may affect both incentives to manage earnings and the demand for high quality earnings.

This study takes advantage of the exogenous shock in oil prices in 2014 and uses a difference-in-differences approach to investigate the effect of a negative shift in performance on earnings quality. Firms that were not directly affected by the decline in oil prices are used as a control group. We hypothesize and find that the negative shock to performance impairs earnings quality in private firms. This result holds even after controlling for measured performance, suggesting that performance measures derived from accounting numbers do not fully capture

fundamental performance. Additional tests suggest that firms affected by the shock responded by managing earnings upwards, suggesting a desire to reduce the negative effect of reduced performance on earnings quality.

4.3. Overall Contribution and Directions for Future Research

This dissertation contributes to our understanding of earnings quality in private firms and private family firms by examining how various characteristics of private firms relates to their earnings quality. It examines earnings quality in private firms through a series of four papers. Three of these papers are related to topics concerning family firms, while the fourth paper examines whether private firms in general manage earnings in response to a shock in fundamental performance. There is limited research on earnings management incentives and earnings quality in a private firm setting, and some have even questioned the motivation for financial reporting in private firms (Habib et al., 2018). Ownership is typically less dispersed in private firms, making it possible to communicate through private channels to a larger extent (Burghstahler et al., 2006). Prior literature on private firms has to a large extent focused on the demand for financial reporting from debtholders and other stakeholders (e.g. Bigus & Hillebrand, 2017; De Meyere et al., 2018; Ding et al., 2016; Gassen & Fülbier, 2015; Hope et al., 2017; Mafrolla & D'Amico, 2017). Our study contributes to this stream of research by demonstrating that a negative shock to performance increases discretionary accruals for these firms compared to a group of control firms that were not affected by this shock. This suggests that managers of private firms manage earnings to conceal the negative effect of fundamental performance on earnings. This indicates that managers of private firms do have incentives to manage earnings, suggesting that financial reporting has an important role in private firms as well. If there was no motivation for financial reporting in private firms other than to meet the requirements of the authorities, there should be no incentives to manage earnings

and consequently we should not have observed any effect on discretionary accruals for firms affected by a negative shock to performance.

The remaining papers focus on family firms, as these constitute a significant portion of private firms. We document significant differences in earnings quality related to family firm status (whether the firm is a family firm or not), and family firms' opportunities and incentives to manage earnings. These papers contribute to the earnings quality and family business literature by focusing on an unexplored setting (private family firms) and focusing on variations among family firms, as opposed to differences between family and non-family firms. We document less earnings management and higher earnings quality among fully owned family firms, family firms with a large second largest shareholder and family firms more sensitive to reputational concerns. Family members who identify more strongly with the family firm seem to be more likely to select real earnings management over accrual-based earnings management. Findings also suggest that family firms are less likely to report impairment losses and report lower impairment losses than non-family firms. Additional analyses suggest that the reported impairment losses in non-family firms better reflect future economic performance, suggesting a reluctance to report impairment losses among private family firms. This differs from prior evidence from public family firms, suggesting that impairment losses of family firms better reflect economic fundamentals, thus highlighting the importance of studying private family firms in particular, since evidence from public family firms may not reflect the behavior of private family firms (Miller, Breton-Miller, & Lester, 2012). These findings and insights on private family firms' accounting practices may be useful for accounting standard setters when developing accounting policies and standards, creditors when evaluating loan decisions, non-family owners of private family firms and other potential stakeholders.

Future research should further explore relevant aspects of private firms and private family firms, or test whether these results hold in other relevant settings. For instance, we find that family firms are less likely to report impairment losses and report lower impairment losses compared to private non-family firms in a setting with low book-tax conformity. Do these results also hold in a setting were book-tax conformity is high? Or will family firms then report higher impairment losses than non-family firms in an attempt to save taxes?

The heterogeneity of family firms in the private firm segment should be further explored. For instance, what corporate governance mechanisms, other than those explored in this dissertation, will affect the reporting behavior of private family firms? Future research should also explore other settings and economic shocks to test the validity of the results in Paper 4.

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Paper 1: Ownership Structure and Earnings Quality in Private Family Firms

Charlotte Haugland Sundkvist
University of South-Eastern Norway

Limei Che
Peking University, PHBS Business School

Tonny Stenheim
University of South-Eastern Norway

Abstract
This study examines the association between earnings quality and ownership of the controlling family and the second largest owner, and the number of family owners using a unique dataset containing detailed information on family relationships for the whole population of Norwegian private family firms. Results show that, compared to fully owned family firms, earnings quality is lower for family firms that are only partly owned by the controlling family. Moreover, the ownership of the second largest owner is positively associated with earnings quality, and we find some evidence indicating that earnings quality may be negatively associated with the number of family owners, but this finding is less robust.

Key words: earnings quality, ownership structure, private family firms, family ownership, second largest owner, the number of family owners

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1. Introduction

This paper examines the role of family ownership in explaining earnings quality in Norwegian family controlled firms.[12] Earnings quality in family firms is likely to differ from non-family firms due to more concentrated ownership, and due to strong involvement and strong emphasis from family owners on preserving socioemotional wealth (Paiva, Lourenço, & Branco, 2016). Salvato and Moores (2010) argue that the relatively little focus on earnings quality in family firms may have hampered theoretical advancements in both the accounting and the family business literature.

In this study we focus on earnings management as an inverse measure of earnings quality. The literature on family firms has mainly focused on public firms. Why private family firms would engage in earnings management is an important question that still remains unresolved (Stockmans, Lybaert, & Voordeckers, 2010). As worldwide the majority of family firms are private, there are increasing calls for more understanding of private family firms (Chrisman, Sharma, & Taggar, 2007; Miller, Le Breton-Miller, & Lester, 2011). This study responds to the calls and contributes to the literature by investigating the heterogeneity in ownership structure and earnings quality among private family firms.

Norway provides an excellent setting to examine this topic because the unique register data in Norway include all private limited liability firms, all Norwegian limited liability firms are required to issue financial reports, we can trace firm ownership to ultimate owners and we can determine relationships using variables such as kinship, marriage and adoption (Che & Langli, 2015).

[12] Firms with a controlling family owning more than 50% of the shares are classified as private family firms. There are various definitions of (private) family firms. We have used other definitions in robustness tests and the results hold.

The theoretical arguments used to develop the hypotheses on earnings quality and family ownership are rooted in agency theory and socioemotional wealth (SEW) theory.[13] While agency theory is useful to elucidate the agency issues in private family firms, it may only provide a partial explanation of private family dynamics (Howorth, Westhead, & Wright, 2004). Salvato and Moores (2010) argue that agency theory may be insufficient to explain variations in earnings quality observed in family firms, and suggest complementing agency theory with other perspectives. Stockmans et al. (2010) demonstrate that SEW theory grounded in behavioral agency theory (Berrone et al., 2012; Gomez-Mejia, Cruz, Berrone, & De Castro, 2011; Gómez-Mejía et al., 2007) provide a fruitful theoretical underpinning to explain variations in earnings quality in private family firms.

Family owners may engage in earnings management to reduce the risk of non-family owners asking questions about the family's control and influence over the firm – a risk which is especially prominent when earnings are low. Since we investigate private family firms, we take advantage of the fact that in some firms the controlling family holds all the shares (i.e., fully owned). This is unique to the private firm setting and provides us with an excellent opportunity to test whether earnings management incentives in family firms may be related to fear of losing family influence and control, as suggested by SEW theory. When the family firm is fully owned by the controlling family, there are no minority (non-family) owners to ask unpleasant questions about the controlling family's control and influence, or to threaten the family's ultimate power and influence over the firm. This suggests that earnings quality will be higher when the firm is fully owned by the family, compared to family firms partly owned by the controlling family.

[13] The socioemotional wealth (SEW) theory has roots in behavioral agency theory (e.g., Gómez-Mejía, Haynes, Núñez-Nickel, Jacobson, & Moyano-Fuentes, 2007) and is a multidimensional concept (Berrone, Cruz, & Gomez-Mejia, 2012). It includes dimensions such as preserving family influence and control. More details will be provided in Section 2.

Agency theory suggests that concentrated ownership creates incentives for controlling owners to expropriate financial wealth from non-controlling owners (Fama & Jensen, 1983; Morck, Shleifer, & Vishny, 1988; Shleifer & Vishny, 1997).[14] The controlling owners may use earnings management to mislead non-controlling owners to facilitate expropriation or to conceal expropriation. When the firm is fully owned by the controlling family, however, agency conflicts and earnings management incentives are likely to be lower. Thus, both SEW theory and agency theory may serve as theoretical bases for our first hypothesis (H1), suggesting that earnings quality is higher in fully owned than in partly owned family firms.

Our second hypothesis (H2) concerns the role of the second largest shareholder. Hope (2013) argues that there is a positive relationship between the shareholdings of the second largest owner and her willingness and ability to monitor the largest shareholder. Using data on public family firms, Jara Bertin and López Iturriaga (2014) find that there is less earnings management when the ownership of the second and third shareholder increases. The second largest shareholder may play an even more important role in preventing earnings management in private family firms, compared to public family firms, as private firms are not disciplined by the capital market forces. Thus, our second hypothesis (H2) states that the shareholding of the second largest owner is positively associated with earnings quality.

The third hypothesis investigates whether the number of family owners is associated with earnings quality. More family members may result in more internal conflicts, which provides incentives to supply less information and hence lowers earnings quality (Paiva et al., 2016;

[14] For instance, DeAngelo and DeAngelo (2000) document that the management team of Time Mirror Company maintained a special dividend for the Chandler family, even though they substantially cut dividends to other shareholders in 1994.

Poutziouris, 2002). We expect that the number of family owners will be negatively related to earnings quality (H3).

Our empirical results support the first hypothesis, suggesting higher earnings quality in firms that are fully family owned. In additional analyses, we find a positive association between poor performance (return on assets; ROA) and positive discretionary accruals, and this association is weaker for fully owned family firms than for partly owned family firms. This may indicate that controlling family owners of partly owned family firms manage earnings upwards to conceal poor performance to a greater extent, possibly due to more threats to family control and influence when performance is poor for partly owned family firms.

In additional analyses we also test whether the association between family ownership and earnings quality is non-linear. For partly owned family firms, agency conflicts increase with family ownership, while threats to family control and influence decrease with the level of family ownership. Hence, relatively high or low family ownership may be negatively related to earnings quality (Jara-Bertin, López-Iturriaga, & López-de-Foronda, 2008).[15] We examine the non-linear relationship between family ownership and earnings quality using cut-offs based on ownership thresholds in the Norwegian Limited Liability Companies Act, which grants different levels of decision-making power when ownership is above 50%, 2/3, and 90%, respectively.[16] Compared to fully owned family firms, earnings quality is lower for family controlled firms with low family ownership (i.e., above 50% but less than 2/3) and high family ownership (i.e., above 90% but less than 100%).

[15] As there is no or less agency conflicts when the controlling family owns 100% of the firm, and the concern of losing control is very low, if not zero; "too high family ownership" means high but less than 100% family ownership.
[16] The details of the different decision-making power related to different ownership thresholds will be discussed in Section 4.7.2.

We find a positive relationship between the second largest ownership and earnings quality. Thus, H2 is also supported. The results from the main test of H3 suggests that the number of family owners is negatively associated with earnings quality. However, when using either an alternative earnings quality measure or restricting the sample to firms with more than one family owner, we find no association between the number of family owners and earnings quality. Moreover, when we split the sample in two, based on firm size, we find no association between the number of family owners and earnings quality for larger firms. Thus, the main results for the number of family owners should be interpreted with caution.

This paper adds several contributions to the literature. To the best of our knowledge, this study is the first to examine the relationship between earnings quality and the ownership of the controlling family and the second largest owner in a setting of private family firms. Most studies have focused on either public family firms or compared family firms to non-family firms. While the distinction between family and non-family firms is important for understanding the different forms of organizations, an approach similar to the ones above implicitly assumes that family firms are homogeneous. This paper, however, explicitly studies the heterogeneity among these firms. In addition, the majority of firms worldwide are private, which emphasizes the importance of investigating private firms.

Secondly, as ownership structure is an important governance mechanism, which could affect incentives for financial reporting, the investigation of how earnings quality might vary with ownership in private family firms sheds new insights on the accounting practices in private family firms. These findings might be useful for regulators making accounting policy decisions, for creditors making loan decisions and for owners.

Thirdly, while most studies in private family firms use a small sample, e.g., Stockmans et al. (2010) obtain 896 responses out of the 8,367 questionnaires distributed, this paper uses a unique and extensive dataset that covers the whole population of private family firms in Norway.

The rest of the paper proceeds as follows. Section 2 outlines the literature and hypotheses development and Section 3 describes the research design and descriptive statistics. Main results, robustness tests and additional analyses are presented in section 4 and Section 5 concludes.

2. Literature, Theories and Hypotheses Development

2.1 Literature

The literature investigating earnings quality in family firms has mainly focused on public family firms and the differences between family and non-family firms (in terms of both public and private firms). A number of studies have examined earnings quality using data on public family firms. Yang (2010) investigates firms listed on the Taiwan Stock Exchange and finds evidence suggesting that more insider ownership (i.e., the fraction of shares owned by executive and non-executive directors, top managers and large shareholders) is associated with more earnings management in family firms. Pazzaglia, Mengoli, and Sapienza (2013) show that firms acquired by families in a market transaction have lower earnings quality than family firms that are founded or inherited by the family owners. Using data on Italian listed firms, Prencipe, Bar-Yosef, Mazzola, and Pozza (2011) document that family controlled firms, where both the CEO and board chairman are members of the controlling family, are less likely to smooth earnings compared to other family controlled firms.

As family firms have certain unique organizational characteristics, researchers have often contrasted family firms with non-family firms. The literature that compares earnings quality between family and non-family firms does not provide conclusive findings. On the one hand, the majority of studies conclude that family firms have higher earnings quality than non-family firms

(Ali, Chen, & Radhakrishnan, 2007; Cascino, Pugliese, Mussolino, & Sansone, 2010; Chen, Chen, & Cheng, 2014; Chen, Chen, & Cheng, 2008; Jiraporn & DaDalt, 2009; Prencipe et al., 2011; Tong, 2007; Wang, 2006). On the other hand, some studies find family control to be associated with lower earnings quality (Achleitner, Günther, Kaserer, & Siciliano, 2014; Ho & Shun Wong, 2001; Kvaal, Langli, & Abdolmohammadi, 2012; Prencipe, Markarian, & Pozza, 2008; Yang, 2010).

In contrast to previous research on *public* family firms, Kvaal et al. (2012) compare earnings quality between *private* family and non-family firms. They find that private family firms are more likely to manage earnings downwards than non-family firms (e.g., to reduce dividend payments). However, when leverage is high, private family firms are more likely to manage earnings upwards than private non-family firms. This suggests that family controlled private firms may manage earnings to conceal true performance and avoid debt covenant violations, possibly due to the fear of losing control and influence over the firm.

One study that investigates earnings quality among private family firms is Stockmans et al. (2010). Using a small survey-based sample, they examine the association between earnings management and the firm's generational stage, and whether the firm CEO is a founding CEO, a descendent CEO or a non-family CEO. They find that first-generation family firms (founder-led family firms) perform more income increasing earnings management than firms in the second and third (and later) generation (non-founder-led family firms), conditional on poor firm performance. The authors attribute these findings to lower emphasis on SEW in later generations.

The similarity between Stockmans et al. (2010) and our paper is that both investigate the heterogeneity in earnings quality among private family firms. However, there are several main distinctions. First, we use data from the whole population of private family firms in Norway over a long period, from 2002 to 2015. In contrast, Stockmans et al. (2010) sent out 8,637 questionnaires

and only received 896 responses in total. Second, they examine how earnings quality varies with different generations, the composition of the management team and the CEO position. Our paper focuses on ownership structure and examines how the ownership of the controlling family and the second largest owner, and the number of family owners, are associated with earnings quality. Third, Stockmans et al. (2010) only use SEW theory and focus on upwards earnings management, while we combine agency theory and SEW theory and study both upwards and downwards earnings management.

2.2 Theories

Agency theory has been widely used to explain conflict issues in corporate governance (Jensen & Meckling, 1976). Compared to the extensively studied agency conflicts between the owners and the management (Agency Problem I), main agency conflicts in private family firms are different. These firms generally have more concentrated family ownership, and there is often a stronger alignment effect between the controlling owners and management. The CEO and other top managers often belong to the controlling family and/or the controlling family have stronger incentives and power to monitor management (Ali et al., 2007; Wang, 2006). The conflicts between the controlling family owners and minority non-family owners (Agency Problem II) may result in entrenchment issues, and have become the main concerns of agency conflicts in family firms (Ali et al., 2007; Wang, 2006).

Although agency theory is still important to elucidate the agency issues in private family firms, it is not sufficient to explain the variations in accounting practices observed in family firms (Salvato & Moores, 2010). Moreover, Howorth et al. (2004) argue that agency theory may only provide a partial explanation of private family dynamics. In recent years, SEW theory has gained support in research on family firms (Salvato & Moores, 2010; Stockmans et al., 2010; Stockmans,

Lybaert, & Voordeckers, 2013). Stockmans et al. (2010) illustrate that SEW theory, which is rooted in behavioral agency theory (Berrone et al., 2012; Gomez-Mejia et al., 2011; Gómez-Mejía et al., 2007), provides another perspective for governance issues in private family firms. Similar to agency theory, SEW theory states that family principals can behave opportunistically at the expense of other stakeholders such as non-family shareholders or creditors. An important implication of SEW theory, however, is that family principals are not merely driven by financial gains and benefits, but also by the preservation of socioemotional wealth (Berrone et al., 2012). SEW theory predicts that if SEW goals and financial goals are in conflict, family principals may choose SEW over financial goals (Berrone et al., 2012). This can lead to sub-optimal business decisions taken by family principals to preserve SEW rather than to maximize financial profits, i.e., decisions made at the expense of stakeholders favoring profit maximization.

Socioemotional wealth is a multidimensional concept (Berrone et al., 2012). It includes dimensions such as a strong desire to preserve family control and influence over the firm, strong social ties and emotional attachment, significant identification with the firm, which makes the family members especially sensitive to reputational concern, and a desire to pass down the firm to future generations (Berrone et al., 2012; Gomez-Mejia, Cruz, & Imperatore, 2014). Gomez-Mejia et al. (2014) argue that family firms may favor different dimensions of SEW, and that these dimensions may lead to different reporting strategies. For instance, families that emphasize the "control and influence" aspect of SEW may resort to a reporting strategy which conceals true performance if they believe that their control over the firm is threatened (Gomez-Mejia et al., 2014).

Family owners may differ from non-family owners in several respects. An important attribute of family owners is that they may favor non-financial goals over financial goals, in order to satisfy their socioemotional needs (Gomez-Mejia et al., 2014). This can cause conflicts between

controlling family and non-family owners, or among family owners, especially when some family owners are not members of the same nuclear family.

We argue that the complementarity of agency theory and SEW can provide a more complete theoretical basis when forming predictions about earnings quality in the private family firm segment, and we thus adopt both theories in this study to motivate our hypotheses.

2.3 Hypotheses Development

2.3.1 Family Ownership and Earnings Quality

Private firms with a controlling family holding more than 50% of the shares are classified as private family firms. The controlling family may play a crucial role in terms of earnings quality. Agency theory indicates that family owners have incentives to expropriate wealth from minority non-family owners (Jensen & Meckling, 1976), which could lead to earnings management behavior. As ownership concentration increases, agency conflicts between majority (family) shareholders and minority (non-family) shareholders are likely to increase as well. High family ownership provides the family with significant power and control over the firm, and the opportunity to extract private benefits and manage earnings is likely to be high as well. Family members can use their extensive control to direct firm resources to projects that mainly benefit family members, rather than directing these resources to projects that would maximize firm value (Claessens, Djankov, Fan, & Lang, 2002; Paiva et al., 2016; Stulz, 1988). They may try to conceal this kind of behavior through earnings management. However, when the firm is fully owned by the controlling family, there are no non-family minority owners, and agency conflicts are likely to be lower. Hence, agency theory

suggests that earnings quality is likely to be higher when a firm is fully owned by the controlling family, compared to firms that are partly owned by non-family owners, ceteris paribus.[17]

SEW theory predicts that family owners' behavior can be explained with reference to family members' affective needs as well as financial benefits (e.g. Berrone et al., 2012; Gomez-Mejia et al., 2011; Gomez-Mejia et al., 2014; Gómez-Mejía et al., 2007; Gomez-Mejia, Patel, & Zellweger, 2018). Many family owners are likely to be concerned with maintaining the family's control and influence over the family firm (Cennamo, Berrone, Cruz, & Gomez-Mejia, 2012). If family owners emphasize the "control and influence" aspect of socioemotional wealth, it is important for the family owners to maintain control of the firm, and relinquishing family control would lead to a substantial socioemotional wealth loss for them (Berrone et al., 2012; Gomez-Mejia et al., 2014).

When the family firm is not fully owned by the family, minority non-family owners may raise unpleasant questions regarding the family's control if the firm performs poorly. Minority non-family owners also posit a threat to the family's ultimate control and influence. Certain decisions require more than a simple majority (i.e., more than 50%) to be approved. For instance, minority (non-family) owners can block resolution changes and decisions to merge or demerge when they have more than 1/3 ownership.[18] If minority owners perceive that the controlling family mismanages the firm, they can consequently block any suggestions made by the family. The concern of losing some control and influence, or the concern of questions regarding the family's control, may result in incentives to manage earnings, for instance to cover up poor performance.

Threat to family control and influence is probably higher when family ownership is relatively low and decreases with family ownership. A family firm that is fully owned by a family

[17] This is conditional on the assumption that external conflicts between the controlling family and external stakeholders are more serious than the internal conflicts among family members. It may happen that internal agency costs within the controlling family are also large, which is beyond the scope of this paper.
[18] Cf. The Norwegian Limited Liability Companies Act paragraphs 5-18, 13-3, and 14-6.

(100% family ownership), has fewer incentives to manage earnings. Since there are no minority non-family owners, there is no real threat of losing family control and influence and no threat of unpleasant inquiries or questions from non-family owners. Thus, the above discussion based on SEW theory also suggests that earnings quality is higher when a firm is fully owned by the family.

A counterargument is that there is less demand for high quality earnings when the firm is 100% owned by the family, as information can more easily flow through private channels. This suggests lower earnings quality when the firm is fully owned by the family. Still, all limited liability firms in Norway are obliged to prepare a financial report with financial statements and additional notes (cf. Norwegian Accounting Act paragraphs 1-2, 3-1, and 3-2). All these firms, except for the very smallest, are also required to engage an independent auditor to control their financial report (cf. Act on Auditing and Auditors paragraph 2-1). This suggests that financial reports will hold a certain amount of information of a certain quality, regardless of the demand for that information. Thus, the effect on earnings quality due to fewer earnings management incentives is expected to outweigh the effect of less demand for high quality earnings information. We formulate our first hypothesis as such:

Hypothesis 1 (H1): Private family firms that are fully owned by the family have higher earnings quality than private family firms partly owned by the family.

2.3.2 Earnings Quality and the Ownership of the Second Largest Owner

The second largest owner might perform an alternative corporate governance mechanism through monitoring the largest owner (Che & Zhang, 2016), and may prevent the largest owner from behaving opportunistically (Che & Langli, 2015; Hope, 2013). Hope (2013) argues that the willingness and ability of the second largest shareholder to monitor the largest shareholder increases with her ownership stake.

Jara Bertin and López Iturriaga (2014) show that the contestability to control (i.e., the proportion of shares owned by the second and third shareholder relative to the largest shareholder) reduces earnings management in public family firms. The importance of a second largest shareholder to prevent earnings management can be even more crucial in private family firms, as private firms are not subject to disciplinary capital market forces as public family firms are. Che and Langli (2015) find that the ownership of the second largest shareholder is positively associated with firm performance in private family firms, which indicates that the second largest shareholder may function as an important governance mechanism in these firms.

The presence of a large second largest shareholder may increase the risk of earnings management being detected (Hope, 2013). Because of higher detection risk, the largest shareholder may consider earnings management too risky, since the potential costs of earnings management may be higher than the potential benefits. We expect that the presence of a large second largest shareholder will mitigate earnings management. Based on the discussion above, we propose the following hypothesis:

Hypothesis 2 (H2): The ownership of the second largest shareholder is positively associated with earnings quality in private family firms.

2.3.3 Earnings Quality and the Number of Family Owners

Family owners are not a homogenous group of owners, as they may have conflicting interests, different risk attitudes and divergent preferences of time horizons. Family firms can suffer from family feuding (Paiva et al., 2016; Poutziouris, 2001, 2002). As the number of family owners increases, conflicting goals and interests among these owners may also increase. The presence of more family owners may increase the likelihood that the (familial) relationship among the family owners is more distant. Family members from different nuclear families (e.g., different sibling

branches) can significantly increase the level of family conflicts (Gersick, 1997), which can potentially cause agency conflicts among family owners. Controlling family owners can exploit non-controlling family owners and manage earnings to cover up such activities, which would suggest a negative association between the number of family owners and earnings quality.

At the same time, it can be argued that an increasing number of family owners increases the demand for accounting information as well. When there are few family owners, they are more likely to establish and maintain close relationships, which enable them to use informal channels of communication (Paiva et al., 2016; Poutziouris, 2002). However, it will probably be more challenging to rely on private information channels such as information sharing over a family dinner, when the number of family owners increases. The lack of information efficiency through private channels may increase the demand for information through more formal channels, such as financial reports. An increased demand for high quality accounting information would suggests a positive relationship between the number of family owners and earnings quality. However, the Norwegian institutional setting, with obligated financial reports for all limited liability firms and independent auditor for all but the very smallest limited liability firms, ensures that accounting information holds a certain quality regardless of demand. Thus, it is reasonable to expect that the negative effect of increased conflicts among family owners as the number of family owners increases outweighs any positive effect of increased demand. Based on this discussion, we formulate our third hypothesis as such:

Hypothesis 3 (H3): The number of family owners is negatively associated with earnings quality in private family firms.

3. Research Design and Summary Statistics

3.1 Data

The data are obtained from the Centre for Corporate Governance Research (CCGR) at BI Norwegian Business School. The CCGR database contains financial accounting information on all limited liability companies in Norway. Norwegian limited liability companies are required to prepare and issue a financial report according to Norwegian GAAP (Generally Accepted Accounting Principles), which to some extent is similar to IFRS (International Financial Reporting Standards) for SMEs (Small and Medium sized enterprises). [19][20]

The CCGR database also provides unique data on family relationships between shareholders, board members and CEOs. Data on family relationships are based on marriage and blood lines, going back four generations and extending out to third cousins (Che & Langli, 2015). There are 3 166 838 firm-year observations in the database for the period from 2002 to 2015. We exclude very small firms by requiring a minimum of NOK 1 million in yearly sales (adjusted by consumer price index) for a firm to be included in our sample. After eliminating firms with less than 1 million in sales, public firms, unlimited liability companies, financial firms, firms that are not defined as private family firms and firms with missing values, our final sample consists of 446 514 firm-year observations. Details of the sample selection process is presented in Table 1.

[Insert Table 1 about here]

[19] They may also prepare the financial report according to IFRS (cf. Norwegian Accounting Act paragraph 3-9), but very few do so.

[20] The Norwegian accounting regulation required all limited liability companies to issue audited financial statements up to the year 2011. Effective from May 1, 2011, the smallest limited liability companies were allowed to deselect their auditor (cf. Norwegian Limited Liability Companies Act paragraph 7-6).These firm-years are not included in our sample as they have missing observations for the variable Big4 from 2011 to 2015. However, to make sure this does not affect our results, we rerun the regression from the period 2002–2010 only. Untabulated results show that our results are qualitatively similar.

3.2. Methodology and Variable Measurement

We specify the following regression equation as our main model:

$$(1)\ EarningsQuality_{i,t} = \beta_0 + \beta_1 FO100_{i,t} + \beta_2 2nd\_Largest\_Owner_{i,t} +$$
$$\beta_3 No\_FamilyOwners_{i,t} + \beta_4 LOSS_{i,t} + \beta_5 SIZE_{i,t} + \beta_6 Big4_{i,t} + \beta_7 FamilyCEO_{i,t} +$$
$$\beta_8 FamilyChair_{i,t} + \beta_9 DebtRatio_{i,t} + \beta_{10} GROWTH_{i,t} + \beta_{11} ROA + \beta_{12} FirmAge + \varepsilon_{i,t}$$

The dependent variable, *EarningsQuality*, is measured using the Dechow and Dichev (2002) model (DD model), as modified by McNichols (2002) and as applied by Francis, LaFond, Olsson, and Schipper (2005):

$$(2) WCAccr_{i,t} = \propto_0 + \propto_1 CFO_{i,t-1} + \propto_2 CFO_{i,t} + \propto_3 CFO_{i,t+1} + \propto_4 \Delta Rev_{i,t} + \propto_5 PPE_{i,t} + \varepsilon_{i,t}$$

Where $WCAccr_{i,t}$ is working capital accruals, measured as change in current assets – change in cash – change in short-term debt + change in interest-bearing short-term debt + change in proposed dividends, scaled by lagged total assets. *CFO* is cash flows from operations, measured as net income before extraordinary items – total accruals, scaled by lagged total assets.[21] Total accruals is measured as working capital accruals + depreciation expenses + impairment losses.[22] $\Delta Rev_{i,t}$ is annual change in revenues, scaled by lagged total assets. $PPE_{i,t}$ is property, plant and equipment, scaled by lagged total assets. Consistent with prior literature, we winsorize the variables in this model at the 1st and 99th percentiles (e.g., Francis et al., 2005). This model is estimated for each industry-year with a minimum of 20 observations, and the residuals measure the discretionary working capital accruals.[23] We follow the literature (e.g., Hope, Thomas, & Vyas, 2013) and

[21] A substantial amount of firms in our sample are not required to prepare cash flow statements. Hence, we use the balance sheet approach for calculating total accruals.
[22] Depreciation expenses and impairment losses are reflected in the database as a negative amount.
[23] These regressions are run in a sample of firms with similar economic fundamentals. That is, before we exclude non-family firms and firms with missing observations.

multiply the absolute value of discretionary accruals by -1 to proxy for earnings quality. Hence, higher value of *EarningsQuality* indicates higher earnings quality.

The test variable *FO100* reflects whether the family firms are fully owned by the family or not. Specifically, *FO100* takes the value 1 if family ownership is 100% and 0 if not. The coefficient of this variable, $\beta_{1,}$ is expected to be positive (H1). The ownership of the second largest shareholder (*2nd_Largest_Owner*) is a continuous variable that measures the proportion of shares owned by the second largest owner. The coefficient of *2nd_Largest_Owner*, β_2, is expected to be positive (H2). The number of family owners (*No_FamilyOwners*) is the natural logarithm of the number of owners from the controlling family. This variable tests H3 and we expect the coefficient β_3 to be negative.

We include control variables based on prior research. *LOSS* is a dummy variable that equals 1 if the firm has negative earnings and 0 if not, which accounts for the asymmetric nature of gains and loss recognition incorporated in the accounting system (Ball & Shivakumar, 2006). *SIZE* is measured as the natural logarithm of total assets. Yang (2010) documents that *SIZE* is correlated with discretionary accruals in family firms. *Big4* is a dummy variable that equals 1 if the financial report is audited by one of the Big 4 audit firms and 0 if not. Prior research documents that the use of a Big 4 audit firm is associated with the level of discretionary accruals (e.g. Becker, Defond, Jiambalvo, & Subramanyam, 1998). Previous research on family firms suggests an association between having a family CEO and earnings quality (Kvaal et al., 2012; Stockmans et al., 2010; Yang, 2010). For example, Yang (2010) finds that non-family CEOs have a greater tendency to manage earnings than family CEOs in family firms. We include an indicator variable, *FamilyCEO*, which equals 1 if the CEO is from the largest family and 0 if not. *FamilyChair* is an indicator variable that equals 1 if the chair of the board belongs to the controlling family and 0 if not. Evidence suggests that family influence on the board of directors is associated with earnings quality

(Kvaal et al., 2012; Prencipe et al., 2011; Stockmans et al., 2013). *DebtRatio* is measured as the ratio of total debt to total assets, and is included in the model in order to control for threats to family control posited by debtholders (Gomez-Mejia et al., 2014), and an increased demand for accounting information from debtholders (Hope, Thomas, & Vyas, 2016).

Kvaal et al. (2012) document that growth in sales is correlated with discretionary accruals in private family firms. Thus, we include sales growth, *GROWTH*, which is measured as changes in sales from year *t*–1 to year *t*. Moreover, Stockmans et al. (2010) document a generational effect in private family firms. *ROA* is included as a control because previous studies document an association between performance and the level of discretionary accruals (Dechow, Sloan, & Sweeney, 1995; Kasznik, 1999; Kothari, Leone, & Wasley, 2005; McNichols, 2000). *ROA* is measured as net income in year *t* divided by the average book value of total assets in year *t* and *t*−1. We include *FirmAge*, measured by the natural logarithm of the number of years since a firm's foundation date, to proxy for generational effects (Kvaal et al., 2012). Variable definitions are presented in Appendix. The variables *ROA, SIZE, DebtRatio* and *GROWTH* are winsorized at the 1st and 99th percentiles. We also control for year and industry fixed effects. To adjust for serial correlation and heteroscedasticity, the standard errors are calculated using the Huber-White Sandwich Estimator, clustered at the firm level (Petersen, 2009).

3.3 Summary Statistics

Descriptive statistics, presented in Table 2, panel A and B, show that family ownership in our sample is high. A total of 299 886 firm-year observations are from fully owned family firms, while 146 628 firm-year observations belong to partly owned family firms. The mean value of family ownership in partly owned family firms in our sample is 74%.

[Insert table 2 about here]

Contrary to our expectations, the mean value of *EarningsQuality* is slightly lower in the group of fully owned family firms (mean value: -0.09) than in the group of partly owned family firms (mean value: -0.08). It is important to note, however, that these statistics do not account for any confounding effects, and the remaining descriptive statistics demonstrate that the two groups are different in many respects. Compared to partly owned family firms, the mean value of *2nd_Largest_Owner* is smaller for fully owned family firms (13% for fully owned vs. 25% for partly owned). The average number of family owners is 1.56 in fully owned and 1.94 in partly owned family firms. There are no differences in the mean value of *LOSS*, though there are large differences in size. The mean value of total assets is 9.70 million NOK for fully owned family firms and 17.61 million NOK for partly owned family firms.[24] A total of 19% of fully owned family firms are audited by a Big4 auditor and the corresponding number for partly owned family firms is 24%. Not surprisingly, fully owned family firms are more likely to have a *FamilyCEO* (85% vs. 67%) and *FamilyChair* (92% vs. 73%) than partly owned family firms. Differences in the mean value of other economic variables such as *DebtRatio* (73% vs. 74%) and *GROWTH* (7% vs. 8%) are smaller, and the mean value of *ROA* is 8% for both groups. Fully owned family firms are on average younger (14.57 years) than partly owned family firms (16.28 years). All these differences between fully owned family firms and partly owned family firms demonstrates the importance of controlling for these variables when assessing differences in earnings quality between the two groups.

Panel C of Table 2 reports correlation coefficients among the test and control variables. Looking at the test variables, only the coefficient of *2nd_Largest_Owner* has the expected sign (positive). The correlation between *FO100* and *EarningsQuality* is negative, and the correlation

[24] The average exchange rate between USD and NOK is 1 USD=6.44 NOK, during the sample period 2002 to 2015.

between *No_FamilyOwners* and *EarningsQuality* is positive, contrary to our expectations. However, a correlation matrix does not control for any confounding effects that may interfere with these results. The highest correlation in magnitude is -0.65 between *ROA* and *LOSS*. The rest of the correlations are reasonably low.

4. Results

4.1 Main Results

Our main analysis examines the association between earnings quality and the ownership of the controlling family (i.e., fully owned by the family vs. partly owned by the family), the ownership of the second largest shareholder and the number of family owners. We regress earnings quality on test and control variables using the regression equation (1) specified in Section 3.2. Table 3 reports the results.

[Insert table 3 about here]

The coefficient of *FO100* (β_1=0.002, *t*-value=3.68) is positive and significant at the 1% level. This suggests that family firms fully owned by the controlling family have higher earnings quality than family firms that are partly owned by the controlling family, providing support for H1. This is consistent with the notion that earnings management incentives in private family firms are stronger when the firm is only partly owned by the controlling family. Threats to family control and influence are likely to be stronger when the firm is not fully owned by the family, and family owners are likely to be reluctant to relinquishing any control over the firm as this may lead to a socioemotional wealth loss for them (Gomez-Mejia et al., 2014; Stockmans et al., 2010).

The coefficient of *2nd_Largest_Owner* is positive and significant (β_2=0.015, *t*-value=11.27), which suggests that earnings quality in private family firms increases as the ownership of the second largest shareholder increases. This is consistent with the argument that the second largest shareholder can monitor the largest shareholder, and the incentive and ability to do so increases

with her ownership stake (Hope, 2013). It also supplements previous findings in the literature that the ownership of the second largest shareholder is positively associated with firm performance in private family firms (Che & Langli, 2015), and that the contest to the control is negatively associated with earnings management in public family firms (Jara Bertin & López Iturriaga, 2014). This result supports H2.[25]

No_FamilyOwners is negative and significant (β_3=-0.002, *t*-value=-4.59), suggesting that earnings quality decreases with the number of family owners, and supports H3. A higher number of family owners can increase agency conflicts among family owners, and thus incentives to manage earnings.

Most of the control variables have significant coefficients. The coefficient of *LOSS* is negative and significant, suggesting that firm-year observations with negative net income are subject to lower earnings quality than those with positive net income. *SIZE* is positively associated with earnings quality, indicating that earnings quality increases with firm size. Both having a family member as the CEO (*FamilyCEO*) and having a family member as chair of the board (*FamilyChair*) are positively associated with earnings quality. *DebtRatio, GROWTH* and *ROA* are all negatively associated with earnings quality. The positive coefficient of *FirmAge* suggests that earnings quality increases over time, consistent with Stockmans et al. (2010).

[25] We do not know whether the second largest owner is a family member or not, because our data do not provide the identity of the second largest owner. However, we identify non-family second largest owners using a subsample of firms with multiple owners but only one family owner, and family second largest owner using a subsample of firms with multiple owners and 100% family ownership. Untabulated results show that the coefficient of *2nd_Largest_Owner* is positive in both samples, and significant at the 10% level in the subsample of firms where the second largest owner is not a family member as well as significant at the 1% level in the subsample of firms where the second largest owner is a family member.

4.2 Alternative Measurement of Earnings Quality

We test whether our results hold using an alternative measure of earnings quality.[26] Panel A in Table 4 reports the results when we compute earnings quality based on the performance adjusted modified Jones model (Dechow et al., 1995; Jones, 1991; Kothari et al., 2005):[27]

$$(3)\ Accr_{i,t} = \propto_0 + \propto_1 \left(\frac{1}{Assets_{i.t-1}}\right) + \propto_2 \Delta Rev_{i,t} + \propto_3 PPE_{i,t} + \propto_4 ROA_{i,t} + \varepsilon_{i,t}$$

Where $Accr_{i,t}$ indicates total accruals, measured as working capital accruals + depreciation expenses + impairment losses, scaled by lagged total assets.[28,29] $\Delta Rev_{i,t}$ is annual change in revenues less annual change in receivables, scaled by lagged total assets. $PPE_{i,t}$ is property, plant and equipment for firm *i* in year *t*, scaled by lagged total assets, and $ROA_{i,t}$ is net income for firm *i* in year *t*, scaled by average total assets. All variables in the performance adjusted Jones model are winsorized at the 1st and 99th percentiles. This model is estimated for each industry-year with a minimum of 20 observations, and the absolute value of the firm-specific residuals, multiplied by -1, are used as our proxy for earnings quality (Hope et al., 2013).

[Insert Table 4 about here]

The coefficients of *FO100* and *2nd_Largest_Owner* are both positive and significant, consistent with the main results, and provide support for H1 and H2. In contrast to the results in Table 3, the

[26] We choose the DD model in the main test rather than the Jones model because of the strong theoretical underpinning between cash flows from operations and working capital accruals in the DD model (i.e., the mapping of accruals into cash flows), which are lacking in the Jones model. The Jones model has been heavily criticized for this lack of theoretical underpinning and accused of being arbitrary in separating between normal and abnormal accruals (e.g., McNichols, 2002).

[27] We run these regressions in a sample of firms with similar economic fundamentals (i.e. before we exclude non-family firms and firms with missing observations).

[28] Depreciation expenses and impairment losses are reflected as a negative amount in the database.

[29] We calculate total accruals using the balance sheet approach as a substantial amount of firms in our sample are not required to prepare cash flow statements.

coefficient of *No_FamilyOwners* is not significant, and we do not get support for H3 when earnings quality is measured using the performance adjusted modified Jones model. This suggests that the support for H3 in the main analysis (Table 3) should be interpreted with caution.

4.3 Alternative Definition of Family Firms

There is no single definition of family firms agreed upon in the literature (Prencipe, Bar-Yosef, & Dekker, 2014). Several previous accounting studies rely on a definition based on either the percentage of family ownership, or a family member in top management or on the board of directors (Ali et al., 2007; Cascino et al., 2010; Chen et al., 2014; Chen et al., 2008; Jaggi, Leung, & Gul, 2009; Jiraporn & DaDalt, 2009; Tong, 2007; Wang, 2006). We test whether our results hold when using an alternative definition of family firms (the original definition of family firms was family ownership above 50%). For this purpose, we require a firm to have more than 50% family ownership, and the CEO and at least one board member to belong to the controlling family, to be classified as a family firm. By restricting our sample to these criteria, we get 347 092 firm year observations. Panel B in Table 4 shows that the results from this regression are consistent with the main results in Table 3, indicating that our findings are robust to alternative definition of private family firms.

4.4. Requiring More Than One Family Owner

According to our original definition of family firms (i.e., family ownership is above 50%), a firm that is owned by one single person will be classified as a family firm. In this robustness test, we limit our definition of family firms to include only firms with more than 50% family ownership *and* two or more family owners. There is likely to be more potential for family dynamics, relationships and possibly intra-familial conflicts in the firm if there are several family owners present. Table 4, panel C reports the results from this regression. The coefficient of *FO100* and

2nd_Largest_Owner are both positive and significant at the 5% and 1% level, respectively. The coefficient of *No_FamilyOwners* is negative, as in the main test, but not significant at conventional levels with a p-value of 0.129.[30]

4.5 Analyses for Firms of Different Size

We test whether our results are robust to firm size, e.g., both small and large firms, or whether the results are driven by one specific size category. We split the sample into two groups, based on the median value of average total sales.[31] Table 5 reports the regression results for large and small firms based on equation (1). *FO100* is positive and significant at the 5% level in both samples, while *2nd_Largest_Owner* is positive and significant at the 1% level in both samples. These results are qualitatively similar to those for the whole sample, suggesting that the results for both H1 and H2 seem to be quite robust across different size categories. Comparing the two samples in Table 5 we observe that the coefficient of *2nd_Largest_Owner* is more positive and significant for small firms than for large firms, which may suggest that this association is stronger for small firms.

[Insert Table 5 about here]

The coefficient of *No_FamilyOwners* is negative and significant at the 5% level in the subsample of small firms, similar to our main results in Table 3. We do not find a significant association with *No_FamilyOwners* in the subsample of large firms, suggesting that this observed association may be limited to smaller firms only, and is not very robust across size categories.

4.6. Summary of Main Findings and Robustness Tests

To summarize, the analyses show that our main findings for *FO100* and *2nd_Largest_Owner* are robust to different definitions of family firms, alternative measures of earnings quality, and firms

[30] In an untabulated analysis we also tested our results in a subsample of firms with more than one owner (family or not), and the main results hold.
[31] The median value of average total sales is 6.625 million NOK.

of different size. Thus, there seems to be quite robust support for H1 and H2. Regarding H3 and the corresponding variable *No_FamilyOwners*, we find that our main results are robust to an alternative definition of family firms. However, we do not find any significant associations using the performance adjusted modified Jones model as an alternative earnings management measure, restricting our sample to more than one family owner, or in the subsample of larger firms.[32]

4.7. Additional Analyses

4.7.1. Moderating Effects of Firm Performance

In this section, we attempt to test more of the theory underlying H1. In Section 2.3.1. we argue that threats to family control and influence, or unpleasant questions and inquiries regarding family control, may create earnings management incentives when the firm is not fully owned by the family. This is likely to be more prominent when the firm is performing poorly, as poor performance may trigger stakeholders to question the family's ultimate control over the firm. This suggests that family firms that are partly owned by the controlling family are more likely to manage earnings upwards in order to mask true performance when performance is poor, compared to family firms fully owned by the family. We test this by interacting the variable *ROAlow* with *FO100*, where *ROAlow* is a dummy variable that equals 1 if the firm's *ROA* is below the 20th percentile of yearly ROA and 0 if not.[33]

[32] We focus on associations rather than causality in this study. While endogeneity issues can be challenging for many studies, we argue that this is not a big concern for our paper. For example, we do not think a firm's earnings quality can directly affect the ownership structure of the family firm. In private firms, the absence of a liquid market to buy and sell shares makes it hard for owners to adjust the ownership structure to accommodate changed conditions or unanticipated events (Nagar, Petroni, & Wolfenzon, 2011). Ownership structure is therefore to a large extent exogenously determined in private firms (Che & Langli, 2015; Nagar et al., 2011).

[33] We acknowledge *ROA* is a noisy measure of firm performance. For instance, if firms with poor performance manage earnings upwards, this could increase *ROA* so much that the firm is classified in the zero-group (i.e., ROA above th 20th percentile). However, this would be a bias *against* finding the predicted results. Despite its limitations, *ROA* has been used as a measure of performance in previous studies on earnings quality (e.g. Balsam, Haw, & Lilien, 1995; DeFond & Park, 1997).

We then use signed discretionary accruals (*DiscretionaryAccruals*) to test the interaction between *FO100* and poor performance for a sample of firms with positive discretionary accruals only.[34] The reason for using signed discretionary accruals is that, unlike in our main analyses, we now have clear predictions on whether firms will manage earnings upwards or downwards. That is, we predict that firms not fully owned by the controlling family and exhibiting poor performance, will manage earnings upwards to a greater extent to mask true performance. This is consistent with strong earnings management incentives in family firms where the controlling family perceives their future influence and control to be threatened (Gomez-Mejia et al., 2014; Stockmans et al., 2010). Upward earnings management is associated with positive discretionary accruals. Hence, we use positive discretionary accruals when adding the interaction term *FO100*ROAlow* to the main regression, to capture the impact of poor performance on upward earnings management. This regression equation is presented below.

$$(4)\ DiscretionaryAccruals +_{i,t} = \beta_0 + \beta_1 FO100_{i,t} + \beta_2 ROAlow_{i,t} + \beta_3 FO100_{i,t} * ROAlow_{i,t} + \beta_4 2nd\_Largest\_Owner_{i,t} + \beta_5 No\_FamilyOwners_{i,t} + \beta_6 LOSS_{i,t} + \beta_7 SIZE_{i,t} + \beta_8 Big4_{i,t} + \beta_9 FamilyCEO_{i,t} + \beta_{10} FamilyChair_{i,t} + \beta_{11} DebtRatio_{i,t} + \beta_{12} GROWTH_{i,t} + \beta_{13} ROA + \beta_{14} FirmAge + \varepsilon_{i,t}$$

[Insert Table 6 about here]

Table 6, panel A, reports the results from this regression. Note that because higher positive discretionary accruals measures lower earnings quality, positive coefficients indicate negative impact on earnings quality.

[34] *EarningsQuality*=the absolute value of the firm-specific residuals from the DD model, multiplied by -1; *DiscretionaryAccruals*=the value of the firm-specific residuals from the DD model.

The coefficient of *ROAlow*, β_2, is positive and significant, while the coefficient of the interaction term *ROAlow*FO100*, β_3, is negative and significant. Taken together, this suggests that firms that are partly owned by the family (*FO100*=0) have a greater tendency to book more positive discretionary accruals when performing poorly, compared to family firms that are fully owned by the family and performing poorly (*FO100*=1, $\beta_2 + \beta_3 < \beta_2$). This strengthens our results that earnings quality is negatively affected by the fear of losing control and influence in family firms that are not fully owned by the family.

4.7.2. Variations in Family Ownership

In our main analysis, we compare firms that are fully owned by the family with firms that are partly owned by the controlling family (*FO100*). For firms that are partly owned by the controlling family, the ownership of the controlling family spans from more than 50% to less than 100%. This suggests that family ownership has a wide range in partly owned family firms, and earnings management incentives and opportunities to manage earnings are not likely to be constant across the broad group. In this section, we test for variations in earnings quality across firms that are not fully owned by the family.

In Section 2.3.1 we discuss that SEW theory predicts that family owners may have incentives to manage earnings to avoid any threats to family control and influence. This threat is likely to be greater when family ownership is relatively low, e.g., 51%, as minority (non-family) owners have more power and incentives to monitor the family. This suggests that earnings management incentives related to fear of losing family control and influence, or unpleasant questions and inquiries regarding family control, are likely to decrease with family ownership. At the same time, agency conflicts between majority (family) owners and minority (non-family) owners are likely to increase with family ownership. Family owners' opportunity to benefit

themselves at the expense of non-family owners and manage earnings to conceal such activities are likely to increase with family ownership. Thus, earnings management incentives to retain control *decreases* with family ownership, while opportunities to extract private benefits and manage earnings *increases* with family ownership. Taken together, these opposite effects might suggest that the association between family ownership and earnings quality might be non-linear.

As we expect a non-linear relationship between family ownership and earnings quality, we split the family ownership into several intervals inspired by the piecewise linear specification (Morck et al., 1988). While it is difficult to determine the exact kink points, and there may be various ways to do so, we use the cutting points based on the Norwegian Limited Liability Companies Act. Che and Langli (2015) argue that 50%, 2/3, and 90% are reasonable cutting points because Norwegian corporate law grants excessive rights to shareholders to take certain actions at these levels of ownership. The Norwegian Limited Liability Companies Act states that when shareholders have more than 50% of the voting rights at the general meeting, these shareholders have simple majority and can for instance appoint or dismiss the board members (cf. paragraph 5-17).[35] In order to make amendments to the company's statues, shareholders representing 2/3 of both the votes and the shares at the general meeting must vote in favor of the amendment (cf. paragraph 5-18). The same is the case when approving a merger or demerger (cf. paragraphs 3-13 and 14-6). In order to modify the shareholder's rights to dividends, shareholders at the general meeting holding more than 90% of the shares must vote in favor of the amendment (cf. paragraph 5-19). Moreover, shareholders who have more than 90% of the votes and 90% of the shares at the general meeting can force the minority shareholders to sell their remaining shares to the majority

[35] Normally, one share gives the right to cast one vote at the general meeting, which means that an ownership stake above 50% is needed to have simple majority.

shareholders. Equally important, when the minority non-family owners together own less than 10% of the shares, the Norwegian Limited Liability Companies Act grants them less minority protection.[36] Based on the above regulation, we use 50%, 2/3, 90%, and 100% as thresholds of family ownership in this test.

These cutting points are used to investigate earnings quality at various levels of family ownership. More specifically, we define *FO50to67* as 1 if family ownership is larger than 50% and less than 2/3, and 0 if not. *FO67to90* equals 1 if family ownership is equal to or larger than 2/3 and less than 90% and 0 if not. *FO90to99* equals 1 if family ownership is equal to or larger than 90% and less than 100% and 0 if not. *FO100* is 1 if the family firm is fully owned by the controlling family and 0 if not.

We have already demonstrated in our main analysis that earnings quality is highest when the firm is fully owned by the family. Hence, we take the scenario of 100% family ownership (*FO100*) as a benchmark when examining earnings quality related to different levels of family ownership, indicating that *FO100* is not included in the regression. We specify the following regression equation as our additional model:

$$(5)\ EarningsQuality_{i,t} = \beta_0 + \beta_1 FO50to67_{i,t} + \beta_2 FO67to90_{i,t} + \beta_3 FO90to99_{i,t} + \beta_4 2nd\_Largest\_Owner_{i,t} + \beta_5 No\_FamilyOwners_{i,t} + \beta_6 LOSS_{i,t} + \beta_7 SIZE_{i,t} + \beta_8 Big4_{i,t} + \beta_9 FamilyCEO_{i,t} + \beta_{10} FamilyChair_{i,t} + \beta_{11} DebtRatio_{i,t} + \beta_{12} GROWTH_{i,t} + \beta_{13} ROA + \beta_{14} FirmAge + \varepsilon_{i,t}$$

Table 6, panel B, reports the results from this regression. The coefficient of *FO50to67* is negative

[36] For instance, minority owners with less than 10% shares can no longer demand an extraordinary general meeting (cf. paragraph 5-6), a court-ordered investigation (cf. paragraph 5-25), a court-ordered additional auditor (cf. paragraph 7-3), or additional dividends through the court system if the dividends have been unreasonably low (cf. paragraph 8-4).

and significant at the 5% level. This suggests that firms with family ownership between 50% and 2/3 have lower earnings quality than firms with 100% family ownership. Furthermore, the coefficient of *FO90to99* is also negative and significant at the 1% level. This indicates that firms with family ownership above 90% but less than 100% (*FO90to99*) have lower earnings quality than firms with 100% family ownership. This may indicate the existence of an entrenchment effect when family ownership is relatively high. When family ownership exceeds 90%, the Norwegian Limited Liability Companies Act grants less protection to minority (non-family) owners. Thus, the controlling family may have significant opportunities to extract private benefits and manage earnings to conceal improper activities from other stakeholders (Ali et al., 2007; Wang, 2006).

The coefficient of *FO67to90* is positive, but insignificant. Hence, we do not find significant differences in earnings quality of the group of firms with family ownership between 2/3 and 90% (*FO67to90*), compared to firms with 100% family ownership (*FO100*). This may indicate that the intermediary group (*FO67to90*) has relatively less incentives to manage earnings compared to the group with relatively low family ownership *(FO50to67),* and less opportunity to extract private benefits compared to the group with high family ownership *(FO90to99).* The insignificant coefficient of *FO67to90* shows that, for private family firms that have less than 100% family ownership, earnings quality is higher for firms with intermediary levels of family ownership than for firms with lower or higher family ownership.

Taken together, our results suggest a non-linear relationship between family ownership and earnings quality, where firms with relatively low family ownership *(FO50to67)* and firms with relatively high family ownership *(FO90to99)* have lower earnings quality than firms with family ownership in-between *(FO67to90)* and firms with 100% family ownership (*FO100*).

5. Conclusions

This study focuses on private family firms and examines how the heterogeneity in ownership structure is associated with earnings quality using a unique dataset that contains the whole population of private limited liability firms in Norway. More specifically, we investigate the ownership of the controlling family and the second largest owner, respectively, and the number of family owners. As ownership structure is one important mechanism for corporate governance and could affect incentives and power distribution, the investigation on how ownership structure affects accounting earnings would provide new evidence of accounting practices in private family firms.

We employ both agency theory and SEW theory to motivate our hypotheses. The results show that earnings quality is higher for fully owned family firms than for partly owned family firms. Additional analysis indicates that earnings management incentives in partly owned family firms may be related to fear of losing control and influence over the firm, or unpleasant questions regarding family control, when performance is poor. We also find some evidence suggesting that the relationship between family ownership and earnings quality is non-linear, where firms with 100% and intermediate (between 2/3 and 90%) family ownership have relatively higher earnings quality than those with relatively low or high family ownership.

Analyses of the ownership of the second largest owner document that earnings quality increases with the magnitude of the second largest owner's shareholdings. Finally, we find a negative association between the number of family owners and earnings quality, though this finding seems to be less robust and should be interpreted with caution.

Our results may be of use to accounting users entering into transactions with private family firms. This study suggests that accounting users of private family firms may use ownership structure as an indicator of the risk of earnings management and consequently low earnings quality. It may also be of use for regulators and standard setters.

Future research should further explore the relationship between governance mechanisms and earnings quality in private family firms. Given our findings that the earnings quality is significantly lower in partly owned family firms, it might be interesting to explore whether governance structures such as for instance independent board members or a high quality auditor matters more regarding improving earnings quality in partly owned family firms compared to fully owned family firms. Another potential avenue is to further explore whether the association between earnings quality and the second largest shareholders depends on whether the second largest owner is a family member or not. We were not able to identify family relationships with the second largest owner, as this data is not available in the CCGR database.

Appendix. Variable Definitions

Variable	Definition
EarningsQuality	Earnings quality, measured as the absolute values of the residuals from the Dechow and Dichev (2002) model, modified by McNichols (2002), for firm *i* in year *t*, multiplied by -1. More details are provided in Section 3.2.
EarningsQualityJones	Earnings quality, measured as the absolute values of the residuals from the performance adjusted modified Jones model for firm *i* in year *t*, multiplied by -1. More details are provided in Section 4.2.
DiscretionaryAccruals^{+}	Positive discretionary accruals, measured as the value of the residuals from the Dechow and Dichev (2002) model, modified by McNichols (2002), for firm *i* in year *t.*
Family_Ownership	The aggregated fraction of shares held by the largest owning family, calculated using ultimate ownership.
FO50to67	Dummy variable that equals 1 if family ownership is above 50% and less than 2/3, and 0 if not.
FO67to90	Dummy variable that equals 1 if family ownership is at least 2/3 and no more than 90% and 0 if not.
FO90to99	Dummy variable that equals 1 if family ownership more than 90% and less than 100% and 0 if not.
FO100	Dummy variable that equals 1 if family ownership is 100% and 0 if not.
2nd_Largest_Owner	Fraction of shares owned by the second largest shareholder.
No_FamilyOwners	Natural logarithm of the number of owners from the largest owning family (ultimate ownership).
ROAlow	Dummy variable that equals 1 if ROA is below or equal to the 20th percentile, 0 if not.
LOSS	Dummy variable that equals 1 if the firm has negative earnings, 0 if not.
SIZE	Natural logarithm of total assets.
Big4	Dummy variable that equals 1 if the financial statements are audited by one of the Big 4 audit firms, 0 if not.
DebtRatio	The ratio of total debt to total assets.
FamilyCEO	A dummy variable that equals 1 if the CEO is from the largest owning family, 0 if not.
FamilyChair	A dummy variable that equals 1 if the chair of the board belongs to the controlling family, 0 if not.
GROWTH	Change in sales in year *t* $(\frac{Sales_t}{Sales_{t-1}}) - 1$.
ROA	Net income in year *t* divided by the average book value of total assets in year *t* and *t*−1.
Firm Age	Natural logarithm of the number of years since foundation date.

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Tables

Table 1. Sample Selection

Sample Selection	Firm-years
Observations in the CCGR database for the years 2002–2015	3 166 838
Exclusion criteria	
Firms with sales less than 1 million NOK in at least one year	2 118 684
Public firms and unlimited liability firms	130 598
Financial firms	5 543
Non-family firms	243 607
Firms with missing information on family relationships	143 936
Firms with missing information on other variables	77 956
Number of firm-years	**446 514**

Table 2. Summary Statistics

Panel A: Descriptive Statistics for Family Firms Fully Owned by the Family

	N	Mean	SD	p5	p25	p50	p75	p95
EarningsQuality	299 886	-0.09	0.10	-0.27	-0.11	-0.05	-0.02	-0.00
Family_Ownership	299 886	1.00	0.00	1.00	1.00	1.00	1.00	1.00
2nd_Largest_Owner	299 886	0.13	0.19	0.00	0.00	0.00	0.29	0.50
No. of family owners	299 886	1.56	0.91	1.00	1.00	1.00	2.00	4.00
LOSS	299 886	0.22	0.42	0.00	0.00	0.00	0.00	1.00
Total Assets (MNOK)	299 886	9.70	22.63	0.57	1.52	3.35	8.10	36.03
Big4	299 886	0.19	0.39	0.00	0.00	0.00	0.00	1.00
FamilyCEO	299 886	0.85	0.36	0.00	1.00	1.00	1.00	1.00
FamilyChair	299 886	0.92	0.28	0.00	1.00	1.00	1.00	1.00
DebtRatio	299 886	0.73	0.30	0.25	0.55	0.75	0.89	1.17
GROWTH	299 886	0.07	0.26	-0.28	-0.06	0.03	0.14	0.52
ROA	299 886	0.08	0.16	-0.17	0.01	0.07	0.16	0.37
Firm age (years)	299 886	14.57	11.95	3.00	6.00	12.00	19.00	35.00

Panel B: Descriptive Statistics for Family Firms Partly Owned by the Family

	N	Mean	SD	p5	p25	p50	p75	p95
EarningsQuality	146 628	-0.08	0.10	-0.26	-0.10	-0.05	-0.02	-0.00
Family_Ownership	146 628	0.74	0.15	0.51	0.60	0.70	0.88	0.99
2nd_Largest_Owner	146 628	0.25	0.13	0.03	0.15	0.25	0.34	0.48
No. of family owners	146 628	1.94	1.28	1.00	1.00	2.00	3.00	4.00
LOSS	146 628	0.22	0.42	0.00	0.00	0.00	0.00	1.00
Total Assets (MNOK)	146 628	17.61	35.20	0.77	2.27	5.50	15.07	80.71
Big4	146 628	0.24	0.43	0.00	0.00	0.00	0.00	1.00
FamilyCEO	146 628	0.67	0.47	0.00	0.00	1.00	1.00	1.00
FamilyChair	146 628	0.73	0.44	0.00	0.00	1.00	1.00	1.00
DebtRatio	146 628	0.74	0.29	0.29	0.58	0.75	0.88	1.13
GROWTH	146 628	0.08	0.28	-0.29	-0.05	0.04	0.16	0.56
ROA	146 628	0.08	0.16	-0.17	0.01	0.07	0.16	0.35
Firm age (years)	146 628	16.28	13.74	3.00	7.00	13.00	21.00	40.00

Panel C: Pearson's Correlation Matrix

		v1	v2	v3	v4	v5	v6	v7	v8	v9	v10	v11	v12	v13
EarningsQuality	v1	1.00												
FO100	v2	-0.02***	1.00											
2nd_Largest_Owner	v3	0.04***	-0.31***	1.00										
No_FamilyOwners	v4	0.07***	-0.17***	0.55***	1.00									
LOSS	v5	-0.17***	-0.00	-0.01***	-0.01***	1.00								
SIZE	v6	0.23***	-0.18***	0.07***	0.24***	-0.14***	1.00							
Big4	v7	0.04***	-0.06***	0.01***	0.08***	-0.00	0.20***	1.00						
FamilyCEO	v8	-0.01***	0.20***	-0.04***	-0.05***	-0.02***	-0.18***	-0.09***	1.00					
FamilyChair	v9	-0.00***	0.24***	-0.06***	-0.02***	-0.02***	-0.17***	-0.07***	0.15***	1.00				
DebtRatio	v10	-0.26***	-0.01***	0.00***	-0.05***	0.30***	-0.20***	0.00	-0.03***	-0.02***	1.00			
GROWTH	v11	-0.12***	-0.02***	0.00**	-0.01***	-0.18***	0.08***	-0.00	-0.01***	-0.01***	0.02***	1.00		
ROA	v12	-0.01***	0.02***	-0.01***	-0.04***	-0.65***	0.03***	-0.03***	0.04***	0.04***	-0.31***	0.25***	1.00	
FirmAge	v13	0.13***	-0.06***	0.04***	0.14***	-0.04***	0.26***	0.04***	-0.02***	-0.02***	-0.16***	-0.09***	-0.02***	1.00

Panel A and panel B present descriptive statistics: mean (Mean), standard deviation (SD), the 5th, 25th, 50th, 75th and 95th percentiles for firms fully owned by the family and for firms partly owned by the family, respectively. Panel C provides the Pearson's correlation matrix among the test and control variables. The variables are defined in Appendix. * (**) *** indicates significance at the 10 (5) 1 percent levels.

Table 3. Regression Results for Earnings Quality on Test and Control Variables

	EarningsQuality	
	Coefficients	*t-stat.*
FO100	0.002***	(3.68)
2nd_Largest_Owner	0.015***	(11.27)
No_FamilyOwners	-0.002***	(-4.59)
LOSS	-0.055***	(-91.33)
SIZE	0.013***	(62.09)
Big4	-0.000	(-0.38)
FamilyCEO	0.005***	(9.41)
FamilyChair	0.005***	(9.35)
DebtRatio	-0.079***	(-65.30)
GROWTH	-0.043***	(-50.14)
ROA	-0.125***	(-47.26)
FirmAge	0.003***	(11.75)
Year fixed effects	Yes	
Industry fixed effects	Yes	
Constant	-0.208***	(-55.93)
N	446 514	
Adjusted R^2	0.162	

This table presents the results of regressing *EarningsQuality* on the test and control variables using ordinary least squares (OLS). The variables are defined in Appendix. Fixed effects on year and industry are included. The first column reports the coefficients and the second column reports the *t*-statistics adjusted for within-cluster correlation using the Huber-White Sandwich Estimator. * (**) *** indicates significance at the 10 (5) 1 percent levels using two-tailed tests.

Table 4. Regression Results Using an Alternative Earnings Quality Measure, Alternative Definition of Family Firms, and a Subsample of Firms Requiring More than One Family Owner

	Panel A Alternative Earnings Quality Measure *EarningsQualityJones*		**Panel B Alternative Definition of Family Firms** *EarningsQuality*		**Panel C More than One Family Owner** *EarningsQuality*	
	Coefficients	*t-stat.*	*Coefficients*	*t-stat.*	*Coefficients*	*t-stat.*
FO100	0.002***	(2.96)	0.002***	(3.87)	0.001**	(2.09)
2nd_Largest_Owner	0.017***	(8.66)	0.015***	(10.20)	0.011***	(4.57)
No_FamilyOwners	-0.001	(-0.98)	-0.003***	(-4.67)	-0.001	(-1.52)
LOSS	-0.031***	(-39.12)	-0.056***	(-83.73)	-0.052***	(-57.97)
SIZE	0.009***	(29.86)	0.014***	(55.63)	0.011***	(38.03)
Big4	-0.003***	(-4.25)	0.000	(0.29)	-0.002***	(-2.86)
FamilyCEO	0.012***	(15.48)			0.004***	(6.11)
FamilyChair	0.005***	(5.74)	0.003***	(4.44)	0.003***	(4.02)
DebtRatio	-0.083***	(-63.70)	-0.079***	(-59.02)	-0.070***	(-38.22)
GROWTH	-0.066***	(-53.55)	-0.042***	(-44.19)	-0.038***	(-29.00)
ROA	-0.157***	(-56.64)	-0.135***	(-45.65)	-0.124***	(-28.92)
FirmAge	0.008***	(20.77)	0.003***	(10.15)	0.002***	(4.65)
Year fixed effects	Yes		Yes		Yes	
Industry fixed effects	Yes		Yes		Yes	
Constant	-0.221***	(-39.34)	-0.211***	(-49.37)	-0.180***	(-34.05)
N	446 514		347 092		182 410	
Adjusted R^2	0.089		0.164		0.153	

This table presents the results of regressing *EarningsQuality* on the test and control variables using alternative *EarningsQuality* measure (panel A), alternative definition of family firms (panel B) and in a subsample of firms with more than one family owner (panel C), using the ordinary least squares (OLS) model. The variables are defined in Appendix. Panel A reports the coefficients and *t*-statistics when the dependent variable (earnings quality) is measured by *EarningsQualityJones*. Panel B reports the coefficients and *t*-statistics using an alternative definition of family firms. Panel C reports the coefficients and *t*-statistics for a subsample of firms with two or more family owners. All regressions control for year and industry fixed effects. The *t*-values are adjusted for within-cluster correlation using the Huber-White Sandwich Estimator. * (**) *** indicates significance at the 10 (5) 1 percent levels using two-tailed tests.

Table 5. Regression Results for Subsamples of Firms Based on Size

	Large Firms *EarningsQuality*		**Small Firms** *EarningsQuality*	
	Coefficients	*t-stat.*	*Coefficients*	*t-stat.*
FO100	0.001**	(2.16)	0.002**	(2.20)
2nd_Largest_Owner	0.009***	(5.62)	0.018***	(8.49)
No_FamilyOwners	-0.001	(-1.37)	-0.002**	(-2.42)
LOSS	-0.052***	(-65.67)	-0.057***	(-64.97)
SIZE	0.008***	(30.76)	0.019***	(41.11)
Big4	0.001	(1.27)	-0.001	(-1.44)
FamilyCEO	0.005***	(8.57)	0.003***	(3.75)
FamilyChair	0.003***	(4.14)	0.008***	(7.11)
DebtRatio	-0.063***	(-38.00)	-0.085***	(-53.76)
GROWTH	-0.042***	(-38.21)	-0.045***	(-33.68)
ROA	-0.110***	(-29.41)	-0.136***	(-37.23)
FirmAge	0.004***	(12.73)	0.003***	(6.47)
Year fixed effects	Yes		Yes	
Industry fixed effects	Yes		Yes	
Constant	-0.149***	(-29.90)	-0.291***	(-38.46)
N	223 257		223 257	
Adjusted R^2	0.134		0.175	

This table presents the results of regressing *EarningsQuality* on the test and control variables in subsamples based on size (measured by sales) using the ordinary least squares (OLS) model. The variables are defined in Appendix. The first two columns report the coefficients and *t*-statistics for the subsample of firms with total average sales above or equal to the median value. The last two columns report the coefficients and *t*-statistics for the subsample of firms with total average sales below the median value. All regressions control for year and industry fixed effects. The *t*-values are adjusted for within-cluster correlation using the Huber-White Sandwich Estimator. * (**) *** indicates significance at the 10 (5) 1 percent levels using two-tailed tests.

Table 6. Regression Results when Taking into Account Moderating Effects of Firm Performance and for Several Family Ownership Categories

	Panel A Moderating Effects of Firm Performance *DiscretionaryAccruals+*		**Panel B Variations in Family Ownership** *EarningsQuality*	
	Coefficients	*t-stat.*	*Coefficients*	*t-stat.*
FO100	0.001**	(2.43)		
ROAlow	0.044***	(25.19)		
*FO100*ROAlow*	-0.012***	(-6.61)		
FO50to67			-0.001**	(-2.10)
FO67to90			-0.001	(-1.03)
FO90to99			-0.004***	(-5.58)
2nd_Largest_Owner	-0.017***	(-10.76)	0.014***	(10.59)
No_FamilyOwners	0.003***	(5.42)	-0.002***	(-4.04)
LOSS	0.030***	(29.66)	-0.055***	(-91.27)
SIZE	-0.007***	(-30.35)	0.013***	(62.16)
Big4	0.001	(1.28)	-0.000	(-0.37)
FamilyCEO	-0.005***	(-7.72)	0.005***	(9.54)
FamilyChair	-0.007***	(-10.48)	0.005***	(9.50)
DebtRatio	0.043***	(31.76)	-0.079***	(-65.31)
GROWTH	0.007***	(5.47)	-0.043***	(-50.15)
ROA	0.429***	(116.49)	-0.125***	(-47.26)
FirmAge	-0.005***	(-15.95)	0.003***	(11.88)
Year fixed effects	Yes		Yes	
Industry fixed effects	Yes		Yes	
Constant	0.133***	(29.74)	-0.206***	(-56.26)
N	224 326		446 514	
adj. R2	0.314		0.162	

This table presents the results from additional analyses. Panel A presents the results (coefficients and corresponding *t*-statistics) from regressing positive discretionary accruals (*DiscretionaryAccruals+*) on test and control variables as described in Section 4.7.1 (equation (4)). Panel B presents the results (coefficients and corresponding *t*-statistics) from regressing *EarningsQuality* on test and control variables as described in Section 4.7.2 (equation (5)). The variables are defined in Appendix. All regressions control for year and industry fixed effects. The *t*-values are adjusted for within-cluster correlation using the Huber-White Sandwich Estimator. * (**) *** indicates significance at the 10 (5) 1 percent levels using two-tailed tests.

Paper 2: Does Family Identity Matter for Earnings Management? Evidence from Private Family Firms

Charlotte Haugland Sundkvist
University of South-Eastern Norway

Tonny Stenheim
University of South-Eastern Norway

Abstract

This study examines the role of family identity and reputational concerns in private family firms. Socioemotional wealth theory predicts that family owners' identification with the firm may affect their reporting decisions and earnings management strategies (Gomez-Mejia, Cruz, & Imperatore, 2014). We use whether or not the family name is included in the firm name as a proxy for family members' identification with the family firm and sensitivity to reputational concerns. Our results show that accrual-based earnings management is lower for family firms with the family name included in the firm name (family named family firms). Moreover, our findings also indicate that family named family firms are more likely to select real earnings management over accrual-based earnings management, compared to non-family named family firms.

Key words: private family firms, family identity, real earnings management, accrual-based earnings management, family name congruence

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1. Introduction

This paper examines whether family members' identification with the family firm and sensitivity to reputational concerns impact their earnings management strategies. Agency theory has long been a dominant theory explaining earnings management behavior and strategies (e.g. Watts & Zimmerman, 1978, 1986, 1990). In recent years, however, socioemotional wealth (SEW) theory has emerged as an alternative theory explaining earnings management behavior in family firms (e.g. Achleitner, Günther, Kaserer, & Siciliano, 2014; Berrone, Cruz, & Gomez-Mejia, 2012; Gomez-Mejia et al., 2014; Paiva, Lourenço, & Branco, 2016; Pazzaglia, Mengoli, & Sapienza, 2013; Salvato & Moores, 2010; Stockmans, Lybaert, & Voordeckers, 2010).

One of the important predictions of SEW theory is that family owners might be willing to make actions that increase their socioemotional wealth at the expense of financial wealth (Berrone et al., 2012; Berrone, Cruz, Gomez-Mejia, & Larraza-Kintana, 2010; Gomez-Mejia et al., 2014; Gómez-Mejía, Haynes, Núñez-Nickel, Jacobson, & Moyano-Fuentes, 2007; Martin, Campbell, & Gomez-Mejia, 2016). This paper draws upon the theoretical framework developed by Gomez-Mejia et al. (2014) and investigates whether family owners are more inclined to make earnings management decisions that favor their socioemotional wealth over their financial wealth in a setting of private family firms. Private firms with a controlling family owning more than 50% of the shares are classified as private family firms.

Earnings management can be viewed as a gamble which family owners are willing to take if they expect some net gains. When assessing this gamble, family owners do not just consider potential financial wealth effects, but also the effects on socioemotional wealth, and weigh potential losses against potential gains (Gomez-Mejia, Patel, & Zellweger, 2018; Gomez–Mejia et al., 2014; Martin, 2016). Family owners may place different emphasis on financial vs. socioemotional output, and on the dimensions of socioemotional wealth (e.g.,

family control vs. family identity), causing earnings management behavior to vary among family firms (Gomez-Mejia et al., 2014).

Existing earnings management literature using SEW theory has generally focused on different motivations for accrual-based earnings management, not real earnings management. Real earnings management has direct cash flow effects, while accrual-based earnings management may not. Real earnings management, however, has the advantage of lower detection risk (Das, Kyonghee, & Patro, 2011; Gomez-Mejia et al., 2014; Zang, 2012). Family members who identify strongly with the firm are likely to be more sensitive to reputational costs (Gomez-Mejia et al., 2014; Pazzaglia et al., 2013). Such family firms may be more inclined to engage in real earnings management than accrual-based earnings management due to lower detection risk for real earnings management (Gomez-Mejia et al., 2014).

We argue that family name congruence is an appropriate measure to proxy for family firm identification. When the firm's name includes the family name, family members will identify more with the firm and be more motivated to pursue a favorable reputation than when the family name is not part of the firm's name (Deephouse & Jaskiewicz, 2013). We use this proxy and examine whether family named family firms have lower levels of accrual-based earnings management, and are more likely to select real earnings management over accrual-based earnings management, compared to non-family named family firms.

We use data from private family firms, which is a group of firms largely ignored in the family business earnings management literature (Paiva et al., 2016).[1] The percentage of shares owned by the controlling family is generally higher in private firms compared to public firms, indicating that both personal attachment to the firm and discretionary power over the firm are higher in private firms (Berrone et al., 2012). This makes private firms a suitable setting to test some of the implications of SEW theory (Salvato & Moores, 2010). We use a unique and rich

[1] Some notable exceptions are Stockmans et al. (2010) and Stockmans, Lybaert, and Voordeckers (2013), who use data from private Flemish firms.

dataset from private firms, containing the whole population of private firms in Norway for a long time period. Family relationships are determined through blood lines, marriage and adoption (going back four generations and extending to third cousins).

Our results confirm that family firm identification (proxied by family name congruence) is associated with earnings management behavior. Specifically, we hypothesize and find that family firms with the family name included in the firm name exhibit lower accrual-based earnings management compared to family firms where the family name is not part of the firm name. Moreover, family-named firms are more likely to have low accrual-based earnings management combined with high real earnings management, compared to non-family-named firms.

Our results are robust to alternative measures of abnormal accruals and alternative classifications of real vs. accrual-based earnings management. We also employ a propensity score matched sample and use an alternative approach to test the trade-off between real and accrual-based earnings management in robustness tests, and the results hold. We also find that the propensity for family named family firms to select real earnings management over accrual-based earnings, compared to non-family named family firms, increases as incentives to manage earnings (proxied by increasing debt ratio) increase and when detection risk is high (proxied by the firm being audited by one of the Big 4 auditing firms).

We make multiple contributions to the literature. First, we contribute to the growing stream of research testing predictions from SEW theory, by demonstrating that family owners' emphasis on socioemotional wealth goals vs. financial goals vary across family firms, and that some family owners are willing to engage in earnings management decisions that may favor socioemotional wealth over financial wealth. Second, we add to the earnings management and family business literature by demonstrating that family firm identity and reputational concerns are associated with both the level of accrual-based earnings management and the choice of real

vs. accrual-based earnings management. To the best of our knowledge, this is the first study to document that earnings management behavior varies with family name congruence. Third, we also contribute to the general family business literature by demonstrating that family name congruence may be a valid construct and possibly a good proxy for family firm identity and reputational concerns, thus adding validity to a construct previously used in other areas in the family business literature (e.g. Deephouse & Jaskiewicz, 2013; Kashmiri & Mahajan, 2010; Rousseau, Kellermanns, Zellweger, & Beck, 2018). Fourth, we contribute to the literature on private family firms by using data on private firms. There is limited research on earnings management behavior in private family firms, even though most family firms are private (Chrisman, Sharma, & Taggar, 2007; Miller, Le Breton-Miller, & Lester, 2011; Paiva et al., 2016).

The remainder of this paper is structured as follows. Section 2 outlines the literature review and hypotheses development, Section 3 describes the data and research design and Section 4 presents the main results, robustness tests and additional analyses. Finally, Section 5 provides a discussion of the research findings and conclusion.

2. Literature Review and Hypotheses

2.1. Family Name and Accrual-Based Earnings Management

A favorable reputation can be a valuable economic resource (Rindova, Williamson, Petkova, & Sever, 2005; Sageder, Mitter, & Feldbauer-Durstmüller, 2018). Prior literature suggests that a good reputation can ensure customer loyalty, provide higher profit margins, attract more qualified employees and provide greater access to capital and financial resources (Fombrun & Shanley, 1990; Sageder et al., 2018; Yang, 2010). Given these benefits of good reputation, firms should in general be motivated to pursue a favorable reputation and be sensitive to reputational damages. Socioemotional wealth theory predicts that family firms may have even stronger

motivations to pursue and preserve a favorable reputation than mere financial gains (e.g. Berrone et al., 2012; Gomez-Mejia et al., 2014; Martin et al., 2016; Sageder et al., 2018).

According to SEW theory, family owners strive to preserve and enhance their socioemotional wealth. This wealth provides non-financial forms of utility such as pleasure derived from family control and influence over the business, family identity, dynastic succession and emotional ties (e.g. Berrone et al., 2012; Dyer & Whetten, 2006; Gómez-Mejía et al., 2007; Gomez–Mejia et al., 2014). For family members who identify strongly with the firm, it is important to protect and maintain a favorable reputation, as this is an important socioemotional wealth goal (Berrone et al., 2010; Dyer & Whetten, 2006; Gomez-Mejia et al., 2014; Zellweger, Nason, Nordqvist, & Brush, 2013). When the family members identify strongly with the firm, the firm can be seen as an extension of the family itself and the family members become especially prone to reputational concerns (Berrone et al., 2012).

According to SEW theory, sensitivity to reputational costs may prevent family members who identify strongly with the firm from engaging in earnings management, especially accrual-based earnings management (Gomez-Mejia et al., 2014; Pazzaglia et al., 2013). Such family members may view earnings management as too costly, since there is a risk that earnings management will be detected. Accrual-based earnings management is managing earnings through accruals, and if this earnings management behavior is uncovered, it could lead to substantial socioemotional wealth loss for them. The reputation of the firm could be hurt, for instance through bad press and talk in the community. As these family owners identify so strongly with the family firm, the reputational damage would affect them personally and lead to a socioemotional wealth loss for them. Family members' identification with the firm is likely to vary across family firms, as some family owners may actively seek a strong identification with the firm while others may not (Rousseau et al., 2018; Sundaramurthy & Kreiner, 2008).

Measuring family firm identity using archival data is challenging. Pazzaglia et al. (2013) find that public family firms acquired through a market transaction exhibit lower earnings quality (higher accrual-based earnings management) than public family firms that are founded by the family or inherited within the family. They attribute these results to stronger identification with the family firm when it is founded or inherited by the family. However, the acquisition itself is an event that can also influence earnings quality both prior to and after the event. Selling a firm may create incentives to manage earnings in order to increase the purchase price, which will result in lower earnings quality both prior to (caused by manipulating accruals) and after (caused by reversal of manipulated accruals) the transaction is completed. We propose an alternative approach to measure family firm identity to mitigate this concern, namely family name congruence.

Deephouse and Jaskiewicz (2013) argue that having the family name included in the firm name is an indicator of family essence that can explain variations and heterogeneity among family firms. Family members are likely to identify more strongly with the firm if the firm carries the family name (Prencipe, Bar-Yosef, & Dekker, 2014). Early research in this field suggests that an important non-financial objective of family firms is to develop and maintain a positive view of the family name in public (de Vries, 1993).

Family name congruence indicates the family members' identification with the firm, their motivation to pursue a favorable reputation and hence their sensitivity to reputational damage. It is likely one of the most effective ways to signal the strong linkage between the family and the firm to both family members as well as external stakeholder (Deephouse & Jaskiewicz, 2013; Rousseau et al., 2018). Family and firm name congruence render the boundaries between family, firm and individual owners less distinctive, and it becomes more visible to the public and external stakeholders that the firm is owned by the family (Kashmiri & Mahajan, 2010; Rousseau et al., 2018; Zellweger et al., 2013).

Prior research suggests that family name congruence may be an appropriate measure of family member's identification with the firm. More specifically, Deephouse and Jaskiewicz (2013) find a positive association between family name congruence and corporate reputation, and Kashmiri and Mahajan (2014) find that family named firms are more likely to have a history of fewer product-related weaknesses compared to firms that are not family named, suggesting higher product quality to protect their reputation. Kashmiri and Mahajan (2010) find differences in strategic behavior between family named and non-family named firms. They also find evidence suggesting that family named firms perform better than non-family named firms. Finally, Rousseau et al. (2018) find that family name congruence negatively interacts with relationship conflicts and affects subjective firm valuations in family firms. Taken together, this suggests that family name congruence might be an appropriate measure of family members' identification with the firm. Hence, in this study we adopt family name congruence as our measure of family members' identification with the firm.

Based on the discussion above, we expect that family firms with the family name included in the firm name will be more sensitive to reputational costs and identify more strongly with the firms, which in turn will prevent them from engaging in accrual-based earnings management due to the fear that this reporting strategy will be detected. Formally stated:

Hypothesis 1 (H1): Family named family firms have lower levels of accrual-based earnings management than non-family named family firms.

2.2. Family Name, Accrual-Based Earnings Management and Real Earnings Management

Earnings can be managed through real activities manipulation (i.e., real earnings management) as well as through reporting decisions (i.e., accrual-based earnings management). Real earnings management is real actions taken to improve short-term earnings, but with a negative impact on long term cash flows (Cohen & Zarowin, 2010; Graham, Harvey, & Rajgopal, 2005; Kothari,

Mizik, & Roychowdhury, 2016; Roychowdhury, 2006). Since family owners typically have a long investment horizon and a substantial amount of their personal wealth tied to the family firm, the negative cash flow consequences of real earnings management might affect them heavily (Achleitner et al., 2014).

Examples of real earnings management include accelerating the timing of sales by offering generous price discounts or credit terms, decreasing the cost of goods sold by increasing production or decreasing discretionary expenses such as R&D expenses, SG&A expenses or advertising expenses (Cohen & Zarowin, 2010; Graham et al., 2005; Kothari et al., 2016; Roychowdhury, 2006). Research on real earnings management in family firms is scarce, with a notable exception of Achleitner et al. (2014) who document that family firms are less likely to engage in real earnings management compared to non-family firms. They attribute this finding to the long term orientation of family firms which make them more subject to the negative future impact of real earnings management.

Real earnings management is likely to vary across family firms just like accrual-based earnings management does. However, it is not given that family firm characteristics associated with high accrual-based earnings management are associated with high real earnings management as well. On the contrary, Gomez-Mejia et al. (2014) argue that certain types of family firms may select one of the earnings management strategies over the other. Recent refinements to SEW theory have tried to take into account how socioemotional and financial wealth may work in tandem, by viewing strategic decisions as a mixed gamble with potential for both losses and gains, though with an uncertain outcome (Gomez-Mejia et al., 2018; Gomez–Mejia et al., 2014; Kotlar, Signori, De Massis, & Vismara, 2018; Martin, 2016). Family firms do not only consider the potential for financial gains and losses when evaluating a risky decision, but also the potential losses and gains of SEW (Gomez–Mejia et al., 2014). Thus, family owners consider the trade-off between socioemotional and financial wealth, and the

optimal trade-off may vary among family firms, indicating that some firms may value socioemotional wealth higher than financial wealth, or vice versa (Gomez–Mejia et al., 2014). This suggests that some family owners may be willing to sacrifice financial wealth in order to preserve or enhance socioemotional wealth.

Family members with the family name included in the firm name are likely to be sensitive to reputational costs and identify strongly with the firm (Deephouse & Jaskiewicz, 2013; Kashmiri & Mahajan, 2010, 2014; Rousseau et al., 2018). Accusations of earnings management would probably lead to a substantial socioemotional wealth loss for them. Real earnings management probably has a lower detection risk compared to accrual-based earnings management (Das et al., 2011; Kothari et al., 2016; Zang, 2012), hence such family members are more likely to choose real earnings management over accrual-based earnings management if they manage earnings (Gomez-Mejia et al., 2014). This suggests that family members who identify strongly with the firm are willing to forego financial gains to protect their socioemotional wealth. Zang (2012) finds that managers' trade off real earnings management and accrual-based earnings management based on their relative costs. Accrual-based earnings management is likely more costly for family members who identify strongly with the firm since they are more sensitive to reputational concerns (Gomez-Mejia et al., 2014).

Based on this discussion, we propose the following hypothesis:

Hypothesis 2 (H2): Family firms are more likely to engage in real earnings management than accrual-based earnings management when the family name is included in the firm name.

3. Research Design and Summary Statistics

3.1. Data

We use data from Norwegian private limited liability companies. All limited liability companies in Norway are required to prepare and issue a financial report in accordance with Norwegian GAAP (Generally Accepted Accounting Principles) (cf. Norwegian Accounting Act paragraph 1-2)[2]. External auditing is mandatory for all but the very smallest limited liability companies (cf. Act on Auditing and Auditors paragraph 2-1).[3]

We obtain most of our data from the CCGR database at the BI Norwegian Business School. The CCGR database contains financial accounting information on all limited liability companies in Norway, and provides unique data on family relationships between shareholders, board members and CEOs. Family relationships are determined through blood lines, adoption, and marriage. It traces family relationships back four generations and extends out to third cousins (Che & Langli, 2015).

Name of the shareholders, CEOs, and board members are provided by PROFF Forvalt.[4] These data, together with firm name, are used to construct the test variable *SameName*. This variable is then matched with the data from the CCGR database. The data from PROFF Forvalt had to be ordered separately, and as the price of this order would increase with the size of the sample, we decided to limit the sample by excluding the smallest firms, as this would also mitigate concerns that our results would be influenced by very small firms with low economic significance (e.g. Che & Langli, 2015). Thus, we require a minimum of 3.5 million NOK[5]

[2] Norwegian GAAP is to some extent similar to IFRS (International Financial Reporting Standards) for SMEs (small and medium sized enterprises). They may also prepare the financial report according to IFRS (cf. paragraph 3-9), but not many do so.
[3] The smallest limited liability companies were allowed to deselect their auditor, effective from May 1, 2011 (cf. Norwegian Limited Liability Companies Act paragraph 7-6). These firm-years will not be included in our sample as they have missing observations for the variable Big4.
[4] PROFF Forvalt is a Norwegian database containing financial and non-financial information on Norwegian firms. PROFF AS gather information on shareholders, CEOs and board members from Brønnøysundregistrene, a Norwegian government agency that is responsible for a number of public registers
[5] This equals approximately EUR 321 000 (1 EUR=10.89 NOK, as of 08.10.2019).

yearly sales (adjusted by the consumer price index) to be included in our sample. There are 3 166 838 firm-year observations in the CCGR database for the period 2002 to 2015. After eliminating firms with less than 3.5 million NOK yearly sales, public firms, unlimited liability firms, financial firms, non-family firms[6], and firms with missing information on family relationships and other test variables, our final sample consists of 209 041 firm-year observations from 28 535 unique firms. Table 1 presents the details of the sample selection process.

[Insert table 1 about here]

3.2. Variable Measurement and Methodology

We specify the following regression equation as our main model to test H1:

$$(1)\ AccrEM_{i,t} = \beta_0 + \beta_1 SameName_{i,t} + \beta_2 FamilyOwnership_{i,t} + \beta_3 2nd\_Largest\_Owner_{i,t} + \beta_4 LOSS_{i,t} + \beta_5 SIZE_{i,t} + \beta_6 Big4_{i,t} + \beta_7 FamilyCEO_{i,t} + \beta_8 FamilyChair_{i,t} + \beta_9 DebtRatio_{i,t} + \beta_{10} GROWTH_{i,t} + \beta_{11} ROA_{i,t} + \beta_{12} FirmAge_{i,t} + \varepsilon_{i,t}$$

Our dependent variable, *AccrEM*, is measured as abnormal accruals using the Dechow and Dichev (2002) model (DD model), modified by McNichols (2002), and as applied by Francis, LaFond, Olsson, and Schipper (2005)[7]:

$$(2)\ WCAccr_{i,t} = \propto_0 + \propto_1 CFO_{i,t-1} + \propto_2 CFO_{i,t} + \propto_3 CFO_{i,t+1} + \propto_4 \Delta Rev_{i,t} + \propto_5 PPE_{i,t} + \varepsilon_{i,t}$$

Where $WCAccr_{i,t}$ is working capital accruals, measured as change in current assets – change in cash – change in short-term debt + change in interest-bearing short-term debt + change in proposed dividends, scaled by lagged total assets. *CFO* is cash flows from operations. *CFO* is measured as net income before extraordinary items – total accruals, scaled by lagged total

[6] We include only family controlled firms (i.e., family ownership above 50%) in our sample, in order to be able to test for heterogeneity *among* family firms, as opposed to differences between family and non-family firms.
[7] We run these regressions in a sample of firms with similar economic fundamentals. That is, before we exclude non-family firms and firms with missing observations on other variables than those included in the abnormal accruals model.

assets.[8] Total accruals is measured as working capital accruals + depreciation expenses + impairment losses.[9] $\Delta Rev_{i,t}$ is annual change in revenues, scaled by lagged total assets. $PPE_{i,t}$ is property, plant and equipment for firm *i* in year *t*, scaled by lagged total assets. We estimate this model for each industry-year with a minimum of 20 observations, and use the absolute values of the firm-specific residuals as our proxy for accrual-based earnings management (Hope, Thomas, & Vyas, 2013). We winsorize all variables in this model at the 1st and 99th percentiles (Francis et al., 2005). This model, and variations of this model, has been used in numerous earnings management studies (e.g. Feng, Hope, Qingyuan, & Xin, 2011; Francis et al., 2005; Hope et al., 2013; Hope, Thomas, & Vyas, 2016; Lawson & Wang, 2016).

SameName is our test variable. It reflects whether the firm is family named or not. It is a dummy variable that equals 1 if the family name of any of the shareholders, board members or CEOs is included in the firm name and 0 if not. Specifically, the family name (last name) of each shareholder, board member, and CEO is matched with the firm name, and if the firm name contains the family name (either alone or as part of a longer name) the observation is classified as a family named firm.[10] H1 implies that $\beta_1 < 0$.

We include control variables based on prior research. Several studies document that family ownership is associated with earnings management (Achleitner et al., 2014; Cascino, Pugliese, Mussolino, & Sansone, 2010; Jiraporn & DaDalt, 2009; Tong, 2007; Wang, 2006), hence we include the variable *FamilyOwnership* in our model. *FamilyOwnership* is measured as the percentage of shares owned by the largest owning family. Sundkvist, Che, and Stenheim (2020) find that the ownership stake of the second largest shareholder is associated with

[8] We use the balance sheet approach for calculating total accruals, as a significant number of firms in our sample are not required to prepare cash flow statements.
[9] Depreciation expenses and impairment losses are reflected in the database as a negative amount.
[10] This variable is based on family name and not family relationships, thus we cannot know for sure whether, for instance, the CEO "Hansen", which is a common name in Norway, is a relative of the owner "Hansen". However, since this variable also requires the firm name to include the name "Hansen" we think that misclassification due to common names is a marginal problem.

earnings management in private family firms, thus we add the variable *2nd_Largest_Owner*[11] to our model. *LOSS* is a dummy variable equal to 1 for negative earnings, and zero if not. This variable is meant to account for the asymmetric recognition of gains and losses (Ball & Shivakumar, 2006). *SIZE* is measured as the natural logarithm of total assets. Prior research has documented that *SIZE* is correlated with earnings management in family firms (Yang, 2010).

We control for audit quality by using the variable *Big4*, which is a dummy variable that equals 1 if the financial report is audited by one of the Big 4 audit firms and 0 if not. The use of a Big 4 audit firm has been shown to be negatively associated with the level of earnings management (e.g., Becker, Defond, Jiambalvo, & Subramanyam, 1998; Che, Hope, & Langli, 2020). We include the variable *FamilyCEO*, which is a dummy variable that equals 1 if the CEO is from the largest owning family and 0 if not. Whether or not the CEO is a family member has been shown to be associated with earnings management (e.g. Kvaal, Langli, & Abdolmohammadi, 2012; Stockmans et al., 2010; Yang, 2010). The variable *FamilyChair* is a dummy variable that equals 1 if the family member of the largest owning family is the chairman of board and 0 if not. This variable is included because prior research suggests an association between family influence on the board of directors and earnings management (e.g. Kvaal et al., 2012; Prencipe, Bar-Yosef, Mazzola, & Pozza, 2011; Stockmans et al., 2013).

To control for potential threats from debtholders to family control (Gomez-Mejia et al., 2014), and an increased demand for high quality accounting information from external stakeholders (Hope et al., 2016), we include the variable *DebtRatio* in the model. *DebtRatio* is measured as the ratio of total debt to total assets. The variable *GROWTH* is measured as the percentage change in sales from year *t*-1 to year *t*. Sales growth has been shown to be correlated with earnings management in private family firms (Kvaal et al., 2012). We include *ROA* as a

[11] The data from the CCGR database does not allow us to identify whether the second largest owner is a family member or not. Thus, *2nd_Largest_Owner* measures the fraction of shares owned by the second largest owner, regardless of whether the second largest owner is a family member or not.

control variable because several studies document an association between performance and earnings management (Dechow, Sloan, & Sweeney, 1995; Kasznik, 1999; Kothari, Leone, & Wasley, 2005; McNichols, 2000). *ROA* is measured as net income in year *t* divided by the average book value of total assets in year *t* and *t*−1. Finally, to proxy for generational effects, we include *FirmAge* in our model (Kvaal et al., 2012; Stockmans et al., 2010). *FirmAge* is measured as the natural logarithm of the number of years since a firm's foundation year. We specify the following regression equation as our main model to test H2:

$$(3)\ RelREM_{i,t} = \beta_0 + \beta_1 SameName_{i,t} + \beta_2 FamilyOwnership_{i,t} +$$
$$\beta_3 2nd\_Largest\_Owner_{i,t} + \beta_4 LOSS_{i,t} + \beta_5 SIZE_{i,t} + \beta_6 Big4_{i,t} + \beta_7 FamilyCEO_{i,t} +$$
$$\beta_8 FamilyChair_{i,t} + \beta_9 DebtRatio_{i,t} + \beta_{10} GROWTH_{i,t} + \beta_{11} ROA_{i,t} + \beta_{12} FirmAge_{i,t} + \varepsilon_{i,t}$$

This is a logistic regression model. H2 implies that $\beta_1 > 0$.

$Relrem_{i,t}$ reflects the relative importance of real earnings management compared to accrual-based earnings management. It is a dummy variable that takes the value 1 if real earnings management (REM) is high and accrual-based earnings management (AEM) is low, and 0 if real earnings management (REM) is low and accrual-based earnings management (AEM) is high. More specifically, $RelREM_{i,t}$ takes the value 1 if the firm-specific signed residual from equation (4) (i.e., REM) is above the 75th percentile of each industry-year and the firm-specific signed residual from equation (2) (i.e., AEM) is between the 25th and 75th percentile (i.e., values close to zero representing low levels of AEM) of each industry-year. It takes the value 0 if the firm-specific signed residual of equation (2) (i.e., AEM) is above the 75th percentile of each industry-year and the firm-specific signed residual of equation (4) (i.e., REM) is below the 75th percentile and above the 25th percentile (i.e., values close to zero representing low levels of REM) of each industry-year.[12]

[12] As with the regressions for abnormal accruals and abnormal production costs, these percentile values are calculated for a sample of firms with similar economic fundamentals (before we exclude non-family firms and

We focus on signed residuals in this test for the following reasons. First, REM has typically been used as a signed measure in previous research (e.g. Achleitner et al., 2014; Cohen, Dey, & Lys, 2008; Cohen & Zarowin, 2010; Dou, Hope, Thomas, & Zou, 2018; Roychowdhury, 2006; Zang, 2012). Using signed residuals for AEM as well makes the two measures comparable. Second, by focusing on the highest values of the signed measure, we focus on income increasing earnings management, which is likely associated with more reputational costs than an accusation of being "too conservative" (i.e., income decreasing earnings management). Third, Chen, Hribar, and Melessa (2018) caution against using signed residuals, though this criticism is mostly relevant when the residual measures are not transformed in any way. Consequently, in H1 we transform using absolute values, in H2 we transform by calculating RelREM and in robustness tests (see Section 4.5) we focus on positive residuals only.

Accrual-based earnings management is measured using residuals from the DD model described in our *AccrEM* measure. Real earnings management (*REM*) is measured as abnormal production costs. Firms may increase production to report lower production costs (COGS), resulting in higher earnings (Roychowdhury, 2006). Managers can manage earnings upwards by producing more goods than is necessary to meet expected demand (i.e., overproduction). Higher production will lead to lower fixed costs per unit as fixed costs are now spread over a larger number of units. This will in turn reduce the cost of goods sold (COGS) and increase earnings (Roychowdhury, 2006). Managers can also manage earnings upwards by temporarily increasing sales by offering aggressive price discounts or favorable credit terms that are not sustainable in the long run (i.e., sales manipulation). Overproduction and sales manipulation

firms with missing observations on other variables than those necessary to measure abnormal accruals and abnormal production costs).

will increase production costs relative to sales, resulting in higher abnormal production costs (Roychowdhury, 2006).

The model for abnormal production costs focuses on both COGS and inventory. The model predicts the normal level of COGS using current period sales, and normal inventory growth using growth in sales in the current period and in the previous period. As production costs are defined as the sum of COGS and growth in sales, the normal level of production cost is predicted in the model by current period sales and growth in sales in the current period and in the previous period (Roychowdhury, 2006). Following Roychowdhury (2006), we estimate abnormal production using the following model[13]:

$$(4)\ \frac{Prod_t}{Assets_{t-1}} = \beta_0 + \beta_1\left(\frac{1}{Assets_{t-1}}\right) + \beta_2\left(\frac{Sales_t}{Assets_{t-1}}\right) + \beta_3\left(\frac{\Delta Sales_t}{Assets_{t-1}}\right) + \beta_4\left(\frac{\Delta Sales_{t-1}}{Assets_{t-1}}\right) + \varepsilon_t$$

Where $Prod_t$is production costs this period and is measured as the sum of COGS and change in inventory in period t ($COGS_t$+ ΔINV_t), $Sales_t$ is sales in period t, $\Delta Sales_t$ is change in sales period t and $\Delta Sales_{t-1}$ is change in sales in period t-1.

The residual from this regression is our measure of abnormal production costs. A higher value indicates abnormally high production costs given the level of sales and hence more real earnings management (e.g. Achleitner et al., 2014; Cohen & Zarowin, 2010). As with our *AccrEM* measure, the model for abnormal production costs is estimated for each industry-year with a minimum of 20 observations, and we winsorize all the variables at the 1st and 99th percentiles. This model has been used in multiple studies as a measure of real earnings management (e.g. Achleitner et al., 2014; Cohen & Zarowin, 2010; Roychowdhury, 2006;

[13] This regression is run in a sample of firms with similar economic fundamentals (i.e. before exclusion of non-family firms and firms with missing observations).

Zang, 2012). In the main models (i.e., equation (1) and (3)), we winsorize the variables *ROA*, *SIZE*, *DebtRatio* and *GROWTH* at the 1st and 99th percentiles. We control for year and industry fixed effects in all our regressions, and adjust for serial correlation and heteroscedasticity by calculating the standard errors using the Huber-White Sandwich Estimator, clustered at the firm level (e.g. Che & Langli, 2015; Petersen, 2009).

3.3. Summary Statistics

Table 2 presents summary statistics. Panel A shows descriptive statistics for the subgroups FN-firms (family name included in firm name) and NFN-firms (family name not included in firm name), while panel B presents correlations. A total of 32% of the firms in our sample (N=66 855) have the family name included in the firm name. Descriptive statistics indicate that these firms are on average larger, measured by total assets (18.03 million NOK vs. 17.08 million NOK). They also have a higher frequency of employing a Big 4 auditor (27% vs. 24%), family CEO (81% vs. 75%) and family chairman (85% vs. 81%). On average, family named firms also have lower debt ratio (71% vs. 74%) and *LOSS* (19% vs. 20%), and higher family ownership (92% vs. 89%) and *GROWTH* (7% vs. 6%). Family named firms are on average somewhat older (16.90 years vs. 16.58 years). The mean values of *ROA* and *2nd_Largest_Owner* are similar across the two groups (*ROA*=8% and *2nd_Largest_Owner*=18%). All the differences are statistically significant, suggesting these variables are important control variables. Panel B shows that *SameName* is negatively correlated with *AccrEM* and positively correlated with *RelREM*, providing preliminary support for our first two hypotheses. The correlation between *AccrEM* and *RelREM* is negative due the way these variables are constructed (i.e., *RelREM* takes the value 1 when *AEMres* is close to zero, and when *AEMres* is close to zero *AccrEM* will be low as well). The highest correlation among the independent variables is -0.31, between *Family_Ownership* and *2nd_Largest_Owner*.

[Insert table 2 about here]

4. Results

4.1. Main Results

Table 3, panel A, presents the results from equation (1) testing H1. The coefficient of *SameName* is negative and significant (β_1=-0.002, *t*-value=-4.46), suggesting that *SameName* is negatively associated with accrual-based earnings management. This indicates that there is less accrual-based earnings management in firms with the family name included in the firm name compared to firms without the family name included in the firm name, providing support for H1.

The control variables *LOSS*, *DebtRatio*, *GROWTH* and *ROA* are all positively significant, suggesting a positive association between these variables and *AccrEM*. *FamilyCEO* and *FamilyChair* are both negatively significant, indicating that family firms with a family member as either CEO or chairman of the board have less accrual-based earnings management compared to family firms where these positions are filled by non-family members. *SIZE* is negatively associated with *AccrEM*, suggesting less accrual-based EM in larger firms. The significantly negative coefficient of *FirmAge* suggests that accrual-based earnings management tends to decrease over time. *2nd_Largest_Owner* is also negatively associated with earnings management, suggesting that accrual-based earnings management decreases with the ownership of the second largest shareholder.

[Insert table 3 about here]

Table 3, panel B, presents the result from equation (3), testing H2. The coefficient of *SameName* is positive and significant (β_1=0.210, *z*-value=5.80), suggesting that firms with the family name included in the firm name are more likely to select the combination of high abnormal production costs (real earnings management) and low discretionary accruals (accrual-based earnings management) than the other way around (low abnormal production costs and high discretionary accruals), compared to firms where the family name is not included in the

firm name. This provides support for H2, and suggests that family firms with the family name included in the firm name are more likely to select real earnings management over accrual-based earnings management. Among the control variables, *Big4, FamilyCEO, FamilyChair, DebtRatio* and *GROWTH* are positively associated with *RelREM*. This suggests that family firms are more likely to select real earnings management over accrual-based earnings management if they employ a Big4 auditor, employ a family CEO or chair, or have higher growth prospects. The variables *LOSS, SIZE, ROA* and *FirmAge* are negatively associated with *RelREM*, suggesting that firms reporting losses, larger firms, firms with higher ROA and older firms are less likely to favor real earnings management over accrual-based earnings management. We find no significant association between *RelREM* and *Family_Ownership* and *2nd_Largest_Owner*, respectively.

4.2. Alternative Measure of Earnings Management

In our main test, we measure accrual-based earnings management using abnormal working capital accruals. We test whether our results are robust to an alternative measure of earnings management. For this purpose, we measure *AccrEM-Jones* (accrual-based earnings management) as discretionary accruals measured using the performance adjusted modified Jones (1991) model, as modified by Dechow et al. (1995) and Kothari et al. (2005):[14]

$$(5)\ Accr_{i,t} = \propto_0 + \propto_1 \left(\frac{1}{Assets_{i.t-1}}\right) + \propto_2 \Delta Rev_{i,t} + \propto_3 PPE_{i,t} + \propto_4 ROA_{i,t} + \varepsilon_{i,t}$$

Where $Accr_{i,t}$ indicates total accruals measured as working capital accruals + depreciation expenses + impairment losses.[15] $\Delta Rev_{i,t}$ is annual change in revenues less annual change in receivables, scaled by lagged total assets. $PPE_{i,t}$ is property, plant, and equipment for firm *i* in

[14] We run these regressions before we exclude non-family firms and firms with missing observations, i.e. in a sample of firms with similar economic fundamentals.

[15] Working capital accruals is measured as change in current assets – change in cash – change in short-term debt + change in interest-bearing short-term debt + change in proposed dividends. Depreciation expenses and impairment losses are reflected in the database as a negative amount.

year *t*, scaled by lagged total assets, and $ROA_{i,t}$ is net income for firm *i* in year *t* scaled by average total assets. All variables in this model are winsorized at the 1st and 99th percentiles. As in the main test, this model is also estimated for each industry-year with a minimum of 20 observations. We use the absolute value of the firm-specific residuals as our proxy for accrual-based earnings management (Hope et al., 2013). We also create an alternative *RelREM* variable based on this alternative measure of accrual-based earnings management. *RelREM-Jones* takes the value 1 if abnormal production costs (*REM*) is above the 75th percentile of the sample and the residuals from the performance matched Jones model is between the 25th and 75th percentile value of the sample, and 0 if it is the other way around.

[Insert table 4 about here]

Table 4 reports the results from these regressions. The results are generally in line with the results from the main test, suggesting that our results are robust to an alternative measure of abnormal accruals (AEM). The coefficient of *SameName* is negative and significant in panel A, providing support for H1, and positive and significant in panel B, providing support for H2.

4.3. Different Classification of RelREM

In our original tests of H2, we construct the variable *RelREM* to take the value 1 if real earnings management is high (above the 75th percentile) and accrual-based earnings management is low (between the 25th and 75th percentile), and 0 if it is the other way around (low real earnings management and high accrual-based earnings management). This means that we exclude observations that simultaneously have high values on both accrual-based and real earnings management. The same is true for observations that simultaneously have low values on both accrual-based and real earnings management. This probably provides the cleanest test of H2, though at the cost of losing many observations. In this section, we test whether our results are sensitive to the exclusion of these groups. Table 5 reports the results from these regressions. Panel A presents the results from regressing *RelREM* on test and control variables when firm-

year observations with simultaneously low accrual-based earnings management (AEM) and real earnings management (REM) are included in the model. This means that the variable *RelREM* now takes the value 1 if real earnings management (REM) is high (above the 75th percentile) and accrual-based earnings management (AEM) is relatively low (below the 75th percentile), and 0 if REM is low and AEM is high or both REM and AEM are low. Panel B presents the results when we also include the observations with both high REM and high AEM. The variable *RelREM* now takes the value 1 if REM is high and AEM is low, and the value 0 if not. This means that the zero-group consists of the following three categories: 1) high REM and high AEM, 2) low REM and high AEM, and 3) low REM and low AEM.

[Insert table 5 about here]

Table 5 shows that the main results of H2 still hold, suggesting that firms with the family name included in the firm name are more likely to select the combination of high abnormal production costs (real earnings management) and low discretionary accruals (accrual-based earnings management) than any other combination of earnings management type (high AEM-high REM, high AEM-low REM, low AEM-low REM) compared to firms where the family name is not included in the firm name. This finding strengthens our support for H2.

4.4. Propensity Score Matching

As discussed in Section 3.3, descriptive statistics reveal that the family named family firms differ from the non-family named family firms in our sample on many characteristics. In this robustness test, we attempt to reduce any potential endogeneity bias stemming from different operating and financing structures between the two groups of firms. For this purpose, we employ a propensity score matching technique and match family named family firms with non-family named family firms based on all the control variables in equations (1) and (3), including year and industry fixed effects (e.g. Mark L DeFond, Hung, Li, & Li, 2015). We use a probit model to obtain propensity scores with *SameName* as the outcome variable. The propensity

scores will then reflect the probability of being a family named family firm. Limiting matching to observations with propensity scores that fall within the common support of both groups (Bonacchi, Marra, & Zarowin, 2019), we further use the nearest neighbor matching technique without replacement (Hope, Yue, & Zhong, 2019), i.e., we match each family named family firm to a non-family named family firm with the *p*-score closest in value. The propensity score-matched sample consists of 133 708 firm-year observations for H1 (equation (1)) and 32 296 firm-year observations for H2 (equation (3)).[16] Both samples have equal amounts of family named and non-family named firms.

[Insert table 6 about here]

Table 6 shows that the main results of both H1 and H2 still hold in this propensity score-matched sample.

4.5. Alternative Approach

In this section, we use an alternative approach to test whether family named and non-family named firms differ in their earnings management strategies. In our main analyses, we constructed a dummy variable to reflect high levels of real earnings management combined with low levels of accrual-based earnings management, and vice versa. In this alternative approach, we use accrual-based earnings management and real earnings management in two separate equations (e.g. Achleitner et al., 2014).

$$(6)\ AEMres_{i,t} = \beta_0 + \beta_1 SameName_{i,t} + \beta_2 FamilyOwnership_{i,t} + \beta_3 2nd\_Largest\_Owner_{i,t} + \beta_4 LOSS_{i,t} + \beta_5 SIZE_{i,t} + \beta_6 Big4_{i,t} + \beta_7 FamilyCEO_{i,t} + \beta_8 FamilyChair_{i,t} + \beta_9 DebtRatio_{i,t} + \beta_{10} GROWTH_{i,t} + \beta_{11} ROA_{i,t} + \beta_{12} FirmAge_{i,t} + + \beta_{13} REMres_{i,t} + \varepsilon_{i,t}$$

[16] As in the main test, the sample for equation (3) is smaller than the sample for equation (1). This is because equation (3) is run in a sample where the observations below the 25th percentile of *AEMres* and *REMres* are excluded (indicating income-decreasing earnings management), and firm-year observations with high levels on both *AEMres* and *REMres* or low levels of both *AEMres* and *REMres* are excluded. See Sections 3.2 and 4.3 for further discussion on this matter.

$$(7)\ REMres_{i,t} = \beta_0 + \beta_1 SameName_{i,t} + \beta_2 FamilyOwnership_{i,t} + \beta_3 2nd\_Largest\_Owner_{i,t} + \beta_4 LOSS_{i,t} + \beta_5 SIZE_{i,t} + \beta_6 Big4_{i,t} + \beta_7 FamilyCEO_{i,t} + \beta_8 FamilyChair_{i,t} + \beta_9 DebtRatio_{i,t} + \beta_{10} GROWTH_{i,t} + \beta_{11} ROA_{i,t} + \beta_{12} FirmAge_{i,t} + \varepsilon_{i,t}$$

Where *AEMres* is the residual from equation (2) (i.e., the DD model specified in Section 3.2) and *REMres* is the residual from equation (4) (i.e., abnormal production costs specified in Section 3.2). Following Zang (2012), we identify a sample where earnings management is more likely to occur. We focus on the financing needs for private firms to identify this sample. Debt financing is the most important financing source for private firms (e.g. Gassen & Fülbier, 2015; Hope & Vyas, 2017), and a general finding in positive accounting theory is that a higher debt ratio is associated with more earnings management (e.g. Dichev & Skinner, 2002; Watts & Zimmerman, 1978, 1986, 1990). Thus, to identify a sample of private firms where earnings management is more likely to occur, we focus on a group of firms with stronger incentives to manage earnings, i.e., firms with high debt ratio. More specifically, we run the regression in a sample of firms with debt ratio above the median value of the main sample only.

We choose to use firm-year observations with positive values of the residuals for several reasons. First, real earnings management has generally been used as a signed measure (i.e., the value of the residuals rather than the absolute value of the residuals) (e.g. Achleitner et al., 2014; Cohen et al., 2008; Cohen & Zarowin, 2010; Roychowdhury, 2006; Zang, 2012) and we want the two earnings management measures to be comparable to each other. This suggests the use of the signed value of accrual-based earnings management as well, rather than merely the absolute value. Second, Chen et al. (2018) caution against using the signed value of the residuals from earnings management studies without any form of transformation. This suggests the "transformation" of the variables by focusing on only positive or negative residuals. Third, high debt ratio has typically been linked to incentives to manage earnings upwards (i.e., positive residuals) to avoid debt covenant violations in classical positive accounting research (Mark L.

DeFond & Jiambalvo, 1994; Dichev & Skinner, 2002; Watts & Zimmerman, 1978, 1986, 1990). Consequently, we run regression (6) in a sample of firms with positive *AEMres* only, and regression (7) in a sample of firms with positive *REMres* only. We also control for the level of real earnings management (*REMres*) in equation (6). If *SameName* is negative in regression (6) and positive in regression (7), this provides additional support for H2.

Table 7 presents the results from these regressions. As expected, the coefficient of *SameName* is significantly negatively associated with *AEMres* and significantly positively associated with *REMres.*

[Insert table 7 about here]

4.6. Untabulated Robustness Test

We test H2 using a logistic regression model (equation (3)). We test whether our results are robust to using probit instead. Untabulated results show that our results are robust to the choice of regression model. Our results hold when using a probit model.

4.7. Additional Analyses

In this section, we further test the robustness of our results by attempting to test some of the theory underlying our hypotheses. Specifically, we test whether the tendency for family named family firms to select real earnings management over accrual-based earnings management, compared to non-family named firms, increase as incentives to manage earnings increases (proxied by debt ratio). We also investigate whether this difference in earnings management strategies between family named and non-family named family firms depends on detection risk (proxied by *Big4*).

4.7.1. Incentives to Manage Earnings (Debt Ratio)

The potential gains of managing earnings are not equal in all situations, and thus affect the incentives to manage earnings. As the potential gains of managing earnings increase, the incentives to manage earnings increase as well. Earnings management incentives are often related to financial needs (e.g. Dichev & Skinner, 2002; Watts & Zimmerman, 1978, 1986, 1990). Firms want to get access to capital, preferably low-cost capital, needed to make necessary investments. Bank financing is an important source of financing in private firms (Gassen & Fülbier, 2015; Hope & Vyas, 2017), indicating that bank financing may be an important source of earnings management incentives in private firms. The earnings management literature suggests that firms may have incentives to increase earnings to avoid debt covenant violations or any restrictions associated with debt covenant violations (e.g. Dichev & Skinner, 2002; Watts & Zimmerman, 1978, 1986, 1990).

The difference in earnings management strategy (i.e., real earnings management vs. accrual-based earnings management) will likely be more pronounced as the incentives to manage earnings increase. We test this by interacting the variable *SameName* with debt ratio in equation (3). To make the interpretation of the main effect of *SameName* more informative in this regression, we mean center the variable *DebtRatio* and label it *DebtRatioM*.[17] A positive interaction (*SameName*DebtRatioM*) suggests that the tendency for family named family firms to select real earnings management over accrual-based earnings management compared to non-family named family firms increases with debt ratio.

[Insert table 8 about here]

[17] If we interact *SameName* with *DebtRatio,* the coefficient of *SameName* will reflect the difference between family named and non-family named family firms when *DebtRatio* is zero. None of the sample firms has a debt ratio of zero. Therefore, we mean center *DebtRatio* to make the coefficient of *SameName* more informative. When *DebtRatio* is mean centered (i.e., *DebtRatioM), SameName* reflects the difference between family named and non-family named family firms when *DebtRatio* is at its mean.

Table 8, panel A, presents the results from this test. The interaction term *SameName *DebtRatioM* is positive and statistically significant, as expected. Interpreting interaction effects in logit models is not straightforward, since they are conditional on the independent variables, suggesting they may have different signs and significance for different values of covariates (Ai & Norton, 2003; Norton, Wang, & Ai, 2004). To better understand the interactions, we estimate the average marginal effects.

The average marginal effect of *DebtRatioM* is significantly positive for family named firms (*SameName*=1) with a *z*-value of 5.63 (untabulated). For non-family named firms (*SameName*=0), the average marginal effect of *DebtRatio* is negative, but not statistically significant (*z*-value=-0.98, untabulated). Figure 1 illustrates this graphically. For family named firms, the tendency to favor real earnings management over accrual-based earnings management increases as *DebtRatio* increases. For non-family named firms, however, this tendency slightly decreases, though remains insignificant. Figure 1 clearly demonstrates that the differences between the groups (family named vs. non-family named) increase when *DebtRatioM* increases. The positive incremental effect of *SameName* is statistically significant from *DebtRatioM*=-0.1 upwards (*z*-value of 3.77 at *DebtRatioM*=-0.1, increasing to a *z*-value of 7.92 at *DebtRatioM*=0.4, untabulated). This suggests that as debt ratio increases, family named family firms' tendency to favor real earnings management over accrual-based earnings management, relative to non-family named family firms, increases.

[Insert figure 1 about here]

4.7.2. Detection Risk (Big4)

As discussed in Section 2, family named family firms are expected to favor real earnings management over accrual-based earnings management because real earnings management has a lower detection risk (Gomez-Mejia et al., 2014). Prior literature documents that real earnings management is more likely when firms are subjected to greater scrutiny (Cohen et al., 2008;

Cohen & Zarowin, 2010; Kothari et al., 2016; Zang, 2012). The use of a high quality auditor such as a Big 4 audit firm has been shown to increase audit quality in private firms (Che et al., 2020), and firms that are audited by a high quality auditor have less accrual-based earnings management (Zang, 2012) and more real earnings management (Cohen & Zarowin, 2010). This suggests that the use of a Big 4 audit firm will increase the likelihood of detecting accrual-based earnings management. The detection risk will increase for both family named firms and non-family named firms, but family named firms will likely be more sensitive to this increase in detection risk, and relative to non-family named firms, they will favor real earnings management over accrual-based earnings management even more when detection risk is high. We test this by interacting the variable *SameName* with the variable *Big4*. Table 8, panel B, presents the results from this regression. The coefficient of *SameName*Big4* is positive and highly significant.

[Insert figure 2 about here]

Figure 2 graphs the interaction from the logit model. From this figure we see that family named firms' tendency to favor real earnings management over accrual-based earnings management, relative to non-family named firms, is strong when audited by a Big 4 audit firm. While the difference between the *SameName* group and non-*SameName* groups' choice of earnings management strategy (real vs. accrual-based earnings management) is not statistically significant for family firms with non-Big 4 auditors (untabulated *z*-value of 0.945), the difference between the groups is both statistically significant and economically meaningful for firms which are audited by a Big 4 auditor. For Big 4 audited firms, the difference in probability between family named family firms and non-family named family firms is 13.5 percentage points, and this difference is highly significant with a *z*-value of 11.45 (untabulated).[18]

[18] We have also tested an interaction between *Big4* and *SameName* in the alternative approach regressions in Section 4.5 (untabulated). These tests confirm the findings in the current section. We find a positive interaction between *Big4* and *SameName* in the regression with *REMres* as the outcome variable, and a negative interaction

5. Discussion and Conclusion

This paper examines family owners' earnings management strategies using SEW theory. SEW theory suggests that family members are highly motivated by a wish to preserve and enhance their socioemotional wealth, even at the expense of financial wealth, if necessary (Berrone et al., 2012; Berrone et al., 2010; Gomez-Mejia et al., 2014; Gómez-Mejía et al., 2007; Martin et al., 2016). Family members' emphasis on various elements of socioemotional wealth is likely to vary within the family firm segment, leading to different earnings management strategies among family firms (Gomez-Mejia et al., 2014).

This paper tests this empirically by focusing on a setting where family members are likely to identify strongly with the firm, i.e., when their family name is included in the firm name. Hence, we predict that family name congruence is a source of heterogeneity among family firms' accounting practices. Specifically, we predict and find that family firms with the family name included in the firm name engage in less accrual-based earnings management and thus have higher earnings quality compared to non-family named family firms. Family members who have their family name included in the firm name are more likely to identify strongly with the family firm and to be sensitive to reputational costs (Deephouse & Jaskiewicz, 2013). If family members identify strongly with the firm, they are less likely to manage earnings by manipulating accruals, as it would lead to a substantial socioemotional wealth loss for them if this reporting practice were uncovered (Gomez-Mejia et al., 2014; Pazzaglia et al., 2013).

This paper also goes a step further and tests whether family members' identification with the firm can predict their earnings management strategies in terms of selecting between accrual-based earnings management and real earnings management. Specifically, our second

in the regression with *AEMres* as the outcome variable. This suggests that family named family firms have higher levels of real earnings management and lower levels of accrual-based earnings management compared to non-family named family firms when audited by a Big 4 auditor, compared to when they are not audited by a Big 4 auditor.

hypothesis predicts that family firms are more likely to select real earnings management over accrual-based earnings management if they have their family name included in the firm name. Due to a higher detection risk of accrual-based earnings management compared to real earnings management (Das et al., 2011; Kothari et al., 2016; Zang, 2012), family owners with strong firm identification may be willing to endure the negative effect of real earnings management on financial performance to avoid the potential reputational loss associated with accrual-based earnings management if detected (Gomez-Mejia et al., 2014). Our empirical findings confirm this. Specifically, we are more likely to find the combination of high real earnings management and low accrual-based earnings management in family named firms compared to family firms that are not named after the family.

Additional analysis reveals that the difference in earnings management strategies between family named and non-family named firms increase as incentives to manage earnings increase (proxied by debt ratio). Additional analysis also reveals that when detection risk is higher (proxied by *Big4*), family named firms' propensity to select real earnings management over accrual-based earnings management, relative to non-family firms, is even more pronounced. This supports the theory underlying our hypothesis stating that family named firms favor real earnings management over accrual-based earnings management due to higher detection risk of accrual-based earnings management.

Our study makes several contributions to the literature. First, we contribute to the literature on socioemotional wealth by demonstrating that family name congruence is a source of family firm heterogeneity to the extent that it can even predict variations in earnings management practices. We also contribute to the recent refinements of SEW theory, considering how financial wealth and socioemotional wealth may work in tandem (Gomez-Mejia et al., 2018; Gomez–Mejia et al., 2014; Martin, 2016) by documenting that the optimal trade-off between financial wealth and socioemotional wealth is likely to vary among family firms.

Family owners may be more willing to sacrifice financial wealth in order to protect their socioemotional wealth if they identify strongly with the family firm. Viewing the strategic decisions as a mixed gamble, family members are likely to trade off potential financial wealth and socioemotional wealth, and our findings suggest that family members who identify strongly with the firm are likely to put more weight on the socioemotional wealth aspect vs. the financial aspect while assessing the gamble. Second, our findings contribute to the earnings management literature by demonstrating that family name congruence is associated with both the level of accrual-based earnings management and the choice of real vs. accrual-based earnings management. To the best of our knowledge, these are new findings. Third, we use family name congruence as a proxy for family identity, thus providing further validity for a construct previously used in other family business studies (Kashmiri & Mahajan, 2010, 2014; Rousseau et al., 2018; Zellweger et al., 2013). Finally, we use data from private family firms as opposed to public family firms. Limited research exists on accounting practices in private family firms (Paiva et al., 2016), even though a large proportion of family firms are private and private firms are likely to be a good setting to test the predictions of SEW theory (Salvato & Moores, 2010).

The quality of our findings is of course limited to the extent that our proxy for identification with the firm and reputational concerns (family name included in the firm name) is a good proxy. Even though findings from prior research suggest that family name congruence is a valid proxy for identity and reputational concerns (e.g. Kashmiri & Mahajan, 2010, 2014; Rousseau et al., 2018; Zellweger et al., 2013), future research should attempt to test the validity of these results using alternative proxies for identification with the firm. Further, future research should test whether these findings are generalizable to public family firms.

Appendix. Variable Definitions

Variable	Definition
AccrEM	Accrual-based earnings management, measured as the absolute values of the residuals from the Dechow and Dichev (2002) model, modified by McNichols (2002).
AccrEM-Jones	Earnings quality, measured as the absolute values of the residuals from the performance adjusted modified Jones model.
RelREM	A dummy variable that takes the value 1 if the residuals from the abnormal production costs model *(REM*) is above the 75th percentile of the sample and the residuals from the Dechow and Dichev (2002) model (AEM) is between the 25th and 75th percentile of the sample, and 0 if the residuals from the Dechow and Dichev (2002) model is above the 75th percentile of the sample and the residuals from the abnormal production cost model (REM) is between the 25th and 75th percentile of the sample.
RelREMJones	A dummy variable that takes the value 1 if the residuals from the abnormal production costs model *(REM*) is above the 75th percentile of the sample and the residuals from the performance adjusted modified Jones model (AEM) is between the 25th and the 75th percentile of the sample, and 0 if the residuals from the performance adjusted modified Jones model is above the 75th percentile of the sample and the residuals from the abnormal production cost model (REM) is between the 25th and the 75th percentile of the sample
REMres	Signed real earnings management, measured as the residuals from the abnormal production costs model (Roychowdhury, 2006).
AEMres	Signed accrual-based earnings management, measured as the residuals from the Dechow and Dichev (2002) model, modified by McNichols (2002).
SameName	A dummy variable that takes the value 1 if the family name of one or more of the shareholders, CEO or board members is included in the firm name and 0 if not.
Family_Ownership	The aggregated fraction of shares held by the largest owning family, calculated using ultimate ownership.
2nd_Largest_Owner	Fraction of shares owned by the second largest shareholder.
LOSS	A dummy variable that equals 1 if the firm has negative earnings and 0 if not.
SIZE	Natural logarithm of total assets.
Big4	A dummy variable that equals 1 if the financial statements are audited by one of the Big 4 audit firms and 0 if not.
DebtRatio	The ratio of total debt to total assets.
FamilyCEO	Dummy variable that equals 1 if the CEO is from the largest owning family, 0 if not.
FamilyChair	Dummy variable that equals 1 if the chair of the board belongs to the controlling family and 0 if not.
GROWTH	Change in sales in year *t* $(\frac{Sales_t}{Sales_{t-1}}) - 1$.
ROA	Net income year *t* divided by the average book value of total assets in year *t* and *t*−1.
FirmAge	Natural logarithm of number of years since foundation date.
DebtRatioM	*DebtRatio* minus the mean value of *DebtRatio*

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Tables and Figures

Table 1. Sample Selection

Sample Selection	Firm-years
Observations in the CCGR database for the years 2002–2015	3 166 838
Exclusion criteria	
Firms with sales less than 3.5 million NOK in at least one year	2 601 120
Public firms and unlimited liability firms	59 167
Financial firms	3 007
Non-family firms	141 288
Firms with missing information on family relationships	94 628
Firms with missing information on other variables	58 587
No of firm-years	209 041

Table 2. Summary Statistics

Panel A: Descriptive Statistics for Family Named Firms vs. Non-Family Named Firms

	Mean		Median		Standard Deviation		No. of observations		Difference in mean
	FN-firms	NFN-firms	FN-firms	NFN-firms	FN-firms	NFN-firms	FN-firms	NFN-firms	
AccrEM	0.07	0.08	0.05	0.05	0.08	0.09	66 855	142 186	-0.01***
RelREM	0.55	0.50	1.00	0.00	0.50	0.50	16 149	32 933	0.05***
Family_Ownership	0.92	0.89	1.00	1.00	0.15	0.16	66 855	142 186	0.03***
2nd_Largest_Owner	0.18	0.18	0.17	0.15	0.18	0.18	66 855	142 186	0.004***
ROA	0.08	0.08	0.07	0.07	0.14	0.16	66 855	142 186	-0.001**
LOSS	0.19	0.20	0.00	0.00	0.39	0.40	66 855	142 186	-0.01***
Total Assets (MNOK)	18.03	17.08	6.32	5.63	39.94	38.38	66 855	142 186	0.95***
Big4	0.27	0.24	0.00	0.00	0.44	0.42	66 855	142 186	0.03***
FamilyCEO	0.81	0.75	1.00	1.00	0.39	0.43	66 855	142 186	0.06***
FamilyChair	0.85	0.81	1.00	1.00	0.35	0.39	66 855	142 186	0.04***
DebtRatio	0.71	0.74	0.74	0.77	0.24	0.24	66 855	142 186	0.03***
GROWTH	0.07	0.06	0.04	0.04	0.22	0.22	66 855	142 186	0.01***
Firm age (years)	16.90	16.58	14.00	14.00	12.96	13.14	66 855	142 186	0.32***

Panel B: Pearson's Correlation Matrix

		v1	*v2*	*v3*	*v4*	*v5*	*v6*	*v7*	*v8*	*v9*	*v10*	*v11*	*v12*	*v13*	*v14*
AccrEM	*v1*	1.00													
RelREM	*v2*	-0.57***	1.00												
SameName	*v3*	-0.03***	0.05***	1.00											
Family_Ownership	*v4*	-0.01***	0.03***	0.06***	1.00										
2nd_Largest_Owner	*v5*	-0.03***	-0.03***	0.01***	-0.31***	1.00									
LOSS	*v6*	0.18***	0.19***	-0.02***	0.00	-0.02***	1.00								
SIZE	*v7*	-0.14***	-0.01**	0.04***	-0.10***	0.05***	-0.11***	1.00							
Big4	*v8*	-0.02***	0.06***	0.03***	-0.03***	-0.03***	0.01***	0.16***	1.00						
FamilyCEO	*v9*	-0.02***	0.03***	0.07***	0.21***	-0.02***	-0.03***	-0.19***	-0.09***	1.00					
FamilyChair	*v10*	-0.01***	0.01***	0.05***	0.25***	-0.05***	-0.03***	-0.17***	-0.06***	0.15***	1.00				
DebtRatio	*v11*	0.22***	0.10***	-0.06***	-0.00	-0.03***	0.28***	-0.21***	0.00	-0.03***	-0.01***	1.00			
GROWTH	*v12*	0.11***	-0.01	0.01***	-0.02***	0.00	-0.19***	0.09***	-0.00**	-0.01**	-0.01***	0.04***	1.00		
ROA	*v13*	-0.01***	-0.44***	-0.00*	-0.01***	0.01***	-0.61***	0.03***	-0.03***	0.03***	0.04***	-0.28***	0.25***	1.00	
FirmAge	*v14*	-0.11***	-0.02***	0.01***	-0.01***	0.04***	-0.03***	0.23***	0.00*	-0.01***	-0.03***	-0.20***	-0.08***	-0.02***	1.00

This table reports summary statistics. Panel A presents descriptive statistics: mean, median, standard deviation and the number of observations for the subgroups (1) family name included in firm name, *SameName=1,* and (2) family name not included in firm name, *SameName=0,* for the largest sample used in our tests. It also shows the difference in mean between the groups. Panel B provides the Pearson's correlation matrix among the test and control variables. The variables are defined in Appendix. * (**) *** indicates significance at the 10 (5) 1 percent levels.

Table 3. Regression Results for AccrEM and RelREM on Test and Control Variables

	Panel A ***Hypothesis 1*** *AccrEM*		**Panel B** ***Hypothesis 2*** *RelREM*	
	coefficients	*t-stat*	*coefficients*	*z-stat*
SameName	-0.002***	(-4.46)	0.210***	(5.80)
Family_Ownership	-0.002	(-0.95)	-0.038	(-0.35)
2nd_Largest_Owner	-0.007***	(-4.97)	-0.155	(-1.59)
LOSS	0.051***	(32.58)	-0.342***	(-6.75)
SIZE	-0.008***	(-24.93)	-0.030*	(-1.77)
Big4	-0.001	(-1.09)	0.232***	(6.10)
FamilyCEO	-0.006***	(-8.92)	0.225***	(5.56)
FamilyChair	-0.003***	(-4.39)	0.202***	(4.56)
DebtRatio	0.066***	(36.94)	0.172**	(2.19)
GROWTH	0.046***	(28.11)	1.528***	(25.26)
ROA	0.086***	(10.59)	-12.168***	(-54.96)
FirmAge	-0.004***	(-11.36)	-0.082***	(-3.85)
Year fixed effects	Yes		Yes	
Industry fixed effects	Yes		Yes	
Constant	0.143***	(23.44)	1.335***	(3.96)
N	209 041		49 082	
adj. R2	0.115			
Pseudo R2			0.198	

This table presents the test for H1 and H2. Panel A presents the coefficients and corresponding *t*-statistics of regressing *AccrEM* on the test and control variables using ordinary least squares (OLS), testing H1. Panel B present the coefficients and corresponding *z*-statistics of regressing *RelREM* on test and control variables using logistic regression, testing H2. The variables are defined in Appendix. Fixed effects on year and industry are included. The *t*- and *z*-statistics are adjusted for within-cluster correlation using the Huber-White Sandwich Estimator. * (**) *** indicates significance at the 10 (5) 1 percent levels using two-tailed tests.

Table 4. Regression Results for AccrEM and RelREM on Test and Control Variables Using an Alternative Earnings Management Measure

	Panel A ***Hypothesis 1*** *AccrEM-Jones*		***Panel B*** ***Hypothesis 2*** *RelREM-Jones*	
	Coefficients	*t-stat*	*coefficients*	*z-stat*
SameName	-0.005***	(-5.51)	0.209***	(6.21)
Family_Ownership	-0.001	(-0.20)	0.142	(1.42)
2nd_Largest_Owner	-0.013***	(-5.35)	-0.195**	(-2.19)
LOSS	0.023***	(15.31)	-0.080**	(-2.37)
SIZE	-0.003***	(-6.34)	-0.099***	(-6.33)
Big4	0.002**	(2.06)	0.219***	(6.40)
FamilyCEO	-0.014***	(-11.73)	0.153***	(4.24)
FamilyChair	-0.004***	(-3.17)	0.138***	(3.46)
DebtRatio	0.088***	(38.85)	0.044	(0.67)
GROWTH	0.075***	(29.05)	0.604***	(12.70)
ROA	0.116***	(16.69)	-1.908***	(-14.56)
FirmAge	-0.010***	(-15.80)	-0.154***	(-8.00)
Year fixed effects	Yes		Yes	
Industry fixed effects	Yes		Yes	
Constant	0.128***	(13.31)	1.804***	(5.87)
N	209 041		47 899	
adj. R2	0.060			
Pseudo R2			0.022	

This table presents the tests for H1 and H2 using an alternative measure of accrual-based earnings management (the performance adjusted modified Jones model). Panel A presents the coefficients and corresponding *t*-statistics of regressing *AccrEM-Jones* on the test and control variables using ordinary least squares (OLS), testing H1. Panel B presents the coefficients and corresponding *z*-statistics of regressing *RelREM-Jones* on test and control variables using logistic regression, testing H2. The variables are defined in Appendix. Fixed effects on year and industry are included. The *t*- and *z*-statistics are adjusted for within-cluster correlation using the Huber-White Sandwich Estimator. * (**) *** indicates significance at the 10 (5) 1 percent levels using two-tailed tests.

Table 5. Alternative Classifications of REM and AEM Groups

	Panel A: Low REM/Low AEM Included		**Panel B: Low REM/Low AEM and High REM/High AEM Included**	
	Hypothesis 2		***Hypothesis 2***	
	RelREM		*RelREM*	
	coefficients	*z-stat*	*coefficients*	*z-stat*
SameName	0.175***	(5.49)	0.174***	(5.85)
Family_Ownership	0.092	(0.99)	0.075	(0.86)
2nd_Largest_Owner	-0.350***	(-4.16)	-0.304***	(-3.86)
LOSS	-0.240***	(-7.73)	-0.255***	(-8.42)
SIZE	-0.112***	(-6.87)	-0.094***	(-6.34)
Big4	0.242***	(7.65)	0.240***	(8.10)
FamilyCEO	0.075**	(2.21)	0.080**	(2.54)
FamilyChair	0.130***	(3.51)	0.135***	(3.87)
DebtRatio	0.420***	(6.54)	0.294***	(5.00)
GROWTH	1.171***	(26.65)	1.041***	(25.52)
ROA	-4.686***	(-32.04)	-5.111***	(-36.78)
FirmAge	-0.200***	(-11.38)	-0.156***	(-9.61)
Year fixed effects	Yes		Yes	
Industry fixed effects	Yes		Yes	
Constant	0.572*	(1.79)	0.135	(0.46)
N	107 811		119 569	
Pseudo R2	0.045		0.045	

This table presents the test for H2 using an alternative classification on the variable *RelREM*. Panel A presents the results when firm-years with both relatively low real earnings management and relatively low accrual-based earnings management are included in the sample. These are classified with the zero-group of *RelREM*. Panel B presents the results when all observations are included in the sample, thus including those with both high levels of real earnings management combined with high levels of accrual-based earnings management as well. These are classified with the zero-group of *RelREM*. The variables are defined in Appendix. Fixed effects on year and industry are included. The *z*-statistics are adjusted for within-cluster correlation using the Huber-White Sandwich Estimator. * (**) *** indicates significance at the 10 (5) 1 percent levels using two-tailed tests.

Table 6. Regression Results for AccrEM and RelREM on Test and Control Variables for Propensity Score Matched Sample

	Panel A ***Hypothesis 1*** *AccrEM*		**Panel B** ***Hypothesis 2*** *RelREM*	
	Coefficients	*t-stat*	*coefficients*	*z-stat*
SameName	-0.003***	(-5.19)	0.149***	(4.16)
Year fixed effects	Yes		Yes	
Industry fixed effects	Yes		Yes	
Constant	0.066***	(35.26)	0.248**	(2.15)
N	133 708		32 296	
adj. R2	0.013			
pseudo R2			0.013	

This table presents the tests for H1 and H2 in a propensity score matched sample. The matching procedure is described in Section 4.4. Panel A presents the coefficients and corresponding t-statistics of regressing *AccrEM* on the test and control variables using ordinary least squares (OLS), testing H1. Panel B present the coefficients and corresponding z-statistics of regressing *RelREM* on test and control variables using logistic regression, testing H2. The variables are defined in Appendix. Fixed effects on year and industry are included. The t- and z-statistics are adjusted for within-cluster correlation using the Huber-White Sandwich Estimator. * (**) *** indicates significance at the 10 (5) 1 percent levels using two-tailed tests.

Table 7. Alternative Approach

	AEMres		*REMres*	
	coefficients	*t-stat*	*coefficients*	*t-stat*
SameName	-0.003***	(-2.87)	0.022***	(2.80)
Family_Ownership	0.009***	(2.61)	0.008	(0.30)
2nd_Largest_Owner	-0.004	(-1.43)	-0.031	(-1.47)
LOSS	0.041***	(19.10)	-0.010	(-1.30)
SIZE	-0.002***	(-2.81)	-0.064***	(-13.89)
Big4	-0.002	(-1.41)	0.031***	(3.71)
FamilyCEO	-0.006***	(-4.83)	0.010	(1.10)
FamilyChair	-0.008***	(-6.08)	-0.014	(-1.33)
DebtRatio	0.155***	(21.55)	0.175***	(5.82)
GROWTH	0.003	(1.08)	0.406***	(28.55)
ROA	0.372***	(35.46)	-0.095***	(-2.83)
FirmAge	-0.007***	(-10.51)	-0.054***	(-12.56)
REMres	0.004***	(2.96)		
Year fixed effects	Yes		Yes	
Industry fixed effects	Yes		Yes	
Constant	-0.060***	(-4.61)	1.275***	(13.47)
N	45 889		55 517	
adj. R2	0.294		0.148	

This table presents the test for the trade-off between real earnings management and accrual-based earnings management (i.e., H2) using an alternative approach. This approach is explained in detail in Section 4.5. The first two columns present the coefficients and corresponding *t*-statistics of regressing *AEMres* on the test and control variables using ordinary least squares (OLS). The last two columns present the coefficients and corresponding *t*-statistics of regressing *REMres* on test and control variables using ordinary least squares (OLS). The variables are defined in Appendix. Fixed effects on year and industry are included. The *t*-statistics are adjusted for within-cluster correlation using the Huber-White Sandwich Estimator. * (**) *** indicates significance at the 10 (5) 1 percent levels using two-tailed tests.

Table 8. Additional analyses

	Panel A: Incentives (DebtRatio) *RelREM*		**Panel B: Detection Risk (Big4)** *RelREM*	
	coefficients	*z-stat*	*coefficients*	*z-stat*
SameName	0.226***	(6.21)	0.003	(0.07)
*SameName*DebtRatioM*	0.807***	(5.49)		
*SameName*Big4*			0.733***	(9.71)
Family_Ownership	-0.042	(-0.38)	-0.031	(-0.28)
2nd_Largest_Owner	-0.150	(-1.53)	-0.108	(-1.11)
LOSS	-0.340***	(-6.70)	-0.337***	(-6.62)
SIZE	-0.029*	(-1.72)	-0.034**	(-2.02)
Big4	0.225***	(5.91)	-0.025	(-0.55)
FamilyCEO	0.220***	(5.42)	0.218***	(5.36)
FamilyChair	0.203***	(4.56)	0.192***	(4.31)
DebtRatio			0.145*	(1.85)
DebtRatioM	-0.089	(-0.99)		
GROWTH	1.531***	(25.31)	1.540***	(25.40)
ROA	-12.188***	(-55.00)	-12.220***	(-55.10)
FirmAge	-0.082***	(-3.84)	-0.078***	(-3.68)
Year fixed effects	Yes		Yes	
Industry fixed effects	Yes		Yes	
Constant	1.450***	(4.44)	1.504***	(4.45)
N	49 082		49 082	
pseudo R2	0.199		0.201	

This table presents the results of the additional analyses described in Section 4.7. Panel A presents the coefficients and corresponding *z*-statistics when *DebtRatioM* is interacted with *SameName* in equation (3). Panel B presents the coefficients and corresponding *z*-statistics when *Big4* is interacted with *SameName* in equation (3). Both regressions are estimated using logistic regression. The variables are defined in Appendix. Fixed effects on year and industry are included. The *z*-statistics are adjusted for within-cluster correlation using the Huber-White Sandwich Estimator. * (**) *** indicates significance at the 10 (5) 1 percent levels using two-tailed tests.

Figure 1. Graphical Illustration of the Interaction SameName*DebtRatioM from Table 8, Panel A

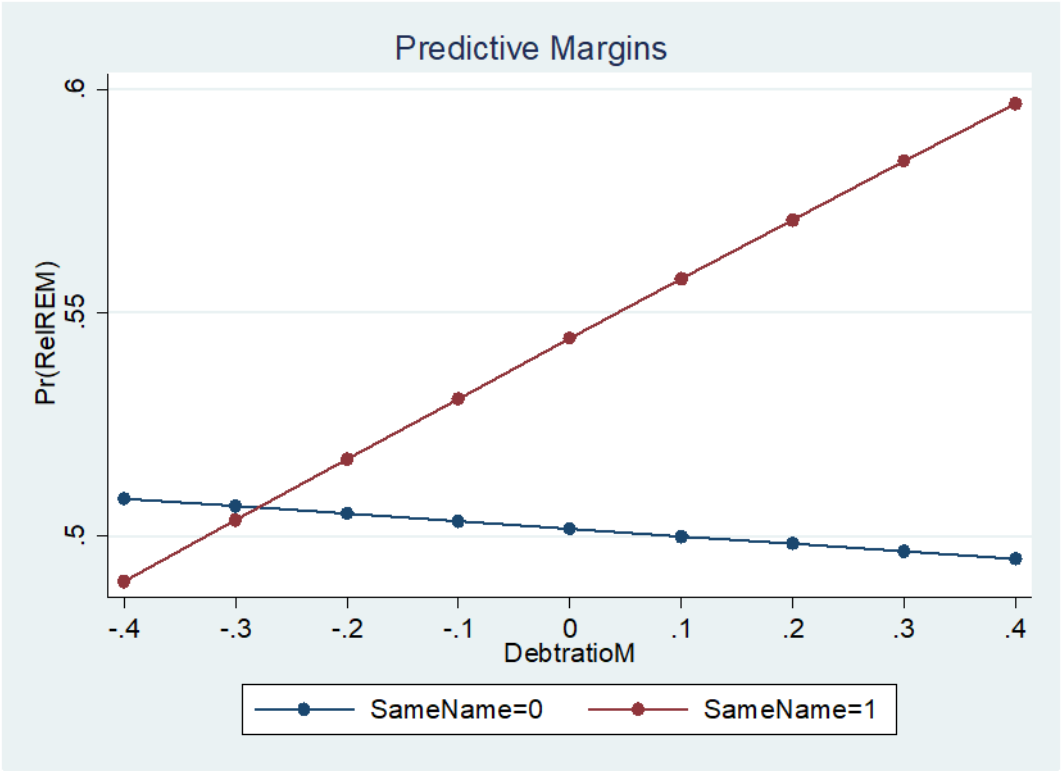
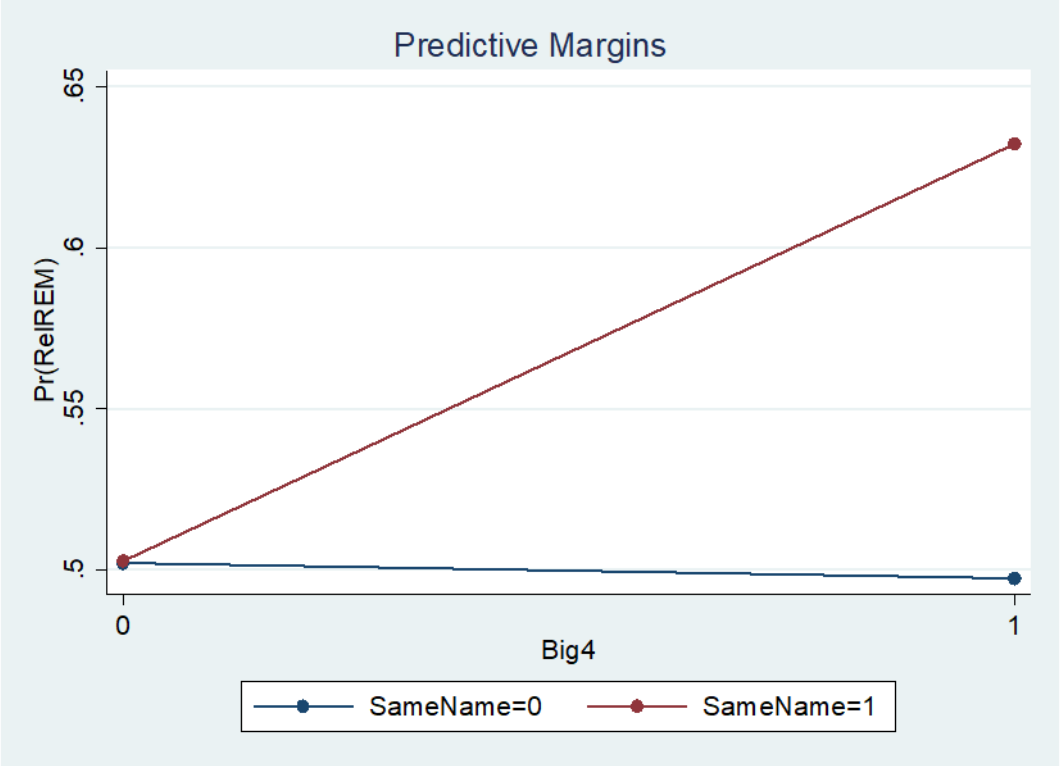


Figure 2. Graphical Illustration of the Interaction SameName*Big4 from Table 8, Panel B



Paper 3: Earnings Quality in Family vs. Non-Family Private Firms: Evidence from Specific Accruals

Charlotte Haugland Sundkvist
University of South-Eastern Norway

Tonny Stenheim
University of South-Eastern Norway

Abstract
This study examines the reporting of impairment losses in family and non-family private firms. Drawing on socioemotional wealth theory, we predict that private family firms are more reluctant to report impairment losses compared to private non-family firms. We find that private family firms are less likely to report impairment losses and report lower impairment losses compared to private non-family firms. There is some evidence suggesting that private family firms with a family CEO report lower impairment losses than private family firms without a family CEO, but this result does not seem to be very robust and should be interpreted with caution. Finally, the likelihood to report impairment losses and the impairment amount increases with board independence in private family firms.

Keywords: Private firms, family firms, impairment losses, socioemotional wealth, family CEO, board independence

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1. Introduction

This paper examines impairment reporting practices in private family firms and non-family firms and whether CEO characteristics such as family ties with the largest owning family and board independence affect these impairment reporting practices. The earnings quality literature has basically investigated aggregated discretionary accruals rather than specific accruals (McNichols, 2000; McNichols & Stubben, 2018) and has not taken into account the fact that family controlled firms (family firms) might have significantly different incentives for making accounting choices than non-family controlled firms (non-family firms) (Paiva, Lourenço, & Branco, 2016). Investigating specific accruals rather than aggregated accruals makes it possible to conduct specific tests on the determinants of accounting choices (McNichols, 2000; McNichols & Stubben, 2018).

In order to make accounting choices, the firms must be left with some discretionary freedom. Impairment losses are found to be among the most discretionary specific accruals. They generally suffer from significant measurement uncertainty and lack of being verifiable, and they are at risk of being opportunistically reported (Alciatore, Dee, Easton, & Spear, 1998; Beatty & Weber, 2006; Francis, Hanna, & Vincent, 1996; Kothari, Ramanna, & Skinner, 2010; Lapointe-Antunes, Cormier, & Magnan, 2008; Ramanna & Watts, 2012; Riedl, 2004; Stenheim & Madsen, 2016; Zang, 2008). Previous literature has demonstrated results suggesting that the reporting of impairment losses is associated with principal-agent related incentives such as inefficient remuneration contracts and debt contracts (e.g., Francis et al., 1996; Ramanna, 2008; Ramanna & Watts, 2012; Riedl, 2004; Stenheim & Madsen, 2016; Zang, 2008).

Accounting choices and thus earnings quality in family firms are likely to differ from those in non-family firms due to more concentrated ownership, family involvement, and emphasis on the preservation of socioemotional wealth (Paiva et al., 2016). We use socioemotional wealth (SEW) theory to guide our hypotheses (e.g. Berrone, Cruz, & Gomez-

Mejia, 2012; Berrone, Cruz, Gomez-Mejia, & Larraza-Kintana, 2010; Gomez-Mejia, Cruz, Berrone, & De Castro, 2011; Gómez-Mejía, Haynes, Núñez-Nickel, Jacobson, & Moyano-Fuentes, 2007; Gomez-Mejia, Patel, & Zellweger, 2018; Kalm & Gomez-Mejia, 2016). SEW theory predicts that family owners are loss averse to the threat of losing control and influence over the firm (Berrone et al., 2012; Gomez-Mejia, Cruz, & Imperatore, 2014), and sensitive to reputational concerns (e.g. Berrone et al., 2012; Cennamo, Berrone, Cruz, & Gomez-Mejia, 2012; Gomez-Mejia et al., 2011; Gomez-Mejia et al., 2014). Both of these concerns are likely to affect impairment reporting practices.

Impairment losses typically emerge in situations with poor performance as they are supposed to reflect expectations of reduced future cash flows (Francis et al., 1996; Kosi & Valentincic, 2013). These losses will, if recognized, reduce earnings and earnings-based performance measures. Consequently, family owners may be reluctant to report impairment losses and to reveal poor performance as this may cause a reputational loss or questions regarding the family's control and influence over the firm. Based on this, we hypothesize that family firms are less likely to report impairment losses, and report lower impairment losses, compared to non-family firms.

We also examine whether the impairment reporting practices vary among family firms with certain characteristics. We expect that more family control will reinforce the general tendency of family firms to avoid the recognition of impairment losses and that less family control will mitigate this trend. Specifically, we hypothesize that if the CEO is a member of the largest owning family, the family firm is less likely to report impairment losses, and if these losses are reported, they will generally report lower impairment losses. Finally, we hypothesize that both the likelihood of reporting impairment losses and the reported impairment loss amounts increase with board independence, measured as the proportion of non-family board members.

Norway provides an excellent setting to test our hypotheses. First, low book-tax alignment (Nobes & Schwencke, 2006) allows us to investigate impairment decisions as distinct from tax motivations. Tax incentives have been suggested in the literature as a motivation for excessive recognition of impairment losses in private firms (Kosi & Valentincic, 2013; Szczesny & Valentincic, 2013). In a setting with book-tax conformity, large impairment losses will reduce tax payments and improve performance. This suggests that family firms may want to report higher impairment losses as this will have real cash flow consequences for them. Such incentives will be hard to separate from incentives to reduce impairment losses to avoid reporting poor performance (reputational concerns and threats to family control which suggests lower write downs) in a setting with high book-tax conformity. Second, all firm-year observations in our sample have audited financial statements.[1] Third, this setting allows us to use a unique and rich dataset from *private* firms. Private firms are less likely to be subject to an external demand for timely loss recognition, thus making impairment losses more discretionary and susceptible to any reporting incentive of the firm (Kosi & Valentincic, 2013). Family relationships are determined through blood lines, marriage, and adoption. It spans back four generations and extends out to third cousins.

Impairment losses are supposed to be faithfully reported if they reflect variables of economic impairment (Francis et al., 1996; Ramanna & Watts, 2012; Riedl, 2004; Stenheim & Madsen, 2016). The true economic impairment is, however, unobservable, which makes it necessary to use proxies to investigate whether or not impairment losses reflect economic impairment. The test design employed in this paper makes it possible to test, at least to some extent, whether or not impairment losses faithfully reflect economic impairment (e.g. Francis et al., 1996; Ramanna & Watts, 2012; Riedl, 2004; Stenheim & Madsen, 2016). This is done

[1] Effective May 2011, the smallest firms were allowed to deselect their auditor (cf. Norwegian Limited Liability Companies Act paragraph 7-6). They are not included in our sample because they have missing observations on the variables *Big4* and *lnAF* (auditor fee).

by using a list of variables supposed to reflect economic impairment. Any additional associations between test variables and the reported impairment losses may indicate earnings management behavior. All other things being equal, there should be no difference in the impairment reporting practices of family and non-family firms, unless they have different incentives to use the discretion inherent in impairment decisions to alter the magnitude of reported impairments.

We find that on average family firms are less likely to report impairment losses and report lower impairment losses compared to non-family firms, controlling for economic conditions that affect the underlying economic impairment. This supports our first hypothesis. The notion underlying this hypothesis suggests that family firms report lower impairment losses compared to non-family firms because family owners are reluctant to report impairment losses. Thus, non-family firms report impairment losses that better reflect economic fundamentals. However, an alternative explanation is that non-family firms report more impairment losses because they have stronger incentives to use impairment losses as an earnings management instrument, indicating that family firms are the ones which report impairment losses that better reflect economic fundamentals (Greco, Ferramosca, & Allegrini, 2015).

This alternative explanation is probably less likely in a private firm setting such as the one used in this study. Incentives to increase impairment losses to smooth earnings or take a big bath are lower in private firms compared to public firms (e.g. Ball & Shivakumar, 2005; Kosi & Valentincic, 2013; Stockmans, Lybaert, & Voordeckers, 2010). Nevertheless, we perform several additional tests to investigate whether our results may be caused by impairment increasing earnings management incentives in non-family firms rather than a general reluctance in family firms to report impairment losses. We find no evidence suggesting that these findings are caused by more earnings management in non-family firms causing higher impairment losses (e.g., big bath accounting or income smoothing incentives), as suggested by evidence from

public firms (Greco et al., 2015). On the contrary, additional analysis suggests that non-family firms report impairment losses that better reflect future economic fundamentals such as future cash flows, sales growth, and performance (ROA).

Analyses within the family firm segment provides little robust findings regarding family CEOs, but more robust findings regarding board independence. Specifically, in the main test, we find that family firms with a family CEO report lower impairment losses, compared to family firms without a family CEO. However, we find no significant differences in the likelihood of reporting impairment losses for family firms with family CEOs and non-family CEOs. Furthermore, in robustness tests, we find no significant association with family CEOs and the impairment losses using tobit regression, or when we use an alternative definition of family firms. This suggests that the main findings regarding family CEOs are not very robust and should be interpreted with caution. The findings regarding board independence, however, appear to be more robust, and suggest that both the likelihood of reporting impairment losses and the reported impairment amounts increase with board independence in family firms.

Our contribution to the family firm and impairment loss literature is threefold. First, we document variations in earnings quality, due to variations in impairment reporting practices in family firms versus non-family firms, which means that we are investigating specific accruals (i.e., impairment losses) rather than aggregate accruals. There is limited research on specific accruals in family firms in general, and within the private firm segment it is, to the best of our knowledge, non-existent. Second, we document these differences in earnings quality using data from private firms rather than public firms. Hope (2013) encourages researchers to examine family ownership in private firms as opposed to public firms. Most research on family ownership to date is conducted on public firms, but private firms provide more variation in family ownership (Hope, 2013). The private firm setting also helps disentangle the effect of family firms' reluctance to report impairment losses from the effect of earnings management

incentives leading to big bath accounting and income smoothing in non-family firms. There is probably fewer incentives for big bath accounting and income smoothing in private firms compared to public firms due to lower manager-owner conflicts and better communication through private channels (Ball & Shivakumar, 2005; Kosi & Valentincic, 2013). This makes it less likely that our results are driven by non-family firms' incentives for big bath accounting or income smoothing rather than family firms' incentives to avoid reporting large impairment losses. As far as we are aware, no prior study has investigated the role of family ownership in determining impairment losses in a private firm setting. Third, we document that impairment loss practices among family firms are associated with board independence (i.e., lack of family presence on the board). To the best of our knowledge, these are new research findings.

The paper proceeds as follows: Section 2 outlines the literature and hypotheses development. Section 3 describes the research design and summary statistics. Main results, robustness tests and additional tests are presented in Section 4, while Section 5 concludes.

2. Literature Review and Hypotheses

2.1. The Regulation of Impairment Losses

All the firms in this setting prepare their financial statements according to the Norwegian Accounting Act and Norwegian Accounting Standards (Norwegian Generally Accepted Accounting Principles: NGAAP), which are in compliance with the European Union directives on financial accounting.[2] The NGAAP standards have over a long period of time been adapted to the International Financial Reporting Standards (IFRS), although they are not fully in line with these standards.

[2] The 4th and 7th EU directives have now been replaced by a consolidated EU directive (2013). This new directive is not yet implemented as part of the Norwegian Accounting Act.

When it comes to the accounting of impairment losses, the NGAAP standard[3] is to a large extent similar to IAS 36 Impairment of Assets, but with some simplifications for small firms.

Still, the NGAAP standard does not require goodwill or intangible assets with indefinite useful life to be tested for impairment losses annually. They are tested for impairment losses when indicators signal an impairment loss.

The general idea of the NGAAP standard on impairment losses is that the reporting firm observes some impairment indicators based on external and internal information, and if these indicators signal that the carrying amount (i.e., the book values) may not be recoverable, assets should be tested for impairment. If the impairment test demonstrates that the carrying amounts are higher than the recoverable amounts, assets are written down to the amounts that are recoverable. The recoverable amount is defined as the higher of the net selling price and the present value of estimated net cash flows from future exploitation of the asset (i.e., value in use).

This test procedure applies to the individual assets as they are recorded in the financial statements. However, the firms may have assets for which the recoverable amounts are not reliably measurable (because input data are missing or unreliable) or economically meaningful (because assets do not generate cash flows in isolation). In these cases, the assets are aggregated for impairment testing purposes into cash-generating units, which are the smallest identifiable group of assets which generates cash inflows that are largely independent of the cash inflows from other assets or groups of assets. Whenever indicators signal a possible impairment, the carrying amount of the cash-generating unit is compared with its recoverable amount. If the comparison demonstrates an impairment, the carrying amount of the cash generating unit is

[3] https://www.regnskapsstiftelsen.no/wp-content/uploads/2015/01/NRSF-Nedskrivning-av-anleggsmidler-2009.pdf (in Norwegian).

written down. The standards provide further details when it comes to the allocation of the impairment to various assets contained in the cash-generating unit.

The impairment test procedure provides significant discretion, which may provide the firm managers with opportunities to align the impairment accounting to their reporting incentives. There is significant discretion when cash-generating units are established (and when goodwill and corporate assets are allocated to these units), when assessing impairment indicators, and in particular when estimating recoverable amounts (Ramanna & Watts, 2012).

2.2 Impairment Losses and Earnings Quality

The recognition of impairment losses is intended to increase the informativeness of earnings by signaling expectations of reduced future cash flows to outside parties (Kosi & Valentincic, 2013). However, the recognition of impairment losses is found to be highly discretionary, which in turn may harm the informativeness of earnings. Impairment losses generally suffer from significant measurement uncertainty and lack of verifiability, and consequently they are at risk of being opportunistically reported (Alciatore et al., 1998; Beatty & Weber, 2006; Francis et al., 1996; Kothari et al., 2010; Lapointe-Antunes et al., 2008; Ramanna, 2008; Ramanna & Watts, 2012; Riedl, 2004; Stenheim & Madsen, 2016; Zang, 2008). Prior studies demonstrate that impairment losses are not always faithfully reported (e.g. Francis et al., 1996; Ramanna, 2008; Ramanna & Watts, 2012; Riedl, 2004; Zang, 2008). They are found to be associated with proxies of earnings management incentives rather than proxies for economic impairment in both public and private firms (Francis et al., 1996; Greco et al., 2015; Kosi & Valentincic, 2013; Riedl, 2004).

Nonetheless, this is not the whole picture. The literature adds important nuances to the above research findings. A study by Greco et al. (2015) investigates impairment reporting practices in public family and non-family firms. They find evidence suggesting that public non-family firms report impairment losses for earnings management purposes to a larger extent than

public family firms. Specifically, they find that public non-family firms report higher impairment losses compared to public family firms both when earnings performance is particularly poor and when it is particularly good, suggesting that public non-family firms engage more in big bath accounting and earnings smoothing than public family firms. They attribute these findings to more type I agency conflicts in public non-family firms than in public family firms, based on the argument that managers of these firms have stronger incentives to report impairment losses for earnings management purposes in order to maximize personal wealth, for instance through compensation contracts or for signaling smooth earnings streams to outsiders.

These findings do not necessarily speak to private family and private non-family firms. A substantial literature has demonstrated that financial reporting practices, hereby designated earnings management incentives in private firms, differ from those in public firms (e.g. Ball & Shivakumar, 2005; Burghstahler, Hail, & Leuz, 2006; Hope, Thomas, & Vyas, 2013), which have the general implication that findings on financial reporting practices in public firms may not reflect these practices in private firms (Hope, Langli, & Thomas, 2012). Earnings management incentives caused by compensation contracts and signaling to outsiders are likely to be of less concern in private firms compared to public firms (Burghstahler et al., 2006). The external demand for timely and accurate recognition of impairment losses in earnings is lower in private firms than in public firms, making impairment losses especially prone to managerial discretion in private firms (Kosi & Valentincic, 2013). Since the incentives to manage earnings to affect compensation contracts or signaling to outsiders is lower in private firms, other considerations such as the preservation of socioemotional wealth (see the next section) may assume a stronger role in predicting and explaining impairment reporting practices in private family firms.

2.3 Socioemotional Wealth Theory and the Reporting of Impairments

Socioemotional wealth theory originated from within the field of family firm research and serves to explain differences in behavior between family and non-family firms as well as among family firms. According to this theory, family owners and managers may behave differently from non-family owners and managers because they strive to enhance and protect their socioemotional wealth. SEW theory predicts that socioemotional wealth is the main reference point for family principals and thus that their actions and decisions will be influenced by their desire to avoid any socioemotional wealth loss (e.g., Berrone et al., 2012; Berrone et al., 2010; Gomez-Mejia et al., 2011; Gomez-Mejia et al., 2014; Gómez-Mejía et al., 2007). The theory goes as far as saying that even if financial goals and socioemotional wealth goals are in conflict, family principals will favor the latter over the former, thus potentially behaving opportunistically towards non-family stakeholders (Berrone et al., 2012; Gomez-Mejia et al., 2011; Gomez-Mejia et al., 2014).

SEW theory builds on behavioral agency theory, which integrates elements from prospect theory, behavioral theory of the firm, and agency theory (Berrone et al., 2012). Prospect theory suggests that risk preferences are not constant, but vary depending on whether the expected outcome is a loss or a gain. This is called loss aversion and predicts that people will be risk averse to expected gains, though will exhibit risk seeking behavior when attempting to avoid a potential loss (e.g. Kahneman & Tversky, 1979; Tversky & Kahneman, 1986, p. 149; Wiseman & Gomez-Mejia, 1998). SEW theory incorporates prospect theory, which suggests that family owners will be *loss averse* to SEW, implying that family owners will accept risks to avoid a loss in SEW (e.g. Berrone et al., 2012; Gomez-Mejia et al., 2011; Gómez-Mejía et al., 2007). This is particularly relevant to the setting of impairment losses. As discussed in the sections below, the reporting of impairment losses may trigger a SEW loss for family owners (i.e., reputational loss or threats to family control). Family owners may then be willing to

manage earnings to avoid this SEW loss, i.e., they are willing to risk an even greater SEW loss (i.e., if earnings management is detected) to avoid the loss in SEW triggered by reporting impairment losses.

An important dimension of SEW is that family owners are loss averse to the threat of losing some of their control and influence over the firm (Berrone et al., 2012; Gomez-Mejia et al., 2014). Such perceived threats to the family's ultimate control may trigger family principals to manage earnings to ensure their continued control over the firm (Gomez-Mejia et al., 2014). An example of a situation where family control could be threatened is if the firm performs poorly, as this may induce criticism and questions regarding the family's management of the firm. This may provide incentives for family owners to manage earnings in order to conceal poor performance. Decisions on whether to write down assets, and the impairment amount, emerges in situations with poor firm performance (e.g. Francis et al., 1996). This may provide incentives for family principals to reduce the impairment amount in order to minimize the effect on observable firm performance. Hence, family principals may be reluctant to report impairment losses

SEW theory also predicts that family principals may be sensitive to reputational concerns by family principals' strong identification with the firm (e.g. Berrone et al., 2012; Cennamo et al., 2012; Gomez-Mejia et al., 2011; Gomez-Mejia et al., 2014). The family firm becomes the family's pride and heritage, and the family name may be associated with the family firm as well. Large write downs and consequently large losses may result in reputational costs for family firms (Greco et al., 2015), motivating family owners to avoid large impairment losses.

Financial statements of all private limited liability firms in Norway can easily be accessed by anyone online, even for the smallest firms. Consequently, poor reported performance can affect the private family firm reputation negatively even if it is not well-known

nationally. For instance, neighbors, competitors, friends, and anyone else in the community who know of the firm can easily access their financial statements and see that they perform poorly. This may motivate family owners to avoid large write downs.

Being accused of manipulating earnings by avoiding impairment losses will also negatively affect the reputation of family firms. However, there are several forces at play regarding why they might be willing to take the risk of managing reported impairment losses. They will only suffer reputational losses if they are actually accused of avoiding impairment losses. Impairment losses are highly discretionary and thus as long as family firms comply with auditors' requests to increase underreported impairment losses, it will not be known to the public that the auditors disagreed with the initial recognized losses. Hence, family firms may be willing to take the risk of avoiding impairment losses to avoid revealing poor performance or relinquishing family control.

Based on this discussion, we propose the following hypotheses:

Hypothesis 1a: Family firms are less likely to report impairment losses compared to non-family firms.

Hypothesis 1b: Family firms report lower impairment losses than non-family firms.

If the family firm has engaged a family member to serve in the CEO position, family control and influence over the firm increases compared to a situation where the family firm has an external CEO. This makes it easier for the family members to make decisions based on socioemotional wealth considerations, when the CEO is a family member (Stockmans et al., 2010). In the case of family CEOs, the CEO's interests are better aligned with those of the dominant (family) shareholder (Yang, 2010). Thus, a family CEO is likely to reinforce the general earnings management strategy of the controlling family (Kvaal, Langli, & Abdolmohammadi, 2012).

Evidence from public family firms suggests a negative association between family CEO and earnings management (i.e., aggregated discretionary accruals) (Wang, 2006; Yang, 2010), while a study using private family firms suggests that a family CEO reinforces the general earnings management strategy of the controlling family (Kvaal et al., 2012). If the general tendency of family firms is to report lower impairment losses compared to non-family firms, we expect that the presence of a family CEO, as opposed to a CEO who is not a member of the controlling family, will reinforce this reporting behavior. Formally stated:

Hypothesis 2a: Family firms are less likely to report impairment losses if the CEO is a member of the controlling family compared to family firms where the CEO is not a member of the controlling family.

Hypothesis 2b: Family firms report lower impairment losses when the CEO is a member of the controlling family compared to family firms where the CEO is not a member of the controlling family.

The board of directors plays an important role in corporate governance research. Board independence has been found to be an efficient corporate governance mechanism to reduce earnings management behavior (e.g. Klein, 2002; Peasnell, Pope, & Young, 2005; Prencipe & Bar-Yosef, 2011). In the case of family firms, we define independent board members as board members who are not related to the controlling family. Independent board members can monitor the family members and prevent them from making reporting decisions based on socioemotional wealth concerns. Thus, independent board members are likely to mitigate the general earnings management strategy of the controlling family (Kvaal et al., 2012). Conditional on that the general reporting strategy of family firms is to report lower impairment losses, independent (i.e., non-family) board members should moderate this reporting behavior.

Formally stated:

Hypothesis 3a: Family firms are more likely to report impairment losses as the proportion of non-family board members on the board of directors increases.

Hypothesis 3b: Family firms' reported impairment losses increase as the proportion of non-family board members on the board of directors increases.

3. Research Design and Summary Statistics

3.1 Sample

Our data are obtained from the CCGR database at the BI Norwegian Business School. There are 3 316 306 firm-year observations in the database for the period of 2001 to 2015. In order to exclude the smallest firms with little economic significance, we require a minimum of 2 million NOK (consumer price adjusted) in yearly sales to be included in the sample.[4] After eliminating firms with less than 2 million NOK, public firms, unlimited liability firms, financial firms, and firms with missing information on family relationships and other variables, our final sample consists of 510 741 firm-year observations. The details of the sample selection process are outlined in Table 1.

[Insert Table 1 about here]

[4] We chose 2 million NOK instead of 1 million NOK, which has been used as a cut-off in previous research on Norwegian private firms (Che & Langli, 2015; Sundkvist, Che, & Stenheim, 2020). This is because very few of the firm-years in the group between 1 million NOK and 2 million NOK report impairment losses (less than 0.07%). Thus, including these firm-year observations would reduce the power of our tests.

3.2 Variable Measurement and Methodology

We specify the following regression equations to test our first hypotheses:

$$(1)\ ImpDec_{i,t} = \beta_0 + \beta_1 FamilyFirm + \beta_2 preROA_{i,t} + \beta_3 GROWTH_{i,t} + \beta_4 preSIZE_{i,t} + \beta_5 preDebtRatio_{i,t} + \beta_6 Hist_{i,t} + \beta_7 Big4_{i,t} + \beta_8 lnAF_{i,t} + \beta_9 SecondLargest_{i,t} + \beta_{10} lnFirmAge_{i,t} + \varepsilon_{i,t}$$

$$(2)\ ImpAsset_{i,t} = \beta_0 + \beta_1 FamilyFirm + \beta_2 preROA_{i,t} + \beta_3 GROWTH_{i,t} + \beta_4 preSIZE_{i,t} + \beta_5 preDebtRatio_{i,t} + \beta_6 Hist_{i,t} + \beta_7 Big4_{i,t} + \beta_8 lnAF_{i,t} + \beta_9 SecondLargest_{i,t} + \beta_{10} lnFirmAge_{i,t} + \varepsilon_{i,t}$$

Where *ImpDec* is a dummy variable reflecting the impairment decision. It takes the value 1 if the firm has reported impairment losses that year and 0 if not. *ImpAsset* indicates the impairment amount divided by lagged total assets multiplied by 100. It reflects the impairment of fixed assets (both tangible and intangible assets) and is defined here as a positive amount. *FamilyFirm* is a dummy variable that equals 1 if the firm is defined as a family firm and 0 if not. Prior studies examining family firms have often used the level of family ownership to define whether the firm is a family firm or not (e.g. Chau & Gray, 2010; Che & Langli, 2015; Ding, Qu, & Zhuang, 2011; Pazzaglia, Mengoli, & Sapienza, 2013; Yang, 2010). In private firms, where ownership concentration and family ownership is higher than in public firms, it is natural to use 50% as a cutoff to separate family firms from non-family firms (e.g. Che & Langli, 2015; Stockmans et al., 2010; Sundkvist et al., 2020). If the family owns more than 50% of the shares, it has simple majority and to a large extent controls the firm. With simple majority, the family can for instance appoint or dismiss the board members (cf. The Norwegian Limited Liability Companies Act, paragraph 5-17).[5] Normally, the board appoints the CEO (cf. paragraph 6-2).

[5] Normally, one share give the right to cast one vote at the general meeting, implying that an ownership stake above 50% is required to have simple majority.

If the family owns less than 50% of the shares, however, non-family owners combined have simple majority, and can block proposals from the family, appoint board members, etc., thus rendering the family with less power over the firm. Consequently, *FamilyFirm* is a dummy variable that equals 1 if the largest owning family owns more than 50% of the shares and 0 if not.

We include several proxies for economic factors that may affect the impairment amount. Performance is likely to affect impairment losses (Francis et al., 1996; Riedl, 2004). We include two variables to control for performance: *preROA* and *GROWTH*. *preROA* indicates return on assets before impairment losses, measured as pre-impairment net income, scaled by lagged total assets. The decision to report impairment losses and the reported impairment amount is likely to be negatively associated with performance, thus the likelihood to report impairment losses and the magnitude of impairment losses increases when performance decreases. The variable *GROWTH* measures growth in sales as the percentage change in sales from year *t*-1 to year *t*. *GROWTH* is included in the model as an alternative performance measure and is expected to be negatively associated with *ImpAsset* and *ImpDec*. *preSIZE* is measured as the natural logarithm of pre-impairment total assets. Prior research documents that larger private firms report higher impairment losses (Kosi & Valentincic, 2013). *preDebtRatio* is measured as the ratio of total debt to pre-impairment total assets, and is included in the model because prior research on private firms documents that debt ratio is associated with impairment losses (Kosi & Valentincic, 2013).

The variable *Hist* reflects prior impairments by the firm and is measured as lagged *ImpAsset*. Prior research has demonstrated that the likelihood of reporting impairment losses increases if the firm has a history of reporting impairment losses (Elliott & Hanna, 1996). We use two proxies for audit quality: *Big4* and *lnAF*. *Big4* is a dummy variable that equals 1 if the firm is audited by one of the Big 4 auditing firms and 0 if not. The use of a Big 4 auditor has

been shown to improve audit quality in private firms (Che, Hope, & Langli, 2020). *lnAF* is the natural logarithm of audit fees and is used as a proxy for audit effort (Hope et al., 2012). *SecondLargest* is measured as the fraction of ownership of the second largest shareholder, regardless of whether the second largest shareholders is a family member or not, and is included in the model to control for ownership concentration, as this might affect the opportunity for both managers and the largest shareholder to behave opportunistically and affect reported impairment losses. *FirmAge* is included to control for the generational effect in family firms, as the emphasis on socioemotional wealth goals is likely to vary across family generations (Stockmans et al., 2010). This variable is measured by the natural logarithm of the number of years since a firm's foundation date.

The variables *preROA*, *preSIZE, GROWTH*, *preDebtRatio*, and *lnAF* are winsorized at the 1st and 99th percentile. The dependent variable, *ImpAsset,* and the lagged version of this variable, *hist*, are winsorized at the 99th percentile of non-zero values.[6] We control for year and industry fixed effects in all our regressions. The standard errors are adjusted for serial correlation and heteroscedasticity by using the Huber-White Sandwich Estimator, clustered at the firm level (e.g. Petersen, 2009). Equation (1) is a logistic regression model and equation (2) is tested using ordinary least squares (OLS) regression. H1a and H1b imply a negative coefficient of *FamilyFirm* in both models.

We specify the following regression equations to test H2a, H2b, H3a, and H3b:

$$
\begin{aligned}
(3)\ ImpDec_{i,t} = {} & \beta_0 + \beta_1 FamilyCEO_{i,t} + \beta_2 BoardInd_{i,t} \\
& + \beta_3 preROA_{i,t} + \beta_4 GROWTH_{i,t} + \beta_5 preSIZE_{i,t} + \beta_6 preDebtRatio_{i,t} \\
& + \beta_7 Hist_{i,t} + \beta_8 Big4_{i,t} + \beta_9 lnAF_{i,t} + \beta_{10} SecondLargest_{i,t} \\
& + \beta_{11} lnFirmAge_{i,t} \quad + \beta_{12} Family\_Ownership_{i,t} + \varepsilon_{i,t}
\end{aligned}
$$

[6] There are 226 firm-year observations with reported impairment reversals in our sample, which we set to zero. The results do not change if these observations instead are excluded from the sample or included as they are.

(4) $ImpAsset_{i,t}$

$$= \beta_0 + \beta_1 FamilyCEO_{i,t} + \beta_2 BoardInd_{i,t}$$
$$+ \beta_3 preROA_{i,t} + \beta_4 GROWTH_{i,t} + \beta_5 preSIZE_{i,t} + \beta_6 preDebtRatio_{i,t}$$
$$+ \beta_7 Hist_{i,t} + \beta_8 Big4_{i,t} + \beta_9 lnAF_{i,t} + \beta_{10} SecondLargest_{i,t}$$
$$+ \beta_{11} lnFirmAge_{i,t} + \beta_{12} Family\_Ownership_{i,t} + \varepsilon_{i,t}$$

The response variables and control variables are the same as in equation (1) and (2), except that *FamilyOwnership* is here included as an additional control variable, as the level of family ownership spans from above 50% to 100% in the sample, and prior research suggests that the level of family ownership is associated with earnings quality in private family firms (Sundkvist et al., 2020). The test variables are *FamilyCEO* and *BoardInd. FamliyCEO* is a dummy variable that equals 1 if the CEO belongs to the largest owning family and 0 if not. *BoardInd* measures the ratio of board members who are not a member of the largest owning family. Specifically, it is the number of board members who are not a member of the controlling family divided by the total number of board members.

As with equation (1) and (2), we control for year and industry fixed effects, and the standard errors are adjusted for serial correlation and heteroscedasticity by using the Huber-White Sandwich Estimator, clustered at the firm level (e.g. Petersen, 2009). Equation (3) is tested using logistic regression, and equation (2) is tested using ordinary least squares regression. As we are here interested in variation *among* family firms, equations (3) and (4) are run using a sample of family firms only. H2a and H2b imply a negative coefficient of *FamilyCEO,* while H3a and H3b imply a positive coefficient of *BoardInd.*

3.3 Summary Statistics

Table 2 presents the summary statistics. Panel A presents descriptive statistics for family firms, while panel B presents descriptive statistics for non-family firms. The total number of family firms in our sample is 339 817 and the number of non-family firms is 170 926. Untabulated statistics show that 2 957 of the family firm-year observations have reported impairment losses and 2597 of the non-family firm-year observations. This implies that even though family firms constitute two thirds of the total sample, they contribute to just above half of the reported impairment losses. This is also reflected by the higher value in *ImpDec* on non-family firms (0.02) compared to family firms (0.01), implying that about 1% of the firm-year observations of family firms and 2% of the firm-year observations of non-family firms have reported impairment losses during the sample period. Average *ImpAsset* is 0.05 for family firms and 0.08 for non-family firms. This implies that reported impairment losses for family firms in our sample is on average 0.05% of lagged total assets for family firm observations and 0.08% of lagged total assets for non-family firms.[7]

[Insert Table 2 about here]

Non-family firms in our sample are on average larger (26.6 million NOK vs. 15.76 million NOK in total pre-impairment assets) and have higher *GROWTH* (13% vs. 9%). They are also more likely to be audited by a Big 4 audit firm (30% vs. 23% of the sample) and have higher audit fees (42.97 vs. 34.88 thousand NOK). *preROA* is on average 9% for family and 10% for non-family firms. pre*DebtRatio* is on average 75% for both family and non-family firms. Non-family firms have a history of higher impairment losses, with an average *Hist* of 0.07 for non-family firms and 0.04 for family firms. Family firms are on average older (15.05 vs. 13.84 years) and the ownership stake of the second largest shareholder is 28% in non-family

[7] *ImpAsset* is measured as the impairment amount divided by lagged total assets multiplied by 100.

firms and 18% in family firms. In family firms, 77% of the firm-year observations have a family CEO, average board independence is 20% and average family ownership is 90%.

Table 2, panel C, reports correlation coefficients for the whole sample of private firms (used to test H1a and H1b), while panel D of Table 2 reports the correlation coefficients for the subsample of family firms only (used to test H2a, H2b, H3a and H3b). We see that the correlations among the test and control variables are reasonably low. We also see that the test variable *FamilyFirm* is negatively correlated with *ImpDec* and *ImpAsset* in panel C. From panel D, we note that the test variable *FamilyCEO* is negatively correlated with both *ImpDec* and *ImpAsset*, ant that the test variable *IndBoard* is positively correlated with both *ImpDec* and *ImpAsset*. This provides some preliminary support for our hypotheses.

4. Results

4.1 Main Results

Table 3 reports the results from the main tests. Panel A presents the results for the whole sample, testing H1a and H1b. The first two columns of panel A present the results from regressing *ImpDec* on test and control variables using logistic regression (equation (1)). Our test variable, *FamilyFirm,* is negative and significant at the 1% level (β_1=-0.271, *z*-statistics=-6.99). This suggests that, after controlling for economic factors that are likely to affect the decision to report impairment losses, family firms are significantly less likely to report impairment losses compared to non-family firms. The last two columns of panel A report the results from regressing *ImpAsset* on test and control variables using OLS (equation (2)). The variable *FamilyFirm* is negative and significant at the 1% level (β_1=-0.015, *t*-statistics=-3.75), suggesting that family firms report significantly lower impairment losses even after controlling for economic factors that are likely to affect the reported impairment amount.

The coefficient of *preROA* is negative and significant in both models. A negative coefficient of *preROA* suggests that the decision to report impairment losses and the impairment

amount is negatively associated with performance prior to the impairment decision. *lnAF* is positive in both models, suggesting that firms with higher audit fees are more likely to report impairment losses and report higher impairment losses. The positive coefficient of *preDebtRatio* in model 2 suggests that firms with higher debt ratio report higher impairment losses. Larger firms are more likely to report impairment losses and report higher impairment losses, as indicated by the positive coefficients of *preSIZE*. The variable *Big4*, a proxy for audit quality, is significantly positive in both models, suggesting that firms audited by a Big 4 auditor are more likely to report impairment losses and report higher impairment losses. Both the likelihood to report impairment losses and the reported amount decreases with the ownership stake of the second largest shareholder and decreases with time, as indicated by the negative coefficients of *SecondLargest* and *FirmAge.*

[Insert Table 3 about here]

Table 3, panel B, reports the results from the regression within the family firm segment, testing H2a, H2b, H3a and H3b. The first two columns of panel B report the results from regressing *ImpDec* on test and control variables for family firms only (equation (3)). The coefficient of *FamilyCEO* is not significant. Thus, we do not get support for H2a. The coefficient of *BoardInd* is positive and significant (β_2=0.418, *z*-statistics=4.97), suggesting that family firms are more likely to report impairment losses as board independence increases. This provides support for H3a. The last two columns of panel B present the results from regressing *ImpAsset* on test and control variables (equation (4)). The variable *FamilyCEO* is significantly negative (β_1=-0.021, *t*-statistics=-3.65), suggesting that family firms with a family CEO report lower impairment amounts compared to family firms where the CEO is not a family member. This supports H2b. The coefficient of *BoardInd* is positive and significant (β_2=0.048, *t*-statistics=4.80), suggesting that the amount of reported impairment losses increases with board independence in family firms, providing support for H3b.

4.2. Alternative Explanation

The main results show that family firms are less likely to report impairment losses and report lower impairment amounts compared to non-family firms. The theory underlying our hypotheses suggests that family controlled firms may be reluctant to write down in order to avoid threats to family control or to avoid reputational loss related to poor performance. However, an alternative explanation for these results is that non-family firms have incentives to increase impairment losses due to big bath accounting or income smoothing. Evidence from public firms suggests that non-family firms have incentives to increase impairment losses when performance is good to smooth earnings and "save" for future periods, and incentives to increase impairment losses also when performance is bad to "clear the decks," making it easier to report better performance in the future (Greco et al., 2015). Motivations underlying such strategies in non-family firms have been identified as maximizing managerial compensation and signaling smooth earnings to outside parties (Greco et al., 2015). These incentives, however, are likely to be smaller in private firms compared to public firms (Burghstahler et al., 2006).

CEOs' incentives to take a big bath are closely related to agency conflicts between manager and owners. Such agency conflicts are likely to increase with dispersed ownership as there are no large owners to monitor the manager. It is probably less of a concern that these results are influenced by big bath accounting in non-family firms when using data from private firms as opposed to public firms. Less dispersed ownership in private firms makes it easier to monitor CEOs and avoid big bath accounting (Stockmans et al., 2010). Further, incentives to smooth earnings to present a smooth earnings path to outsiders are less likely to be a concern in private firms, as communication to a larger extent takes place through private channels (Ball & Shivakumar, 2005; Kosi & Valentincic, 2013).

Even though big bath accounting and income smoothing is unlikely to cause the observed differences between family firms and non-family firms' impairment practices in private firms, we still conduct several additional tests to examine this alternative interpretation further. First, we test whether the variable *Big4* (a proxy for audit quality) is associated with more and higher impairment losses across both family and non-family firms. Second, we run the regression on a sample of firms where we have excluded firms with stronger incentives to manage earnings through big bath accounting or earnings smoothing. Third, we test whether impairment losses better reflect economic fundamentals in family vs. non-family firms by interacting *FamilyFirm* with future cash flows, future sales growth, and future performance (ROA).

4.2.1. Audit quality

In the first test we examine the variable *Big4* for samples of family firms and non-family firms separately. A positive coefficient of the variable *Big4* suggests that firms audited by a Big 4 auditor report more impairment losses. A possible interpretation of this result is that the general tendency for private firms is to be reluctant to report impairment losses and thus a Big 4 auditor will to a larger extent require higher impairment losses. The use of a Big 4 auditor has been shown to improve audit quality in private firms (Che et al., 2020). In this test we investigate whether this tendency of higher reported impairment losses for Big 4 audited firms holds across both family firms and non-family firms. Table 4 suggests that the use of a Big 4 auditor is associated with higher impairment losses in both non-family firms and family firms. This does not support the alternative explanation that non-family firms are in general more susceptible to big bath accounting. If this was the case, a Big 4 auditor should reduce rather than increase impairment losses in non-family firms.

[Insert Table 4 about here]

4.2.2. Big Bath Accounting and Income Smoothing

In the second test we examine whether the results still hold when we exclude firm-year observations with strong incentives for big bath accounting or income smoothing. We rely upon prior research to identify these firm-year observations (e.g. Francis et al., 1996; Greco et al., 2015; Riedl, 2004). Big bath accounting is more likely when the change in earnings performance is especially poor, as this might provide incentives to charge additional costs in the current year, making it easier to report better earnings in the future. Thus, we exclude firm-year observations when the change in earnings (measured as the change in pre-impairment earnings from *t*-1 to *t*, scaled by lagged total assets) is below the median of non-zero negative values (Greco et al., 2015; Riedl, 2004). Income smoothing, on the other hand, is more likely to occur when the change in earnings is especially good, creating incentives to manage earnings downwards in order to create reserves and "save" for the future. Thus, we exclude firm-year observations when the change in earnings (measured as the change in pre-impairment earnings from *t*-1 to *t*, scaled by lagged total assets) is above the median value of non-zero positive values (Greco et al., 2015; Riedl, 2004). By excluding these firm-year observations we are left with a sample of firm-years where big bath accounting and income smoothing is less likely. If our main results hold in this sample, a higher propensity for big bath accounting and income smoothing for non-family firms is unlikely to explain the main results. Table 5 shows that our results still hold when we exclude these firm-year observations.

[Insert Table 5 about here]

4.2.3. Future Economic Fundamentals

In our third test we examine whether the association between reported impairment losses and future economic fundamentals differ between family and non-family firms. Impairment losses are supposed to reflect diminished expectations of future cash flows (Kosi & Valentincic, 2013), implying that impairment losses should be negatively associated with future cash flows

(Gordon & Hsu, 2018). Greco et al. (2015) argue that impairment losses should be negatively associated with future performance (ROA) and sales growth as well. Taken together, this implies that the impairment amount better reflects economic impairment to the extent that it is negatively associated with future cash flows, sales growth and/or performance (ROA). We test whether family and non-family firms differ in this manner by interacting future cash flows, future sales growth and future ROA with *FamilyFirm*, as presented in the model below.

$$(5)\ ImpAsset_{i,t} = \beta_0 + \beta_1 FamilyFirm_{i,t} + \beta_2 EconFund_{i,t+1} + \beta_3 FamilyFirm_{i,t} * EconFund_{i,t+1} + \beta_4 preROA_{i,t} + \beta_5 GROWTH_{i,t} + \beta_6 preSIZE_{i,t} + \beta_7 preDebtRatio_{i,t} + \beta_8 hist + \beta_9 Big4_{i,t} + \beta_{10} lnAF_{i,t} + \beta_{11} SecondLargest_{i,t} + \beta_{12} lnFirmAge_{i,t} + \varepsilon_{i,t}$$

EconFund is economic fundamentals and is one of the three variables $CFO_{i,t+1}$, $GROWTH_{i,t+1}$ or $preROA_{i,t+1}$. $CFO_{i,t+1}$ is cash flows from operations in year *t*+1, measured as net income before extraordinary items minus total accruals for firm *i* in year *t+1*, scaled by pre-impairment total assets in year *t* [8]. $GROWTH_{i,t+1}$ is measured as the percentage change in sales from year *t* to year *t*+1. $ROA_{i,t+1}$ is measured as net income in year *t*+1 scaled by pre-impairment total assets in year *t*.[9]

[Insert Table 6 about here]

Table 6 reports the results from this regression. The coefficients of $CFO_{i,t+1}$, $GROWTH_{i,t+1}$ and $preROA_{i,t+1}$ are all negative and significant, while the coefficients of the interaction terms $FamilyFirm * CFO_{i,t+1}$, $FamilyFirm * GROWTH_{i,t+1}$ and $FamilyFirm * preROA_{i,t+1}$ are

[8] A substantial portion of the firms in our sample is not required to issue cash flow statements. Consequently, we calculate cash flows using the balance sheet method. Total accruals= changes in non-cash current assets less changes in current non-interest-bearing liabilities+depreciation expenses+impairment losses.

[9] We adjust for the impairment amount for numbers measured in the event-year. For instance, $ROA_{i,t+1}$ use net income year *t*+1 and pre-impairment assets year *t*, while $preROA_{i,t}$ use pre-impairment net income year *t* and total assets year *t*-1.

positive and significant. Taken together, this suggests that the negative association between the impairment amount and future economic fundamentals such as cash flows from operations, sales growth, and ROA is weaker for family firms compared to non-family firms. As the associations between impairment losses and these economic fundamentals are expected to be negative, weaker associations in family firms can be interpreted as indications that impairment losses better reflect economic impairment losses in non-family firms than in family firms. This is consistent with the theory underlying our hypotheses, which suggests a general reluctance to report impairment losses in family firms.

4.3. Tobit Regressions

In our main analysis we use OLS regression to test for differences in the impairment amount between family and non-family firms and logistic regression to test for differences between the likelihood that family firms vs. non-family firms will report impairment losses. In this robustness test, we combine the two and test whether family firms report higher impairment losses, conditional on the impairment decision. We also test whether a family CEO is associated with lower impairment losses and whether board independence is associated with higher impairment losses among family firms, conditional on the impairment decision. We model the impairment decision and impairment amount together by using a tobit regression (Francis et al., 1996; Kosi & Valentincic, 2013; Riedl, 2004; Szczesny & Valentincic, 2013; Tobin, 1958).

[Insert Table 7 about here]

Table 7 reports the results from the tobit regressions. The coefficient of *FamilyFirm* is negative and significant, suggesting that conditional on the decision to report impairment losses, family firms report lower impairment losses compared to non-family firms. This is in line with our main results, which showed both a lower propensity for reporting impairment losses and lower impairment amount for family firms compared to non-family firms. The coefficient of *FamilyCEO* is not significant in the tobit regression. In the main results we found *FamilyCEO*

to be significantly negatively related to the impairment amount but not the likelihood to report impairment losses. The coefficient of *BoardInd* is positive and significant in the tobit regression, suggesting that board independence is positively associated with the impairment amount in family firms, conditional on the impairment decision. This supports our main results, where we found board independence to be positively associated with both the impairment amount and the likelihood to report impairment losses.

4.4 Size and Propensity Score Matching

Summary statistics (Table 2) show that family firms and non-family firms differ with regard to size, measured as pre-impairment total assets. Untabulated analysis reveals that this difference in average pre-impairment total assets between the groups is mainly driven by the largest firms. Among the largest 10% of firms in the sample, non-family firms are on average 20 million NOK larger than family firms, while this difference in size is only 1.35 million NOK for the remaining firms in the sample (those below the 90th percentile based on *preSIZE*).

We do control for *preSIZE* in all our analysis, thus this differences in size is not likely to affect our results. Still, we conduct an additional robustness test where we exclude the largest 10% of firms from the sample to make sure that differences in total assets do not interfere with the results. In this truncated sample, family and non-family firms are also more equal regarding other variables such as audit fees (an average of 34 thousand NOK for non-family firms and 30 thousand NOK for family firms) and *Big4* (an average of 0.25 for non-family firms and 0.22 for family firms).

Table 8, panel A, reports the results from this test when the largest 10% of firms are excluded from the sample. *FamilyFirm* is negative and significant in both models, indicating that our main results still hold. The coefficients and *t*- and *z*-values are somewhat smaller than in the main test. This is not surprising, given that impairment losses are reported more frequently among the largest firms. Untabulated analysis shows that 3.6% of the largest 10% of

firms (i.e., the firms we have now excluded from the sample) have reported impairment losses, but only 0.8% of the remaining firms in the sample (i.e., the firms below the 90th percentile based on *preSIZE*) reported impairment losses. Thus, when we exclude the firms that most frequently report impairment losses from the sample, we risk "throwing the baby out with the bathwater," and lower coefficients and significance levels in this sample are not surprising.

[Insert Table 8 about here]

Summary statistics reveals that the two groups of firms (family vs. non-family firms) differ on other dimensions besides just size. To further assess whether any of these differences may bias our main results, we rerun equation (1) and (2) (main test models for H1a and H1b outlined in Section 3.2) in a propensity score matched sample. The propensity scores are estimated using a probit model with *FamilyFirm* as the outcome variable. We match on all the control variables in equation (1) and (2), including industry and year fixed effects (e.g. DeFond, Hung, Li, & Li, 2015). We use nearest neighbor matching without replacement, with common support restriction (Bonacchi, Marra, & Zarowin, 2019; Hope, Yue, & Zhong, 2019). Thus, each observation from a family firm is matched with the non-family firm observation with the propensity score closest in value.

Table 8, panel B, reports the results from this test. The coefficient of *FamilyFirm* is negative and significant (1% level) in the propensity score matched sample, consistent with the main results.

4.5 Alternative Definition of Family Firms and Economic Significance

In our main analysis, we define a family firm as a firm with more than 50% family ownership, regardless of whether the family ownership consists of multiple family owners or one single person. In this robustness test, we require more than one family owner, in addition to more than 50% family ownership, to be defined as a family firm. Firm-year observations with more than 50% ownership but only one family owner are excluded from the sample.

Table 9, panels A and B, present the results of these regressions. Panel A presents the results from equations (1) and (2), testing differences between family and non-family firms (H1a and H1b). *FamilyFirm* is negative and significant in both regressions, suggesting that our main results regarding differences between family and non-family firms are robust to this alternative definition of family firms. Panel B presents the results from equations (3) and (4) in a subsample of family firms only. *FamilyCEO* is not significantly associated with either *ImpDec* or *ImpAsset* in this sample. In the main test, *FamilyCEO* was significantly negatively associated with *ImpAsset*, but not *ImpDec.* This lack of significant association with *ImpAsset* in this robustness test further confirms the findings of the last robustness test (i.e., tobit regression) that the association between *FamilyCEO* and *ImpAsset* observed in the main test is not very robust. The variable *BoardInd* is positive and significantly associated with both *ImpDec* and *ImpAsset*. This is in line with the main findings and supports H3a and H3b, stating that family firms are more likely to report impairment losses, and report higher impairment losses, as the ratio of independent board members increases.

[Insert Table 9 about here]

We also wish to assess the economic significance of our results further. For this purpose, we focus on a specific situation where a certain type of firms are likely to experience poor performance or at least a rapid decline in performance, suggesting a possible impairment. Specifically, we examine the rapid decline in oil prices starting in 2014 and use this as an exogenous shock that was likely to trigger a need for reporting impairment losses in oil price exposed firms. We estimate equations (1) and (2) (see Section 3.2) in a sample of oil firms for the period 2014–2015[10]. Table 9, panel C, reports the results from these regressions. Consistent

[10] Firms with the following industry codes are defined as oil firms or oil-related firms: 06.000: Extraction of crude petroleum and natural gas, 09.100: Service activities for petroleum and natural gas, 49.500: Pipeline, 52.125: Services related to pipelines, 30.113: Construction of oil platforms and modules, 30.116: Installation work on drilling rigs and modules, and 52.223: Supply bases. This is based on a report from Statistics Norway regarding employees in the oil industry (i.e. Eikeland, 2014).

with our main results, the coefficient of *FamilyFirm* is negative at the 10% level with a *p*-value of 0.057, suggesting that family firms were less likely to report impairment losses in the period after the rapid decline in oil price.

Using the margins command in Software for Statistics and Data Science (STATA), we find that the average marginal effect of *FamilyFirm* is -0.09, i.e., the likelihood of reporting impairment losses was 9 percentage point higher for non-family firms. This difference is significant at the 10% level with a *p*-value of 0.072. This suggests that in this specific situation where the firms in the sample were most likely hit by a negative economic shock, which is likely to trigger a need for impairment, the difference between the likelihood of reporting impairment losses between family and non-family firms was substantial and economically significant. We find no significant difference in the impairment amount in this sample. The coefficient is, as expected, negative, but not significant with a *p*-value of 0.259. Given our small sample (N=113) and the fact that only 12% of these reported impairment losses (untabulated), it might be hard to find statistically significant results.

5. Concluding Remarks

This paper investigates the reporting of impairment losses in family versus non-family private firms, and variations among family firms. Impairment losses are highly discretionary and may reflect earnings management incentives (e.g. Francis et al., 1996; Greco et al., 2015; Riedl, 2004). Family firms are likely to have different reporting incentives from non-family firms, suggesting that the reporting of impairment losses and consequently earnings quality may differ between family and non-family firms (e.g. Greco et al., 2015; Paiva et al., 2016).

The overall results suggest that family firms are less likely to report impairment losses and report lower impairment losses compared to non-family firms, controlling for economic conditions that probably reflect the economic impairment. The underlying notion is that family firms are more reluctant to report impairment losses than non-family firms. An alternative

explanation is that non-family firms report more impairment losses in order to meet income smoothing or big bath accounting incentives, though this explanation is less evident in a private firm setting. When performing additional tests, we do find evidence suggesting that family firms in general are reluctant to report impairment losses, and that the reported impairment losses in non-family firms reflect future economic fundamentals to a larger extent than the reported impairment losses in family firms.

We also examine whether the reporting of impairment losses varies with family power and influence among private family firms. We find some evidence suggesting that a family firm with a family CEO reports lower impairment losses than a family firm where the CEO is not a family member, though these findings are not very robust, and we do not find significant differences in the likelihood of reporting impairment losses related to whether or not the CEO is a family member. Our results also suggest that board members who are not family members are positively associated with both the likelihood of reporting impairment losses and the impairment amount, suggesting that independent board members mitigate the general tendency of family firms to avoid reporting impairment losses.

Since the true economic impairment is unobservable, it is necessary to use proxies to control for whether impairment losses are faithfully reported or not. We base our proxies on prior research (e.g. Francis et al., 1996; Greco et al., 2015; Riedl, 2004), but the validity of our results is limited to the extent that these proxies capture true economic impairment. This study is conducted in a setting with low book-tax conformity. Future research should examine whether these results are generalizable to a high book-tax conformity setting. In such a setting, firms may have incentives to manage earnings downwards in order to reduce tax payments, and it would be interesting to examine whether family firms' desires to reduce tax payments outweighs their desires to avoid reporting poor performance.

Appendix. Variable Definitions

Variable	Definition
Outcome Variables	
ImpDec	Impairment decision, a dummy variable that equals 1 if the firm has reported impairment losses current year and 0 if not.
ImpAsset	Impairment losses, measured as impairment scaled by lagged total assets and multiplied by 100.
Test Variables	
FamilyFirm	A dummy variable that takes the value 1 if the family ownership is more than 50% and 0 if not.
FamilyCEO	A dummy variable that equals 1 if the CEO is a member of the controlling family and 0 if not.
BoardInd	The number of board members who are not a member of the controlling family divided by the total number of board members.
Control Variables	
preSIZE	Natural logarithm of pre-impairment total assets.
Big4	A dummy variable that equals 1 if the financial statements are audited by one of the big 4 audit firms and 0 if not.
preDebtRatio	The ratio of total debt to pre-impairment total assets.
GROWTH	Change in sales in year *t* $(\frac{Sales_t}{Sales_{t-1}}) - 1$.
preROA	Net income in year *t* plus impairment, divided by lagged total assets.
lnAF	Natural logarithm of auditor fee.
Hist	Impairment history, measured as lagged *ImpAsset* (*ImpAsset*$_{t-1}$).
SecondLargest	Fraction of shares owned by the second largest shareholder
lnFirmAge	Natural logarithm of number of years since foundation date
Family_Ownership	The aggregated fraction of shares held by the largest owning family, calculated using ultimate ownership.

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Tables

Table 1. Sample Selection

Sample Selection	Firm-years
Observations in the CCGR database for the years 2001–2015	3 316 306
Exclusion criteria	
Firms with sales less than 2 million NOK in at least one year	2 520 703
Public firms or unlimited liability firms	85 085
Financial firms	4 032
Firm-years with missing values on family ownership	119 303
Firm-years with missing values on other variables	76 442
Number of firm-years	510 741

Table 2. Summary Statistics

Panel A: Descriptive Statistics for Family Firms								
	N	Mean	SD	p5	p25	p50	p75	p95
ImpDec	339 816	0.01	0.09	0.00	0.00	0.00	0.00	0.00
ImpAsset	339 816	0.05	0.98	0.00	0.00	0.00	0.00	0.00
preROA	339 816	0.09	0.17	-0.16	0.01	0.07	0.17	0.39
Audit Fee (TNOK)	339 816	34.88	30.63	10.00	18.00	26.00	40.00	89.00
Total Assets (MNOK)	339 816	15.76	40.70	0.91	2.27	4.73	11.65	60.13
preDebtRatio	339 816	0.75	0.27	0.31	0.59	0.77	0.89	1.13
GROWTH	339 816	0.09	0.32	-0.26	-0.05	0.04	0.16	0.58
Hist	339 816	0.04	0.91	0.00	0.00	0.00	0.00	0.00
Big4	339 816	0.23	0.42	0.00	0.00	0.00	0.00	1.00
SecondLargest	339 816	0.18	0.18	0.00	0.00	0.15	0.33	0.50
FirmAge	339 816	15.05	12.78	2.00	6.00	12.00	20.00	37.00
FamilyCEO	339 816	0.77	0.42	0.00	1.00	1.00	1.00	1.00
BoardInd	339 816	0.20	0.29	0.00	0.00	0.00	0.50	0.75
Family_Ownership	339 816	0.90	0.16	0.55	0.83	1.00	1.00	1.00

Panel B: Descriptive Statistics for Non-family Firms								
	N	Mean	SD	p5	p25	p50	p75	p95
ImpDec	170 925	0.02	0.12	0.00	0.00	0.00	0.00	0.00
ImpAsset	170 925	0.08	1.25	0.00	0.00	0.00	0.00	0.00
preROA	170 925	0.10	0.18	-0.17	0.01	0.07	0.18	0.43
Audit Fee (TNOK)	170 925	42.97	41.69	10.00	19.00	30.00	48.00	129.00
Total Assets (MNOK)	170 925	26.60	61.14	1.01	2.76	6.55	19.08	125.81
preDebtRatio	170 925	0.75	0.26	0.33	0.60	0.76	0.89	1.11
GROWTH	170 925	0.13	0.39	-0.27	-0.04	0.05	0.19	0.81
Hist	170 925	0.07	1.16	0.00	0.00	0.00	0.00	0.00
Big4	170 925	0.30	0.46	0.00	0.00	0.00	1.00	1.00
SecondLargest	170 925	0.28	0.15	0.07	0.17	0.25	0.40	0.50
FirmAge	170 925	13.84	13.29	2.00	5.00	11.00	18.00	35.00

Panel C: Pearson's Correlation Matrix for the Whole Sample

		v1	*v2*	*v3*	*v4*	*v5*	*v6*	*v7*	*v8*	*v9*	*v10*	*v11*	*v12*
ImpDec	*v1*	1.00											
ImpAsset	*v2*	0.52***	1.00										
FamilyFirm	v3	-0.03***	-0.01***	1.00									
preROA	v4	-0.03***	-0.02***	-0.02***	1.00								
GROWTH	v5	0.00*	-0.00**	-0.06***	0.23***	1.00							
preSIZE	v6	0.09***	0.03***	-0.12***	0.03***	0.06***	1.00						
preDebtRatio	v7	-0.00**	0.01***	0.00***	-0.28***	0.05***	-0.23***	1.00					
Hist	v8	0.10***	0.13***	-0.01***	-0.02***	-0.00***	0.02***	0.03***	1.00				
Big4	v9	0.05***	0.03***	-0.07***	-0.04***	0.01***	0.22***	-0.03***	0.03***	1.00			
lnAF	v10	0.08***	0.02***	-0.10***	-0.05***	-0.02***	0.55***	-0.05***	0.02***	0.16***	1.00		
SecondLargest	v11	-0.01***	-0.01***	-0.29***	0.03***	0.01***	-0.04***	0.01***	-0.01***	-0.05***	-0.02***	1.00	
lnFirmAge	v12	0.01***	-0.01***	0.06***	-0.02***	-0.25***	0.24***	-0.21***	-0.01***	0.02***	0.21***	-0.02***	1.00

Panel D: Pearson's Correlation Matrix for the Subsample of Family Firms Only

		v1	*v2*	*v3*	*v4*	*v5*	*v6*	*v7*	*v8*	*v9*	*v10*	*v11*	*v12*	*v13*	*v14*
ImpDec	*v1*	1.00													
ImpAsset	*v2*	0.53***	1.00												
FamilyCEO	v3	-0.02***	-0.02***	1.00											
BoardInd	v4	0.04***	0.03***	-0.33***	1.00										
preROA	v5	-0.02***	-0.01***	0.04***	-0.04***	1.00									
GROWTH	v6	-0.00	-0.00***	-0.02***	0.03***	0.24***	1.00								
preSIZE	v7	0.06***	0.02***	-0.18***	0.24***	0.03***	0.06***	1.00							
preDebtRatio	v8	0.00*	0.01***	-0.02***	0.02***	-0.30***	0.05***	-0.23***	1.00						
Hist	v9	0.11***	0.14***	-0.02***	0.02***	-0.01***	-0.00*	0.01***	0.03***	1.00					
Big4	v10	0.03***	0.02***	-0.09***	0.09***	-0.03***	0.01***	0.18***	-0.01***	0.02***	1.00				
lnAF	v11	0.06***	0.02***	-0.12***	0.24***	-0.06***	-0.03***	0.53***	-0.04***	0.02***	0.12***	1.00			
SecondLargest	v12	-0.00	-0.00	-0.02***	0.07***	0.00*	-0.00	0.05***	-0.02***	-0.00	-0.01***	0.04***	1.00		
lnFirmAge	v13	0.01***	-0.01***	-0.01***	0.02***	-0.02***	-0.22***	0.25***	-0.20***	-0.01***	0.02***	0.22***	0.04***	1.00	
Family_Ownership	v14	-0.01***	-0.01***	0.20***	-0.47***	-0.01***	-0.03***	-0.10***	-0.01***	-0.01***	-0.03***	-0.10***	-0.32***	-0.00	1.00

Panel A presents descriptive statistics (mean, standard deviation, the 5th, 25th, 50th, 75th, 95th percentiles) for family firms.
Panel B presents descriptive statistics (mean, standard deviation, the 5th, 25th, 50th, 75th, 95th percentiles) for non-family firms.
Panel C provides the Pearson correlations for the whole sample of private firms (used to test H1a and H1b).
Panel D provides the Pearson correlations for the subsample of family firms only (used to test H2a, H2b, H3a and H3b).
The variables are defined in Appendix. * (**) *** indicates significance at the 10 (5) 1 percent levels using two-tailed tests.

Table 3. Regression Results for ImpDec and ImpAsset on Test and Control Variables

	Panel A: Family vs. Non-family Firms – H1a and H1b				**Panel B: Family Firms – H2a, H2b, H3a and H3b**			
	ImpDec		*ImpAsset*		*ImpDec*		*ImpAsset*	
	Coefficients	*z-stat*	*Coefficients*	*t-stat*	*Coefficients*	*z-stat*	*Coefficients*	*t-stat*
FamilyFirm	-0.271***	(-6.99)	-0.015***	(-3.75)				
FamilyCEO					0.010	(0.18)	-0.021***	(-3.65)
BoardInd					0.418***	(4.97)	0.048***	(4.80)
preROA	-1.363***	(-10.19)	-0.083***	(-4.22)	-0.859***	(-4.89)	0.025	(0.81)
GROWTH	0.004	(0.10)	-0.023***	(-3.45)	-0.044	(-0.64)	0.003	(0.24)
preSIZE	0.403***	(21.48)	0.025***	(10.29)	0.312***	(13.24)	0.020***	(6.80)
preDebtRatio	0.055	(0.70)	0.019*	(1.83)	0.250**	(2.50)	0.018*	(1.80)
Hist	0.114***	(17.71)	0.136***	(7.48)	0.128***	(13.98)	0.187***	(5.17)
Big4	0.330***	(8.68)	0.037***	(8.31)	0.205***	(4.01)	0.021***	(3.75)
lnAF	0.278***	(8.60)	0.006*	(1.72)	0.321***	(7.56)	-0.001	(-0.35)
SecondLargest	-0.499***	(-4.47)	-0.032***	(-3.55)	-0.276*	(-1.86)	-0.018	(-1.34)
lnFirmAge	-0.133***	(-6.46)	-0.025***	(-10.82)	-0.099***	(-3.56)	-0.015***	(-5.57)
Family_Ownership					0.065	(0.40)	0.004	(0.21)
Year fixed effects	Yes		Yes		Yes		Yes	
Industry fixed effects	Yes		Yes		Yes		Yes	
Constant	-11.522***	(-39.09)	-0.299***	(-8.33)	-10.723***	(-26.24)	-0.232***	(-4.96)
N	510 734		510 741		339 775		339 816	
adj. R^2			0.019				0.027	
pseudo R^2	0.095				0.069			

This table presents the test for H1, H2 and H3. Panel A presents the results for H1a and H1b (equations (1) and (2)), addressing differences between family and non-family firms. Panel B presents the results for H2a, H2b, H3a and H3c (equations (3) and (4)), addressing variations *among* family firms. The first two columns of panel A present the coefficients and corresponding *z*-statistics of regressing *ImpDec* on test and control variables using logistic regression. The last two columns of panel A present the results of regressing *ImpAsset* on test and control variables using ordinary least squares (OLS) regression. The test variable of interest in panel A is *FamilyFirm.* The first two columns of panel B present the coefficients and corresponding *z*-statistics of regressing *ImpDec* on test and control variables using logistic regression. The last two columns of panel A presents the results of regressing *ImpAsset* on test and control variables using ordinary least squares (OLS) regression. The test variables of interest in panel B are *FamilyCEO* and *BoardInd,* and the regressions are run in a sample of family firms only. The variables are defined in Appendix. Fixed effects on year and industry are included. The *t*-and *z*-statistics are adjusted for within-cluster correlation using the Huber-White Sandwich Estimator. * (**) *** indicates significance at the 10 (5) 1 percent levels using two-tailed tests.

Table 4. Audit Quality (Big4)

	Panel A: Family Firms				Panel B: Non-family Firms			
	ImpDec		*ImpAsset*		*ImpDec*		*ImpAsset*	
	Coefficients	*z-stat*	*Coefficients*	*t-stat*	*Coefficients*	*z-stat*	*Coefficients*	*t-stat*
preROA	-0.900***	(-5.08)	-0.029	(-1.22)	-1.775***	(-9.30)	-0.161***	(-4.90)
GROWTH	-0.040	(-0.59)	-0.026***	(-3.61)	0.032	(0.56)	-0.022*	(-1.79)
preSIZE	0.335***	(14.31)	0.018***	(6.34)	0.462***	(16.56)	0.033***	(7.95)
preDebtRatio	0.271***	(2.72)	0.035***	(3.08)	-0.184	(-1.55)	-0.010	(-0.50)
Hist	0.130***	(14.17)	0.149***	(5.84)	0.095***	(12.47)	0.118***	(4.67)
Big4	0.223***	(4.39)	0.024***	(4.75)	0.442***	(7.70)	0.055***	(6.71)
lnAF	0.350***	(8.28)	0.006	(1.56)	0.197***	(4.28)	0.003	(0.50)
SecondLargest	-0.283**	(-2.12)	-0.007	(-0.69)	-0.679***	(-3.17)	-0.068***	(-3.36)
lnFirmAge	-0.105***	(-3.78)	-0.018***	(-7.21)	-0.163***	(-5.47)	-0.036***	(-8.01)
Year fixed effects	Yes		Yes		Yes		Yes	
Industry fixed effects	Yes		Yes		Yes		Yes	
Constant	-11.045***	(-30.32)	-0.247***	(-5.92)	-12.123***	(-25.80)	-0.358***	(-5.57)
N	339 775		339 816		170 922		170 925	
adj. R^2			0.022				0.018	
pseudo R^2	0.068				0.122			

This table presents the results from equations (1) and (2) for samples of family firms and non-family firms separately. The variable of interest in this robustness test is *Big4.* Panel A presents the results from the subsamples of family firms only, while panel B presents the results from the subsamples of non-family firms only. The first two columns of panel A present the coefficients and corresponding *z*-statistics of regressing *ImpDec* on test and control variables using logistic regression. The last two columns of panel A present the results of regressing *ImpAsset* on test and control variables using ordinary least squares (OLS) regression. The first two columns of panel B present the coefficients and corresponding *z*-statistics of regressing *ImpDec* on test and control variables using logistic regression. The last two columns of panel B present the results of regressing *ImpAsset* on test and control variables using ordinary least squares (OLS) regression. The variables are defined in Appendix. Fixed effects on year and industry are included. The *t*- and *z*-statistics are adjusted for within-cluster correlation using the Huber-White Sandwich Estimator. * (**) *** indicates significance at the 10 (5) 1 percent levels using two-tailed tests.

Table 5. Reduced Sample with Fewer Incentives for Big Bath Accounting and Income Smoothing

	ImpDec		*ImpAsset*	
	Coefficients	*z-stat*	*Coefficients*	*t-stat*
Familyfirm	-0.301***	(-5.55)	-0.008**	(-2.15)
preROA	-2.024***	(-6.53)	-0.152***	(-4.68)
GROWTH	-0.162*	(-1.96)	-0.020*	(-1.95)
preSIZE	0.460***	(16.73)	0.016***	(7.05)
preDebtRatio	-0.353***	(-2.70)	-0.021*	(-1.72)
Hist	0.186***	(11.48)	0.246***	(5.50)
Big4	0.281***	(5.24)	0.018***	(4.17)
lnAF	0.234***	(5.10)	-0.001	(-0.25)
SecondLargest	-0.424***	(-2.66)	-0.027***	(-2.62)
lnFirmAge	-0.153***	(-5.05)	-0.016***	(-6.33)
Year fixed effects	Yes		Yes	
Industry fixed effects	Yes		Yes	
_cons	-12.103***	(-27.40)	-0.140***	(-3.99)
N	255 947		255 954	
adj. R^2			0.052	
pseudo R^2	0.110			

This table presents the results from equations (1) and (2) for a reduced sample with fewer incentives for big bath accounting and income smoothing. The first two columns present the coefficients and corresponding *z*-statistics of regressing *ImpDec* on test and control variables using logistic regression. The last two columns present the results of regressing *ImpAsset* on test and control variables using ordinary least squares (OLS) regression. The variables are defined in Appendix. Fixed effects on year and industry are included. The *t*- and *z*-statistics are adjusted for within-cluster correlation using the Huber-White Sandwich Estimator. * (**) *** indicates significance at the 10 (5) 1 percent levels using two-tailed tests.

Table 6. Future Economic Fundamentals

	Panel A: CFO *ImpAsset*		**Panel B: GROWTH** *ImpAsset*		**Panel C: ROA** *ImpAsset*	
	Coefficients	*t-stat*	*Coefficients*	*t-stat*	*Coefficients*	*t-stat*
Familyfirm	-0.018***	(-4.08)	-0.018***	(-4.11)	-0.022***	(-4.35)
CFO_{t+1}	-0.058***	(-4.73)				
*FamilyFirm** CFO_{t+1}	0.035**	(2.45)				
$GROWTH_{t+1}$			-0.082***	(-6.46)		
*FamilyFirm** $GROWTH_{t+1}$			0.042***	(2.83)		
ROA_{t+1}					-0.183***	(-8.49)
*FamilyFirm** ROA_{t+1}					0.093***	(4.02)
preROA	-0.043**	(-2.20)	-0.061***	(-3.16)	0.003	(0.11)
GROWTH	-0.025***	(-3.96)	-0.024***	(-3.86)	-0.027***	(-4.31)
preSIZE	0.025***	(10.75)	0.026***	(11.13)	0.025***	(10.69)
preDebtRatio	0.003	(0.32)	0.005	(0.53)	0.007	(0.82)
Hist	0.139***	(7.27)	0.139***	(7.27)	0.139***	(7.27)
Big4	0.035***	(8.17)	0.035***	(8.16)	0.035***	(8.13)
lnAF	0.005	(1.43)	0.004	(1.22)	0.005	(1.43)
SecondLargest	-0.031***	(-3.54)	-0.032***	(-3.66)	-0.029***	(-3.36)
lnFirmAge	-0.022***	(-9.88)	-0.023***	(-10.26)	-0.021***	(-9.80)
Year fixed effects	Yes		Yes		Yes	
Industry fixed effects	Yes		Yes		Yes	
Constant	-0.299***	(-8.87)	-0.312***	(-9.27)	-0.298***	(-8.87)
N	501 236		501 236		501 236	
adj. R^2	0.022		0.022		0.022	

This table presents the results from equation (5). Panel A presents the coefficients and corresponding *t*-statistics from regressing *ImpAsset* on test and control variables using ordinary least squares (OLS) regression. The economic fundamentals variable of interest in this regression is future *CFO*. Panel B presents the coefficients and corresponding *t*-statistics from regressing *ImpAsset* on test and control variables using ordinary least squares (OLS) regression. The economic fundamentals variable of interest in this regression is future *GROWTH*. Panel C presents the coefficients and corresponding *t*-statistics from regressing *ImpAsset* on test and control variables using ordinary least squares (OLS) regression. The economic fundamentals variable of interest in this regression is future *ROA*. Fixed effects on year and industry are included. The *t*-statistics are adjusted for within-cluster correlation using the Huber-White Sandwich Estimator. * (**) *** indicates significance at the 10 (5) 1 percent levels using two-tailed tests.

Table 7. Tobit Regressions

	Panel A: Family vs. Non-family Firms – H1b		**Panel B: Family Firms – H2b and H3b**	
	ImpAsset		*ImpAsset*	
	Coefficients	*t-stat*	*Coefficients*	*t-stat*
FamilyFirm	-1.608***	(-6.57)		
FamilyCEO			-0.218	(-0.61)
Boardind			2.858***	(5.08)
preROA	-8.317***	(-9.52)	-5.303***	(-4.46)
GROWTH	-0.209	(-0.70)	-0.678	(-1.48)
preSIZE	2.551***	(19.99)	2.059***	(12.28)
preDebtRatio	0.908*	(1.79)	2.162***	(3.24)
Hist	1.113***	(21.56)	1.276***	(17.30)
Big4	2.347***	(9.43)	1.574***	(4.71)
lnAF	1.785***	(8.72)	1.953***	(7.11)
SecondLargest	-3.172***	(-4.58)	-1.842**	(-1.97)
lnFirmAge	-1.065***	(-7.71)	-0.818***	(-4.46)
Family_Ownership			-0.023	(-0.02)
Year fixed effects	Yes		Yes	
Industry fixed effects	Yes		Yes	
Constant	-83.234***	(-32.50)	-80.691***	(-23.06)
N	510 741		339 816	
pseudo R^2	0.063		0.050	

This table presents the results from equations (2) and (4), using tobit regression. The first two columns present the coefficients and corresponding *t*-statistics of regressing *ImpAsset* on test and control variables as presented in equation (2). The last two columns present the results of regressing *ImpAsset* on test and control variables as presented in equation (4) in a sample of family firms only. The variables are defined in Appendix. Fixed effects on year and industry are included. The *t*- statistics are adjusted for within-cluster correlation using the Huber-White Sandwich Estimator. * (**) *** indicates significance at the 10 (5) 1 percent levels using two-tailed tests.

Table 8. Sample without the Largest 10% of Firms and Propensity Score Matching

	Panel A: Largest 10% of Firms Dropped				Panel B: Propensity Score Matching			
	ImpDec		*ImpAsset*		*ImpDec*		*ImpAsset*	
	Coefficients	*z-stat*	*Coefficients*	*t-stat*	*Coefficients*	*z-stat*	*Coefficients*	*t-stat*
FamilyFirm	-0.167***	(-3.56)	-0.009**	(-2.28)	-0.365***	(-8.70)	-0.019***	(-3.98)
preROA	-1.265***	(-8.59)	-0.074***	(-3.95)				
GROWTH	-0.033	(-0.57)	-0.018***	(-2.72)				
preSIZE	0.413***	(15.43)	0.013***	(5.98)				
preDebtRatio	0.203**	(2.26)	0.019*	(1.90)				
Hist	0.106***	(14.79)	0.105***	(5.69)				
Big4	0.283***	(6.21)	0.030***	(6.61)				
lnAF	0.335***	(8.58)	0.018***	(6.19)				
SecondLargest	-0.359***	(-2.81)	-0.018*	(-1.95)				
lnFirmAge	-0.131***	(-5.36)	-0.019***	(-8.86)				
Year fixed effects	Yes		Yes		Yes		Yes	
Industry fixed effects	Yes		Yes		Yes		Yes	
Constant	-12.004***	(-29.08)	-0.169***	(-4.82)	-3.853***	(-30.40)	0.098***	(6.17)
N	459 661		459 668		341 834		341 838	
adj. R^2			0.012				0.002	
pseudo R^2	0.053				0.022			

This table presents the results from equations (1) and (2), for a reduced sample without the largest 10% of firms (panel A) and for a propensity score matched sample (panel B). The first two columns of each panel present the coefficients and corresponding *z*-statistics of regressing *ImpDec* on test and control variables using logistic regression. The last two columns of each panel present the results of regressing *ImpAsset* on test and control variables using ordinary least squares (OLS) regression. The variables are defined in Appendix. Fixed effects on year and industry are included. The *t*-and *z*-statistics are adjusted for within-cluster correlation using the Huber-White Sandwich Estimator.
* (**) *** indicates significance at the 10 (5) 1 percent levels using two-tailed tests.

Table 9. Alternative Definition of Family Firms and Oil Price Shock

	Panel A: More than One Family Owner Full Sample				Panel B: More than One Family Owner Family Firms Only				Panel C: Oil Firms After the Oil Price Shock (2014/2015)			
	ImpDec		*ImpAsset*		*ImpDec*		*ImpAsset*		*ImpDec*		*ImpAsset*	
	Coeff.	*z-stat*	*Coeff.*	*t-stat*	*Coeff.*	*z-stat*	*Coeff.*	*t-stat*	*Coeff.*	*z-stat*	*Coeff.*	*t-stat*
FamilyFirm	-0.235***	(-4.99)	-0.011**	(-2.56)					-1.326*	(-1.90)	-0.744	(-1.14)
FamilyCEO					0.069	(0.91)	-0.012	(-1.31)				
BoardInd					0.380***	(2.93)	0.059***	(3.62)				
preROA	-1.402***	(-8.68)	-0.074***	(-2.69)	-0.561**	(-2.08)	0.158***	(2.77)	1.816	(0.57)	-0.975	(-0.60)
GROWTH	0.020	(0.40)	-0.027***	(-2.95)	-0.040	(-0.39)	-0.025*	(-1.69)	1.011	(1.49)	1.462	(1.06)
preSIZE	0.414***	(18.52)	0.026***	(8.97)	0.309***	(9.14)	0.018***	(4.53)	0.903	(1.40)	0.270	(1.16)
preDebtRatio	-0.068	(-0.71)	-0.002	(-0.14)	0.198	(1.31)	0.004	(0.31)	-0.563	(-0.36)	-0.314	(-0.44)
Hist	0.114***	(14.04)	0.148***	(6.25)	0.149***	(9.76)	0.255***	(3.80)	0.458*	(1.91)	0.293**	(2.53)
Big4	0.392***	(8.66)	0.043***	(7.37)	0.296***	(4.09)	0.020**	(2.28)	1.419	(1.20)	-0.904	(-0.65)
lnAF	0.227***	(6.02)	0.001	(0.23)	0.265***	(4.33)	-0.007	(-1.22)	0.601	(1.56)	0.058	(0.32)
SecondLargest	-0.810***	(-4.81)	-0.086***	(-5.25)	-0.843***	(-3.06)	-0.058*	(-1.96)	5.266	(1.31)	-1.112	(-0.25)
lnFirmAge	-0.149***	(-6.03)	-0.029***	(-9.40)	-0.119***	(-2.80)	-0.018***	(-4.25)	-0.137	(-0.27)	-0.316	(-0.98)
Family_Ownership					0.415*	(1.83)	0.021	(0.88)				
Year FE	Yes		Yes		Yes		Yes		Yes		Yes	
Industry FE	Yes		Yes		Yes		Yes		Yes		Yes	
Constant	-11.412***	(-31.27)	-0.274***	(-6.34)	-10.607***	(-17.84)	-0.200***	(-3.06)	-23.936**	(-2.06)	-2.841	(-1.16)
N	317 246		317 251		146 311		146 326		113		113	
adj. R^2			0.023				0.048				0.085	
pseudo R^2	0.106				0.076				0.381			

This table presents the results from equations (1) and (2), in various subsamples. Panel A presents the results from a sample with both family and non-family firms, requiring more than one family owner to be defined as a family firm. Panel B presents the results from family firms only, when requiring more than one family owner to be defined as a family firm. Panel C presents the results from oil price exposed firms in the period after the rapid decline in oil price (2014/2015). The first two columns of each panel present the coefficients and corresponding *z*-statistics of regressing *ImpDec* on test and control variables using logistic regression. The last two columns of each panel present the results of regressing *ImpAsset* on test and control variables using ordinary least squares (OLS) regression. The variables are defined in Appendix. Fixed effects on year and industry are included. The *t*- and *z*-statistics are adjusted for within-cluster correlation using the Huber-White Sandwich Estimator. * (**) *** indicates significance at the 10 (5) 1 percent levels using two-tailed tests.

Paper 4: Fundamental Performance and Earnings Quality in Private Firms

Charlotte Haugland Sundkvist
University of South-Eastern Norway

Tonny Stenheim
University of South-Eastern Norway

Abstract
This paper examines the effect of a negative shock to performance on earnings quality in a private firm setting. Private firms are fundamentally different from public firms, with the consequence that results from public firms may not be generalizable to private firms (e.g. Ball & Shivakumar, 2005; Burghstahler, Hail, & Leuz, 2006; Hope, Langli, & Thomas, 2012). Fundamental performance is unobservable and therefore difficult to measure. Existing research has used proxies that are subject to estimation errors and endogeneity concerns (e.g. Balsam, Haw, & Lilien, 1995; Mark L. DeFond & Park, 1997). This study attempts to overcome this issue by taking advantage of the exogenous shock in oil price which occurred in 2014 and using a difference-in-differences approach to investigate the effect of a negative shift in performance on earnings quality. The results suggest that a negative shock in fundamental performance lowers earnings quality.

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1. Introduction

This paper examines the effect of a decline in fundamental performance, proxied by a drop in oil prices, on earnings quality in private firms. A significant portion of the Norwegian economy is heavily exposed to the volatility of oil prices, whereas the remainder is less exposed, making it possible to conduct a difference-in-differences design to test the effect of fundamental performance, proxied by oil prices, on earnings quality.

Extant research in this field has mainly been conducted on public firms, yields mixed results and may suffer from endogeneity bias due to the use of accounting-based performance measures (e.g., ROA) or a lack of control group. Several studies demonstrate that extreme performance leads to more earnings management and less earnings quality due to stronger earnings management incentives (e.g. Balsam et al., 1995; Mark L. DeFond & Park, 1997; Keating & L. Zimmerman, 1999; Mollik, Mir, McIver, & Bepari, 2013; Persakis & Iatridis, 2015; Pong, Chia, Lapsley, & Lee, 2007), though some studies examining the financial crisis suggest less earnings management after the crisis, possibly due to increased monitoring (Cimini, 2015; Filip & Raffournier, 2014). The models estimating earnings management and earnings quality are also found to be heavily affected by situations of extreme performance (e.g. Dechow, Sloan, & Sweeney, 1995; Kothari, Leone, & Wasley, 2005), however the performance measures leading to these results suffer from endogeneity concerns due to the use of accounting-based performance measures (e.g., ROA).

The findings regarding public firms in situations of extreme performance may not be valid for private firms. The incentives and opportunities to manage earnings are likely different due to factors such as more concentrated ownership, more debt financing and the lack of

disciplinary capital market forces (Ball & Shivakumar, 2005; Bar-Yosef, D'Augusta, & Prencipe, 2019; Burghstahler et al., 2006; Hope & Vyas, 2017).

Concentrated ownership may cause wealth expropriation of a controlling owner at the expense of non-controlling owners (Fama & Jensen, 1983). Earnings management may serve as an instrument to facilitate or to conceal such expropriation. Debt financing may lead to stronger earnings management incentives in situations where firms need to raise new debt or there is risk of debt covenant violations (e.g. Mark L. DeFond & Jiambalvo, 1994; Dichev & Skinner, 2002; Sweeney, 1994; Watts & Zimmerman, 1986). Capital market incentives, however, are less prominent in private firms, which suggest that they are less inclined to use earnings management to smooth earnings or to meet or beat analyst's earnings forecasts. Private firms are also less subject to disciplinary capital market forces and less concerned with earnings informativeness, since they can communicate through private channels more easily than public firms (Burghstahler et al., 2006).

Prior research on earnings quality and performance has generally used accounting-based measures of performance (e.g. Balsam et al., 1995; Mark L. DeFond & Park, 1997; Keating & L. Zimmerman, 1999; Kothari et al., 2005). Since a firm's fundamental performance is unobservable, accounting earnings will be a function of fundamental performance and the accounting system used to measure fundamental performance (Dechow, Ge, & Schrand, 2010). Earnings quality will then be a function of the ability of the accounting system to measure fundamental performance (e.g., fair value vs. historical cost), and the application of the accounting system (e.g., intentional and unintentional estimation errors and bias) (Dechow et al., 2010; Mark L. DeFond, 2010). The literature has not been able to distinguish the effect of

fundamental performance from the effect of the accounting system on earnings quality. Dechow et al. (2010) call for more research on this matter.

This study responds to this call and aims to isolate the effect of fundamental performance while keeping the ability of the accounting system to measure fundamental performance constant. This is done by using a difference-in-differences design which allows us to capture the impact of fundamental performance, proxied by the drop in oil prices, without relying on accounting-based performance measures. Firms less affected by the drop in oil prices are used as control group. By measuring the difference in earnings quality before and after the drop for both the treatment and control group, and then measuring the difference of the differences across these two groups, we aim to isolate the effect which the change in performance, caused by the drop in oil prices, has on earnings quality. The significant drop in oil prices in 2014 is here used as an exogenous event. We focus on Norwegian firms, as Norway provides an excellent setting for using the oil price as a proxy for fundamental performance. By using a control group, we control for the general trend in the Norwegian economy and for the institutional setting which could affect earnings quality at that time regardless of the oil prices. Since the drop in oil prices was an external event outside the control of the individual firms, selection bias should not be a big concern in our design.

Prior research demonstrates that oil prices are likely to be a good measure of fundamental performance for oil firms (Hall & Stammerjohan, 1997; Han & Wang, 1998). A possible drawback of this approach is that oil price exposed companies may use derivatives to hedge against the exposure to oil price risk. If this is the case, the impact of oil prices on performance will be reduced, at least in the short run. However, future expected income will fall. It will probably not be possible to renew these hedging contracts with the same prices. The

extent to which hedging offsets some of the impact on performance will also work *against* finding any predicted differences in earnings quality between the oil price exposed firms and the control group.

Firms with extreme performance are likely to engage in earnings management (Kothari et al., 2005). Poor performance can generate incentives to manage earnings in order to hide poor performance (income smoothing), or to charge additional costs in the current period to make it easier to report better earnings in the future (big bath) (Kirschenheiter & Melumad, 2002). Thus, we expect to find that a decline in fundamental performance, caused by a drop in oil prices, will increase earnings management and lower earnings quality in the oil industry.

The results support our hypothesis that a negative shock in performance lowers earnings quality. This result still holds after controlling for accounting-based performance measures such as ROA and LOSS (negative net income), suggesting that changes in fundamental performance are not fully captured by accounting-based performance measures. Our results are also robust to the inclusion of firm fixed effects and using an alternative control group based on propensity score matching. Finally, we test whether our results are robust to various models of earnings management or earnings quality. We find that the results are sensitive to the choice of model.

Our findings are robust to an alternative specification of the Dechow and Dichev (2002) model (DD model) where we account for asymmetric gain and loss recognition, as suggested by Ball and Shivakumar (2006), but we fail to find any significant results by using the performance adjusted modified Jones model (Kothari et al., 2005). This may be due to the alternative control for fundamental performance in the DD model, where the mapping of accruals in cash flows accounts for this relation. A negative shift in performance will likely reduce future cash flows, and if this is not properly accounted for in current earnings (e.g.,

through write downs), the model will likely reveal this through increased positive discretionary accruals. In the performance adjusted Jones model, on the other hand, the relationship between non-discretionary accruals and performance is accounted for using ROA in the estimation model. A serious limitation with this approach is that if earnings are managed, this will affect ROA as well. Consequently, the model can compare ROA of a firm with managed earnings to the same ROA of a firm with unmanaged earnings when estimating non-discretionary and discretionary accruals. This will cause the discretionary accruals estimate to be too low, resulting in low power tests (Dechow et al., 2010).

In additional analysis we test whether our results seem to be driven by an increase in positive accruals or an increase in negative discretionary accruals. An increase in negative discretionary accruals may indicate big bath accounting, while an increase in positive discretionary accruals may indicate that managers attempt to reduce the negative effect of reduced performance on earnings. We find no indication that our main results are driven by an increase in negative discretionary accruals, but rather by an increase in positive discretionary accruals. Consequently, we find no indications of big bath accounting. On the contrary, our results suggest that managers respond to the decline in performance by increasing positive accruals, suggesting an attempt to dampen the negative shock to true performance on reported earnings.

We make multiple contributions to the literature. First, we provide a relatively clean identification of the impact of performance on earnings quality. Using a difference-in-differences design and exploiting the decline in performance of oil companies due to the rapid

decline of oil prices in 2014, allows us to examine the impact of performance on earnings quality without the use of a specific observable performance measure.

Second, we focus on private firms as it is especially challenging to measure performance in a private firm setting due to the lack of observable equity market prices. Private firms contribute to a large portion of the economic activity both in Norway and worldwide, which makes it important to assess determinants of earnings quality in these firms (Hope et al., 2012). To the best of our knowledge, no previous study has examined the impact of performance on earnings quality in private firms.

Third, we perform additional tests with alternative discretionary accruals models and document that the ability of the accrual models to detect earnings management caused by a shock to performance may vary among the models. We argue that this difference may be attributable to variations in how the models control for performance, as this is the main distinction between the models.

Fourth, we provide additional insights on earnings quality in a specific industry, i.e., the oil industry. Prior research on oil firms has mainly focused on incentives to manage earnings downwards to avoid political costs associated with reporting high performance in this industry (e.g. Byard, Hossain, & Mitra, 2007; Hall & Stammerjohan, 1997; Han & Wang, 1998). We focus on a group of oil firms that are less susceptible to political costs, i.e., private oil firms, and document that these may have incentives to manage earnings to conceal true performance as well. Finally, we document that our results still hold after controlling for measured performance such as ROA, suggesting that ROA does not fully capture fundamental performance.

The remainder of this paper is structured as follows. Section 2 reviews related literature and outlines the hypothesis development. Section 3 explains our research design and data, while Section 4 presents summary statistics, main findings, robustness tests and additional analysis. Finally, Section 5 concludes.

2. Literature Review and Hypothesis Development

2.1. Earnings Management Strategies

A negative shock to fundamental performance, e.g., a significant decline in oil prices for oil price exposed firms, may lead to lower earnings quality due to more earnings management. Given sufficient flexibility and discretion, and sufficiently low detection risk, engaging in earnings management may provide the managers of these firms with some net benefits (Fields, Lys, & Vincent, 2001; Schipper & Vincent, 2003). A negative shock in fundamental performance could give rise to earnings management incentives leading to two different reporting strategies. The first and most obvious strategy is to manage earnings upwards, that is to engage in income increasing earnings management. Several studies have documented that managers attempt to hide poor fundamental performance through income increasing earnings management (Balsam et al., 1995; Mark L. DeFond & Park, 1997; Keating & L. Zimmerman, 1999). The second and less obvious strategy is to manage earnings downwards (i.e., a big bath or income decreasing earnings management). Some prior studies have found evidence of income decreasing earnings management in times of financial crises (Mollik et al., 2013; Persakis & Iatridis, 2015; Pong et al., 2007). The latter of these two strategies will be discussed later in this section.

Several incentives may motivate managers to engage in income increasing earnings management. One set of incentives stems from the desire to prevent shareholders (and

potentially other stakeholders) from raising questions and concerns about the low firm performance, which could eventually lead to questions about the managers' capabilities for running the firm (Mark L. DeFond & Park, 1997; Fudenberg & Tirole, 1995).

A different set of incentives relevant in a private firm setting is related to debt financing. Debt is the most important financing source for private firms (Hope & Vyas, 2017) and may give rise to incentives to manage earnings upwards. A classical result in positive accounting theory is that the likelihood of income increasing earnings management increases when the debt-to-equity ratio increases (Fields et al., 2001; Watts & Zimmerman, 1978, 1986, 1990). Most long-term private debt contracts have one or more accounting-based debt covenants (Dichev & Skinner, 2002). These will in general be closer to being violated when reported earnings decreases. Upon violation, they will impose some costs on the firm, which will eventually also harm the managers.

Prior evidence suggests that debt covenants are associated with income increasing earnings management to reduce the likelihood of debt covenant violations (e.g. Mark L. DeFond & Jiambalvo, 1994; Sweeney, 1994), and that they have been suggested as a prominent motivation for earnings management in troubled periods (e.g. Filip & Raffournier, 2014). Evidence from private firms has also documented the importance of debt financing as a determinant of earnings quality (e.g. Gassen & Fülbier, 2015). Thus, poor fundamental performance may motivate managers to engage in income increasing earnings management to offset some of the effects of poor fundamental performance on reported earnings (Ahmad-Zaluki, Campbell, & Goodacre, 2011).

If the negative shock in performance is sufficiently large, managers may select income decreasing earnings management, i.e., to take a big bath, rather than income increasing earnings

management. Taking a big bath involves underreporting the current period's earnings by charging the current period with as much costs as possible, including future periods' costs. This makes it easier to report higher earnings in the future, since some of the costs have already been charged (Kirschenheiter & Melumad, 2002). Some studies on public firms suggest an increase in income decreasing discretionary accruals in times of financial crises (e.g. Mollik et al., 2013; Persakis & Iatridis, 2015; Pong et al., 2007), indicative of a sort of big bath behavior, making it easier to report higher earnings after the crisis (e.g. Persakis & Iatridis, 2015).

Since the negative shock in our setting was caused by an external event outside the managers' control, this may increase the likelihood of taking a bath and placing the blame on the external event. Still, the managers will probably be compared to managers of comparable firms facing similar conditions. This may reduce incentives for big bath accounting, as it can potentially cause earnings to fall below that of comparable firms. In addition, big bath accounting may increase the likelihood of debt covenant violations. Since debt financing is the primary financing source for private firms (e.g. Hope & Vyas, 2017), managers of private firms may be less inclined to engage in big bath accounting compared to public firms.

The literature discussed so far suggests that poor fundamental performance increases the likelihood of earnings management, though it is not straightforward whether managers will respond with income increasing or income decreasing earnings management. Some prior studies also suggest that firms experiencing economic crises are less likely to engage in earnings management. A crisis or economic downturn can increase monitoring from auditors, creditors and other stakeholders, thus reducing managers' discretion and opportunity to manage earnings (Filip & Raffournier, 2014; Pong et al., 2007). Increased litigation risk and demand for timely loss recognition during recession periods should also reduce earnings management during

financial crises (Filip & Raffournier, 2014). In line with these arguments, some prior studies suggest that economic downturns are associated with less earnings management (Cimini, 2015; Filip & Raffournier, 2014). These studies are conducted on public firms, and incentives and opportunities for earnings management in private firms may differ significantly from those in public firms (Ball & Shivakumar, 2005; Burghstahler et al., 2006; Hope, Thomas, & Vyas, 2013), thus suggesting that findings from public firms may not be generalizable to private firms (Hope et al., 2012). Private firms in general face lower litigation risk and less demand for timely loss recognition from stakeholders compared to public firms, and litigation risk in Norway is generally low (Ball & Shivakumar, 2005; Burghstahler et al., 2006; Hope & Langli, 2010). Thus, the constraining effects on earnings management in economic crises observed among public firms may not be applicable to private firms, suggesting that the first order effect of decline in fundamental performance in private firms is likely to be more earnings management and consequently less earnings quality.

Based on the literature review and discussion in this section, we propose the following hypothesis:

Hypothesis: A negative shock to performance will lower earnings quality.

3. Data, Sample, and Research Design

3.1. Challenges in Measuring Performance

Measuring true performance is challenging, and prior studies on earnings quality and performance have used various measures such as return on assets (ROA), pre-managed earnings, and cash flows (e.g. Balsam et al., 1995; Mark L. DeFond & Park, 1997; Kothari et al., 2005). The most common measure, however, is ROA. It is calculated using accounting figures and is therefore a noisy measure of fundamental performance. It is a function of fundamental performance, accounting regulation and the implementation of the accounting regulation.

One particular aspect is highly influential when it comes to ROA, and that is the magnitude of tangible assets. As most accounting regimes, including Norway's, require all tangible assets to be reported in the balance sheet, there are generally restrictions regarding doing the same for intangible assets, especially for internally generated intangible assets. Thus, firms with few tangible assets, typically knowledge-intensive firms such as auditing firms and consulting firms, will have higher ROA than firms with ample tangible assets such as industrial firms. This problem can to some extent be mitigated by comparing ROA within industries. If the accounting figures are managed, however, this introduces severe endogeneity problems. ROA will then be a function of earnings management and true performance, which suggests that ROA is a noisy measure of true performance.

Using the oil price as a proxy for fundamental performance in a sample of oil price exposed firms, the performance effect on earnings quality can be controlled for without the use of accounting-based performance measures.

3.2. Data and Sample

Our sample consists of Norwegian private limited liability firms. Accounting data and industry data are collected from the CCGR database at the BI Norwegian Business School. Firms are classified as either oil firms or non-oil firms (control group) based on their industry code. This classification is based on a report from Statistics Norway regarding employees in the oil industry (i.e., Eikeland, 2014). According to this report, the following industry codes are oil firms or oil-related firms:

- 06.000 – Extraction of crude petroleum and natural gas
- 09.100 – Service activities for petroleum and natural gas
- 30.113 – Construction of oil platforms and modules
- 30.116 – Installation work on drilling rigs and modules
- 49.500 – Pipeline
- 52.125 – Services related to pipelines
- 52.223 – Supply bases

To isolate the effect of the negative shock in oil prices, we use a difference-in-differences estimator, using firms that are not defined as oil firms or oil-related firms as controls. This design controls for heterogeneity between the two groups before treatment, and time trends that would have affected earnings quality regardless of treatment. Oil prices started to decline in the last half of 2014, and we define 2014 as the year after the oil shock and 2013 as the year before the oil shock.

There are 560 391 observations in the CCGR database for the years 2013 and 2014. After eliminating firms with sales less than 1 million NOK in the sample period, public firms, non-limited liability firms, financial firms, and firms with missing information on necessary

variables or not present in both time periods, our sample consists of 130 158 observations. Out of these observations, only 438 observations pertain to oil firms while the remainder pertain to non-oil firms. We use this as our first sample, and we construct a second sample by restricting the industries in the control group. This second sample is an attempt to make the two groups more similar. For our second sample, we require that the firms in the control group only consist of firms in the same broad industry group as the firms in the treatment group (the oil firms). The firms in the treatment group all come from industry group B, C, and H[1]. Hence, we require that the firms in the control group must also come from industry group B, C, and H. This limits our sample to 16 353, where 438 observations pertain to oil firms and the remaining observations to non-oil firms. Table 1 describes the details of the sample selection process.

[Insert table 1 about here]

3.3. Model Specification

We specify the following main model to test our hypothesis:

$$(1)\ EarningsQuality_{it} = \beta_0 + \beta_1 Oil_i + \beta_2 OS_t + \beta_3 Oil_i * OS_t + \beta_4 lnAF_{it} + \beta_5 SizeAssets_{i.t} + \beta_6 DebtRatio_{it} + \beta_7 Growth_{i,t} + \beta_8 Big4_{i,t} + \beta_9 SizeSales_{i,t} + \beta_{10} lnFirmAge_{i,t} + \varepsilon_{i,t}$$

EarningsQuality is measured using the DD model, modified by McNichols (2002).

We run the following regression for each industry year with a minimum of 20 observations:

$$(2)\ WCAccr_{i,t} = \alpha_0 + \alpha_1 CFO_{i,t-1} + \alpha_2 CFO_{i,t} + \alpha_3 CFO_{i,t+1} + \alpha_4 \Delta REV_{i,t} + \alpha_5 PPE_{i,t} + \varepsilon_{i,t}$$

[1] Industry group B=Mining and quarrying, Industry group C=Manufacturing, and industry group H=Transportation and storage. An overview of industry codes and their corresponding industry groups can be found on Statistics Norway's website: https://www.ssb.no/en/klass/klassifikasjoner/6 (retrieved 18.08.2017).

Where $WCAccr_{i,t}$ is working capital accruals, measured as change in current assets – change in cash – change in short-term debt + change in interest-bearing short-term debt + change in proposed dividends, scaled by lagged total assets. CFO is cash flows from operations, measured as net income before extraordinary items less total accruals, scaled by lagged total assets (Hope, Thomas, & Vyas, 2016). Total accruals is measured as working capital accruals + depreciation expenses + impairment losses.[2] $\Delta Rev_{i,t}$ is annual change in revenues, scaled by lagged total assets. $PPE_{i,t}$ is property, plant, and equipment, scaled by lagged total assets.

We winsorize the variables in this model at the 1st and 99th percentiles (e.g. Francis, LaFond, Olsson, & Schipper, 2005). This model is estimated for each industry year with a minimum of 20 observations. The residuals measure the discretionary working capital accrual, and the absolute values of these firm-specific residuals (multiplied by -1) are used as our proxy for earnings quality (e.g. Hope et al., 2013).

Oil is a dummy variable that equals 1 if the firm is an oil company and 0 if not. *OS* is a time dummy that equals 1 for the time period after the oil shock (2014) and 0 before the oil shock (2013). The interaction variable *Oil*OS* measures the treatment effect. This variable tests our hypothesis and is expected to be negative. Control variables are included in the model based on prior research.

A control variable of special importance in this design is to control for audit effort. Auditors may have increased their effort in oil companies after the performance shock. Increased audit effort should increase earnings quality. This could induce systematic differences between the treatment and control groups that were not present prior to the event.

[2] Depreciation expenses and impairment losses are reflected as negative amounts in the database.

A common proxy for audit effort is to use audit fees (e.g. Hope et al., 2012). *lnAF* is measured as the natural logarithm of audit fees. *SizeAssets* is measured as the natural logarithm of total assets. *DebtRatio* is measured as the ratio of total debt to total assets. It is included in the model to control for a possible increased demand for accounting information from debtholders (Hope et al., 2016) and motivations to manage earnings to avoid debt covenant violations (e.g. Mark L. DeFond & Jiambalvo, 1994). *Growth* is measured as changes in sales from year *t*-1 to year *t*. *Big4* is a dummy variable that equals 1 if the financial statements are audited by one of the Big 4 audit firms and 0 if not. Prior research documents that the use of a Big 4 audit firm is associated with earnings quality (e.g., Becker, Defond, Jiambalvo, & Subramanyam, 1998; Che, Hope, & Langli, 2020) *SizeSale* is an additional size variable measured as the natural logarithm of total revenue. This variable is included in the model because oil firms and non-oil firms are likely to differ significantly when it comes to size, where oil firms are typically larger than non-oil firms. *lnFirmAge* is measured as the natural logarithm of years since foundation date. Together with *Growth* and the size variables, this variable is included in the model to account for differences in operating volatility which may affect earnings quality (e.g. Hribar & Nichols, 2007).

The variables *SizeAssets*, *DebtRatio*, *Growth* and *SizeSales* are winsorized at the 1% level. We adjust for serial correlation and heteroscedasticity by calculating the standard errors using the Huber-White Sandwich Estimator, clustered at the firm level (e.g. Petersen, 2009). β_3 measures the treatment effect, and we expect this coefficient to be negative. Variable definitions are presented in Appendix.

4. Results

4.1. Summary Statistics

Summary statistics are presented in Table 2. Panel A and panel B present descriptive statistics for oil firms and non-oil firms in sample 1 and sample 2 respectively. In both samples, mean *EarningsQuality* is higher for the group of non-oil firms (-0.09 in sample 1 and -0.08 in sample 2) compared to the group of oil firms (-0.12).[3] Audit fees are on average higher for the oil firms (369.87) than for the non-oil firms (sample 1=44.13, sample 2=66.41). Oil firms are on average larger, measured by total assets (total assets=366.68 million NOK), than non-oil firms (total assets=37.13 million NOK in sample 1 and 61.86 million NOK in sample 2). We observe large differences in size when proxied by total revenue as well. Average total revenue for oil firms is 294.76 million NOK, while the corresponding value for non-oil firms is 31.64 million NOK in sample 1 and 58.56 million NOK in sample 2. These substantial differences in size between oil firms and non-oil firms highlights the importance of using both total assets and total sales as control variables to proxy for size in the regressions. We also perform robustness tests further addressing this issue in Section 4.5 and 4.7.

The average debt ratio is similar for both oil-firms and non-oil firms in sample 1 (0.7), but slightly lower for non-oil firms in sample 2 (0.67). Sales growth is also higher in oil firms (*Growth*=0.27) compared to non-oil firms (*Growth*=0.13 in sample 1 and 0.11 in sample 2). A total of 80% of the oil firms are audited by one of the Big 4 audit firms, while the corresponding number for non-oil firms is 31% for sample 1 and 37% for sample 2. Average firm age is 16.36 years for oil firms and for non-oil firms the corresponding number is 16.18 years in sample 1

[3] A number closer to zero suggests less accrual estimation errors and therefore higher earnings quality.

and 18.24 years in sample 2. Descriptive statistics reveal that the treatment and the control groups differ on several characteristics, but the two groups (oil firms and non-oil firms) appear somewhat more similar in sample 2. In Section 4.5, we obtain a more similar control group using propensity score matching.

[Insert table 2 about here]

Panel C and panel D of Table 2 report the correlation coefficients between the test and control variables for both samples. The correlation between *Oil*OS* and *EarningsQuality* is negative in both samples, providing preliminary support for our hypothesis. The correlation between *Oil*OS* and *Oil* is high (0.71 in sample 1 and 0.70 in sample 2) due to the way these variables are constructed. Our proxy for audit effort, *lnAF*, is highly correlated with both size variables. The correlation between *lnAF* and *SizeAssets* is 0.49 in sample 1 and 0.71 in sample 2, and the correlation between *lnAF* and *SizeSales* is 0.69 in sample 1 and 0.75 in sample 2. This is not surprising, as larger firms probably have more complex operations, thus requiring more audit effort. The two size variables are also highly correlated with each other. The correlation between *SizeAssets* and *SizeSales* is 0.56 in sample 1 and 0.79 in sample 2. Again, this is not surprising, as both of these variables are meant to proxy for size. Due to the relatively high correlations between some of the control variables, we examine the variance inflation factor (VIF) to check whether multicollinearity may be a problem in our analysis. The mean VIF-value is approximately 3 in both models, and the VIF-value is the same for both Size variables. Thus, multicollinearity is not likely to be a problem in our analysis. In untabulated robustness tests we also find that our results are robust to excluding one of the Size variables from the model (see Section 4.7).

4.2. Main Results

Table 3 presents the results from regressing *EarningsQuality* on test and control variables specified in regression equation (1) in Section 3.

[Insert table 3 about here]

The coefficient of the treatment variable *Oil* is negative and significant (β_1=-0.026, *t*-statistics=-2.81 in sample 1; β =-0.027, *t*-statistics=-2.91 in sample 2), indicating that *EarningsQuality* is on average lower for oil firms compared to non-oil firms prior to the oil shock. This variable controls for differences between the two groups prior to treatment (oil shock). *OS* is negative and significant (β_2=-0.003, *t*-statistics=-5.02 in sample 1; β_2=-0.005, *t*-statistics=-3.50 in sample 2), suggesting that *EarningsQuality* is lower in the period after the oil shock for the control group. This variable controls for general trends in the economy absent treatment.

The coefficient of *Oil*OS* measures the treatment effect, and tests our hypothesis. This coefficient is negative and significant at the 5% level in both samples (β_3=-0.026, *t*-statistics=-2.48 in sample 1; β_3=-0.022, *t*-statistics=-2.18 in sample 2). The coefficient has the expected sign and indicates that the reduction in earnings quality after the oil shock is higher/stronger for oil firms than non-oil firms. In other words, oil firms have lower earnings quality after the oil shock, controlling for the change in earnings quality for non-oil firms and the difference in earnings quality between the two groups before the oil shock. This indicates that a negative shock to performance lowers earnings quality and provides support for our hypothesis. The difference in earnings quality between the oil firms and non-oil firms is about twice as large after the oil shock compared to prior to the oil shock. The difference between the two groups

before the oil shock is measured by β_1 (-0.026 in sample 1 and -0.027 in sample 2), and the difference between the two groups after the oil shock is given by the sum of β_1 and β_3 (-0.026–0.026=-0.052 in sample 1 and -0.027–0.022=-0.049 in sample 2). This suggests that our results are not only statistically significant but have economic significance as well.

All the control variables are significantly associated with *EarningsQuality* at the 1% level. The coefficient of audit fees (*lnAF*) is negative in both samples. This suggests that firms with high audit fees have lower earnings quality compared to firms with low audit fees. However, it does not necessarily mean that audit fees, which is a proxy for audit effort, lowers earnings quality. The more likely explanation is that firms with intrinsically low earnings quality requires more audit effort.

Both our size proxies, i.e., *SizeAssets* and *SizeSales*, are positively associated with *EarningsQuality* in our tests. This indicates that larger firms have higher earnings quality than smaller firms. *Growth* and *DebtRatio* are both negatively associated with earnings quality.

The coefficient of *Big4* is negative and significant, indicating that firms audited by a Big 4 audit firm have lower earnings quality compared to firms audited by a non-Big 4 audit firm. As with *lnAF,* this does not necessarily mean that being audited by a Big 4 firm lowers earnings quality. According to the summary statistics presented in Table 2, Big 4 audits were highly represented in the sample of oil firms (80%), but much less represented in the sample of non-oil firms (31% in sample 1 and 37% in sample 2). Our results also show that oil firms generally have lower earnings quality (β_1 in Table 3 is significantly negative). Taken together, this may indicate that firms with intrinsically low earnings quality in our sample are more likely

to select a Big 4 audit firm, causing a negative association between *EarningsQuality* and *Big4*. *lnFirmAge* also has a positive coefficient in both samples, indicating that earnings quality increases with firm age.

4.3. Controlling for Measured Performance

In this section we test whether our results still hold after we control for measured performance by including ROA and *LOSS* (negative net income) in equation (1). ROA is return on assets, measured as net income divided by total assets. *LOSS* is a dummy variable that equals 1 if net income is negative and 0 if not.

Table 4 reports the results from this test. The interaction *Oil*OS* is still negative and significant, suggesting that there is an effect of reduced fundamental performance on earnings quality, even after controlling for accounting-based performance.[4] This also indicates that accounting-based performance measures, which are extensively used in prior research, do not fully capture fundamental performance.

[Insert table 4 about here]

[4] We have also tested whether the effect of *LOSS* is different between oil firms and non-oil firms by interacting *Oil* with *LOSS*. This interaction is not significant, indicating that the effect of *LOSS* does not differ between oil firms and non-oil firms, but the main results still hold. We use *ROA* as a continuous variable including both negative and positive ROA, rather than focusing on only positive ROA. This is because *ROA* contains more information about negative performance than *LOSS*. *LOSS* is a dummy variable which only indicates whether or not there has been a loss, while negative ROA provides information about the size of the loss, which may be correlated with earnings quality. However, an advantage of using *posROA* is that that the effect of losses on earnings quality will then be concentrated in the variable *LOSS* and not reflected in *ROA*. To ensure that this choice does not have an effect on the results on *Oil*LOSS*, we rerun equation (3) using *posROA* instead of *ROA*. *posROA* equals *ROA* if *ROA* is positive and 0 if not. Untabulated results show that *Oil*LOSS* is still insignificant when we use *posROA* instead of *ROA*.

4.4. Alternative Measures of Earnings Quality

In this section, we test whether our results hold using alternative discretionary accruals models. Extant research documents that the ability of the discretionary accruals models to capture earnings management varies among different models, especially when performance is extreme (e.g. Dechow et al., 1995; Kothari et al., 2005). The oil firms in our sample likely experienced an extreme decline in performance due to the fall in oil prices. This makes our setting especially interesting to assess whether the different accrual models vary in their ability to detect earnings management. For this purpose, we rerun the main regression using (1) the DD model modified by McNichols (2002) with asymmetric gain and loss recognition (Ball & Shivakumar, 2006), and (2) the performance adjusted modified Jones model (Kothari et al., 2005).

Ball and Shivakumar (2006) suggest a piecewise linear specification of the accrual models. Accounting rules require losses to be incorporated in earnings in a timely manner, but traditional earnings management measures do not incorporate timely loss recognition and the asymmetric treatment of gains and losses required by accounting regulation. Consequently, these models assume a linear relation between accruals and cash flows, which is unlikely to be valid (Ball & Shivakumar, 2006; Basu, 1997). Such model misspecifications may be especially problematic when performance is extreme (Ball & Shivakumar, 2006). Thus, we test whether our results still hold when we incorporate asymmetric gain and loss recognition in the DD model as suggested by Ball and Shivakumar (2006), and implemented by, for instance, Hope, Thomas, and Vyas (2017):

$$(3)\ WCAccr_{i,t} = \alpha_0 + \alpha_1 CFO_{i,t-1} + \alpha_2 CFO_{i,t} + \alpha_3 CFO_{i,t+1} + \alpha_4 \Delta REV_{i,t} + \alpha_5 PPE_{i,t} + \alpha_6 DCFO_{i,t} + \alpha_7 DCFO_{i,t} * CFO_{i,t} + \varepsilon_{i,t}$$

The variables in this model are defined in section 3.3, with the exception of *DCFO* which is a dummy variable which equals 1 if *CFO* current year is negative and 0 if not.

The performance adjusted Jones model is also interesting in this setting because it includes the accounting-based performance measure ROA to control for variations in performance across firms. Consequently, in theory, this should result in residuals that represent discretionary accruals which are excessive to what can be explained by variations in performance across firms (Kothari et al., 2005). A drawback of this approach is that ROA is affected by both true performance and earnings management, and there is no way of knowing whether the sample firms' ROA reflects only performance (limited of course by the ability of the accounting system to measure performance) or whether it reflects earnings management instead. For instance, if firm A has a ROA of 18% due to income increasing earnings management, but "true" ROA (adjusted for earnings management) is 16%, then the performance adjusted model will compare it to the level of accruals for another firm with a ROA of 18%, while it should have been compared to another firm with a ROA of 16% (Dechow et al., 2010). This will likely cause an underestimation of discretionary accruals for firm A, and the model will not be able to detect this earnings management. Thus, the performance adjusted Jones model risks "throwing the baby out with the bath water."

One of the main differences between the performance adjusted Jones model and the DD model modified by McNichols (2002) is how it accounts for the relation between performance and accruals.[5] In the DD model, performance is controlled for by the mapping of accruals in

[5] Another difference is that the DD model uses working capital accruals while the Jones model uses total accruals. In untabulated tests we rerun the DD model with total accruals instead of working capital accruals and find that our main results hold. Thus, the differences between the results using the DD model and the

cash flows, while the performance adjusted modified Jones model controls for performance using ROA. Consequently, if these two models differ in their ability to detect earnings management in our setting, it is likely attributable to how they model the relationship between performance and normal or non-discretionary accruals.

The performance adjusted modified Jones (1991) model, as modified by Dechow et al. (1995) and Kothari et al. (2005) is outlined below:

$$(4)\ Accr_{i,t} = \propto_0 + \propto_1 \left(\frac{1}{Assets_{i.t-1}}\right) + \propto_2 \Delta Rev_{i,t} + \propto_3 PPE_{i,t} + \propto_4 ROA_{i,t} + \varepsilon_{i,t}$$

Where $Accr_{i,t}$ indicates total accruals measured as working capital accruals + depreciation expenses + impairment losses.[6] $\Delta Rev_{i,t}$ is annual change in revenues less annual change in receivables, scaled by lagged total assets. $PPE_{i,t}$ is property, plant, and equipment for firm *i* in year *t*, scaled by lagged total assets, and $ROA_{i,t}$ is net income for firm *i* in year *t* scaled by average total assets. All variables in equations (3) and (4) are winsorized at the 1st and 99th percentiles. The models are estimated for each industry-year with a minimum of 20 observations, and the absolute values of the firm-specific residuals, multiplied by -1 are our measures of earnings quality (Hope et al., 2013).

[Insert table 5 about here]

performance adjusted Jones model observed in this subsection is not likely to be attributable to the use of working capital accruals vs. total accruals.

[6] Working capital accruals is measured as change in current assets – change in cash – change in short-term debt + change in interest-bearing short-term debt + change in proposed dividends. Depreciation expenses and impairment losses are reflected in the database as a negative amount.

Table 5 reports the results from the regressions with alternative measures of earnings management. Our results are qualitatively the same when using the DD model with asymmetric gain and loss recognition, but we fail to find significant results with the performance adjusted Jones model. Dechow et al. (2010) caution against using the performance adjusted Jones model in studies where performance motivated earnings management is of interest, as it may extract too much discretion from the discretionary accruals estimate. The mapping of accruals in cash flows, as in the DD model, may better account for the normal relationship between accruals and performance. For instance, a decline in fundamental performance, as in our setting, should result in reduced future cash flows. If these expectations of reduced future cash flows are not incorporated in earnings in a timely manner through negative accruals (e.g., write downs), this will result in poorer mapping of accruals in cash flows and consequently the model will recognize this as earnings management.

4.5. Propensity Score Matching and Firm Fixed Effects

The difference-in-differences estimator assumes that the change in the outcome variable (earnings quality) over time is constant between the two groups in the absence of treatment, i.e., the trend is parallel. In the main analysis, we control for the possibility that this assumption may not hold by adding control variables to the regression. An even stronger approach to deal with a possible breach of this assumption is to use a matched sample as control group. In this robustness test we use propensity score matching to determine the control group.

We match on all the control variables in equation (1) (Mark L DeFond, Hung, Li, & Li, 2015; Hope, Yue, & Zhong, 2019). In addition, we also match on *ROA* and *LOSS*.[7] We obtain propensity scores by including all these variables in a probit model with *Oil* as the outcome variable, i.e., the propensity scores reflect the probability of being an oil firm prior to treatment. We match treatment and control firms using nearest neighbor matching without replacement (Hope et al., 2019). We also restrict the matching to observations with propensity scores that fall within the common support of both groups (Bonacchi, Marra, & Zarowin, 2019). We match on ex ante values of the control variables (e.g. Hope et al., 2019), i.e., the value of the control variables in the year 2013, and we restrict the matching to firms in the main industry groups which includes oil firms, i.e., industry groups B, C, and H. Our matched sample consists of 424 treated firms (oil firms) and 424 control firms (non-oil firms). The results are reported in Table 6, panel A. The coefficient of *Oil*OS* is negative, as in the main test, and significant at the 5% level.

[Insert table 6 about here]

We also test whether our results hold when controlling for time-invariant unobserved heterogeneity using firm fixed effects. We control for firm fixed effects in all three samples (sample 1, sample 2 and propensity score matched sample). Table 6, panels B, C and D, report the results from these regressions and demonstrates that the results hold.

[7] ROA and *LOSS* are not included in the main analysis because they are proxies of the same underlying variable as our treatment effect (performance). In the propensity score matching procedure, however, we include ROA and *LOSS* because we match on values prior to the oil shock (i.e., 2013 observations). Thus, including ROA and *LOSS* in the matching procedure does not control for the change in measured performance; it only makes the two groups more similar with regard to measured performance prior to treatment.

4.6. Placebo Test

We perform a placebo test on a period where oil prices were relatively stable. Oil prices have generally been quite volatile, but the period 2002–2003 appears to be relatively stable. We thus selected this period for the placebo test.[8] We replace the dummy variable *OS* in equation (1) with the variable *OSplacebo*. *OSplacebo* is a dummy variable that equals 0 if the year is 2002 and 1 if the year is 2003. Applying the same sample restrictions as in the main test provides us with a sample of 101 544 firm year observations in sample 1 and 15 944 firm-year observations in sample 2, where 326 observations pertain to oil firms and the remaining observations to non-oil firms. Since the oil price was stable in this period, we expect *Oil* OSplacebo* to have no effect.

[Insert table 7 about here]

Table 7 reports the results from this regression. *Oil*OSplacebo* is not statistically significant and the placebo test is passed.

4.7. Untabulated Robustness Tests

We perform several robustness tests on equation (1) which are not tabulated. To further address whether multicollinearity may be a problem, as we include two variables to proxy for size (i.e., *SalesAssets* and *SizeSales*), we rerun the regression excluding either one of the size variables and the results hold. We also rerun the DD model using total accruals as the outcome variable instead of working capital accruals, and the results hold.

[8] This is based on historical values for the Brent spot prices. According to the US Energy Information Administration, the yearly closing price was approximately $30 each year in 2002 and 2003 (see https://www.eia.gov/dnav/pet/hist/rbrteD.htm for detailed historical information on the Brent spot price, retrieved 12.06.2020).

Discretionary accrual estimations may be affected when some, but not all, of the firms within an industry year experience an economic shock (Owens, Wu, & Zimmerman, 2017). We attempt to test whether this may have affected our results by rerunning the DD model for oil firms and non-oil firms separately (within each industry year). Untabulated analysis shows that our results are robust to this alternative estimation procedure.

4.8. Additional Analysis with Signed Discretionary Accruals

In this section we test whether the negative effect of reduced fundamental performance on earnings quality is attributed to more income increasing discretionary accruals or more income decreasing discretionary accruals.

This is interesting for at least two reasons. First, it will provide an indication of whether managers of private firms responded to the negative shock in performance by reducing the negative impact on earnings (i.e., positive discretionary accruals) or whether they responded by taking a big bath (i.e., negative discretionary accruals). Second, prior research has demonstrated that traditional models used to measure earnings management, such as the Jones model and the modified Jones model, do not perform well for firms exhibiting extreme performance (Dechow et al., 1995; Peasnell, Pope, & Young, 2000). Specifically, these models tend to over-reject the null hypothesis of no earnings management for firm-years with extreme performance, i.e., firm-years with extreme positive performance will also tend to have large discretionary positive accruals, and firms with extreme negative performance will also tend to have large negative discretionary accruals. It is therefore difficult to examine whether firms experiencing extreme performance have higher discretionary accruals due to earnings management or because of a mechanical relationship between discretionary accruals and performance (Kothari et al., 2005).

However, these findings are obtained using accounting-based measures on performance such as ROA, and it is not given that the models perform poorly on firms with extreme changes in fundamental performance. Still, this additional test will also address this issue. If the increase in the absolute value of discretionary accruals is driven by an increase in income decreasing discretionary accruals (i.e., large negative accruals) it will be hard to determine whether our findings are caused by earnings management strategies such as big bath accounting or whether the models perform poorly.

[Insert table 8 about here]

Table 8 show the results from these regressions. Columns 1 and 2 present the coefficients and corresponding *t*-statistics for the subsample of positive discretionary accruals. The coefficient is positive and significant at the 5% level, suggesting an increase in income increasing discretionary accruals for oil firms. Columns 3 and 4 present the coefficients and corresponding *t*-statistics for the subsample of firms with negative discretionary accruals. The coefficient is negative, but not significant. Taken together, these results suggest that managers of private firms respond to a negative shock to performance by managing accruals to conceal some of the impact on earnings.

We find no evidence that managers of private firms engage in big bath accounting. Further, the non-significant coefficient of negative discretionary accruals suggests that our original results are *not* caused by model misspecification, to the extent that firms with extreme negative change in performance also have large negative discretionary accruals, because the models may have difficulties separating normal and discretionary accruals for firms with extreme performance, as indicated by prior research (e.g. Dechow et al., 1995).

5. Conclusion

This paper investigates how performance affects earnings quality of private firms by examining a negative shift in performance. More specifically, we exploit an exogenous shock that affected the fundamental performance of some firms in the Norwegian economy, and use a difference-in-differences design to assess the effect of this shock to performance on earnings quality. Our results indicate that this negative shock to performance resulted in lower earnings quality for the firms affected, supporting our hypothesis. Additional analysis also suggests that this result holds even after controlling for measured performance.

We choose to focus on a negative shock to performance rather than a positive shock as a negative shock is likely associated with less estimation problems in the DD model. Norwegian accounting regulation (GAAP) requires all unrealized losses to be incorporated into earnings, but rarely allows unrealized gains to be included in the earnings figure. Thus, a positive shock to performance could produce a poor mapping of accruals into cash flows caused by accounting regulation rather than earnings management. Consequently, the DD model could overestimate discretionary accruals. This is not likely to be a problem in our setting, since unrealized losses should be included in earnings.

Our results are robust across three different samples of control groups (i.e., all non-oil firms (sample 1), non-oil firms restricted to the same industry groups as the oil firms (sample 2), and a propensity score matched control sample. The results also hold after controlling for time-invariant unobserved heterogeneity by adding firm fixed effects.

As with all earnings management research, our results are of course limited by the ability for discretionary accruals models to estimate discretionary accruals correctly. We find that our

results are robust to an alternative specification of the DD model including asymmetric gain and loss recognition (Ball & Shivakumar, 2006), but we do not find any significant effects using the performance matched Jones model (Kothari et al., 2005). We argue that this may be attributed to a better control for fundamental performance in the DD model where the mapping of accruals into cash flows accounts for this, rather than ROA.

Additional analysis reveals that our main results seem to be driven by an increase in positive discretionary accruals, suggesting that managers of private firms experiencing a negative shock to performance seem to manage earnings upwards to mitigate the effect on reported performance (earnings).

Our results imply that managers of private firms experiencing a decline in performance may manage earnings to offset some of the effect on reported performance. This suggests that the users of financial statements of private firms should be careful and attentive to the risk of earnings management when making decisions based on accounting figures from private firms experience a negative shock to performance.

Future research should attempt to analyze the effect of a positive shift in performance while addressing the aforementioned challenges (i.e., the accounting regulation typically do not permit recognition of unrealized gains in earnings). A boom in salmon prices can for instance be used as a measure of a positive shift in fundamental performance for the affected firms. If the same results are observed for a positive shift in performance, this might suggest that managers smooth earnings as a response to changes in fundamental performance. Future research should also test the effect of a negative shock to performance in other industries in order to increase the external validity of these results.

Appendix. Variable Definitions

Variable	Definition
EarningsQuality	Earnings quality, measured as the absolute values of the residuals from the Dechow and Dichev (2002) model, modified by McNichols (2002), multiplied by -1.
EarningsQualityAsym	Earnings quality, measured as the absolute values of the residuals from the Dechow and Dichev (2002) model, modified by McNichols (2002) and incorporating asymmetric gains and losses, multiplied by -1.
EarningsQualityJones	Earnings quality, measured as the absolute values of the residuals from the performance adjusted modified Jones model.
DiscretionaryAccruals	Discretionary accruals, measured as the value of the residuals from the Dechow and Dichev (2002) model, modified by McNichols (2002).
Oil	Dummy variable that equals 1 if the firm is defined as an oil company and 0 if not.
OS	Dummy variable that equals 1 if the time period is after the oil shock (2014) and 0 if before (2013).
*Oil*OS*	A dummy variable that equals 1 if the firm is defined as an oil company and the time period is after the oil shock and 0 if not.
lnAF	Natural logarithm of audit fees.
SizeAssets	Natural logarithm of total assets.
Big4	Dummy variable that equals 1 if the financial statements are audited by one of the Big 4 audit firms and 0 if not.
DebtRatio	The ratio of total debt to total assets.
Growth	Change in sales in year *t* $(\frac{Sales_t}{Sales_{t-1}}) - 1$.
SizeSales	Natural logarithm of total sales.
Firm Age	Natural logarithm of number of years since foundation date.
ROA	Net income in year *t* divided by the average book value of total assets in year *t* and *t*−1.
LOSS	A dummy variable that equals 1 if the firm has negative earnings and 0 if not.
OSplacebo	Dummy variable that equals 1 if the year is 2003 and 0 if the year is 2002.

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Tables

Table 1. Sample Selection

Sample Selection	Sample 1 Firm-years	Sample 2 Firm-years
Observations in the CCGR database for the years 2013–2014	560 391	560 391
Exclusion criteria		
Firms with sales less than 1 million NOK	289 231	289 231
Public firms	383	383
Non-limited liability firm	34 160	34 160
Financial firms	2 594	2 594
Firms with missing information on other variables or not present in both time periods	103 865	103 865
Firms in other industries		113 805
Number of firm-years	**130 158**	**16 353**

Table 2. Summary Statistics

Panel A: Descriptive Statistics Sample 1												
	Oil price exposed firms						Control group					
	N	Mean	SD	p25	p50	p75	N	Mean	SD	p25	p50	p75
EarningsQuality	438	-0.12	0.15	-0.15	-0.07	-0.03	129 720	-0.09	0.13	-0.11	-0.05	-0.02
Audit Fee (TNOK)	438	369.87	639.43	45.00	131.00	374.00	129 720	44.13	263.18	17.00	26.00	43.00
Total Assets (MNOK)	438	366.68	349.77	43.97	220.01	852.60	129 720	37.13	109.22	3.05	7.65	21.78
DebtRatio	438	0.70	0.38	0.49	0.73	0.87	129 720	0.70	0.35	0.49	0.70	0.86
Growth	438	0.27	1.26	-0.13	0.04	0.22	129 720	0.13	0.73	-0.06	0.03	0.14
Big4	438	0.80	0.40	1.00	1.00	1.00	129 720	0.31	0.46	0.00	0.00	1.00
Total Revenue (MNOK)	438	294.76	261.45	33.82	223.14	635.99	129 720	31.64	82.74	3.67	8.44	21.89
FirmAge	438	16.36	12.38	8.00	12.00	21.00	129 720	16.18	13.68	7.00	13.00	21.00
Panel B: Descriptive Statistics Sample 2												
	Oil price exposed firms						Control group					
	N	Mean	SD	p25	p50	p75	N	Mean	SD	p25	p50	p75
EarningsQuality	438	-0.12	0.15	-0.15	-0.07	-0.03	15 915	-0.08	0.11	-0.10	-0.05	-0.02
Audit Fee (TNOK)	438	369.87	639.43	45.00	131.00	374.00	15 915	66.41	160.00	22.00	35.00	61.00
Total Assets (MNOK)	438	366.68	349.77	43.97	220.01	852.60	15 915	61.86	158.47	3.95	9.88	32.98
DebtRatio	438	0.70	0.38	0.49	0.73	0.87	15 915	0.67	0.33	0.48	0.67	0.83
Growth	438	0.27	1.26	-0.13	0.04	0.22	15 915	0.11	0.65	-0.07	0.03	0.16
Big4	438	0.80	0.40	1.00	1.00	1.00	15 915	0.37	0.48	0.00	0.00	1.00
Total Revenue (MNOK)	438	294.76	261.45	33.82	223.14	635.99	15 915	58.56	121.41	6.62	15.45	45.51
FirmAge	438	16.36	12.38	8.00	12.00	21.00	15 915	18.24	14.05	9.00	15.00	24.00

Panel C: Correlations Sample 1

		v1	*v2*	*v3*	*v4*	*v5*	*v6*	*v7*	*v8*	*v9*	*v10*	*v11*
EarningsQuality	*v1*	1.00										
Oil	*v2*	-0.01***	1.00									
OS	*v3*	0.00	0.00	1.00								
*Oil*OS*	*v4*	-0.01***	0.71***	0.04***	1.00							
lnAF	*v5*	0.02***	0.11***	0.02***	0.08***	1.00						
SizeAssets	*v6*	0.19***	0.10***	0.01***	0.07***	0.49***	1.00					
DebtRatio	*v7*	-0.27***	-0.00	-0.01***	-0.00	-0.00*	-0.17***	1.00				
Growth	*v8*	-0.16***	0.01***	-0.06***	0.00	-0.01***	0.08***	0.02***	1.00			
Big4	*v9*	0.02***	0.06***	-0.00	0.04***	0.23***	0.29***	-0.01***	0.01***	1.00		
SizeSales	*v10*	0.06***	0.10***	0.01***	0.07***	0.69***	0.56***	-0.00	0.06***	0.23***	1.00	
lnFirmAge	*v11*	0.11***	0.00	0.07***	0.01**	0.19***	0.17***	-0.14***	-0.08***	0.04***	0.15***	1.00

Panel D: Correlations Sample 2

		v1	*v2*	*v3*	*v4*	*v5*	*v6*	*v7*	*v8*	*v9*	*v10*	*v11*
EarningsQuality	*v1*	1.00										
Oil	*v2*	-0.05***	1.00									
OS	*v3*	-0.01*	0.00	1.00								
*Oil*OS*	*v4*	-0.04***	0.70***	0.12***	1.00							
lnAF	*v5*	0.07***	0.22***	0.02**	0.16***	1.00						
SizeAssets	*v6*	0.15***	0.23***	0.01	0.16***	0.71***	1.00					
DebtRatio	*v7*	-0.27***	0.01	-0.01	0.01	0.00	-0.13***	1.00				
Growth	*v8*	-0.14***	0.04***	-0.03***	0.01	0.01	0.08***	0.02***	1.00			
Big4	*v9*	-0.00	0.14***	-0.00	0.10***	0.39***	0.42***	0.01	0.02*	1.00		
SizeSales	*v10*	0.12***	0.20***	0.01	0.14***	0.75***	0.79***	0.00	0.08***	0.35***	1.00	
lnFirmAge	*v11*	0.11***	-0.02***	0.06***	-0.01	0.20***	0.15***	-0.16***	-0.09***	0.03***	0.15***	1.00

Panel A presents descriptive statistics (mean, standard deviation, the 5th, 25th, 50th, 75th, 95th percentiles, minimum and maximum value) for sample 1.
Panel B presents descriptive statistics (mean, standard deviation, the 5th, 25th, 50th, 75th, 95th percentiles, minimum and maximum value) for sample 2.
Panel C provides the Pearson correlations among the variables in sample 1.
Panel D provides the Pearson correlations among the variables in sample 2.
The variables are defined in Appendix. * (**) *** indicates significance at the 10 (5) 1 percent levels using two-tailed tests.

Table 3. Regression Results for Earnings Quality on Test and Control Variables

	Sample 1 *EarningsQuality*		**Sample 2** *EarningsQuality*	
	Coefficients	*t-stat*	*Coefficients*	*t-stat*
Oil	-0.026***	(-2.81)	-0.027***	(-2.91)
OS	-0.003***	(-5.02)	-0.005***	(-3.50)
*Oil*OS*	-0.026**	(-2.48)	-0.022**	(-2.18)
lnAF	-0.013***	(-18.17)	-0.009***	(-4.38)
SizeAssets	0.013***	(24.43)	0.008***	(5.40)
DebtRatio	-0.089***	(-35.85)	-0.087***	(-13.34)
Growth	-0.031***	(-23.85)	-0.024***	(-8.52)
Big4	-0.006***	(-6.43)	-0.012***	(-5.15)
SizeSales	0.005***	(9.05)	0.009***	(4.74)
lnFirmAge	0.005***	(9.70)	0.007***	(4.39)
Industry fixed effects	Yes		Yes	
Constant	-0.289***	(-39.72)	-0.289***	(-16.76)
N	130 158		16 353	
adj. R^2	0.139		0.121	

This table presents the results of regressing *EarningsQuality* on test and control variables using OLS. The variables are defined in Appendix. Column 1 reports the coefficients from the regression equation specified in Section 3.3, controlling for industry fixed effects, for sample 1. Column 2 reports the corresponding *t*-statistics. Column 3 reports the coefficients from the regression equation specified in Section 3.3, controlling for industry fixed effects, for sample 2. Column 4 reports the corresponding *t*-statistics. The *t*-statistics are adjusted for within-cluster correlation using the Huber-White Sandwich Estimator. * (**) *** indicates significance at the 10 (5) 1 percent levels using two-tailed tests.

Table 4. Regression Results for Earnings Quality on Test and Control Variables – Controlling for Measured Performance

	Sample 1 *EarningsQuality*		**Sample 2** *EarningsQuality*	
	Coefficients	*t-stat*	*Coefficients*	*t-stat*
Oil	-0.025***	(-2.68)	-0.026***	(-2.84)
OS	-0.003***	(-5.21)	-0.005***	(-3.56)
*Oil*OS*	-0.023**	(-2.24)	-0.020**	(-1.99)
lnAF	-0.012***	(-16.49)	-0.008***	(-4.13)
SizeAssets	0.012***	(22.61)	0.008***	(5.17)
DebtRatio	-0.087***	(-35.05)	-0.085***	(-13.09)
Growth	-0.030***	(-23.42)	-0.024***	(-8.39)
Big4	-0.006***	(-6.61)	-0.012***	(-5.04)
SizeSales	0.005***	(7.61)	0.008***	(4.28)
lnFirmAge	0.005***	(8.96)	0.006***	(3.98)
ROA	-0.087***	(-12.27)	-0.074***	(-3.56)
LOSS	-0.044***	(-31.21)	-0.036***	(-8.92)
Industry fixed effects	Yes		Yes	
Constant	-0.251***	(-34.81)	-0.263***	(-15.37)
N	130 158		16 353	
adj. R^2	0.151		0.131	

This table presents the results of regressing *EarningsQuality* on test and control variables (including *ROA* and *LOSS*) using OLS. The variables are defined in Appendix. Column 1 reports the coefficients from the regression equation specified in Section 3.3, controlling for year and industry fixed effects, for sample 1. Column 2 reports the corresponding *t*-statistics. Column 3 reports the coefficients from the regression equation specified in Section 3.3, controlling for year and industry fixed effects, for sample 2. Column 4 reports the corresponding *t*-statistics. The *t*-statistics are adjusted for within-cluster correlation using the Huber-White Sandwich Estimator. * (**) *** indicates significance at the 10 (5) 1 percent levels using two-tailed tests.

Table 5. Alternative Measures of Earnings Quality

	Panel A: Earnings Quality Measured Using the DD Model with Asymmetric Gain and Loss Recognition				**Panel B: Earnings Quality Measured Using the Performance Adjusted Modified Jones Model**			
	Sample 1		**Sample 2**		**Sample 1**		**Sample 2**	
	EarningsQualityAsym		*EarningsQualityAsym*		*EarningsQualityJones*		*EarningsQualityJones*	
	Coefficients	*t-stat*	*Coefficients*	*t-stat*	*Coefficients*	*t-stat*	*Coefficients*	*t-stat*
Oil	-0.027***	(-3.08)	-0.028***	(-3.10)	-0.032*	(-1.94)	-0.033*	(-1.94)
OS	-0.003***	(-4.58)	-0.005***	(-3.81)	-0.001	(-1.26)	-0.000	(-0.09)
*Oil*OS*	-0.028***	(-2.65)	-0.024**	(-2.29)	-0.015	(-0.79)	-0.016	(-0.85)
lnAF	-0.013***	(-18.30)	-0.009***	(-4.57)	-0.007***	(-6.53)	-0.001	(-0.18)
SizeAssets	0.014***	(28.55)	0.009***	(6.22)	0.012***	(17.24)	0.008***	(4.04)
DebtRatio	-0.089***	(-35.68)	-0.086***	(-13.38)	-0.080***	(-30.97)	-0.082***	(-11.36)
Growth	-0.029***	(-23.08)	-0.024***	(-8.47)	-0.047***	(-28.79)	-0.047***	(-8.97)
Big4	-0.005***	(-6.27)	-0.012***	(-5.16)	-0.014***	(-10.56)	-0.027***	(-7.19)
SizeSales	0.004***	(6.70)	0.008***	(4.70)	-0.001	(-1.05)	0.003	(1.30)
lnFirmAge	0.005***	(9.10)	0.006***	(4.30)	0.015***	(18.49)	0.017***	(7.51)
Industry fixed effects	Yes		Yes		Yes		Yes	
Constant	-0.289***	(-40.06)	-0.290***	(-17.16)	-0.265***	(-24.76)	-0.319***	(-11.88)
N	130 158		16 353		130 158		16 353	
adj. R^2	0.143		0.123		0.096		0.080	

This table presents the results of regressing alternative measures of *EarningsQuality* on test and control variables using OLS. The variables are defined in Appendix. Panel A reports the coefficients and corresponding *t*-statistics from the regression equation specified in Section 3.3, but with earnings quality measured using an alternative specification of the DD model as described in Section 4.4, for sample 1 and sample 2 respectively. Panel B reports the coefficients and corresponding *t*-statistics from the regression equation specified in Section 3.3, but with earnings quality measured using the Jones model as described in Section 4.4, for sample 1 and sample 2 respectively. The *t*-statistics are adjusted for within-cluster correlation using the Huber-White Sandwich Estimator. * (**) *** indicates significance at the 10 (5) 1 percent levels using two-tailed tests.

Table 6. Matched Sample and/or Firm Fixed Effects

	Panel A: Matched Sample		**Panel B: Including Firm Fixed Effects in Sample 1**		**Panel C: Including Firm Fixed Effects in Sample 2**		**Panel D: Including Firm Fixed Effects in Matched Sample**	
	EarningsQuality		*EarningsQuality*		*EarningsQuality*		*EarningsQuality*	
	Coefficients	*t-stat*	*Coefficients*	*t-stat*	*Coefficients*	*t-stat*	*Coefficients*	*t-stat*
Oil	-0.019	(-1.20)						
OS	0.013	(1.30)	-0.002**	(-2.20)	-0.005**	(-2.53)	0.013	(1.31)
*Oil*OS*	-0.034**	(-2.30)	-0.024**	(-2.36)	-0.020**	(-1.98)	-0.034**	(-2.30)
lnAF			0.001	(0.55)	0.001	(0.25)		
SizeAssets			-0.044***	(-10.62)	-0.026**	(-2.45)		
DebtRatio			-0.058***	(-6.64)	-0.022	(-0.92)		
Growth			-0.022***	(-13.69)	-0.019***	(-5.35)		
Big4			0.002	(0.32)	-0.018**	(-1.99)		
SizeSales			0.023***	(6.22)	0.025***	(2.79)		
lnFirmAge			0.012	(1.49)	0.013	(0.67)		
Industry fixed effects	Yes		No		No		No	
Firm fixed effects	No		Yes		Yes		Yes	
Constant	-0.090***	(-7.23)	0.253***	(3.47)	-0.089	(-0.52)	-0.099***	(-27.22)
N	848		130 158		16 353		848	
adj. R^2	0.012		0.032		0.022		0.011	

This table presents the results of regressing *EarningsQuality* on test and control variables in alternative samples using OLS. The variables are defined in Appendix. Panel A reports the coefficients and corresponding *t*-statistics from the regression equation specified in Section 3.3, using a propensity score matched sample and excluding control variables. Panel B reports the coefficients and corresponding *t*-statistics from the regression equation specified in Section 3.3, and including firm fixed effects, in sample 1. Panel C reports the coefficients and corresponding *t*-statistics from the regression equation specified in Section 3.3, and including firm fixed effects, in sample 2. Panel D reports the coefficients and corresponding *t*-statistics from the regression equation specified in Section 3.3, including firm fixed effects and excluding control variables for the propensity score matched sample. The *t*-statistics are adjusted for within-cluster correlation using the Huber-White Sandwich Estimator. * (**) *** indicates significance at the 10 (5) 1 percent levels using two-tailed tests.

Table 7. Placebo Test

	Sample 1		***Sample 2***	
	EarningsQuality		*EarningsQuality*	
	Coefficients	*t-stat*	*Coefficients*	*t-stat*
Oil	-0.025**	(-2.38)	-0.023**	(-1.98)
OSplacebo	-0.004***	(-5.46)	-0.003*	(-1.77)
*Oil*OSplacebo*	0.012	(0.99)	0.015	(1.17)
lnAF	-0.016***	(-20.30)	-0.011***	(-5.58)
SizeAssets	0.018***	(27.49)	0.010***	(6.57)
DebtRatio	-0.100***	(-35.10)	-0.089***	(-13.01)
Growth	-0.040***	(-25.62)	-0.038***	(-8.00)
Big4	-0.009***	(-8.22)	-0.013***	(-5.07)
SizeSales	0.003***	(4.83)	0.006***	(3.51)
lnFirmAge	0.002***	(3.48)	0.003**	(2.17)
Industry fixed effects	Yes		Yes	
_cons	-0.283***	(-36.58)	-0.235***	(-14.57)
N	101 544		15 944	
adj. R^2	0.158		0.135	

This table presents the result of regressing *EarningsQuality* on test and control variables using OLS. The variables are defined in Appendix. Column 1 reports the coefficients from the regression equation specified in Section 3.3, but substitutes *OSplacebo* for *OS*, for sample 1. Column 2 reports the corresponding *t*-statistics. Column 3 reports the coefficients from the regression equation specified in Section 3.3, but substitutes *OSplacebo* for *OS*, for sample 2. Column 4 reports the corresponding *t*-statistics. The *t*-statistics are adjusted for within-cluster correlation using the Huber-White Sandwich Estimator. * (**) *** indicates significance at the 10 (5) 1 percent levels using two-tailed tests.

Table 8. Signed Discretionary Accruals

	Panel A: Positive Discretionary Accruals				**Panel B: Negative Discretionary Accruals**			
	Sample 1 *Discretionary Accruals*$^{+}$		***Sample 2*** *Discretionary Accruals*$^{+}$		***Sample 1*** *Discretionary Accruals*$^{-}$		***Sample 2*** *Discretionary Accruals*$^{-}$	
	Coefficients	*t-stat*	*Coefficients*	*t-stat*	*Coefficients*	*t-stat*	*Coefficients*	*t-stat*
Oil	0.017	(1.61)	0.015	(1.36)	-0.033**	(-2.36)	-0.035**	(-2.49)
OS	0.002**	(2.33)	0.006**	(2.13)	-0.003***	(-4.76)	-0.005***	(-2.64)
*Oil*OS*	0.048**	(2.15)	0.045**	(2.05)	-0.008	(-0.49)	-0.008	(-0.48)
lnAF	0.010***	(8.56)	0.003	(0.79)	-0.016***	(-18.78)	-0.013***	(-5.85)
SizeAssets	-0.009***	(-8.49)	-0.002	(-0.76)	0.015***	(29.35)	0.011***	(8.26)
DebtRatio	0.052***	(14.23)	0.052***	(5.67)	-0.116***	(-37.03)	-0.113***	(-12.99)
Growth	0.038***	(17.79)	0.023***	(5.98)	-0.023***	(-15.72)	-0.024***	(-5.91)
Big4	0.002	(1.56)	0.009**	(2.54)	-0.009***	(-9.14)	-0.016***	(-5.85)
SizeSales	-0.008***	(-7.45)	-0.010***	(-3.22)	0.004***	(6.68)	0.008***	(4.34)
lnFirmAge	-0.009***	(-9.78)	-0.010***	(-3.84)	0.003***	(4.12)	0.004**	(2.38)
Industry fixed effects	Yes		Yes		Yes		Yes	
Constant	0.326***	(28.33)	0.274***	(9.59)	-0.252***	(-30.49)	-0.297***	(-16.52)
N	59 667		7 590		70 491		8 763	
adj. R^2	0.087		0.056		0.220		0.214	

This table presents the results of regressing signed discretionary accruals on test and control variables using OLS. The variables are defined in Appendix. Panel A reports the results from the regression equation specified in Section 3.3, but with the signed value of discretionary accruals, for firm-year observations with positive discretionary accruals. Columns 1 and 2 report the coefficients and corresponding *t*-statistics for sample 1. Columns 3 and 4 report the coefficients and corresponding *t*-statistics for sample 2. Panel B reports the results from the regression equation specified in Section 3.3, but with the signed value of discretionary accruals, for firm-year observations with negative discretionary accruals. Columns 5 and 6 report the coefficients and corresponding *t*-statistics for sample 1. Columns 7 and 8 report the coefficients and corresponding *t*-statistics for sample 2. The *t*-statistics are adjusted for within-cluster correlation using the Huber-White Sandwich Estimator. * (**) *** indicates significance at the 10 (5) 1 percent levels using two-tailed tests.