Earnings Management in Private Firms

An Empirical Analysis of Determinants and Consequences of Earnings Management in Private Firms

Jensen, Morten

COPENHAGEN BUSINESS SCHOOL
SOLBJERG PLADS 3
DK-2000 FREDERIKSBERG
DANMARK

WWW.CBS.DK

ISSN 0906-6934

Print ISBN: **978-87-93956-10-0**
Online ISBN: **978-87-93956-11-7**

EARNINGS MANAGEMENT IN PRIVATE FIRMS

PhD Series 34-2019

Morten Nicklas Bigler Jensen

EARNINGS MANAGEMENT IN PRIVATE FIRMS

An Empirical Analysis of Determinants and Consequences of Earnings Management in Private Firms

Doctoral School of Business and Management | **PhD Series 34.2019**

CBS COPENHAGEN BUSINESS SCHOOL
HANDELSHØJSKOLEN

Earnings Management in Private Firms

An Empirical Analysis of Determinants and Consequences of Earnings Management in Private Firms

Morten Nicklas Bigler Jensen

Supervisors:
Associate Professor Jeppe Christoffersen
Professor Thomas Plenborg

Doctoral School of Business and Management
Copenhagen Business School

Morten Nicklas Bigler Jensen
Earnings Management in Private Firms:
An Empirical Analysis of Determinants and Consequences
of Earnings Management in Private Firms

1st edition 2019
PhD Series 34.2019

ISSN 0906-6934
Print ISBN: 978-87-93956-10-0
Online ISBN: 978-87-93956-11-7

The Doctoral School of Business and Management is an active national and international research environment at CBS for research degree students who deal with economics and management at business, industry and country level in a theoretical and empirical manner.

ACKNOWLEDGEMENT

This dissertation was written during the period from October 2016 to September 2019 at the Department of Accounting, Copenhagen Business School. My time as a PhD student has been demanding and challenging, yet rewarding and one of the best decisions of my life. I am grateful for having had this opportunity and the trust and support that I have received during my studies, and I appreciate the generous financial support received by FSR in relation to my studies.

I gratefully acknowledge the guidance and valuable suggestion that I have received from my supervisors Jeppe Christoffersen and Thomas Plenborg. The dissertation has benefited greatly from our discussions, and your persistent push to develop the research papers further. You have succeeded in consistently challenging my research, both when I got stuck and had difficulties in discovering the right path, and when I was confident and needed arguments against my position. I want to thank you for your interest in my research, as well as being what I consider close friends.

Also, I would like to thank employees at the Department of Accounting at CBS for being great colleagues, for insightful comments during my presentations, and for interesting research discussions it being during lunches, at Nexus on a Thursday evening, or during conferences. You have made the past three years a true pleasure.

I am grateful for the comments and critique that I have received from my pre-defense opponents Juha-Peka Kallunki and Melanie Feldhues. I appreciate your time, and the dissertation has truly benefited from your suggestions.

I have been so fortunate to having had the opportunity of spending two semesters abroad at Stern School of Business, New York University. I wish to sincerely thank Stephen Ryan for being my sponsor, and Mary Billings, April Klein, and Ilan Guttman for running excellent courses and allowing me to sit in. My stay at Stern truly opened my eyes towards the academic world, and I have acquired many of my research capabilities during my stay at Stern. In that relation, I am grateful for the generous travel scholarships received in support of my stay abroad from Knud Højgaards Fond, Otto Mønsteds Fond, Augustinus Fonden, Fabrikant Vilhelm Pedersen og Hustrus legat, Danmark-Amerika Fondet, Rudolph Als Fondet, Tranes Fond, Torben og Alice Frimodt Fond, P. A. Fiskers Fond, and Sehested Hansen Fonden.

Also, I would like to thank Alessandro Ghio (discussant), Frøystein Gjesdal (discussant), Chen Chen (discussant), and conference participants at the AAA Annual Meeting 2019, the EAA annual congress 2019, the BAFA annual conference 2019, the International Accounting

Section Midyear Meeting 2019, and the Nordic Accounting Conference 2018. Also, I would like to thank seminar participants at Stockholm School of Economics November 2018, participants at the EAA doctoral colloquium 2019 (special thanks to Beatriz Garcia Osma, Ann Vanstraelen, and Steven Young for great comments and feedback), and symposium participants at The Three Star Symposium, SDU, 2019. You have succeeded in providing feedback and comments that have truly improved the quality of my research papers.

Finally, I would like to thank my friends and family for your infinite trust and support, and for enriching my life with everything beyond accounting (yes – there is a world beyond accounting). You have provided high-fives in good times and hugs in bad times, and for that I am ever grateful. Most importantly, my partner Barbara has been immensely supporting and encouraging. You have provided me with love whenever I was, and was not, in need. I am impressed of the way you have supported me during my times of frustration, especially during the last months preceding submission. You are my world.

ENGLISH SUMMARY

This dissertation seeks to understand the determinants and implications of earnings management in private firms, an economically significant yet not well researched segment of the economy. Earnings management occurs when a firm uses discretion and judgement in financial reporting to alter financial reports to mislead stakeholders or to influence contractual outcomes that depend on the reported numbers, and inherently impair the quality of financial reports, and thus hinders efficient capital allocation.

The dissertation consists of three chapters that are written in the form of separate academic research papers that can be read independently of each other. Despite the chapters being separate academic research papers, all three chapters are related as they all investigate earnings management in private firms, however from different angles and at different levels of analysis. The first chapter explores on a firm level how financially distressed firms use financial reporting when they face financial distress, and find that they use discretion in the accrual estimation process to signal private information and resolve information asymmetries. The second chapter focuses on earnings management driven by the firm's CEO and exploits a setting in which an owner-manager at own discretion can shift her income from salary to dividends at almost no direct cost and hence increase reported earnings. Then, the paper explores determinants and cost of debt implications of this type of income shifting in owner-managed firms, and finds that such behavior is related to the level of debt, and has implications in the form of lower cost of debt. The third and last chapter moves beyond the firms' executives and explores if rank-and-file employees explain variation in financial reporting, and find that they do. Specifically, I find that firms with a large percentage of criminal employees are more likely to engage in earnings management. The following section briefly summarizes each of the three papers by their abstracts.

Chapter 1: Financially distressed firms and information value of discretionary accrual choices

This paper investigates the implications of discretionary accrual choices in non-bankrupt financially distressed firms on two important aspects of earnings quality: earnings persistence and information value about future cash flows. Financially distressed firms can use their discretion to either opportunistically conceal poor performance, or to signal firm prospects. I find that discretionary accruals of financially distressed firms, relative to non-distressed firms,

contribute to higher earnings quality. The effect is driven by income-increasing discretionary accruals, and lenders put more weight on discretionary accruals in loan pricing, when firms are financially distressed. Emphasizing the information enhancing effects of firms' discretionary accrual choices in financially distressed firms my findings contribute to the ongoing discussion on financial reporting discretion and its impact on earnings quality.

Chapter 2: Owner-managers' income shifting and cost of debt benefits

Co-authored with Jeppe Christoffersen and Thomas Plenborg

This paper explores the causes and consequences of earnings management in owner-managed firms. We identify an institutional setting in which the owner-manager has discretion to shift income from salary to dividends and hence increase reported earnings, at almost no direct cost due to approximate tax neutrality between the two income streams. We find that income shifting is associated with the magnitude of debt, is more likely when a firm issues debt in the following year, and induce firm benefits in terms of lower cost of debt. These relations are stronger in magnitude around the zero earnings benchmark. Our findings extend the earnings management literature by documenting opportunistic behavior and economic consequences in firms with weak manager-shareholder agency conflicts.

Chapter 3: Criminal executives, criminal employees, corporate culture, and earnings management

It is well established in the literature that executives influence corporate culture and firm behavior. In this paper, I predict and find that traits of rank-and-file employees capture a distinct but correlated aspect of corporate culture beyond what is explained by executive traits. Controlling for executives' criminal record, I find that firms with criminal employees are more likely to use earnings management. This effect is concentrated in firms where both executives and employees are relatively criminal. My results highlight the importance of employees in financial reporting, and show how employee traits can be used to capture corporate culture.

Collectively, the three papers provide novel insights on financial reporting behavior, specifically earnings management behavior, in private firms. The first chapter adds to the ongoing discussion about discretion in financial reporting, and suggests that private firms on average use their discretion in the accrual estimation process to signal private information when experiencing uncertainty, highlighting the benefits of discretion on earnings quality. The second

chapter shows that opportunistic behavior happens in private firms (specifically owner-managed firms) through a channel not previously studied, which raises the question of how owner-managed firms should report their financials. The third chapter moves beyond executive traits and shows that employees are associated with financial reporting outcomes. Currently, firms are mandated to publish in the annual report the number of full-time employees. The evidence provided here raises the question if firms should report more descriptive information about their employees.

DANISH SUMMARY

Denne afhandling forsøger at belyse bestemmende faktorer og konsekvenser af regnskabsmanipulation i private selskaber; en selskabsform, der udgør en økonomisk signifikant del af samfundsøkonomien, som forskningen ikke i høj grad har belyst. Regnskabsmanipulation forekommer når en virksomhed benytter skøn og subjektive vurderinger i regnskabsaflæggelsen til at ændre rapporterede regnskabstal *for at vildlede* eksterne interessenter eller *påvirke kontraktmæssige udfald*, der afhænger af rapporterede regnskabstal. Regnskabsmanipulation forringer regnskabskvaliteten, og hæmmer dermed effektiv kapitalallokering.

Denne afhandling består af tre kapitler, der er skrevet i form af særskilte akademiske forskningsartikler, der kan læses uafhængigt af hinanden. Til trods for at kapitlerne er skrevet som særskilte forskningsartikler, relaterer alle tre kapitler til hinanden, da de alle belyser regnskabsmanipulation eller regnskabskvalitet i private virksomheder fra forskellige vinkler og på forskellige analyseniveauer. Det første kapital undersøger på selskabsniveau hvordan økonomisk hårdt trængte selskaber benytter skøn og subjektive vurderinger i den finansielle rapportering, og konkluderer at disse selskaber bruger sådanne værktøjer til at signalere deres underhåndsviden om selskabets fremtid og dermed afhjælpe informationsasymmetrier. Det andet kapitel undersøger regnskabsmanipulation, der er drevet af et selskabs administrerende direktør og udnytter en dansk institutionel ramme, hvor en ejerleder tilnærmelsesvist skattefrit kan ændre sin løn til dividender og dermed forøge den rapporterede indtjening. Artiklen undersøger bestemmende faktorer af en sådan adfærd og konsekvenser for rente-omkostningerne. I artiklen finder mine medforfattere og jeg at en sådan adfærd er relateret til gældsniveaet, og at det medfører fordele for selskabet i form af lavere renteomkostninger. Det tredje og sidste kapitel kigger dybere end et selskabs topledelse og undersøger om menige

medarbejdere påvirker et selskabs eksterne rapportering, og finder at de gør. Helt konkret, viser resultaterne at selskaber med en større andel af medarbejdere med en kriminel baggrund er mere tilbøjelige til at lave regnskabsmanipulation. De følgende afsnit summerer i korte træk hver af de tre forskningsartikler.

Kapitel 1: Financially distressed firms and information value of discretionary accruals choices

Denne forskningsartikel undersøger effekten af skøn og subjektive vurderinger i regnskabsaflæggelsen i ikke-konkursramte økonomisk hårdt trængte virksomheder på to vigtige aspekter omkring regnskabskvalitet: den nuværende indtjenings informationsværdi omkring fremtidig indtjening og fremtidige pengestrømme. Økonomisk hårdt trængte virksomheder kan bruge skøn til enten opportunistisk at skjule en dårlig økonomisk udvikling, eller at signalere deres underhåndsviden omkring selskabets fremtid og dermed afhjælpe informations-asymmetrier. For økonomisk trængte selskaber, relativt til ikke-økonomisk trængte selskaber, finder jeg at den del af indtjeningen, der opstår på baggrund af skøn, bidrager til højere regnskabskvalitet. Effekten er drevet af indkomstforøgende skøn, og långivere tillægger denne information værdi i deres prissætning af lån når selskaber er økonomisk hårdt trængte. Ved at fremhæve de positive aspekter af selskabers brug af skøn, bidrager denne artikel til den løbende diskussion omkring skøn og selskabers frihedsgrader i den finansielle rapportering, og afledte konsekvenser for regnskabskvaliteten.

Kapitel 2: Owner-managers' income shifting and cost of debt benefits

Medforfattere: Jeppe Christoffersen og Thomas Plenborg

Denne forskningsartikel undersøger bestemmende faktorer og konsekvenser af regnskabs-manipulation i ejerledede selskaber. Vi identificerer en institutionel ramme, hvor en ejerleder har frihed til at skifte (en del af) sin løn ud med dividender, og kan gøre dette tilnærmelsesvist uden skattemæssige konsekvenser, og dermed forøge den rapporterede indtjening. Vi finder at en sådan indkomstforskydning er påvirket af et selskabs gældsniveau, er mere sandsynligt når et selskab optager ny gæld i det følgende år, og bidrager til at selskabet opnår en lavere renteomkostning. Disse effekter er større omkring nulindtjeningsreference-punktet. Vores resultater bidrager til litteraturen omkring regnskabsmanipulation, ved at dokumentere opportunistisk adfærd og økonomiske konsekvenser i selskaber, hvor agentproblemer mellem ejere og ledere er tilnærmelsesvist ikkeeksisterende.

Kapitel 3: Criminal executives, criminal employees, corporate culture, and earnings management

Det er veludforsket og anerkendt i litteraturen at topledere påvirker et selskabs kultur og adfærd. I denne forskningsartikel danner jeg hypoteser omkring, og finder, at menige medarbejdere fanger et særskilt men med topledere korreleret aspekt af et selskabs kultur. Når jeg kontrollerer for toplederes kriminelle baggrund, finder jeg at selskaber med kriminelle medarbejdere er mere tilbøjelige til at lave regnskabsmanipulation. Denne effekt er koncentreret i selskaber hvor både topledere og medarbejdere er relativt kriminelle. Resultaterne fremhæver vigtigheden af medarbejdere i finansiel rapportering, og viser hvordan medarbejderes karaktertræk kan benyttes til at beskrive et selskabs kultur.

Tilsammen bidrager de tre forskningsartikler med ny viden og indsigt i adfærd omkring finansiel rapportering, mere specifikt regnskabsmanipulation, i private selskaber. Det første kapitel bidrager til den løbende diskussion omkring skøn i finansiel rapportering, og konkluderer at private selskaber i gennemsnit bruger skøn til at signalere underhåndsviden når de oplever usikkerhed, hvilket fremhæver de positive aspekter af skøn i finansiel rapportering. Det andet kapitel viser opportunistisk adfærd i private selskaber (specifikt ejerledede selskaber) gennem en form for regnskabsmanipulation, som tidligere forskning ikke har afdækket. Denne opdagelse og resultaterne i forskningsartiklen rejser spørgsmålet om hvordan ejerledede virksomheder burde rapportere eksternt. Det tredje kapitel bevæger sig videre end selskabets topledelse og viser at menige medarbejdere påvirker et selskabs tilbøjelighed til at lave regnskabsmanipulation. Det er i øjeblikket obligatorisk for selskaber i årsrapporten at rapportere antallet af (fuldtids-ækvivalente) medarbejdere. Resultaterne af dette kapitel rejser spørgsmålet om selskaber burde rapportere yderligere beskrivende statistik omkring deres medarbejdere, der kan hjælpe eksterne investorer med at træffe investeringsbeslutninger.

TABLE OF CONTENTS

SYNOPSIS 15

1. MOTIVATION AND CONTRIBUTION 15

2. SELECTED LITERATURE 18

2.1 EARNINGS QUALITY 18

2.2 EARNINGS MANAGEMENT 23

2.3 EARNINGS QUALITY AND EARNINGS MANAGEMENT IN PRIVATE FIRMS 31

3. THE DISSERTATION 34

3.1 POSITIONING 34

3.2 THEORETICAL APPROACH 37

3.3 DATA 38

3.4 EMPIRICAL DESIGN 39

3.5 LIMITATIONS AND FUTURE RESEARCH 41

4. REFERENCES 43

A. PAPER 1 50

1. INTRODUCTION 51

2. RELATED RESEARCH AND EMPIRICAL PREDICTIONS 55

2.1 TWO WIDELY HELD VIEWS ON DISCRETION IN FINANCIAL REPORTING 55

2.2 FINANCIAL REPORTING IN FINANCIALLY DISTRESSED FIRMS 56

2.3 EMPIRICAL PREDICTIONS 57

3. SETTING, DATA AND RESEARCH DESIGN 58

3.1 PRIVATE FIRMS 58

3.2 DANISH SETTING 59

3.3 SAMPLE 59

3.4 DISCRETIONARY ACCRUALS ESTIMATION 60

3.5 FINANCIALLY DISTRESSED FIRMS 62

3.6 DO DISCRETIONARY ACCRUALS CONTAIN INFORMATION FOR FINANCIALLY DISTRESSED FIRMS? 64

4. RESULTS 66

4.1 DESCRIPTIVE STATISTICS 66

4.2 DO DISCRETIONARY ACCRUALS CONTAIN INFORMATION FOR FINANCIALLY DISTRESSED FIRMS? 69

4.3 Additional tests 69
5. CONCLUSION AND DISCUSSION 79
6. REFERENCES 82
7. APPENDIX 86

B. PAPER 2 90

1. INTRODUCTION 91
2. HYPOTHESIS DEVELOPMENT AND RELATED RESEARCH 95
2.1 The influence of debt on SDEM 95
2.2 Consequences of SDEM for the cost of debt 96
2.3 Moderating effects: meeting or beating benchmarks 97
3. SETTING, DATA AND RESEARCH DESIGN 99
3.1 Owner-managed firms and institutional setting 99
3.2 Data sources 100
3.3 Key variable definitions and descriptive statistics 101
3.4 Research design 105
4. RESULTS 107
4.1 The influence of debt on SDEM 107
4.2 Consequences of SDEM for the cost of debt 108
4.3 Alternative explanations 112
4.4 Alternative econometric estimations 116
4.5 Interview evidence 121
5. LIMITATIONS, DISCUSSION, AND CONCLUSION 123
5.1 Limitations 123
5.2 Discussion and conclusion 125
6. REFERENCES 127
7. APPENDIX 130

C. PAPER 3 144

1. INTRODUCTION 145
2. BACKGROUND AND EXPECTATIONS 149
2.1 Criminal record 149

2.2 Corporate culture and executives 150
2.3 Corporate culture and employees 152
3. SAMPLE CONSTRUCTION AND KEY MEASURES 154
3.1 Data sources and data description 154
3.2 Key variables 156
4. EMPIRICAL DESIGN AND RESULTS 159
4.1 Empirical design 159
4.2 Channels through which corporate culture influences criminal behavior 160
4.3 Descriptive statistics 162
4.4 Regression results 167
4.5 Robustness tests 170
5. LIMITATIONS, DISCUSSION, AND CONCLUSION 177
5.1 Discussion 177
5.2 Limitations 178
5.3 Conclusion 180
6. REFERENCES 182
7. APPENDIX 185

SYNOPSIS

1. Motivation and contribution

Private firms represent an economically significant part of the economy. In the OECD area SMEs (primarily private) constitute more than 99% of all firms, represent about 60% of employment and 50-60% of value added (OECD 2017). Related statistics consistently underpin the economic significance of private firms around the word, including the US (see e.g. Hope and Vyas 2017; Hope et al. 2017; Chen et al. 2011; EU 2017). Despite their economic significance, compared to the large literature on financial reporting in public firms, little is known about financial reporting in private firms. Financial reporting is important because it helps to facilitate optimal capital allocation by alleviating information asymmetries between the firm and external stakeholders[1] and by helping firms allocate internal capital to optimal investments (Roychowdhury et al. 2019; Chen et al. 2011). It is thus important to understand reporting decisions of private firms and its implications.

Beyond the obvious benefits of researching an economically significant yet scarcely researched segment of the economy, exploring financial reporting in private firms allows the investigation of financial reporting behavior in a setting where reporting incentives differ substantially from the much researched public firms. For example, private firms are typically characterized by concentrated ownership and greater managerial ownership, and therefore one primary agency cost of public firms – the separation of ownership and control – is not as acute in private firms, and their major capital providers have access to insider information and can communicate privately with the firm manager (Chen et al. 2011; Minnis and Shroff 2017). These dynamics and information asymmetries raise several interesting research questions, for example if and how firms manage earnings absent owner-manager agency conflicts, or how lenders influence borrowing firms' financial reporting.

Although managers can communicate privately with capital providers (for example their bank) in a private firm setting financial statements are essential in the investment decision and hence capital allocation. For example, financial statements are considered the single most used source of information in the lending decision (Agarwal and Hauswald 2010; Donelson et al. 2017) and serve as a verifying mechanism enhancing the credibility of managers' private

[1] As recognized by the conceptual frameworks of both IASB and the FASB as the general purpose of financial reporting.

information disclosure (Ball 2013). Accordingly, prior research finds that attributes of private firms' financial statements such as audit status (audit vs. non-audited), reporting format (accrual-based vs. cash flow based), earnings smoothness, and earnings quality, influence firms' credit access and cost of debt (Minnis 2011; Allee and Yohn 2009; Gassen and Fülbier 2015; Vander Bauwhede et al. 2015). Further, recent research provides evidence that technological advances such as XBRL data filings reduce lenders' information processing costs and influence loan contracts (Kaya and Pronobis 2016), highlighting the importance of high quality in financial reports on which capital allocation decisions are made.

This dissertation aims to shed light on financial reporting behavior of private firms, with a focus on earnings management and earnings quality. Opportunistic earnings management inherently lowers earnings quality and thus impairs firm stakeholders' ability to assess the underlying economics of firms, as well as firms' internal investment decisions (McNichols and Stubben 2008), which then deters efficient capital allocation. The first chapter of this dissertation explores how firms respond to financial distress, and find that they use discretion in the accrual estimation process to signal their superior private information on firm prospects and hence help resolve information asymmetries. The second chapter seeks to identify a novel measure of earnings management that is fully at the discretion of the manager. Specifically, the chapter identifies a setting where an owner-manager at almost no direct cost can lower her salary and concurrently increase dividends, and uses this measure to examine determinants and implications of earnings management in owner-managed firms. The third and last chapter brings into the analysis employees, and show how employees through their influence on corporate culture and their role in the financial data generation process within the firm influence earnings management and thus financial reporting. Broadly speaking, the findings of this dissertation contribute to our knowledge and understanding of financial reporting in private firms; an economically very significant segment of the economy which has not received much focus in the literature. Specifically, the findings offer the following contributions and implications:

1. Financially distressed firms, a setting in which prior research observes mixed evidence on the direction of discretionary accounting choices, use their discretion over the accrual estimation to signal their superior private information. Whereas prior research use discretionary accrual measures to proxy earnings management, the findings of this dissertation suggest that such discretionary reporting choices on average improves earnings quality through improved informativeness of current earnings about future earnings and cash flows. Notably, this finding is important in a setting where private

firms are mandated to publish financial reports, where financial statements are getting more easily available due to technological advances, and where lenders increasingly value financial statement information. Further, the conclusion adds to the ongoing debate on discretion in financial reporting.

2. In small owner-managed firms the owner-manager's salary represents a significant expense, which provides a channel to manage earnings. This dissertation provides empirical evidence on approximately tax neutral income-shifting in owner-managed firms, where owner-managers lower their salary and concurrently increase dividends. However, I point out that even in jurisdictions where dividends are preferable due to lower tax rates, managers have a natural incentive to compensate themselves through dividends rather than salary which likely results in abnormally low salary levels that inflate reported earnings. By shifting income from salary to dividends and thereby increase reported earnings, an owner-manager can obtain benefits in terms of lower cost of debt. The finding has implications for users of financial statements, for example banks, suppliers, customers, or even employees, and urges caution to financial statement users to be aware of the significant influence of the owner-manager's salary and its influence on reported earnings. Further, this finding has implications for regulators, and raise the question of how financial disclosures enable stakeholders to discover and compensate for owner-managers' opportunistic behavior.
3. Albeit firm managers are important for firm behavior, not all firm behavior is solely driven by the top executives. In this dissertation, I provide empirical evidence that financial reporting is associated with the traits of rank-and-file employees and that this effect is incremental to the effect of firm executives. Specifically, the results show that firms with a high percentage of employees with a criminal background are more likely to manage earnings, suggesting that employees influence financial reporting. This result has implications for regulators and raises the question if companies should disclose in the annual report information on human capital; a significant capital factor in a knowledge economy that is subject to low disclosure requirements. Such disclosures could help resolve information asymmetries. Further, the insights are important for scholars researching corporate culture and financial reporting, who might benefit from looking beyond executive traits.

2. Selected Literature

The following broadly outlines the literature on which this dissertation is written. It is not to be seen as a comprehensive literature review, but an overview of the literature relevant for the research conducted in this dissertation. Because each of the three chapters ask different research questions and thus calls for separate background literature, the relevant literature for each chapter is covered within each chapter. The following briefly outlines the concept of earnings quality, empirical proxies, and its relation to earnings management. Then, different types of earnings management as well as proxies for earnings management are discussed. Lastly, selected prior research on earnings management in private firms is reviewed.

2.1 Earnings Quality

2.1.1 What is earnings quality?

Earnings quality is a construct which prior research has thought about in a number of different ways. For example, Dechow et al. (2010) provide the following definition of earnings quality:

> "Higher quality earnings provide more information about the features of a firm's financial performance that are relevant to a specific decision made by a specific decision-maker." (Dechow et al. 2010, 344)

The definition has several noteworthy attributes: (1) Earnings quality refers to the decision-relevance of earnings and implies that one cannot assess earnings quality without considering the decision context. For example, a lender may demand attributes of earnings different from what an equity investor may demand. (2) The quality of a reported earnings number is to be assessed in relation to its information about the underlying performance, which in nature is unobservable. (3) Thus, the quality is determined by the joint ability of the accounting system to facilitating decision making (for example, to provide external capital to the firm) and to accurately measure performance. I point out that Dechow et al. (2010) define "earnings quality", whereas other researchers use other terms for related constructs, such as "accounting quality" or "financial reporting quality" (see e.g. Francis et al. 2006; Hope et al. 2013; Hope et al. 2017). For example, Francis et al. (2006) discuss how earnings quality is a summary indicator of

financial reporting quality. For those reasons "earnings quality", "accounting quality", and "financial reporting quality" are used interchangeable throughout this dissertation.

Researchers highlight several attributes that contribute to high earnings quality, such as preciseness (Francis et al. 2006) transparency (Barth and Schipper 2008; Bhattacharya et al. 2003) timeliness (Ball et al. 2000; Ball and Shivakumar 2005) persistency (Dechow and Dichev 2002; Richardson and Sloan 2005; Sloan 1996), and comparability (De George et al. 2016; Neel 2017).

The conceptual frameworks of standard setters provide guidelines for high quality financial reporting, and like Dechow et al. (2010) focus on decision usefulness of financial reports. FASB defines the general objective of financial reporting as

> "[…] to provide financial information about the reporting entity that is useful to existing and potential investors, lenders, and other creditors in making decisions about providing resources to the entity. Those decisions involve buying, selling, or holding equity and debt instruments and providing or settling loans and other forms of credit." (FASB 2018, 1)

In a similar vein, IASB defines the general purpose of financial reporting as

> "[…] to provide financial information about the reporting entity that is useful to existing and potential investors, lenders and other creditors in making decisions relating to providing resources to the entity. Those decisions involve decisions about: (a) buying, selling or holding equity and debt instruments, (b) providing or settling loans and other forms of credit; or (c) exercising rights to vote on, or otherwise influence, management's actions that affect the use of the entity's economic resources." (IASB 2018, A17)

In conclusion, high quality financial reporting is associated with firm stakeholders' ability to make decisions regarding the firm, and the extent to which earnings capture and communicate well the underlying economics of the firm.

2.1.2 Empirical proxies

Researchers have developed several empirical measures aiming to capture aspects of earnings quality. The following outlines the key measures employed in the literature. Note that measures based on discretionary accruals are covered in section 2.2.2.1. I point out that most estimation models scale accounting numbers by for example assets, lagged assets, or average assets, and usually control for size (for example *1/TA*, *log(TA)*, or *log(MVE)*) or use a scaled intercept, which is not explicitly stated in the following equations.

2.1.2.1 Earnings persistence

Researchers generally view high earnings persistence as an indicator of high earnings quality. When earnings are persistent current earnings is a good summary measure of future performance, which is useful for equity valuation and lenders' assessment of borrowing firms' capability to meet loan obligations and the potential for future business. Earnings persistence is typically estimated with the following equation, where the slope on β_1 captures the persistence of earnings.

$$Earnings_{t+1} = \alpha + \beta_1 Earnings_t + \varepsilon \quad (1)$$

These type of models are used to assess the informativeness of current earnings about future cash flows (Barth et al. 2001; Badertscher et al. 2012; Li 2019), substituting *Earnings* with a measure of cash flow on the left hand side. Further, researchers split *Earnings* on the right hand side into a cash flow component and an accrual component (Sloan 1996), and additionally split the accrual component into an "innate" (or normal) component and a "discretionary" (or abnormal) component (Allen et al. 2013; Dechow and Dichev 2002; Xie 2001; Subramanyam 1996), or other divisions of accruals into more and less persistent components (Richardson and Sloan 2005; Richardson et al. 2006).

2.1.2.2 Earnings smoothness

A basic mechanism of an accrual-based earnings system is that accruals smooth random fluctuations in cash flows and thereby better communicate firm performance. Firm managers may use their private information about future income to smooth out transitory fluctuations, and thereby present a more informative and useful earnings measures. However, smoothing accruals

that hide or delay changes in economic performance impair decision usefulness, and therefore smooth earnings are not always an indicator of high earnings quality. By virtue of the conflicting forces driving earnings smoothness, the opinions held in the literature, as well as the empirical evidence on the earnings quality consequences of smooth earnings are mixed (Dechow et al. 2010). Prior research (Leuz et al. 2003; Francis et al. 2004; Barth et al. 2008; Lang et al. 2003; Lang et al. 2006; Tucker and Zarowin 2006; Gassen and Fülbier 2015) operationalizes the following empirical proxies of earnings smoothness:

$$Volatility = \frac{\sigma(Earnings)}{\sigma(Cash\ flows)} \quad (2)$$

Where low scores of *Volatility* indicate smooth earnings.

$$Volatility = \sigma(Earnings) \quad (3)$$

Where low scores of *Volatility* indicate smooth earnings.

$$Smooth = -\rho(\Delta Accruals, \Delta Cash\ flows) \quad (4)$$

Changes in accruals and changes in cash flows are inherently negatively correlated due to the role of accruals. However, more negative correlations (i.e. higher values of *Smooth*) indicate that accruals smooth earnings to a high extent.

$$Smooth = -\rho(\Delta Discretionary\ accurals, \Delta Normal\ accruals) \quad (5)$$

Similar to Eq. (4), however, instead of benchmarking accruals against cash flows, Eq. (5) types of regressions measure the extent to which discretionary accruals are used to smooth earnings, relative to normal accruals.

Further, to control for innate factors that influence earnings smoothness researchers use residuals of estimations of the following type, rather than raw earnings or cash flows.

$$\begin{aligned}\Delta Earnings = \quad & \alpha + \beta_1 Size + \beta_2 Growth + \beta_3 EquityIssuance + \beta_4 Leverage + \\ & \beta_5 DebtIssuance + \beta_6 \frac{Sales}{Assets} + \beta_7 Cash + \beta_8 BigXaudit + \\ & \beta_9 ListingInformation + \beta_{10} \%CloselyHeldShares + \varepsilon\end{aligned} \quad (6)$$

Also, variations of this type of estimation are applied, with cash flows substituting earnings on the left hand side. Researchers then use the residuals of Eq. (6) to estimate Eq. (2) through Eq. (4) and aim to capture the managerial discretion applied to smooth earnings.

2.1.2.3 Timely loss recognition (conservatism)

To be recognized in financial statements good news requires a higher degree of verification than bad news, and therefore there is an asymmetry in the recognition of good news and bad news. Basu (1997) terms this attribute of financial reporting as (conditional) conservatism. Through its accelerated dissemination of bad news, accounting conservatism is generally viewed as earnings quality enhancing, because it makes financial statements more useful in several contexts, such as corporate governance and debt agreements (Ball and Shivakumar 2005).

Generally accounting researchers estimate two general types of models, aiming to capture the degree of conservatism in financial reporting. The first type examines how bad news information is factored into earnings. Basu (1997) defines the following reverse return estimation:

$$Earnings_{t+1} = \alpha + \beta_1 NegReturn + \beta_2 Return + \beta_3 NegReturn * Return + \varepsilon \quad (7)$$

Where β_3 captures the difference in sensitivity of earnings to "good news" and "bad news". Conservatism predicts that β_3 is positive, because earnings are more sensitive to bad news than good news. Basu (1997) use negative returns (both raw and adjusted returns) as an indicator of bad news.

Based on this setup, Ball and Shivakumar (2005)[2] estimate a comparable model with accruals on the left hand side and cash flows on the right hand side.

$$Accruals = \alpha + \beta_1 NegCF + \beta_2 CF + \beta_3 NegCF * CF + \varepsilon \quad (8)$$

Where the β_2 slope is generally expected to be negative because accruals mitigate noise in cash flows. The slope on β_3 captures conservatism and is expected to be positive, because accrued losses are more likely when the cash flow is negative. Further, Byzalov and Basu (2016) estimate several models with accruals on the left hand side, and several indicators for bad news on the right hand side, such as negative sales growth, negative employee growth, and negative cash flow.

[2] A similar model is estimated by Hope et al. (2013)

The second type of models relies on the notion that negative earnings changes are less persistent and tend to reverse more than positive earnings changes. Basu (1997) provides the following model:

$$\Delta Earnings_{t+1} = \alpha + \beta_1 Neg\Delta Earnings + \beta_2 \Delta Earnings + \beta_3 Neg\Delta Earnings * \Delta Earnings + \varepsilon \quad (9)$$

The magnitude of the β_3 slope (expected to be negative) captures conservatism. This type of model is also used by Ball and Shivakumar (2005) and Hope et al. (2013)

2.1.2.4 Earnings response coefficients (ERCs)

To measure the information content of earnings, researchers regress stock returns (either raw or abnormal) on earnings (either raw or "unexpected" earnings, measures as reported earnings – analyst forecast consensus), with different types of the following model:

$$Return = \alpha + \beta_1 Earnings + \varepsilon \quad (10)$$

These type of regressions stem from one of the most fundamental questions in accounting research: "is our product useful?"; a question that dates back to Ball and Brown (1968) and Beaver (1968). Researchers assess the R^2 (how much earnings explain of variation in returns) or the β_1 slope (how much one unit of (unexpected) earnings translates into firm value) of such regressions to determine earnings quality. Related to conservatism, research finds that ERCs are low in loss firms (Beaver et al. 2018; Basu 1997; Hayn 1995).

2.2 Earnings Management

2.2.1 Earnings management and its relation to earnings quality

As with earnings quality no uniform definition of earnings management exists. As discussed in Beneish (2001), several researchers have attempted to capture and define earnings management.

Healy and Wahlen (1999) define earnings management as:

> "Earnings management occurs when managers use judgment in financial reporting and 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." (p 368)

Schipper (1989) defines earnings management as:

"…a purposeful intervention in the external financial reporting process, with the intent of obtaining some private gain (as opposed to say, merely facilitating the neutral operation of the process)."... "[a] minor extension of this definition would encompass 'real' earnings management, accomplished by timing investment or financing decisions to alter reported earnings or some subset of it." (p 92)

Earnings management, which as defined above is opportunistic in nature[3], impairs earnings quality because it introduces noise in the financial reporting (Dechow et al. 2010), and therefore earnings management and earnings quality are two closely related concepts. For that reason, a large body of the accounting literature aims to empirically estimate and detect earnings management and investigates determinants and consequences of earnings management.

2.2.2 Types of earnings management and empirical proxies

Researchers typically distinguish between several types of earnings management. The first type, accounting earnings management, occurs when firms exercise discretion in accounting choices to manage reported earnings. This type of earnings management includes managers' use of discretion in the accrual estimation process (Jones 1991), misleading classification of expenses in the income statement (McVay 2006), or hand picking of accounting methods within GAAP (Schipper 1989). The second type, real earnings management, occurs when managers opportunistically manipulate real activities, by for example cutting discretionary expenses (e.g. R&D or marketing expenses), building up inventory to reduce the COGS, or manipulating sales figures (e.g. by lowering sales prices towards year, or offering more lenient credit terms, and hence generating abnormally high and unsustainable revenues) (Roychowdhury 2006).

Accounting type earnings management is typically viewed as less costly than real earnings management, because this type of earnings management biases the reported earnings in a particular direction without changing the underlying transactions, whereas real earnings management implies that the firm manager manipulates real transactions (therein "real" earnings

[3] "to mislead" in Healy and Wahlen (1999), and "obtaining some private gain" in Schipper (1989)

management) in the timing or structuring of an operation, which have suboptimal business consequences (Roychowdhury 2006; Cohen and Zarowin 2010; Vorst 2016; Zang 2012).

Investigating private firms comes with great opportunities but also limits the availability of research designs because certain data points are either not available at all, or are not available in machine readable form. For example the datasets employed in this dissertation do not include data on accounting methods applied, cash flow statements, R&D, marketing expenses, transitory earnings, or COGS and revenue (for most observations), and hence the dissertation is generally limited from estimating measures of real earnings management, hand-picking of accounting methods, and classification shifting. Therefore, the following only briefly outlines empirical proxies of such types of earnings management. As with the earnings quality proxies, I point out that most estimation models scale accounting numbers by for example assets, lagged assets, or average assets, and usually control for size (for example *1/TA*, *log(TA)*, or *log(MVE)*), or use a scaled intercept, which is not explicitly stated in the equations below.

2.2.2.1 Accrual earnings management

Measures of discretionary (or abnormal) accruals are used extensively in the literature as an indicator of earnings management or earnings quality. For example, in a comprehensive literature review Dechow et al. (2010) conclude that "almost one hundred papers in our database use abnormal accruals generated from an accruals model as a measure of earnings quality." (p 358, footnote 22). Several attempts have been made in the literature to separate innate (or normal) accruals from discretionary (or abnormal) accruals.

Jones (1991) defines the accrual process as

$$Accruals = \quad \alpha + \beta_1 \Delta Revenue + \beta_2 PPE + \varepsilon \tag{11}$$

Dechow et al. (1995) modify the Jones model to adjust for growth in credit sales which is subject to manipulation and thus correcting for it better capture activity growth.

$$Accruals = \quad \alpha + \beta_1 (\Delta Revenue - \Delta Receivables) + \beta_2 PPE + \varepsilon \tag{12}$$

Kothari et al. (2005) further adjust for performance by adjusting discretionary accruals with a performance matched peer within the same industry and year, or by including a term of profitability (*ROA*) directly in the regression estimation.

$$DiscAccruals = \text{estimated } DiscrAccruals - \text{performance matched } DiscrAccruals \quad (13)$$

$$Accruals = \alpha + \beta_1(\Delta Revenue - \Delta Receivables) + \beta_2 PPE + ROA_{t\ or\ t-1} + \varepsilon \quad (14)$$

Dechow and Dichev (2002) develop another type of estimation and model accruals as a function of past, present, and future cash flows because the role of accruals is to shift the recognition of cash flows over time, and accruals therefore anticipate some cash flows and follow others.

$$Accruals = \alpha + \beta_1 CF_{t-1} + \beta_2 CF_t + \beta_3 CF_{t+1} + \varepsilon \quad (15)$$

In her discussion paper, McNichols (2002) link Dechow and Dichev's model to prior accrual estimation models, and proposes the following model:

$$Accruals = \alpha + \beta_1 CF_{t-1} + \beta_2 CF_t + \beta_3 CF_{t+1} + \beta_4 \Delta Revenue + \beta_5 PPE + \varepsilon \quad (16)$$

Researchers typically rely on the residuals from accrual estimation models as proxy for earnings management or earnings quality. In some research designs researchers use the signed residuals, which is useful when the researcher has a prior on the direction of the earnings management (Godsell et al. 2017). Conventionally, researchers use the predicted residuals from an accrual estimation model, and use it as dependent variable in the second stage. However, Chen et al. (2018) show that such approach produces biased estimates and suggest a one-stage estimation where both accrual determinants, earnings management control variables, and a variable of interest, are included in one regression. Studies which do not predict a specific direction of the accruals use unsigned (i.e. absolute values of) discretionary accruals, or the standard deviation of residuals. Hribar and Nichols (2007) criticize the use of unsigned discretionary accruals, because unsigned discretionary accruals are mechanically negatively associated with the goodness of fit from the accrual estimation, positively associated with the variance of total accruals, and positively associated with operating volatility. McNichols (2002) points out that the standard deviation of residuals is positively associated with accruals variability (and therefore firms with greater underlying earnings volatility are classified as low quality earnings) and the magnitude of accruals.

Most researchers use working capital accruals, either including or excluding depreciation[4], with Larson et al. (2018) and Richardson and Sloan (2005) being notable exceptions. Larson et al. (2018) encourage that barring some compelling reason to focus on working capital alone, one should incorporate non-current operating accruals, and empirically show that comprehensive operating accruals are much larger in magnitude than working capital accruals. Supporting this view, Ball (2013) argues that working capital accounts (such as inventories, receivables, and payables) are relatively easy to audit relative to long-horizon accruals and therefore difficult to manage.

Several researchers have recently raised concerns about the ability of accrual models to distinguish innate accruals from discretionary accruals (Ball 2013; Jackson 2018). We know little about the determinants of "normal" accruals because accruals absent manipulation are unobservable. For that reason, discretionary accruals estimated with an econometric model inherently represent a noisy proxy for earnings management. The concerns regard for example the following: (1) Discretionary accrual estimates of firm X are affected by peer firms' accounting choices, holding the economics and accounting choices of firm X constant (Jackson 2018). (2) Discretionary accruals might capture economic shocks, which indeed is the objective of accrual accounting (Ball 2013). (2) Amounts of discretionary accruals reported in the literature are implausible (Jackson 2018). (3) Discretionary accruals are not related to ex post cases of earnings management (such as AAERs or restatements) (Jackson 2018) (4) Using total accruals does not tell us which account is used to manage earnings (McNichols and Stubben 2018).

Albeit all critique points have merit, several counter arguments exist against most of the critique. For example, as accruals are estimated based on peer firms, the average amount of earnings management of peer firms is built into the expectation, and the estimated amount of discretionary accruals measures the amount of discretion that is *incremental* to that of peer firms. The typical earnings management research design aims to capture earnings management of a treatment group relative to a control group, and therefore such concerns are not detrimental to the results obtained from such studies (McNichols and Stubben 2018). Further, recent estimation model developments (see e.g. Larson et al. 2018; Collins et al. 2017; Frankel et al. 2016; Frankel and Sun 2018) help explain the accrual process and allow researchers to better

[4] See for example Larson et al. (2018) Table 1 for an overview of prior research that uses working capital accruals (either including or excluding depreciation). From the table I count more than 100 papers that use such measures.

distinguish innate from discretionary accruals. For example, Godsell et al. (2017) claim that their model does not produce implausibly high amounts of discretionary accruals, and that their measure of discretionary accruals covariate with their sample firms' incentives, indicating that contemporary estimation models capture well earnings management in settings in which the researcher has priors on the direction of earnings management. Further, the evidence on discretionary accruals and ex post measures of earnings management is nuanced rather than non-existing, potentially due to database limitations (Karpoff et al. 2017) or ex post measures being confounded by the lack of misreporting detection (McNichols and Stubben 2018), which might be particularly pertinent to within GAAP earnings management of minor magnitude.

2.2.2.2 Classification shifting and real earnings management

McVay (2006) shows how firms opportunistically engage in classification shifting within the income statement, by shifting expenses from core expenses to special items. Ha and Thomas (2019), however, show that managers engage in such behavior to signal which core expenses are less likely to persist, and show that income shifting increases earnings predictability, especially when uncertainty is high. In an interesting study on classification outside the financial statements, Bird et al. (2018) find that firms disclose news to the EDGAR system opportunistically, and classify bad news into EDGAR categories that have low investor attention.

The early research on real earnings management relied on myopic behavior, and examined cuts in discretionary expenses, such as R&D (Bushee 1998). More recently, based on the estimation models of Roychowdhury (2006) researchers examine real earnings management more broadly than cuts in R&D. In a similar vein to the abnormal accrual measures, the real earnings management measures are based on residuals from an estimation model. Specifically, Roychowdhury estimates the following models:

$$CFO = \alpha + \beta_1 Sales + \beta_2 \Delta Sales + \varepsilon \quad (17)$$

Where price discounts or more lenient credit terms lead to lower margins and hence an abnormally low cash flow given the sales level and changes, and therefore negative residuals indicate real earnings management.

$$COGS = \quad \alpha + \beta_1 Sales + \varepsilon \tag{18}$$

$$\Delta Inventory_t = \quad \alpha + \beta_1 \Delta Sales_t + \beta_2 \Delta Sales_{t-1} + \varepsilon \tag{19}$$

$$PROD_t = \quad \alpha + \beta_1 Sales_t + \beta_2 \Delta Sales_t + \beta_3 \Delta Sales_{t-1} + \varepsilon \tag{20}$$

Roychowdhury (2006) models *COGS* and *ΔInventory* separately, but combine them in a production estimation (*PROD=COGS+ΔInventory*), where managers can produce more than necessary and thus spread the fixed overhead costs over a large number of units, and then lower COGS and increase reported earnings. Therefore, positive residuals indicate real earnings management.

$$Discretionary\ expenses = \quad \alpha + \beta_1 Size + \beta_2 Sales_{t-1} + \varepsilon \tag{21}$$

Discretionary expenses include expenses that do not generate immediate revenues and income, such as R&D, Advertising, and SG&A, and therefore negative residuals indicate real earnings management.

Interestingly, researchers compare the use of real earnings management and accrual earnings management. This type of research suggests that firms trade off the use of accrual and real earnings management, based on their relative costs (Cohen and Zarowin 2010; Cohen et al. 2008; Zang 2012).

2.2.2.3 Benchmark beating

Since Burgstahler and Dichev (1997) researchers have documented "kinks" in the distribution of reported earnings around zero, last year's earnings, and analysts' consensus earnings forecasts. Researchers find a statistically small number of firms reporting just below a benchmark, and a statistically large number of firms reporting at or just above a benchmark. A common, but not universal, interpretation of this pattern is that firms manage earnings to just meet or beat a benchmark and avoid the adverse reactions to missing a benchmark, such as stock price decreases (Bartov et al. 2002; Kasznik and McNichols 2002), or cost of debt increases (Jiang 2008; Chin et al. 2018).

Researchers have provided alternative explanations for such patterns, such as asymmetric tax rates (Beaver et al. 2007), or sampling bias and earnings being scaled by price (Durtschi and Easton 2005; Durtschi and Easton 2009), especially pertinent to the discontinuities around zero

and last year's earnings. However, based on a review of the literature on benchmark beating, Burgstahler and Chuk (2017) argue that earnings management is the simplest and most complete explanation for the body of evidence about earnings discontinuities. Specifically, they point out that earnings management explains the discontinuities generally observed in earnings, that discontinuities covariate with earnings management incentives, and that discontinuities exist in earnings measures that are widely used in stakeholder decisions (earnings before extraordinary items, net income, earnings per share), but not in other earnings measures, such as the sum of four quarters' earnings (annual earnings) ending on interim quarter-ends (Jacob and Jorgensen 2007) and in "as restated" EPS measures following SFAS 128 (Jorgensen et al. 2014). Further, Chu et al. (2019) find that firms that consistently meet or beat analysts' earnings forecasts are more likely to engage in earnings manipulation[5], and Bernard et al. (2018) extend the thoughts of discontinuities to size management around disclosure and audit thresholds in private firms.

2.2.3 External indicators of earnings management

The above describes how researchers estimate earnings management proxies based on information in the financial statements. Additionally, researchers identify earnings management incidences through external indicators (information not available for private firms) such as restatements, SEC accounting and auditing enforcement releases (AAERs), and internal control weaknesses (Dechow et al. 2010).

2.2.4 Short on incentives

Prior research detects a wide variety of determinants of earnings management. For example, managers use earnings management to influence their compensation (Cheng and Warfield 2005; Guidry et al. 1999; Healy 1985), when raising new external capital, such as around IPOs (Teoh et al. 1998b; Sletten et al. 2018), seasoned equity offerings (Teoh et al. 1998a), or bond issuances (Liu et al. 2010), to avoid covenant violations (Jha 2013; Dichev and Skinner 2002; DeFond and Jiambalvo 1994), to influence credit ratings (Liu et al. 2018), or even to contract with employees (Dou et al. 2016). Further, prior research suggests that firms manage earnings downwards to mitigate the threat of entry of potential competitors (Tomy 2019), and during

[5] Anecdotally supporting this research, Harry Markopolos, the main investigator behind the report "General Electric, a bigger fraud than Enron" comments that he became aware of GE's suspect accounting at a CFA luncheon, where equity analysts, chief investment officers, and portfolios managers all commented on how they did not believe that GE's earnings figures could be true, because they always met or beat analyst consensus forecasts. Report available at gefraud.com.

trade investigations where firms benefit from appearing less profitable than the actual (Jones 1991; Godsell et al. 2017). The literature on the determinants and consequences of earnings management is large, and is reviewed thoroughly by Dechow et al. (2010).

2.2.5 Earnings management vs fraud

Earnings management and fraud are two closely related constructs. According to the definitions of earnings management discussed earlier, earnings management occurs *"when managers use judgment in financial reporting […] to mislead some stakeholders about the underlying economic performance of the firm"* (Healy and Wahlen 1999, 368), which closely assimilates several fraud definitions. For example in the Statement of Auditing Standards 99 (SAS 99) fraud is defined as *"an intentional act resulting in a material misstatement in the financial statements"*, and the Association of Certified Fraud Examiners[6] defines fraud as *"A knowing misrepresentation of the truth or concealment of a material fact to induce another to act to his or her detriment"*.

As further discussed by Dechow and Skinner (2000), earnings management is a broader concept than fraud. Financial reporting choices that clearly *violate* GAAP can constitute both fraud and earnings management, whereas systematic choices *within* GAAP rather represent earnings management. Earnings management lies in the grey area of a continuum with truthful reporting and fraud at the extremes. For example, Chu et al. (2019) hypothesize and find that managers who consistently meet or beat analyst consensus forecasts initially engage in within GAAP earnings management techniques, but as expectations rise, the techniques become increasingly more aggressive leading to outside GAAP violations and thus fraud. Accordingly, prior research finds that determinants that predict earnings management also predict fraud (see e.g. Biggerstaff et al. 2015; Liu 2016).

2.3 Earnings quality and earnings management in private firms

Several studies compare earnings quality between public companies and private companies. Two conflicting forces shape differences in earnings quality between private and public firms: The "demand hypothesis" predicts that public companies, relative to private companies, have higher demands for high quality financial reporting, for the following reasons: (1) Public firms face regulation that limits private communication (private firms can communicate privately with

[6] https://www.acfe.com/fraud-101.aspx

firm stakeholders) and thus investors to a larger extent rely on public financial reporting, (2) ownership is more dispersed in public firms, and thus agency costs are higher. The "opportunistic behavior" hypothesis predicts that managers of public companies, relative to private companies, are subject to capital market pressure to meet or beat expectations and often have equity based compensation packages, and therefore are more likely to manage earnings.

These two opposing forces are tested in a variety of geographical settings with different empirical proxies. The empirical evidence generally lends support to the demand hypothesis. Ball and Shivakumar (2005) use a sample of UK firms and find that private firms report less conservative (lower timeliness in financial statement recognition of economic losses). Burgstahler et al. (2006) use a sample of European firms and compare measures of earnings management (tendency to avoid reporting losses, magnitude of accruals to magnitude of cash flows, and two measures of smoothness of earnings) between private and public firms, and find that private firms have higher levels of earnings management. They conclude that the first order effect of financial reporting is to improve earnings informativeness (the demand hypothesis). Givoly et al. (2010) use a clever setting of US firms, where their "public" firms have listed equity, and their "private" firms have private equity but public debt, and are therefore mandated by the SEC to publish financial statements. In contrast to Burgstahler et al. (2006) they find that private firms have *lower* levels of earnings management (accrual persistence, estimation error, tendency to avoid loss reporting), but consistent with Ball and Shivakumar (2005) they find that private firms' financial reporting is less conservative. However, the results of Givoli et al. (2010) are statistically weak[7]. Hope et al. (2013) use a larger and more generalized sample of private US firms, and find that public firms have higher earnings quality (based on discretionary accruals, discretionary revenue, accruals to cash flow ratio, and conservatism estimations) consistent with the demand hypothesis. However, these effects are muted or eliminated in settings where public firms are more likely to manage earnings (just meet or beat, obtain external financing in the subsequent year, does not have a big 4 auditor) or face reduced demand for financial reports (no analyst following).

The setting of private firms is also used to empirically document the consequences of several accounting choices that are not possible to study empirically using public firms. For example, this type of research finds that firms with audited financial statements (Minnis 2011) and

[7] For example, their result on accrual persistence disappear when they include controls in the regression (Table 2, Panel B), and the result obtained from the "estimation errors" proxy is based on simple mean comparison and thus does not take into account innate differences between public and private firms.

accrual-based financial statements (Allee and Yohn 2009) benefit in the form of lower cost of credit, thus providing evidence on the economic benefits of sophisticated and verified financial reporting. Further, researchers exploit this setting to examine the muting effects of predation risk (Bernard 2016), perceived competition (Dedman and Lennox 2009), and proprietary costs (Bernard et al. 2018) on disclosure, or the implications of disclosure for, for example, innovation (Breuer et al. 2019).

Relative to public firms, financial statements of private firms assume a less important role in communicating firm performance, because private firm capital providers have access to private information (one of the arguments underlying the demand hypothesis discussed earlier). For example, Bharath et al. (2008) find that firms with poor accounting quality self-select into bank financing (rather than bond financing), because banks possess superior information access and processing abilities that reduce adverse selection costs for borrowers. Albeit the relative importance of financial reporting is likely lower for private firms, financial statements are still very important. For example, Agarwal and Hauswald (2010) use a dataset on loan applications and outcomes from private SME firms, provided by a major US small-business lender, and find that 70-80 percent of the bank's score of (potential) borrowers is based on hard information. Donelson et al. (2017) survey 492 US lending officers and provide similar insights: they find that their survey respondents make credit decisions "more on the basis of financial statements than on the soft information provided by relationship lending" (p 2053). From a firm perspective, the perception is that their financial reports of private firms are used by external stakeholders. For example, the survey evidence by Graham et al. (2005) suggest that private firms perceive earnings and cash flow measures as the most important performance measures reported to outsiders, that both last year's earnings and zero earnings are important benchmarks, and that smooth earnings are perceived less risky by outsiders and are important for credit ratings.

Further, several attributes of private firms' financial reporting are related to their cost of debt, suggesting that banks to some extent rely on financial reports. For example Kaya and Pronobis (2016) find that lenders reward voluntary XBRL adopters by charging lower interest rates. Further, research generally finds that earnings quality attributes are associated with better credit terms (Minnis 2011; Allee and Yohn 2009; Gassen and Fülbier 2015; Vander Bauwhede et al. 2015).

The financial reporting environment of private firms differs substantially around the globe. For example, firms located in the US or Canada are neither required to publish financial

statements nor have then audited. By contrast, most European firms must publish at least some financial statement information and many are required auditing (depending on some rather low size thresholds). In a recent interesting study, Minnis and Shroff (2017) find that private firms generally prefer not to file financial statements publicly if public reporting were voluntary, however the majority of their respondents support a rule requiring public reporting. Minnis and Shroff argue that mandatory financial reporting may have positive externalities, because firms can use peer firms' financial reports to make better investments and lower their cost of capital.

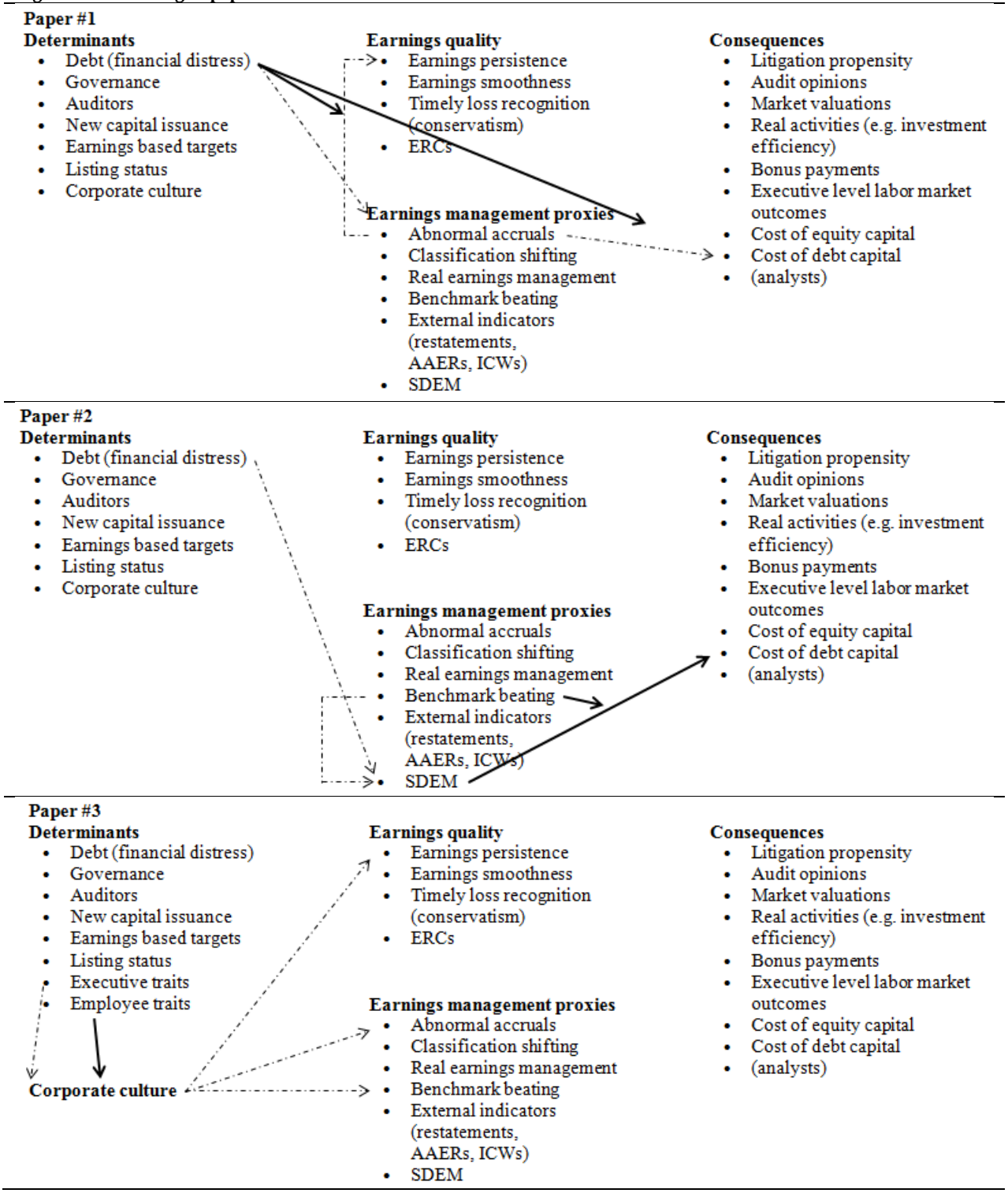
3. The Dissertation

3.1 Positioning

As the three chapters each represent a separate academic research paper, the different chapters fit into the literature in different ways. Figure 1 provides a brief overview of the positioning of the papers. Dotted lines denote links established in prior research, and solid lines denote innovations of the three papers, respectively.

The first chapter utilizes the setting of private firms to better isolate financially distressed firms' debt driven financial reporting incentives, and test the earnings quality implications of discretionary accrual choices. Prior research separately provides evidence on (1) either income-increasing (Rosner 2003; Lara et al. 2009; Charitou et al. 2007; Trombetta and Imperatore 2014; Jha 2013; Dichev and Skinner 2002; DeFond and Jiambalvo 1994) or income-decreasing (Anagnostopoulou and Tsekrekos 2017; Lee et al. 2007; DeFond and Park 1997; Becker et al. 1998) accounting behavior in financially distressed firms, (2) on discretionary accruals and earnings persistence (Allen et al. 2013; Dechow and Dichev 2002; Xie 2001; Subramanyam 1996), and (3) on discretionary accruals and cost of debt (Bharath et al. 2008; Francis et al. 2005; Vander Bauwhede et al. 2015). In this chapter, I combine these literatures, and test the motivations of financially distressed firm managers' discretionary accrual reporting choices, by investigating how financial distress moderates the relation between discretionary accruals and earnings persistence, and the relation between discretionary accruals and cost of debt.

Figure 1: Positioning of papers in the literature



This figure shows how the three papers of this dissertation fit into the literature. Dotted lines denote links established in prior research, and solid lines denote innovations of the three papers, respectively

The second chapter explores a special however prevalent type of private companies: owner-managed firms, which is not really displayed in the figure. Prior research extensively investigates earnings management in public firms, where agency costs arise due to separation of ownership and control (Dechow et al. 2010), and to some extent earnings management in insider owned firms, such as family firms, where agency conflicts arise between majority owners and minority owners (Ghosh and Tang 2015; Srinidhi et al. 2014; Gopalan and Jayaraman 2012; Ali et al. 2007; Wang 2006) [8]. In this paper, my co-authors and I examine earnings management behavior in a setting where the owner and the manager is the same person, and hence owner-manager or owner-owner agency conflicts are practically absent (except in the rare case of an upcoming M&A or IPO). We develop a novel measure of earnings management based on an owner-managers' approximately tax neutral income shifting from salary to dividends (Salary-Dividend Earnings Management: SDEM, hereinafter), and explore causes and consequences. Not surprising, we find that SDEM is associated with the magnitude of debt, that owner-managers are more likely to use SDEM preceding debt issuances and when pre-managed earnings fall just below zero. Further, we are far from the first to investigate the implications of earnings management (or earnings quality) on credit terms (Jiang 2008; Bharath et al. 2008; Francis et al. 2005; Vander Bauwhede et al. 2015). However, SDEM works through information that is not disclosed in the annual report (the manager's salary), and our estimations thus indirectly capture lenders' tendency to ask for private information, and highlight certain adverse effects of public disclosure and lenders' relative low costs of obtaining financial statement information, for example through central databases.

The third chapter exploits the fact that private firms are large in numbers, which is needed to answer the research question asked in the paper: how employees influence corporate culture and financial reporting. Prior research links corporate culture to opportunistic firm behavior, including measures for earnings management. However, prior research relies on traits or actions of firm executives in measuring corporate culture (Liu 2016; Biggerstaff et al. 2015) or use indirect proxies such as religiosity (McGuire et al. 2012; Dyreng et al. 2012) or educational level (Call et al. 2017) in the geographical proximity of the firm's headquarter. Based on theory on corporate culture (Van Den Steen 2010; O'Reilly 1989) I predict and show that rank-and-file

[8] As pointed out by a reviewer in Wang (2006) (footnote 3) the entrenchment of family firms may lead to greater demand for high quality earnings by external stakeholders (such as debt holders) to resolve information asymmetries. Therefore, family firms potentially represent an interesting setting to investigate how firms respond to agency conflicts between the firm and non-shareholder stakeholders.

employees influence corporate culture and financial reporting beyond what is explained by executive traits. The chapter thus fits well into the literature on corporate culture and firm behavior, and adds to a recent literature on employees' influence on financial reporting.

3.2 Theoretical approach

The dissertation largely builds on theory of the firm that aims to explain principal-agent relationships and agency costs (or more broadly contracting costs) (Jensen and Meckling 1976) and positive accounting theory (Watts and Zimmerman 1978; Watts and Zimmerman 1979) that aims to predict accounting behavior by understanding the incentives of an agent. The theories assume that information asymmetries exist between the principal and the agent and that individuals seek to maximize their own expected utilities and are innovative and creative in doing so.

Both theories view a firm as a nexus of contracts, both formal and informal. When a firm enters into a contract it imposes contracting costs including agency costs (e.g. monitoring costs, bonding costs, and the residual loss from dysfunctional decisions), information costs (e.g. an outsider's cost of being informed), and renegotiation costs (the costs of rewriting existing contracts because the extant contract is made obsolete by some unforeseen event). Contracting costs can occur between a manager and firm owners (i.e. due to the separation of ownership and control), between a firm and its lenders, or even between a firm and its suppliers, customers, employees, or the tax authorities.

Contracting costs arise due to information asymmetries, and financial reporting is one remedy to resolve such asymmetries. On the one hand, contracts between the firm and an external stakeholder are not efficient when the firm has complete discretion over reported accounting numbers. On the other hand, the firm manager presumably has superior insider information about her firm that she can disclose through financial reporting. Therefore, managers are typically constrained by GAAP reporting requirements, however are still allowed discretion in the preparation of financial reports. The firm manager can then use such discretion to either increase the total wealth of all stakeholders (for example, by the dissemination of private information and thus resolving information asymmetries and decrease contracting costs), or to extract rents from firm stakeholders and thereby making the manager better off at the expense of for example owners or lenders (for example, by managing earnings and fool

stakeholders). Firm managers then balance off the expected benefits and costs associated with earnings management in their determination of the optimal level of earnings management.

The three papers in this dissertation all draw on such theory. In the first paper, I empirically test for firms' discretionary reporting choices when they are financially distressed – that is, a setting in which both incentives to manage earnings and costs of managing earnings are high. In the second paper, I use positive accounting theory to predict instances in which owner-managers engage in earnings management behavior (debt driven incentives and benchmark driven incentives), and further draw on earnings management theory and empirical insights from prior research to form hypotheses about the consequences of such behavior (for example the costs of being informed mitigating lenders' propensity to collect private information). In the third paper, I use positive accounting theory to predict a setting in which the firm has an incentive to increase earnings (when the firm issues new debt) and complement with theory on criminology and corporate culture, to form hypotheses about the influence of rank-and-file employees and executives on earnings management.

3.3 Data

The three chapters are all based on large sample data on private firms' financial statements. The data are obtained through the ORBIS database and the EXPERIAN database. These datasets are complemented with additional firm-level data, such as industry membership, data about bankruptcies, financial reporting dates, the number of employees, and proprietary data on revenue from tax filings. Additionally, in the second and the third chapter those databases are further complemented with person-level data on the individuals connected to those firms, it being executive managers, rank-and-file employees, owners, and individuals serving company boards. The latter data are rich and include income data and income sources, prior criminal convictions, personal wealth measures, gender, family data (marital status, number of children), residential information, as well as other personal information.

As is further elaborated in each of the three chapters the data allow me to shed light on certain issues of financial reporting that prior research has not examined, likely because these data are difficult to get access to. The dissertation has benefited greatly from access to such granular, very interesting, and rather unique data. For example, the data allow me to track managers' salary over time and provide empirical evidence on income-shifting, and to measure the traits of rank-and-file employees directly, instead of relying on indirect proxies such as

geographical averages (see e.g. Call et al. 2017; McGuire et al. 2012). Further, with the data I can disentangle the effects of the manager (e.g. the wealth of the manager and other personal characteristics) from the effects of firm financial reporting when investigating the influence of SDEM on the cost of debt. The following table summarizes the dataset used in each of the three chapters.

Table 1: Overview of data sources

Data provider	**Dataset and description**	**Used in chapter(s)**		
		1	**2**	**3**
ORBIS (Bureau van Dijk)	Financial statement information of Danish limited liability firms, and data on number of full-time equivalent employees	X	X	X
Experian	Detailed line-items on current assets and current liabilities of Danish limited liability firms. Data on financial reporting filing dates.	X	X	X
Statstidende.dk (The Danish Official Gazette)	Accessed through konkurs.dk: Data on bankruptcy filings.	X		
Statistics Denmark	IDAN dataset: Annual individual-level data on employer-employee links, salary, employment start date, and employment end date.		X	X
Statistics Denmark	IND dataset: Annual individual level information on income and wealth.		X	X
Statistics Denmark	FIRM dataset: Data on proprietary revenue from tax and VAT filings, and complementary data on number of full-time equivalent number of employees	X	X	X
Statistics Denmark	KRAF dataset: Data on criminal records of all sample firm employees and executives		X	X
Statistics Denmark	BEF dataset: Data on residential municipality and address, gender, marital status, birth date, ancestry country, and other family related information.		X	X
The Danish Business Authority	Ownership dataset: Data on owner(individual)-firm and owner(firm)-firm links. Data on starting and termination dates of the ownership, along with ownership percentage.		X	X
The Danish Business Authority	Executive data: Data on executive-firm links. Data on starting and termination dates of the executive employment.		X	X
The Danish Business Authority	Board data: Data on board member-firm links. Data on position held, along with starting and termination dates of the board position.			X

3.4 Empirical Design

The empirical approaches employed throughout the dissertation are primarily econometric, and include multiple regressions estimated with ordinary least squares, panel data estimation with firm fixed effects estimated with ordinary least squares, multiple logistic regressions

estimated with maximum likelihood, propensity score matching, and instrumental variable regressions. Further, the results in Chapter 2 are complemented with interview insights about banks' lending practices. In all standard multiple OLS regressions and logistic regressions standard errors are clustered by firm and year to correct for cross-sectional and time-series dependence in the error term (Gow et al. 2010).

In the first paper, I rely solely on quantitative estimations. I estimate discretionary accruals using recent model enhancements (Collins et al. 2017; Larson et al. 2018) and use the residuals from the estimation model as a proxy for accrual discretion exercised in the financial reporting. Then, I estimate a bankruptcy probability model following Beaver et al. (2005), and use the predicted values of this estimation as a proxy for financial distress. Then, to test the research question of this paper, I estimate standard earnings persistence regressions with both future return on assets and future operating cash flows as dependent variables, respectively, and investigate the influence of discretionary accruals on earnings persistence/cash flow prediction.

In the second paper, my co-authors and I base the main analysis on quantitative estimations and complement the results with interview insights with a number of large Danish banks. We estimate the propensity to shift salary to dividends (salary-dividend earnings management: SDEM, hereinafter) using logistic regression. Then, to test if the use of SDEM has implications for the firm's cost of debt, we use multiple regressions and estimate future cost of debt as a function of current SDEM and controls, and complement with propensity score matching and IV regressions. To extend our understanding of how banks use financial reporting information in the lending decision, we conduct semi-structured interviews with four large Danish banks. To avoid blurred answers we initially tell the interviewees that the research project explores earnings management in private firms, but not the specific channel through which we investigate earnings management (SDEM).

In the third paper, I rely on quantitative estimations. I estimate accruals in a one-step procedure (Chen et al. 2018) based on Larson et al.'s (2018) accrual estimation model, with several additional controls improving my ability to determine innate ("normal") accruals, and hence discretionary accruals. In the main analysis I rely on the slope on an interaction term between the variable of interest and an indicator of new finance issuance. The interaction coefficient thus captures the incremental effect of the variable of interest on accruals, given that the firm issues new finance. This econometric procedure is similar to that of several related research papers (Ayers et al. 2006 Table 1, Panel D; Balsam et al. 2002 Table 3; Call et al. 2014 Table 5; Frankel et al. 2016 Table 5; Gul et al. 2003 Table 4; Doukakis et al. 2019 equation 1).

3.5 Limitations and future research

Investigating financial reporting in Danish private firms comes with benefits in the form of large sample sizes, access to proprietary data difficult to obtain elsewhere, and special agency settings. Despite those important benefits researching earnings management in private firms comes with several major limitations: First, market prices are naturally not available. Therefore, this dissertation is limited from linking financial reporting to stock returns to test the "value" of financial reporting (Allen et al. 2013; Richardson et al. 2006; Richardson and Sloan 2005; Dechow and Dichev 2002; Xie 2001; Subramanyam 1996), using market based proxies for growth opportunities (Collins et al. 2017), and using market based variables in the estimation of the probability of default (Hillegeist et al. 2004; Shumway 2001).

Second, a wide range of conventional variables used by prior research (Biggerstaff et al. 2015; Ali and Hirshleifer 2017; Liu 2016; Davidson et al. 2015; Kallunki et al. 2018; Dhaliwal et al. 2011) to capture earnings management, or outcomes of earnings management, are not available for private firms, such as restatements, meeting or beating analyst forecasts, SEC enforcements, and internal control deficiencies, as well as other proxies for opportunistic firm behavior, such as option backdating, insider trading, and shareholder litigations. Future research could benefit from obtaining data on other opportunistic firm outcomes of private firms than those employed in this dissertation. For example, researchers could obtain data on the auditors' adjustments to managers' submitted accounting data (see e.g. Lennox et al. 2018), or enforcement actions of the business authorities, if such data is available anywhere.

Third, detailed data on loan characteristics are not available and thus this dissertation relies on proxies of cost of debt using financial expenses scaled by liabilities net of trade payables. Other contracting terms that may influence the total cost of debt include collateral, distance to the bank, covenants, and length of bank relationship (Cassar et al. 2015; Agarwal and Hauswald 2010; Granja et al. 2019). If such data are available elsewhere, future research could benefit greatly from including those factors in the analysis. Although not currently available, I point out that the Danish Central Bank has just recently mandated Danish banks to file with the Central Bank detailed loan-level data (instead of aggregated data as off now)[9]. The data will be available for researchers through Statistics Denmark's researcher access later this year. I believe such data can contribute greatly to further refine the research questions asked in this dissertation.

[9]See http://www.nationalbanken.dk/da/statistik/FIONA/Sider/Banker,-realkreditinstitutter-mv.aspx. Look for "kreditregister". Additionally, I have been in contact with the Central Bank, who plans to launch the dataset in the third quarter of 2019. Which data that will become available to researchers is not yet determined.

I point out that the institutional setting of using Danish firms may impair the generalizability of the findings of this dissertation. For example, as with most European countries all Danish limited liability firms are mandated to disclose financial statements publicly[10], and the data can be easily extracted from a central database by firm stakeholders, and therefore capital providers' information acquisition costs are likely lower than for example in the US or Canada (Minnis and Shroff 2017), which may influence how firm stakeholders use and rely on reported statements. Further, the Danish setting is characterized by high legal and enforcement quality and a low level of alignment between financial accounts for external reporting and tax purposes (Burgstahler et al. 2006)[11]. It would be interesting to see how lenders rely on financial statement data (and adjust for managers' salary) in jurisdictions where public financial disclosure is not mandatory, or in jurisdictions without approximate tax neutrality. In the light of those caveats, however, most of the findings are based on theories of information asymmetries – issues that are present in most countries around the world.

[10] And as in other European countries the information content of the financial report increases with firm size.
[11] See also Leuz et al. (2003) and Blaylock et al. (2015) for additional factors characterizing Denmark.

4. References

Agarwal, S., and R. Hauswald. 2010. Distance and private information in lending. *Review of Financial Studies* 23 (7): 2758–2788.

Ali, A., T. Y. Chen, and S. Radhakrishnan. 2007. Corporate disclosures by family firms. *Journal of Accounting and Economics* 44 (1–2): 238–286.

Ali, U., and D. Hirshleifer. 2017. Opportunism as a firm and managerial trait: Predicting insider trading profits and misconduct. *Journal of Financial Economics* 126 (3): 490–515.

Allee, K. D., and T. L. Yohn. 2009. The Demand for Financial Statements in an Unregulated Environment: An Examination of the Production and Use of Financial Statements by Privately Held Small Businesses. *The Accounting Review* 84 (1): 1–25.

Allen, E. J., C. R. Larson, and R. G. Sloan. 2013. Accrual reversals, earnings and stock returns. *Journal of Accounting and Economics* 56 (1): 113–129.

Anagnostopoulou, S. C., and A. E. Tsekrekos. 2017. The effect of financial leverage on real and accrual-based earnings management. *Accounting and Business Research* 47 (2): 191–236.

Ayers, B. C., J. Jiang, and P. E. Yeung. 2006. Discretionary accruals and earning management: An analysis of pseudo earnings targets. *The Accounting Review* 81 (3): 617–652.

Badertscher, B. A., D. W. Collins, and T. Z. Lys. 2012. Discretionary accounting choices and the predictive ability of accruals with respect to future cash flows. *Journal of Accounting and Economics* 53 (1–2): 330–352.

Ball, R. 2013. Accounting informs investors and earnings management is rife: Two questionable beliefs. *Accounting Horizons* 27 (4): 847–853.

Ball, R., and P. Brown. 1968. An Empirical Evaluation of Income Numbers. *Journal of Accounting Research* 6 (2): 159–178.

Ball, R., S. P. Kothari, and A. Robin. 2000. The effect of international institutional factors on properties of accounting earnings. *Journal of Accounting and Economics* 29 (1): 1–51.

Ball, R., and L. Shivakumar. 2005. Earnings quality in UK private firms: comparative loss recognition timeliness. *Journal of Accounting and Economics* 39 (1): 83–128.

Balsam, S., E. Bartov, and C. Marquardt. 2002. Accruals management, investor sophistication, and equity valuation: Evidence from 10-Q filings. *Journal of Accounting Research* 40 (4): 987–1012.

Barth, M. E., D. P. Cram, and K. K. Nelson. 2001. Accruals and the prediction of future cash flows. *The Accounting Review* 76 (1): 27–58.

Barth, M. E., W. R. Landsman, and M. H. Lang. 2008. International accounting standards and accounting quality. *Journal of Accounting Research* 46 (3): 467–498.

Barth, M. E., and K. Schipper. 2008. Financial reporting transparency. *Journal of Accounting, Auditing and Finance* 23 (2): 173–190.

Bartov, E., D. Givoly, and C. Hayn. 2002. The rewards to meeting or beating earnings expectations. *Journal of Accounting and Economics* 33 (2): 173–204.

Basu, S. 1997. The conservatism principle and the asymmetric timeliness of earnings. *Journal of Accounting and Economics* 24 (1): 3–37.

Vander Bauwhede, H., M. De Meyere, and P. Van Cauwenberge. 2015. Financial reporting quality and the cost of debt of SMEs. *Small Business Economics* 45 (1): 149–164.

Beaver, W. H. 1968. The Information Content of Annual Earnings Announcements. *Journal of Accounting Research* 6: 67.

Beaver, W. H., M. F. McNichols, and K. K. Nelson. 2007. An alternative interpretation of the discontinuity in earnings distributions. *Review of Accounting Studies* 12 (4): 525–556.

Beaver, W. H., M. F. McNichols, and J.-W. Rhie. 2005. Have financial statements become less informative? Evidence from the ability of financial ratios to predict bankruptcy. *Review of*

Accounting Studies 10 (1): 93–122.
Beaver, W. H., M. F. McNichols, and Z. Z. Wang. 2018. The information content of earnings announcements: new insights from intertemporal and cross-sectional behavior. *Review of Accounting Studies* 23 (1): 95–135.
Becker, C. L., M. L. DeFond, J. Jiambalvo, and K. R. Subramanyam. 1998. The Effect of Audit Quality on Earnings Management. *Contemporary Accounting Research* 15 (1): 1–24.
Beneish, M. D. 2001. Earnings management: A perspective. *Managerial Finance* 27 (12): 3–17.
Bernard, D. 2016. Is the risk of product market predation a cost of disclosure? *Journal of Accounting and Economics* 62 (2–3): 305–325.
Bernard, D., D. Burgstahler, and D. Kaya. 2018. Size management by European private firms to minimize proprietary costs of disclosure. *Journal of Accounting and Economics* 66 (1): 94–122.
Bharath, S. T., J. Sunder, and S. V. Sunder. 2008. Accounting quality and debt contracting. *The Accounting Review* 83 (1): 1–28.
Bhattacharya, U., H. Daouk, and M. Welker. 2003. The world price of earnings opacity. *The Accounting Review* 78 (3): 641–678.
Biggerstaff, L., D. C. Cicero, and A. Puckett. 2015. Suspect CEOs, unethical culture, and corporate misbehavior. *Journal of Financial Economics* 117 (1): 98–121.
Bird, A., S. A. Karolyi, and P. Ma. 2018. Strategic Disclosure Misclassification. *SSRN* (Working paper).
Blaylock, B., F. Gaertner, and T. Shevlin. 2015. The association between book-tax conformity and earnings management. *Review of Accounting Studies* 20 (1): 141–172.
Breuer, M., C. Leuz, and S. Vanhaverbeke. 2019. Mandated Financial Reporting and Corporate Innovation. *SSRN* (Working paper).
Burgstahler, D. C., L. Hail, and C. Leuz. 2006. The importance of reporting incentives: Earnings management in European private and public firms. *The Accounting Review* 81 (5): 983–1016.
Burgstahler, D., and E. Chuk. 2017. What Have We Learned About Earnings Management? Integrating Discontinuity Evidence. *Contemporary Accounting Research* 34 (2): 726–749.
Burgstahler, D., and I. Dichev. 1997. Earnings management to avoid earnings decreases and losses. *Journal of Accounting and Economics* 24 (1): 99–126.
Bushee, B. J. 1998. The influence of institutional investors on myopic R&D investment behavior. *The Accounting Review* 73 (3): 305–333.
Byzalov, D., and S. Basu. 2016. Conditional conservatism and disaggregated bad news indicators in accrual models. *Review of Accounting Studies* 21 (3): 859–897.
Call, A. C., J. L. Campbell, D. S. Dhaliwal, and J. R. Moon. 2017. Employee quality and financial reporting outcomes. *Journal of Accounting and Economics* 64 (1).
Call, A. C., S. Chen, B. Miao, and Y. H. Tong. 2014. Short-term earnings guidance and accrual-based earnings management. *Review of Accounting Studies* 19 (2): 955–987.
Cassar, G., C. D. Ittner, and K. S. Cavalluzzo. 2015. Alternative information sources and information asymmetry reduction: Evidence from small business debt. *Journal of Accounting and Economics* 59 (2–3): 242–263.
Charitou, A., N. Lambertides, and L. Trigeorgis. 2007. Managerial discretion in distressed firms. *The British Accounting Review* 39 (4): 323–346.
Chen, F., O. K. Hope, Q. Li, and X. Wang. 2011. Financial reporting quality and investment efficiency of private firms in emerging markets. *The Accounting Review*.
Chen, W., P. Hribar, and S. Melessa. 2018. Incorrect Inferences When Using Residuals as Dependent Variables. *Journal of Accounting Research* 56 (3): 751–796.
Cheng, Q., and T. D. Warfield. 2005. Equity incentives and earnings management. *The*

Accounting Review 80 (2): 441–476.
Chin, C.-L., M.-H. Chen, and P.-H. Yu. 2018. Does meeting analysts' forecasts matter in the private loan market? *Journal of Empirical Finance* 48: 321–340.
Chu, J., P. M. Dechow, K. W. Hui, and A. Y. Wang. 2019. Maintaining a Reputation for Consistently Beating Earnings Expectations and the Slippery Slope to Earnings Manipulation. *Contemporary Accounting Research* (Online early).
Cohen, D. A., A. Dey, and T. Z. Lys. 2008. Real and accrual-based earnings management in the pre- and post-sarbanes-oxley periods. *The Accounting Review* 83 (3): 757–787.
Cohen, D. A., and P. Zarowin. 2010. Accrual-based and real earnings management activities around seasoned equity offerings. *Journal of Accounting and Economics* 50 (1): 2–19.
Collins, D. W., R. S. Pungaliya, and A. M. Vijh. 2017. The effects of firm growth and model specification choices on tests of earnings management in quarterly settings. *The Accounting Review* 92 (2): 69–100.
Davidson, R., A. Dey, and A. Smith. 2015. Executives' "off-the-job" behavior, corporate culture, and financial reporting risk. *Journal of Financial Economics* 117 (1): 5–28.
Dechow, P., W. Ge, and C. Schrand. 2010. Understanding earnings quality: A review of the proxies, their determinants and their consequences. *Journal of Accounting and Economics* 50 (2): 344–401.
Dechow, P. M., and I. D. Dichev. 2002. The quality of accruals and earnings: The role of accrual estimation errors. *The Accounting Review* 77 (Supplement): 35–59.
Dechow, P. M., and D. J. Skinner. 2000. Earnings Management: Reconciling the Views of Accounting Academics, Practitioners, and Regulators. *Accounting Horizons* 14 (2): 235–250.
Dechow, P. M., R. G. Sloan, and A. P. Sweeney. 1995. Detecting Earnings Management. *The Accounting Review* 70 (2): 193–225.
Dedman, E., and C. Lennox. 2009. Perceived competition, profitability and the withholding of information about sales and the cost of sales. *Journal of Accounting and Economics* 48 (2–3): 210–230.
DeFond, M. L., and J. Jiambalvo. 1994. Debt covenant violation and manipulation of accruals. *Journal of Accounting and Economics* 17 (1–2): 145–176.
DeFond, M. L., and C. W. Park. 1997. Smoothing income in anticipation of future earnings. *Journal of Accounting and Economics* 23 (2): 115–139.
Dhaliwal, D., C. Hogan, R. Trezevant, and M. Wilkins. 2011. Internal control disclosures, monitoring, and the cost of debt. *The Accounting Review* 86 (4): 1131–1156.
Dichev, I. D., and D. J. Skinner. 2002. Large-sample evidence on the debt covenant hypothesis. *Journal of Accounting Research* 40 (4): 1091–1123.
Donelson, D. C., R. Jennings, and J. Mcinnis. 2017. Financial Statement Quality and Debt Contracting: Evidence from a Survey of Commercial Lenders. *Contemporary Accounting Research* 34 (4): 2051–2093.
Dou, Y., M. Khan, and Y. Zou. 2016. Labor unemployment insurance and earnings management. *Journal of Accounting and Economics* 61 (1): 166–184.
Doukakis, L. C., D. C. Ghicas (Gikas), G. Siougle, and T. Sougiannis. 2019. The Informativeness of Micro and Macro Information During Economic Crisis and Non-Crisis Periods: Evidence from Europe. *European Accounting Review* (Forthcoming): 1–26.
Durtschi, C., and P. Easton. 2005. Earnings management? the shapes of the frequency distributions of earnings metrics are not evidence ipso facto. *Journal of Accounting Research* 43 (4): 557–592.
———. 2009. Earnings management? erroneous inferences based on earnings frequency distributions. *Journal of Accounting Research* 47 (5): 1249–1281.

Dyreng, S. D., W. J. Mayew, and C. D. Williams. 2012. Religious Social Norms and Corporate Financial Reporting. *Journal of Business Finance and Accounting* 39 (7–8): 845–875.
EU. 2017. *Annual report on European SMEs 2016/2017*.
FASB. 2018. *Conceptual Framework for Financial Reporting, Statement of Financial Accounting Concepts No. 8*.
Francis, J., R. LaFond, P. Olsson, and K. Schipper. 2004. Costs of Equity and Earnings Attributes. *The Accounting Review* 79 (4): 967–1010.
———. 2005. The market pricing of accruals quality. *Journal of Accounting and Economics* 39 (2): 295–327.
Francis, J., P. Olsson, and K. Schipper. 2006. Earnings Quality. *Foundations and Trends® in Accounting* 1 (4): 259–340.
Frankel, R., J. Jennings, and J. Lee. 2016. Using unstructured and qualitative disclosures to explain accruals. *Journal of Accounting and Economics* 62 (2–3): 209–227.
Frankel, R., and Y. Sun. 2018. Predicting Accruals Based on Cash-Flow Properties. *The Accounting Review* (5): accr-52001.
Gassen, J., and R. U. Fülbier. 2015. Do Creditors Prefer Smooth Earnings? Evidence from European Private Firms. *Journal of International Accounting Research* 14 (2): 151–180.
De George, E. T., X. Li, and L. Shivakumar. 2016. A review of the IFRS adoption literature. *Review of Accounting Studies* 21 (3): 898–1004.
Ghosh, A. Al, and C. Y. Tang. 2015. Assessing financial reporting quality of family firms: The auditors' perspective. *Journal of Accounting and Economics* 60 (1): 95–116.
Givoly, D., C. K. Hayn, and S. P. Katz. 2010. Does public ownership of equity improve earnings quality? *The Accounting Review* 85 (1): 195–225.
Godsell, D., M. Welker, and N. Zhang. 2017. Earnings Management During Antidumping Investigations in Europe: Sample-Wide and Cross-Sectional Evidence. *Journal of Accounting Research* 55 (2): 407–457.
Gopalan, R., and S. Jayaraman. 2012. Private control benefits and earnings management: Evidence from insider controlled firms. *Journal of Accounting Research* 50 (1): 117–157.
Gow, I. D., G. Ormazabal, and D. J. Taylor. 2010. Correcting for cross-sectional and time-series dependence in accounting research. *The Accounting Review* 85 (2): 483–512.
Graham, J. R., C. R. Harvey, and S. Rajgopal. 2005. The economic implications of corporate financial reporting. *Journal of Accounting and Economics*. North-Holland.
Granja, J., C. Leuz, and R. G. Rajan. 2019. Going the Extra Mile: Distant Lending and Credit Cycles. *SSRN* (Working paper).
Guidry, F., A. J. Leone, and S. Rock. 1999. Earnings-based bonus plans and earnings management by business-unit managers. *Journal of Accounting and Economics* 26 (1–3): 113–142.
Gul, F. A., C. J. P. Chen, and J. S. L. Tsui. 2003. Discretionary Accounting Accruals, Managers' Incentives, and Audit Fees. *Contemporary Accounting Research* 20 (3): 441–464.
Ha, K., and W. B. Thomas. 2019. Classification Shifting and Earnings Predictability. *SSRN* (Working paper).
Hayn, C. 1995. The information content of losses. *Journal of Accounting and Economics* 20 (2): 125–153.
Healy, P. M. 1985. The effect of bonus schemes on accounting decisions. *Journal of Accounting and Economics* 7 (1–3): 85–107.
Healy, P. M., and J. M. Wahlen. 1999. A Review of the Earnings Management Literature and its Implications for Standard Setting. *Accounting Horizons* 13 (4): 365–383.
Hillegeist, S. A., E. K. Keating, D. P. Cram, and K. G. Lundstedt. 2004. Assessing the probability of bankruptcy. *Review of Accounting Studies* 9 (1): 5–34.

Hope, O.-K., W. B. Thomas, and D. Vyas. 2013. Financial Reporting Quality of U.S. Private and Public Firms. *The Accounting Review* 88 (5): 1715–1742.

———. 2017. Stakeholder demand for accounting quality and economic usefulness of accounting in U.S. private firms. *Journal of Accounting and Public Policy* 36 (1): 1–13.

Hope, O. K., and D. Vyas. 2017. Private company finance and financial reporting. *Accounting and Business Research* 47 (5): 506–537.

Hribar, P., and D. C. Nichols. 2007. The Use of Unsigned Earnings Quality Measures in Tests of Earnings Management. *Journal of Accounting Research* 45 (5): 1017–1053.

IASB. 2018. *Conceptual Framework for Financial Reporting*.

Jackson, A. B. 2018. Discretionary Accruals: Earnings Management.. or Not? *Abacus* 54 (2): 136–153.

Jacob, J., and B. N. Jorgensen. 2007. Earnings management and accounting income aggregation. *Journal of Accounting and Economics* 43 (2–3): 369–390.

Jensen, M. C., and W. H. Meckling. 1976. Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics* 3 (4): 305–360.

Jha, A. 2013. Earnings management around debt-covenant violations - An empirical investigation using a large sample of quarterly data. *Journal of Accounting, Auditing and Finance* 28 (4): 369–396.

Jiang, J. (Xuefeng). 2008. Beating Earnings Benchmarks and the Cost of Debt. *The Accounting Review* 83 (2): 377–416.

Jones, J. J. 1991. Earnings Management During Import Relief Investigations. *Journal of Accounting Research* 29 (2): 193.

Jorgensen, B. N., Y. G. Lee, and S. Rock. 2014. The shapes of scaled earnings histograms are not due to scaling and sample selection: Evidence from distributions of reported earnings per share. *Contemporary Accounting Research* 31 (2): 498–521.

Kallunki, J., J.-P. Kallunki, H. Nilsson, and M. Puhakka. 2018. Do an insider's wealth and income matter in the decision to engage in insider trading? *Journal of Financial Economics* 130 (1): 135–165.

Karpoff, J. M., A. Koester, D. S. Lee, and G. S. Martin. 2017. Proxies and databases in financial misconduct research. *The Accounting Review* 92 (6): 129–163.

Kasznik, R., and M. F. McNichols. 2002. Does Meeting Earnings Expectations Matter? Evidence from Analyst Forecast Revisions and Share Prices. *Journal of Accounting Research* 40 (3): 727–759.

Kaya, D., and P. Pronobis. 2016. The benefits of structured data across the information supply chain: Initial evidence on XBRL adoption and loan contracting of private firms. *Journal of Accounting and Public Policy* 35 (4): 417–436.

Kothari, S. P., A. J. Leone, and C. E. Wasley. 2005. Performance matched discretionary accrual measures. *Journal of Accounting and Economics* 39 (1): 163–197.

Lang, M., J. S. Raedy, and M. H. Yetman. 2003. How representative are firms that are cross-listed in the United States? An analysis of accounting quality. *Journal of Accounting Research* 41 (2): 363–386.

Lang, M., J. Smith Raedy, and W. Wilson. 2006. Earnings management and cross listing: Are reconciled earnings comparable to US earnings? *Journal of Accounting and Economics* 42 (1–2): 255–283.

Lara, J. M. G., B. G. Osma, and E. Neophytou. 2009. Earnings quality in ex-post failed firms. *Accounting and Business Research* 39 (2): 119–138.

Larson, C. R., R. Sloan, and J. Zha Giedt. 2018. Defining, measuring, and modeling accruals: a guide for researchers. *Review of Accounting Studies* 23 (3): 827–871.

Lee, K. W., B. Lev, and G. Yeo. 2007. Organizational structure and earnings management.

Journal of Accounting, Auditing and Finance 22 (2): 293–331.
Lennox, C., Z. T. Wang, and X. Wu. 2018. Earnings management, audit adjustments, and the financing of corporate acquisitions: Evidence from China. *Journal of Accounting and Economics* 65 (1): 21–40.
Leuz, C., D. Nanda, and P. D. Wysocki. 2003. Earnings management and investor protection: an international comparison. *Journal of Financial Economics* 69 (3): 505–527.
Li, V. 2019. The effect of real earnings management on the persistence and informativeness of earnings. *The British Accounting Review* 51 (4): 402–423.
Liu, A. Z., K. R. Subramanyam, J. Zhang, and C. Shi. 2018. Do firms manage earnings to influence credit ratings? Evidence from negative credit watch resolutions. *The Accounting Review* 93 (3): 267–298.
Liu, X. 2016. Corruption culture and corporate misconduct. *Journal of Financial Economics* 122 (2): 307–327.
Liu, Y., Y. Ning, and W. N. Davidson. 2010. Earnings management surrounding new debt issues. *Financial Review* 45 (3): 659–681.
McGuire, S. T., T. C. Omer, and N. Y. Sharp. 2012. The impact of religion on financial reporting irregularities. *The Accounting Review* 87 (2): 645–673.
McNichols, M. F. 2002. Discussion of The Quality Earnings of Accruals and Earnings: The of Role of Estimation Errors. *The Accounting Review* 77: 61–69.
McNichols, M. F., and S. R. Stubben. 2008. Does earnings management affect firms' investment decisions? *The Accounting Review* 83 (6): 1571–1603.
———. 2018. Research Design Issues in Studies Using Discretionary Accruals. *Abacus*.
McVay, S. E. 2006. Earnings management using classification shifting: An examination of core earnings and special items. *The Accounting Review* 81 (3): 501–531.
Minnis, M. 2011. The Value of Financial Statement Verification in Debt Financing: Evidence from Private U.S. Firms. *Journal of Accounting Research* 49 (2): 457–506.
Minnis, M., and N. Shroff. 2017. Why regulate private firm disclosure and auditing? *Accounting and Business Research* 47 (5): 473–502.
Neel, M. 2017. Accounting Comparability and Economic Outcomes of Mandatory IFRS Adoption. *Contemporary Accounting Research* 34 (1): 658–690.
O'Reilly, C. 1989. Corporations, Culture, and Commitment: Motivation and Social Control in Organizations. *California Management Review* 31 (4): 9–25.
OECD. 2017. *Entrepreneurship at a Glance 2017*. Entrepreneurship at a Glance. OECD Publishing.
Richardson, S. A., and R. G. Sloan. 2005. Accrual reliability , earnings persistence and stock prices. *Journal of Accounting and Economics* 39: 437–485.
Richardson, S. A., R. G. Sloan, M. T. Soliman, and I. Tuna. 2006. The implications of accounting distortions and growth for accruals and profitability. *The Accounting Review* 81 (3): 713–743.
Rosner, R. L. 2003. Earnings Manipulation in Failing Firms. *Contemporary Accounting Research* 20 (2): 361–408.
Roychowdhury, S. 2006. Earnings management through real activities manipulation. *Journal of Accounting and Economics* 42 (3): 335–370.
Roychowdhury, S., N. Shroff, and R. S. Verdi. 2019. The Effects of Financial Reporting and Disclosure on Corporate Investment: A Review. *Journal of Accounting and Economics* (Online early): 1–18.
Schipper, K. 1989. Commentary on Earnings management. *Accounting Horizons* 3 (4): 91–102.
Shumway, T. 2001. Forecasting bankruptcy more accurately: A simple hazard model. *The Journal of Business* 74 (1): 101–124.

Sletten, E., Y. Ertimur, J. Sunder, and J. Weber. 2018. When and why do IPO firms manage earnings? *Review of Accounting Studies* 23 (3): 872–906.
Sloan, R. 1996. Do stock prices fully reflect information in accruals and cash flows about future earnings? *The Accounting review* 71 (3): 289–315.
Srinidhi, B. N., S. He, and M. Firth. 2014. The effect of governance on specialist auditor choice and audit fees in U.S. family firms. *The Accounting Review* 89 (6): 2297–2329.
Van Den Steen, E. 2010. On the origin of shared beliefs (and corporate culture). *RAND Journal of Economics* 41 (4): 617–648.
Subramanyam, K. R. 1996. The pricing of discretionary accruals. *Journal of Accounting and Economics* 22 (1–3): 249–281.
Teoh, S. H., I. Welch, and T. J. Wong. 1998a. Earnings management and the underperformance of seasoned equity offerings. *Journal of Financial Economics* 50 (1): 63–99.
———. 1998b. Earnings Management and the Long-Run Market Performance of Initial Public Offerings. *The Journal of Finance* 53 (6): 1935–1974.
Tomy, R. E. 2019. Threat of entry and the use of discretion in banks' financial reporting. *Journal of Accounting and Economics* 67 (1): 1–35.
Trombetta, M., and C. Imperatore. 2014. The dynamic of financial crises and its non-monotonic effects on earnings quality. *Journal of Accounting and Public Policy* 33 (3): 205–232.
Tucker, J. W., and P. A. Zarowin. 2006. Does income smoothing improve earnings informativeness? *The Accounting Review* 81 (1): 251–270.
Vorst, P. 2016. Real earnings management and long-term operating performance: The role of reversals in discretionary investment cuts. *The Accounting Review* 91 (4): 1219–1256.
Wang, D. 2006. Founding family ownership and earnings quality. *Journal of Accounting Research* 44 (3): 619–656.
Watts, R. L., and J. L. Zimmerman. 1978. Towards a Positive Theory of the Determination of Accounting Standards Towards a Positive Theory of the Determination of Accounting. *The Accounting Review* 53 (1): 112–134.
Watts, R. L., and J. L. Zimmerman. 1979. The demand for and supply of accounting theories: the market for excuses. *The Accounting Review* 54 (2): 273–305.
Xie, H. 2001. The Mispricing of Abnormal Accruals. *The Accounting Review* 76 (3): 357–373.
Zang, A. Y. 2012. Evidence on the trade-off between real activities manipulation and accrual-based earnings management. *The Accounting Review* 87 (2): 675–703.

A. PAPER 1

Financially distressed firms and information value of discretionary accrual choices

Morten Nicklas Bigler Jensen

Copenhagen Business School | Department of Accounting | mojen.acc@cbs.dk

ABSTRACT: This paper investigates the implications of discretionary accrual choices in non-bankrupt financially distressed firms for two important aspects of earnings quality: earnings persistence and information value about future cash flows. Financially distressed firms can use discretion to either opportunistically conceal poor performance, or to signal firm prospects. I find that discretionary accruals of financially distressed firms, relative to non-distressed firms, contribute to higher earnings quality. The effect is driven by income-increasing discretionary accruals, and lenders put more weight on discretionary accruals in loan pricing, when firms are financially distressed. Emphasizing the information enhancing effects of firms' discretionary accrual choices in financially distressed firms my findings contribute to the ongoing discussion on financial reporting discretion and its impact on earnings quality.

KEYWORDS: Discretionary Accruals; Earnings Management; Signaling; Financial Distress

I gratefully acknowledge and appreciate sharp, critical and constructive comments and suggestions provided by Alessandro Ghio (discussant), Juha-Pekka Kallunki (opponent), Melanie Feldhues (opponent), Jeppe Christoffersen, Thomas Plenborg, and conference participants at the AAA International Accounting Section midyear meeting 2019. An earlier version of this paper was circulated with the title "Can we trust the financial reporting of distressed firms?"

1. INTRODUCTION

Prior research on earnings management in financially distressed firms finds mixed evidence on the direction of discretionary accounting choices. One stream observes income-increasing discretionary accruals in financially distressed firms, such as in most years preceding bankruptcy (Rosner 2003; Lara et al. 2009; Charitou et al. 2007), during severe macroeconomic financial crises (Trombetta and Imperatore 2014) and when firms are close to covenant violation (Jha 2013; Dichev and Skinner 2002; DeFond and Jiambalvo 1994), and interprets the evidence as opportunistic earnings management where firms hide poor performance. Another stream observes a negative relation between discretionary accruals and debt (Anagnostopoulou and Tsekrekos 2017; Lee et al. 2007; DeFond and Park 1997; Becker et al. 1998) and interprets the evidence as debt serving as a monitoring mechanism that mitigates earnings management. I argue that such interpretations about earnings management are premature, unless one can show negative consequences of discretionary accounting choices on earnings quality.

In this paper, I abstract from fixating on directional relationships between financial distress and discretionary accrual proxies. Instead, I explore the implications of financially distressed firms' discretionary accrual choices for two important attributes of earnings quality: earnings persistence and informativeness about future cash flows. I do this by investigating accrual choices in non-bankrupt financially distressed firms, because they somehow manage to survive their situation of financial distress, which motivates the following research question: Do non-bankrupt financially distressed firms use discretion to hide poor performance, or to signal future firm prospects?

The question stated above is based on two widely held views in the accounting literature on firm insiders' motivations behind discretionary accrual choices (Badertscher et al. 2012; Beaver et al. 2012; Beaver 2002). The first view, referred to here as the signaling hypothesis, is that firm insiders hold superior information and use discretion to reveal and signal such information about firm prospects, and thereby help resolve information asymmetries and decrease contracting costs. In my setting, this hypothesis leads to the prediction that financially distressed firms' discretionary accrual choices improve earnings quality. The second view, referred to here as the opportunism hypothesis, is that firms use discretion opportunistically to conceal poor economic performance, fool stakeholders and thereby survive. In my setting, this hypothesis leads to the prediction that financially distressed firms' discretionary accrual choices deteriorate earnings quality.

Which of the two views stated above on average dominates the reporting incentives of financially distressed firms, depends on the benefits and costs associated with opportunistically managing earnings and truthful reporting, respectively. As further discussed in section 2 both views have merit, and hence the managerial motivation behind discretionary accrual choices of financially distressed firms is ultimately an empirical question.

Financial reporting of financially distressed firms is likely driven by debt incentives. On the one hand, financially distressed firms are in particular risk of lenders demanding accelerated debt payments or lenders filing the borrower firm for bankruptcy proceedings, possibly affecting those firms' financial reporting decisions. On the other hand, lenders' debt investment is at stake and therefore lenders exert increased monitoring and scrutiny on financially distressed borrowing firms, possibly affecting the demand side of financial reporting. To better isolate how financially distressed firms alter their reported earnings due to asymmetries between lenders and the firm, rather than between owners and managers, I collect large sample data on private firms, because private firms are typically characterized by centralized ownership, greater managerial ownership, and low ownership turnover (Chen et al. 2011).

To proxy the level of financial distress I use the predicted values of a probability of default model based on the estimation developed by Beaver et al. (2005). From these estimates, within each year I rank and classify observations into 10 equally sized portfolios, where the 10^{th} portfolio (*DISTRESS_10*, hereinafter) contains the firms with the highest predicted probability of default, and the 1^{st} portfolio (*DISTRESS_1*, hereinafter) the firms with the lowest predicted probability of default.

To estimate the level of discretion exercised in financial reporting I estimate discretionary accruals based on the approach outlined by Collins et al. (2017) and further refine their estimation model to better capture innate and discretionary accruals, and define discretionary accruals as the part of comprehensive operating accruals not explained by lagged accruals, gross profit growth[1], lagged cash flows, current cash flows, or current level of profitability. Because the research question stated earlier concerns how non-bankrupt firms use discretion to alter reported earnings, for the following analysis I focus on non-bankrupt firms.

[1] I point out that other studies typically use changes in revenue (or sometimes changes in the number of employees) as proxy for growth. However, due to exemption rules for small companies, most of the observations in my sample do not publicly disclose revenue data. Later in the paper, I estimate discretionary accruals for the subsample of firms with employee data (revenue data) available, and find a high correlation of 0.93 (0.80) between discretionary accruals estimated with changes in gross profit as proxy for growth and changes in employees (changes in revenue) respectively. Further, as I discuss later, the general conclusions remain unchanged when I substitute gross profit growth with employee growth or revenue growth, respectively, in the estimation of discretionary accruals.

Consistent with prior research I find mixed evidence on the direction of discretionary accruals of financially distressed firms. Discretionary accruals are negative for firms in the *DISTRESS_10* portfolio and positive for firms in the *DISTRESS_9* portfolio. I point out that this finding is potentially due to the discretionary accrual model employed. Collins et al. (2017) argue that their modelling approach (which is adopted in this paper) might "throw the baby out with the bathwater", and show that their estimation model effectively does not produce discretionary accruals different from zero in two extreme portfolios based on probability of default (highest and lowest quintile). However, not controlling for characteristics such as profitability in the accrual estimation, which is also used to model the probability of default, will falsely classify a part of nondiscretionary accruals as discretionary accruals. Ultimately, the modeling approach allows me to better distinguish normal from discretionary accruals, which is particularly important when testing the implications of such accounting choices, which indeed is the primary aim of this paper.

Then, I explore how discretionary accruals influence earnings quality of financially distressed firms. For these analyses, I estimate standard persistence regressions where I regress either future profitability or future cash flows on current profitability and discretionary accruals, and thus the predictive slope on discretionary accruals reflect the information content of discretionary accruals, controlling for current profitability (Lewellen and Resutek 2019; Fairfield et al. 2003). I estimate the influence of discretionary accruals on earnings quality by comparing predictive slopes on discretionary accruals between the firms in the *DISTRESS_10* (*DISTRESS_10* and *DISTRESS_9*) portfolio(s) and firms not in this portfolio (these portfolios). I find that the predictive slope of discretionary accruals is higher for financially distressed firms, relative to non-distressed firms, both in predicting future profitability and future cash flows. The results suggest that discretionary accruals are more informative when firms experience financial distress, and lend support to the signaling hypothesis.

Then, in regressions where I split the sample by income-increasing/income-decreasing discretionary accruals, I find that the results are driven by income-increasing discretionary accruals. Further, in simple cost of debt regressions, I find that lenders put more weight on discretionary accruals when firms are financially distressed, lending additional support to the signaling hypothesis.

I perform several sensitivity analyses to bolster the inference that discretionary accruals of financially distressed firms increase earnings quality. First, I re-estimate the standard persistence regressions and explicitly control for "normal" accruals. If I truly capture discretionary accruals,

and not just general accruals, only the slope on discretionary accruals – and not the slope on normal accruals – should increase for financially distressed firms. Indeed, I find that the slope of normal accruals is not significantly different for financially distressed firms. Second, I re-estimate discretionary accruals substituting gross profit growth with employee growth and revenue growth (one at a time) for the subsamples for which these data points are available. I consistently find that discretionary accruals contribute relatively more to earnings persistence in financially distressed firms. When using employee growth I further consistently find that discretionary accruals predict cash flows relatively more in financially distressed firms. However, when using revenue growth, I do not find that discretionary accruals predict cash flows relatively better. With this growth proxy the difference is not significant. Although this latter result weakens the inference of signaling, the findings are still highly inconsistent with the opportunism hypothesis, because discretionary accruals of financially distressed firms do not contribute to lower informativeness of earnings about future cash flows.

Collectively, I interpret the empirical evidence as highly inconsistent with the opportunism hypothesis, because discretionary accruals of financially distressed firms contain relatively high predictive power on future performance and future cash flows – an effect that is driven by income-increasing discretionary accruals – and lenders seem to value this information more when firms are financially distressed. By contrast, on balance I interpret the collective empirical evidence as consistent with the signaling hypothesis, where financially distressed firms use accruals to signal firm prospects and thus improve earnings quality.

I point out that in my tests accounting discretion is estimated, not empirically observed, and the information value of discretionary accruals of financially distressed firms is estimated relative to non-distressed firms. Thus, my inferences are subject to the standard caveats regarding measurement error, and the potential alternative story that the control group (non-distressed firms) on average use discretion opportunistically, which however is inconsistent with prior research on discretion exercised in non-opportunistic settings (Badertscher et al. 2012). With this caveat in mind, the contributions of this paper are threefold. First, this paper broadens the scope of research on earnings management in financially distressed firms, by showing that financially distressed firms use their discretion to signal private information rather than opportunistically hide poor performance. Second, this paper makes a contribution to the literature on earnings persistence and the informativeness of current earnings about future cash flows. Specifically, in broad samples without any specific setting prior literature consistently finds that accruals (in some papers discretionary accruals) carry information about future

performance, however less than other components of earnings (Allen et al. 2013; Richardson et al. 2006; Richardson and Sloan 2005; Dechow and Dichev 2002; Xie 2001; Subramanyam 1996). In this paper, I replicate the findings of these papers in a broad sample, but provide empirical evidence that this relation does not extend to financially distressed firms, and thus firm financial distress is an important determinant of accrual informativeness. Third, this paper makes a contribution to the literature on discretionary accruals and earnings management. Whereas much prior research use discretionary accruals as a proxy for opportunistic earnings management or earnings quality[2], my results suggest that when firms experience financial distress discretionary accruals serve as a tool to signal private information on firm prospects.

The remainder of this paper proceeds as follows: The next section discusses related research and develops empirical predictions. Setting, sample and research strategy are outlined in section 3. Section 4 presents the results, and Section 5 concludes.

2. RELATED RESEARCH AND EMPIRICAL PREDICTIONS

2.1 Two widely held views on discretion in financial reporting

Contracting costs arise due to information asymmetries in a principal-agent relationship (Jensen and Meckling 1976; Watts and Zimmerman 1978; Watts and Zimmerman 1979; Watts and Zimmerman 1990) and include agency costs, information costs, and renegotiation costs. Financial reporting represents one remedy to alleviate such information asymmetries. Firm insiders are allowed discretion in financial reporting because they presumably hold superior insider information, and disclosing such information through financial reporting help mitigate information asymmetries and lower contracting costs. By contrast, firm insiders can use their discretion to opportunistically attempt to fool stakeholders, and thereby increase own wealth at the cost of for example lenders. Based on these thoughts, two widely held views exist in the accounting literature regarding discretion in financial reporting (Beaver et al. 2012; Badertscher et al. 2012; Beaver 2002; Dechow 1994)[3]. The first view, which I refer to here as the "signaling

[2] For example, in a comprehensive literature review Dechow et al. (2010) conclude that "almost one hundred papers in our database use abnormal accruals generated from an accruals model as a measure of earnings quality." (p 358, footnote 22).

[3] I note that Badertscher et al (2012) list three widely held views. Badertscher et al. describe the opportunistic view as the scenario where firm managers make discretionary choices to fool investors and extract rents, and the contracting view as the scenario where firm managers make discretionary choices to influence contracting outcomes, such as bonus payments and debt covenants. Both the opportunistic view and the contracting view lead to the prediction that firm managers make accounting choices that obfuscate the ability of financial statements to

hypothesis", is that discretionary accounting choices are made to reveal private information and thereby alleviate information asymmetries. The second view, which I refer to here as the "opportunism hypothesis", is that discretionary accounting choices are made to obfuscate true economic performance and thereby extract rents.

Empirical evidence exists and suggests that in many cases discretionary accounting choices provide useful information about firm prospects. For example, Badertscher et al. (2012) find that discretionary accounting choices provide information value about future cash flows in cases where discretionary accounting choices are not used to opportunistically meet-or-beat analyst forecasts, and Linck et al. (2013) find that financially constrained firms[4] use discretionary accruals to ease constraints and invest in projects that improve future performance. In broad samples researchers find that discretionary accruals map into future earnings, cash flows, and stock returns, however to a lower extend than other components of earnings (Allen et al. 2013; Dechow and Dichev 2002; Xie 2001; Subramanyam 1996). Further, Ha and Thomas (2019) find that classification shifting (from core to non-core earnings) generally increases earnings predictability, and that this effect is stronger when uncertainty is high (for example, when the firm is more levered), suggesting that firms use accounting discretion to signal future performance, and especially so when information asymmetry is high.

Likewise, the opportunism hypothesis has motivated a large stream of literature. For example, Teoh et al. (1998b) and Teoh et al. (1998a) provide evidence on income-increasing earnings management during equity offerings that is associated with poor post-issue stock returns. Further, the opportunism hypothesis is used to explain income-increasing accounting choices when firms are close to debt covenant thresholds (Jha 2013; Dichev and Skinner 2002; DeFond and Jiambalvo 1994), during negative credit watch (Liu et al. 2018), and around bonus thresholds (Guidry et al. 1999).

2.2 Financial reporting in financially distressed firms

Researchers investigating reporting choices in financially distressed firms generally link a measure of financial distress to a measure of a discretionary reporting choice. For example, prior

present a true and fair view of the underlying firm economics, and hence I pool the two views into one view, which I term the opportunism hypothesis. This approach is similar to Beaver (2002) and Beaver et al. (2012).

[4] I point out that Linck et al. identify financially constrained firms based on a simple index of age and size, and hence their measure of "financial constraint" differs significantly from the measure "financial distress" used in this paper.

research finds that firms use discretion in the accrual estimation to increase earnings in most years preceding bankruptcy (Rosner 2003; Lara et al. 2009; Charitou et al. 2007), during macroeconomic financial distress (Trombetta and Imperatore 2014), and to avoid debt covenant violations (Jha 2013; Dichev and Skinner 2002; DeFond and Jiambalvo 1994). By contrast, several other studies observe a negative relation between debt and discretionary accruals (Anagnostopoulou and Tsekrekos 2017; Lee et al. 2007; DeFond and Park 1997; Becker et al. 1998).

However, with a notable exception being Choi et al. (2011) who find that discretionary accruals were less information relevant during the Asian financial crisis in 1997-78, neither of these studies test the earnings quality implications of discretionary accrual choices.

2.3 Empirical predictions

Which of the two views on discretion in financial reporting on average is dominating in financially distressed firms depends on the expected benefits and expected costs associated with opportunistic earnings management and truthful reporting, respectively.

Supporting the opportunism hypothesis, the expected benefits of opportunistic earnings management are rather obvious: Bankruptcy costs are high, and in the case that managers believe that they can successfully fool capital suppliers the avoidance of bankruptcy costs provides a clear incentive to manage earnings. For example, based on a US sample of small closely held firms Campbell (1997) estimates the average direct bankruptcy costs at 8.5% of total assets. Further, Eckbo and Thorburn (2003) and Eckbo et al. (2016) find that CEOs of bankrupt firms suffer large income losses following firm bankruptcy.

The costs mitigating opportunistic behavior include psychic costs, perceived legal risks, auditor risks, and reputational risks (see e.g. Fischer and Verrecchia 2000). For example, detected earnings management has severe implications for managers' future careers (Desai et al. 2006; Karpoff et al. 2008). The costs of managing earnings are particularly high in financially distressed firms because they are subject to increased scrutiny and outside attention, both from lenders (Anagnostopoulou and Tsekrekos 2017; Rodríguez-Pérez and van Hemmen 2010) and auditors (Nelson et al. 2002). Further, supporting the signaling hypothesis, a financially distressed firm may report conservatively to signal to its stakeholders acknowledgement of the firm's financial troubles, and thereby improve its position in contractual (for example loan) renegotiations (DeAngelo et al. 1994; Jaggi and Lee 2002).

As both views on discretion in financial reporting have merit, the overall relation between earnings quality and the accrual discretion exercised in financial reporting is an empirical question. Each of the two opposing views induces the following distinct and testable empirical predictions. The signaling hypothesis leads to the prediction that discretionary accrual choices of financially distressed firms, relative to non-distressed firms, to a similar or higher extent contribute to earnings quality. The opportunism hypothesis leads to the prediction that discretionary accrual choices of financially distressed firms, relative to non-distressed firms, deteriorate earnings quality.

3. SETTING, DATA AND RESEARCH DESIGN

3.1 Private firms

Financial reporting of financially distressed firms is likely driven by debt incentives. Lenders care about downside risk rather than upside potential (Jiang 2008), and lenders are therefore likely to apply increased monitoring, attention, and scrutiny to financially distressed firms. From the borrowing firm's perspective, lenders are important in this setting because they have the ability to demanding accelerated debt payments and file for bankruptcy proceedings on behalf of the borrowing firm. To better isolate how financially distressed firms alter their reported earnings due to asymmetries between lenders and the firm, rather than between owners and managers, I construct a large dataset with financial statement data on private firms. Private firms are excellent for investigating lender-firm agency problems, because they are typically characterized by centralized ownership, greater managerial ownership, and low ownership turnover (Chen et al. 2011).

In this setting, although managers can communicate privately with lenders, financial statements are considered the single most used source of information in the lending decision (Agarwal and Hauswald 2010; Donelson et al. 2017). Additionally, Ball (2013) argues that financial statements are important as they serve as a verifying mechanism enhancing the credibility of managers' private information disclosure.

Further, investigating private firms comes with an unintended yet beneficial benefit in the sense that private firms are economically dominant in most countries[5], and yet little is known about private firms' financial reporting (Hope 2015; Chen et al. 2011).

3.2 Danish setting

I extract financial statement data for a comprehensive sample of Danish limited liability firms. I use a one-country sample to avoid cross-country performance variation in discretionary accrual models (see Peek et al. 2013), and to fix the institutional and regulatory setting for all sample firms. Using Danish firms comes with the following data benefits: (1) As in most of the European Union Danish firms are mandated to publish their financial reports, and therefore financial statement data are available. (2) Data for estimating discretionary accruals are available through the EXPERIAN database. These detailed data are (practically) not available from the ORBIS database used extensively by other accounting research papers on private firms (Bernard 2016; Gassen and Fülbier 2015)[6]. (3) Firm coverage is high, because regulation has required since 1930 all limited liability firms to file financial statements with the relevant authority. The Danish Business Authority, who is currently responsible for companies' financial reporting, made the reports available for outsiders in 1998. Further, the requirement is strongly enforced (unlike for example Germany (Bernard 2016)), as non-reporting causes enforced closure by the Danish Business Authority[7]. (4) Bankruptcy data covering all limited liability firms are readily available covering many years back in time.

3.3 Sample

The final dataset is comprised of three separate datasets that are merged via unique firm identifiers. Firm financials are obtained from the ORBIS database. Complementary financial information on current accounts (allowing me to generate accruals) and report publication dates

[5] For example, in the OECD area SMEs (primarily private) constitute ~99% of all firms, representing 60% of employment and 50-60% of value added (OECD 2017).

[6] For example, Burgstahler et al. (2006) who use the AMADEUS database to generate accruals (similar database to ORBIS, but covers only European firms). They use (Δtotal current liabilities - Δshort-term debt) when calculating working capital accruals from the liability side and assume that short-term debt equals zero if information on this variable is not available. In my dataset, drawn from the same source, this variable is missing for more than 99 percent of all observations.

[7] See https://erhvervsstyrelsen.dk/frister-forsinkelser-og-afgifter

(allowing me to observe the last report preceding bankruptcy filing) are obtained from EXPERIAN. Bankruptcy filings along with filing dates are hand collected from konkurs.dk[8].

I merge the datasets and apply several screens in the identification of the final sample: I exclude (i) firms with total assets lower than DKK 10m (EUR 1.3m) to ensure that all financial statements are audited[9], (ii) firms with total assets higher than DKK 323m[10] (EUR 43m) to conform to the European Commission's SME definition, (iii) publicly listed firms, (iv) financial reports not covering 12 months, (v) certain industries (financial, utilities, and state-owned) consistent with prior research, (vi) subsidiaries for which the parent company is identified in the dataset, and report on consolidated basis (to avoid double counting), (vii) observations with insufficient information to estimate Eq. (1) and Eq. (2). The sample selection procedure is listed in Table A.1. I note that the number of observations used for testing predictive power of discretionary accruals and other earnings components is lower than listed in the sample characteristics. This is because observations for year *t+1* are not available for all year *t* observations. However, I cannot limit the sample to include only those observations where both year *t* and year *t+1* observations are available, as all bankrupt firm-year observations would be excluded from the sample disabling me to estimating the probability of default model. All financial ratios are winsorized at the 1st and 99th percentile to accommodate for outliers.

The final sample covers 31,265 firms, representing 165,673 firm-years for the period 2003-2015. The average annual bankruptcy rate in the sample equals 1.10 percent.

3.4 Discretionary accruals estimation

I use discretionary accruals as a measure of discretion exercised in financial reporting. Larson et al. (2018) argue that barring some compelling reason to focus on working capital accruals alone, researchers should focus on comprehensive operating accruals, and therefore I use

[8] All Danish bankruptcies are made publicly available by the Danish Official Gazette (statstidende.dk). Konkurs.dk draws information from this information source. Data from konkurs.dk is cross-checked with data from Statistics Denmark. Konkurs.dk provides bankruptcy data on firm level, and Statistics Denmark provides summarized monthly bankruptcy data for the full economy.

[9] The auditing exemption requirements are as follows: For two consecutive years the company cannot exceed two of the following three thresholds: (1) Total assets of DKK 4m, (2) operating revenue of DKK 8m, and (3) number of full time equivalent employees of 12. However, revenue and employee data are not available for the full sample, and hence I use a conservative (higher than the actual threshold) total asset restriction criteria.
Formerly, the thresholds were even lower. The thresholds were increased in 2006, 2011, and 2013, respectively.

[10] An international definition of SMEs does not exist. I use total asset constraint to define my SME sample, and use the thresholds set forward by the European Commission. DKK 323m approximately equals EUR 43m. I use a DKK/EUR rate of 7.5.

Table A.1: Sample identification

Note	Screen applied	Observations dropped	Sample size	Decrease in sample size, %
1	All firm-year observations, fiscal years 2003-2015		2,635,218	
	Keep financial reports with 12 months	106,237	2,528,981	4%
	Remove observations with missing data on total assets	192,364	2,336,617	8%
2	Keep firm-years with ta≥10m & ta≤323m	1,859,598	477,019	80%
	Remove observations with missing data on net income	10	477,009	0%
3	Remove certain industries	179,468	297,541	38%
4	Remove subsidiaries	12,460	285,081	4%
	Remove listed firms	436	284,645	0%
	Keep observations with data available for estimation	118,972	165,673	42%

This table shows the sample selection procedure. Notes: (1): The period 2003-2016 are the years for which bankruptcy data are available, and to allow one year's lag between the fiscal year end and the bankruptcy filing, I restrict the period to include 2003-2015. (2) The lower cap aims to assure that all financial statements are audited, and the upper cap conforms to the SME definition of the European Commission. I note that the total asset criterion is only one of three to define a company as an SME, but – similar to the audit requirement discussion stated above – revenue and employee data are not available for all observations. (3): Consistent with prior accounting and finance research I exclude certain regulated industries (financials and utilities), and further exclude state-owned companies. (4) To avoid double counting I exclude subsidiaries.

comprehensive operating accruals as my measure for accruals. In robustness tests I estimate discretionary working capital accruals, and results remain unchanged.

Inspired by Collins et al. (2017) I model normal and discretionary accruals as a non-linear function of growth and current profitability, and a linear function of lagged accruals and size. Further, I complement the model with current and lagged cash flows, because Allen et al. (2013) show that the component of normal accruals predicted by cash flows[11] is the most persistent component of accruals, indicating that controlling for cash flows is important when dividing accruals into normal accruals and discretionary accruals. I do not include leaded cash flows in the model, because this would induce a mechanical bias between modelled accruals and future profitability/cash flows (Allen et al. 2013). If future cash flows are already controlled for when estimating discretionary accruals, discretionary accruals cannot contain information value about future cash flows. Because future cash flows are correlated with future profitability, a similar argument can be raised regarding future profitability.

I estimate Eq. (1) for each industry-year, classify growth and profitability measures into quintiles by industry-year (Collins et al. 2017), and require at least 30 observations per industry-year. Discretionary accruals (*DACC*, hereinafter) are the residuals from estimating Eq. (1).

[11] In Table 5 of Allen et al., they term this component "MDDMATCH" and find that it to a very high extend maps into future earnings.

$$OPACC_{i,t} = \alpha_{0,i,t} + \alpha_1 \frac{1}{TA_{i,t}} + \sum_k^5 ROA\_IND_{k,i,t} + \sum_k^5 \Delta GP\_IND_{k,i,t} + \beta_1 OPACC_{i,t-1} + \beta_2 OPCF_{i,t} + \beta_3 OPCF_{i,t-1} + \varepsilon_{i,t} \quad (1)$$

Where *OPACC* is comprehensive operating accruals estimated using the balance sheet approach[12] scaled by lagged assets, *ROA* is net income scaled by lagged assets, *ΔGP* is the change in gross profit scaled by lagged assets, and *OPCF* is comprehensive operating cash flows scaled by lagged assets, for firm *i* in year *t*. *ROA_IND* is an indicator variable that takes the value one if *ROA* in the industry-year belongs to the *k*th quintile, and zero otherwise. A similar procedure is used to define *ΔGP_IND* (see Collins et al. 2017). For completeness, in Table A.2 I report the regression coefficients using a pooled regression, where quintile indicators are generated per industry-year.

Data availability is constrained by exemption rules, as disclosure of revenue and cash flow statements is voluntary for most firms in the sample. Therefore I use gross profit growth as proxy for economic activity when estimating discretionary accruals. In untabulated analysis I estimate discretionary accruals for the 134,693 (28,089) firm-years with employee (revenue) data available, and find a high correlation of 0.93 (0.80) between the discretionary accruals estimated with gross profit growth and employee growth (revenue growth) respectively. In robustness tests I repeat all analyses using revenue growth and employee growth, respectively, for the subsamples in which the data are available.

3.5 Financially distressed firms

I estimate a probability of default model to estimate the level of financial distress. I use Beaver et al.'s (2005) bankruptcy prediction model with certain modifications, and re-estimate the model coefficients. I adjust *ROA* for discretionary accruals to capture pre-managed earnings, add a measure of size (logarithm of total assets), and add a measure of current assets to current liabilities. Financial distress is estimated as the predicted values of Eq. (2).

$$BANKR_{i,t} = \alpha_0 + \beta_1 (ROA - DACC)_{i,t} + \beta_2 TLTA_{i,t} + \beta_3 EBITDATL_{i,t} + \beta_4 CACL_{i,t} + \beta_5 Log(TA)_{i,t} + \sum INDUSTRY + \sum YEAR + \varepsilon_{i,t} \quad (2)$$

[12] I recognize the limitations by estimating accruals from the balance sheet approach, such as errors due to M&A activity or discontinuation of operations (Hribar and Collins 2002). However, the winsorizing procedure applied mitigates such concerns.

Table A.2: Discretionary accruals and probability of default estimation models

Discretionary accrual model		*Probability of default model*		
	(1) OPACC		(2) BANKR (regression coefficients)	(3) BANKR (marginal effects)
1/TA	6.5920**	ROA-DACC	-4.215***	-0.043***
	(2.14)		(-9.55)	(-9.56)
		TLTA	2.771***	0.028***
ROA_IND			(33.25)	(33.87)
2	0.0827***	EBITDATL	-1.155***	-0.012***
	(16.74)		(-6.15)	(-6.18)
3	0.1053***	Log(TA)	-0.201***	-0.002***
	(18.10)		(-5.43)	(-5.50)
4	0.1375***	CACL	-0.086***	-0.001***
	(20.91)		(-2.88)	(-2.90)
5	0.2520***			
	(27.19)			
ΔGP_IND				
2	0.0212***			
	(18.25)			
3	0.0210***			
	(17.47)			
4	0.0255***			
	(27.06)			
5	0.0550***			
	(37.37)			
$OPACC_{t-1}$	0.1992***			
	(23.91)			
$OPCF_{t-1}$	0.2250***			
	(25.89)			
OPCF	-0.8818***			
	(-269.49)			
Intercept	-0.1230***		-5.225***	
	(-16.05)		(-10.82)	
Industry FE	YES		YES	
Year FE	YES		YES	
N	165,673		165,673	165,673
Adjust R. sq.	0.8478			
Pseudo R sq.			0.179	0.179
AUROC			0.866	0.866

Column (1) of this table shows the pooled regression of Eq (1). *ROA_IND* and *ΔGP_IND* are quintiles generated per industry-year. *ROA_IND*=1 and *GP_IND*=1 are captured in the intercept. I point out that this regression table is reported only for completeness; *DACC* is estimated as the residuals from Eq. (1) estimated by industry-year. Column (2) shows the coefficients from the logistic regression of Eq. (2) used to estimate the probability of default. Column (3) shows the marginal effects of this regression at mean.

Continuous variables are winsorized at the lower and upper 1% level. Variable definitions are listed in appendix. Standard errors are clustered by firm and year (Gow et al. 2010). *t* statistics in parentheses. ***, **, * Represent significance levels at 0.01, 0.05, and 0.10, respectively.

Where *BANKR* is an indicator variable that takes the value one for the last firm-year observation preceding the bankruptcy filing, and zero otherwise, *TLTA* is total liabilities to total assets, *EBITDATL* is *EBITDA* to total liabilities, *CACL* is current assets to current liabilities, *Log(TA)* is

the logarithm of total assets, and *INDUSTRY* and *YEAR* are industry and year fixed effects. All variable definitions are listed in appendix.

I estimate Eq. (2) using logistic regression and cluster standard errors by firm and year. The coefficient estimates are displayed in Table A.2. Overall, the model has a good fit with AUROC of 0.866, higher than reported in for example Gupta et al. (2015) who also estimate a probability of default model for SMEs. Further, within each year, I rank and allocate firms into 10 equally sized portfolios (deciles) based on the estimated probability of default, and term these portfolios *DISTRESS_1 … DISTRESS_10*. In Table A.3, I show the number of bankruptcies per portfolio. The model captures 53.3% (74.3%) of all bankruptcies within the highest (the two highest) decile(s), which is considerably higher than for example Kalak and Hudson (2016), who also estimate a probability of default model for SMEs. A random guess would attribute 10% (20%) of bankruptcy firms to the highest (the two highest) decile(s).

Table A.3: Bankruptcies per DISTRESS portfolio

	(1)	(2)	(3)	(4)
BANKR	**0**	**1**	**Total**	**Percent of total BANKR in decile**
DISTRESS_1	16,569	5	16,574	0.28%
DISTRESS_2	16,550	16	16,566	0.88%
DISTRESS_3	16,547	20	16,567	1.10%
DISTRESS_4	16,540	28	16,568	1.55%
DISTRESS_5	16,533	33	16,566	1.82%
DISTRESS_6	16,482	86	16,568	4.75%
DISTRESS_7	16,456	114	16,570	6.30%
DISTRESS_8	16,402	163	16,565	9.01%
DISTRESS_9	16,187	381	16,568	21.05%
DISTRESS_10	15,597	964	16,561	53.26%
Total	163,863	1,810	165,673	

This table shows the number of bankruptcies captured within each *DISTRESS* portfolio, where *DISTRESS* portfolio denotes the within-year probability of default decile. Column (1) shows the number of non-bankrupt firms within each *DISTRESS* portfolio. Column (2) shows the number of bankrupt firms within each *DISTRESS* portfolio. Column (3) shows the total number of observations within each portfolio. Column (4) shows the percentage of total bankrupt firms captured within each portfolio (*DISTRESS_X* / total number of bankrupt firms (1,810)).

3.6 Do discretionary accruals contain information for financially distressed firms?

To test how discretionary accrual choices of financially distressed firms contribute to earnings quality I test the informativeness of current accruals about future profitability and future cash flows. The accrual literature often considers standard persistence regressions of the following form:

$$ROA_{i,t+1} = \alpha_0 + \beta_1 CF_{i,t} + \beta_2 ACCRUALS_{i,t} + \varepsilon_{i,t} \quad (3)$$

for firm *i* in year *t*, where *ROA* is net income scaled by total assets, *CF* is a measure of cash flows, typically operating cash flow, or a more comprehensive cash flow measure such as free cash flow or comprehensive operating cash flows, and *ACCRUALS* is a measure of accruals, typically working capital accruals, or a more comprehensive accrual measure such as total accruals, or comprehensive operating accruals (dependent on the cash flow measure used). Persistence refers to the coefficient slopes in Eq. (3). Researchers investigating the information value of current earnings about future cash flows typically use a similar design (Li 2019; Atwood et al. 2010; Barth et al. 2001). Further, researchers decompose the accrual component into "normal" accruals and discretionary accruals (see e. g. Allen et al. 2013; Xie 2001).

As noted by Lewellen and Resutek (2019) and Fairfield et al. (2003) an equivalent regression can be estimated substituting *CF* with *ROA* on the right hand side, yielding the following equation:

$$ROA_{i,t+1} = \alpha_0 + \gamma_1 ROA_{i,t} + \gamma_2 ACCRUALS_{i,t} + \varepsilon_{i,t} \quad (4)$$

In Eq. (4) the coefficient on γ_2 captures the *differential* persistence of accruals relative to cash flows (i.e. $\gamma_2 = \beta_1 - \beta_2$). Following this setup, I generate the following two equations, where I substitute *ACCRUALS* on the right hand side with *DACC* (the residuals from estimating Eq. (1)), and in Eq. (6) I further substitute *ROA* with *OPCF* on the left hand side:

$$ROA_{i,t+1} = \alpha_0 + \gamma_1 ROA_{i,t} + \gamma_2 DACC_{i,t} + \varepsilon_{i,t} \quad (5)$$

$$OPCF_{i,t+1} = \alpha_0 + \gamma_1 ROA_{i,t} + \gamma_2 DACC_{i,t} + \varepsilon_{i,t} \quad (6)$$

I estimate Eq. (5) and Eq. (6) separately for distressed and non-distressed firms, respectively, and use the Wald test to compare the *DACC* slopes. This setup has an appealing attribute for addressing the research question stated in this paper. Absent managerial estimation errors and manipulation earnings persistence is expected to differ across the level of financial distress, because financially distressed firms typically have high earnings volatility and a high fraction of losses – attributes that have previously been linked to lower earnings persistence (Dichev and Tang 2009; Frankel and Litov 2009; Basu 1997). When estimating Eq. (3) type regressions one would expect that both the coefficient estimates of β_1 and β_2 would decrease with the level of financial distress. With Eq. (5) and Eq. (6) I benchmark *DACC* against other components of *ROA* for the same firm, and thus a firm serves as a control for itself through *ROA-DACC*, in the sense that *ROA-DACC* captures informativeness of current earnings absent manipulation

(assuming that *ROA-DACC* represents earnings as they would be absent manipulation). The coefficient estimate of γ_2 thus captures the informativeness of *DACC* after controlling for current profitability.

The predictions of the opportunism hypothesis imply that the coefficient estimate of γ_2 of financially distressed firms is lower than γ_2 of non-distressed firms, because opportunistic manipulation represents a confounding component of earnings that should not carry information value about future earnings or cash flows. The predictions of the signaling hypothesis imply the opposite: that the coefficient estimate of γ_2 of financially distressed firms is higher than or equal to γ_2 of non-distressed firms.

4. RESULTS

4.1 Descriptive statistics

Summary statistics for all sample observations are listed in Table A.4. In Table A.5 I show the descriptive statistics for all non-bankrupt firms across each *DISTRESS* portfolio. I find that observations in the *DISTRESS_9* portfolio have income-increasing discretionary accruals of 1.3 percentage points, while observations in the *DISTRESS_10* portfolio have income-decreasing discretionary accruals of 0.7 percentage points. To further test whether *DISTRESS* is related to discretionary accruals, I follow Chen et al. (2018) and estimate accruals with a one-step procedure. The results are tabulated in Table A.6, where firms with predicted probability of default below the within-year median (i.e. *DISTRESS_1* through *DISTRESS_5*) serve as base

Table A.4: Summary statistics, all observations

	count	mean	sd	min	p25	p50	p75	max
OPACC	165,673	0.032	0.239	-0.649	-0.064	0.007	0.101	1.124
DACC	165,673	-0.000	0.063	-0.234	-0.025	-0.000	0.024	0.255
NACC	165,673	0.032	0.211	-0.542	-0.064	0.010	0.104	0.901
OPCF	165,673	0.025	0.261	-1.095	-0.059	0.028	0.132	0.825
ROA	165,673	0.058	0.141	-0.416	0.001	0.036	0.104	0.636
TLTA	165,673	0.621	0.283	0.010	0.436	0.656	0.821	1.420
EBITDATL	165,673	0.232	0.445	-1.226	0.046	0.135	0.314	2.457
CACL	165,673	3.176	8.523	0.017	0.884	1.289	2.043	68.334
CASHTA	165,673	0.093	0.147	0.000	0.002	0.025	0.118	0.727
ΔGP	165,673	0.030	0.169	-0.462	-0.027	0.006	0.067	0.832
mTA (DKK)	165,673	42.9	50.9	10.0	14.3	22.8	46.7	323.0
mTA (EUR)	165,673	5.7	6.8	1.3	1.9	3.0	6.2	43.1
Age	165,673	19.0	15.6	0.0	8.0	15.0	26.0	280.0
CostDebt	134,666	0.046	0.039	0.001	0.023	0.039	0.057	0.300

This table shows the descriptive statistics of all observations. Continuous variables are winsorized at the lower and upper 1% level. Variable definitions are listed in appendix. The number of observations with *CostDebt* data available is smaller than the other variables, because *CostDebt* data is not used in the final sample selection procedure, and *CostDebt* is restricted to include observations with *CostDebt* ∈]0.00 ; 0.30].

Table A.5: Summary statistics, non-bankrupt firms, across DISTRESS portfolios

DISTRESS portfolio	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Total**
OPACC	0.022	0.032	0.034	0.032	0.031	0.029	0.032	0.037	0.040	0.024	0.031
	(0.230)	(0.218)	(0.218)	(0.215)	(0.212)	(0.214)	(0.216)	(0.233)	(0.257)	(0.322)	(0.234)
DACC	**0.009**	**-0.009**	**-0.010**	**-0.007**	**-0.003**	**0.000**	**0.004**	**0.007**	**0.013**	**-0.007**	**-0.000**
	(0.094)	**(0.071)**	**(0.059)**	**(0.050)**	**(0.043)**	**(0.040)**	**(0.039)**	**(0.042)**	**(0.052)**	**(0.098)**	**(0.063)**
NACC	0.001	0.036	0.042	0.037	0.033	0.028	0.028	0.030	0.028	0.044	0.031
	(0.196)	(0.187)	(0.192)	(0.193)	(0.191)	(0.192)	(0.195)	(0.210)	(0.232)	(0.282)	(0.208)
OPCF	0.191	0.121	0.076	0.050	0.028	0.013	-0.003	-0.025	-0.055	-0.141	0.030
	(0.264)	(0.230)	(0.224)	(0.216)	(0.212)	(0.212)	(0.217)	(0.235)	(0.261)	(0.338)	(0.257)
ROA	0.207	0.154	0.112	0.083	0.060	0.043	0.028	0.011	-0.016	-0.111	0.062
	(0.197)	(0.141)	(0.114)	(0.094)	(0.077)	(0.070)	(0.064)	(0.065)	(0.077)	(0.135)	(0.140)
TLTA	0.194	0.348	0.446	0.532	0.608	0.677	0.740	0.799	0.850	1.005	0.608
	(0.167)	(0.182)	(0.180)	(0.165)	(0.151)	(0.140)	(0.136)	(0.136)	(0.138)	(0.211)	(0.282)
EBITDATL	0.892	0.435	0.287	0.212	0.168	0.136	0.109	0.082	0.046	-0.055	0.241
	(0.954)	(0.372)	(0.270)	(0.217)	(0.184)	(0.155)	(0.144)	(0.140)	(0.159)	(0.205)	(0.453)
CACL	16.876	3.684	2.439	1.882	1.583	1.343	1.183	1.033	0.974	0.863	3.307
	(21.940)	(4.350)	(2.577)	(1.885)	(1.459)	(1.190)	(1.051)	(0.871)	(0.831)	(0.800)	(8.784)
CASHTA	0.212	0.153	0.119	0.099	0.080	0.066	0.060	0.053	0.050	0.050	0.096
	(0.208)	(0.171)	(0.152)	(0.141)	(0.125)	(0.115)	(0.115)	(0.113)	(0.111)	(0.107)	(0.150)
ΔGP	0.074	0.063	0.052	0.040	0.030	0.024	0.018	0.012	0.000	-0.027	0.030
	(0.209)	(0.184)	(0.171)	(0.156)	(0.144)	(0.139)	(0.134)	(0.135)	(0.148)	(0.197)	(0.166)
mTA (DKK)	41.6	46.9	46.2	48.1	48.7	47.4	44.2	39.3	36.2	32.5	43.4
	(49.7)	(55.9)	(55.0)	(55.7)	(56.5)	(55.1)	(50.9)	(45.3)	(42.0)	(37.7)	(51.3)
mTA (EUR)	5.5	6.3	6.2	6.4	6.5	6.3	5.9	5.2	4.8	4.3	5.8
	(6.6)	(7.5)	(7.3)	(7.4)	(7.5)	(7.3)	(6.8)	(6.0)	(5.6)	(5.0)	(6.8)
Age	19.2	21.0	21.4	20.9	20.5	19.9	18.8	17.4	16.9	15.7	19.3
	(15.6)	(16.6)	(17.6)	(16.9)	(17.2)	(16.2)	(15.1)	(14.4)	(13.6)	(12.8)	(15.9)
CostDebt	0.047	0.042	0.041	0.042	0.043	0.045	0.045	0.047	0.049	0.052	0.045
	(0.056)	(0.047)	(0.042)	(0.038)	(0.035)	(0.033)	(0.031)	(0.031)	(0.032)	(0.040)	(0.039)

This table shows the mean (standard deviations) of variables by *DISTRESS* portfolios, where 1 denotes the *DISTRESS_1* portfolio (the non-distressed firms), and 10 denotes the *DISTRESS_10* portfolio (the most distressed firms). Bankrupt firms (i.e. all observations that relate to a firm that at any time in the dataset files for bankruptcy) are excluded from the table. Continuous variables are winsorized at the lower and upper 1% level. Variable definitions are listed in appendix. *CostDebt* is not available for all sample observations and hence *N* is lower.

levels. From these estimations, the above observations prevail, however the magnitudes change slightly.

Table A.6: DISTRESS and DACC: A one-step procedure

	(1) OPACC
DISTRESS_6	0.0007
	(0.74)
DISTRESS_7	0.0033***
	(3.31)
DISTRESS_8	0.0077***
	(4.79)
DISTRESS_9	**0.0113*** **
	(5.49)
DISTRESS_10	**-0.0162*** **
	(-7.68)
N	154,651
Adjust R. sq.	0.7638

This table estimates the influence of *DISTRESS* portfolios on comprehensive operating accruals in a one-step procedure (Chen et al. 2018). *DISTRESS_1* through *DISTRESS_5* are base levels and are captured by the intercept.

Continuous variables entering the estimation are winsorized at the lower and upper 1% level. Variable definitions are listed in appendix. Standard errors are clustered by firm and year (Gow et al. 2010). *t* statistics in parentheses. ***, **, * Represent significance levels at 0.01, 0.05, and 0.10, respectively.

The reported estimation table is based on the following regression, where all beta coefficients are estimated, but only *DISTRESS* indicator coefficients are reported:

$$OPACC_t = \alpha_{0,i,t} + \alpha_1 \frac{1}{TA_{i,t}} + \sum_k^{10} DISTRESS_{k,i,t} + \sum_k^5 \beta_{2,k} ROA_{IND\,k,i,t} + \sum_k^5 \beta_{3,k}\, \Delta GP_{IND\,k,i,t} + \beta_4 OPACC_{t-1} + \beta_5 OPCF_{i,t} + \beta_5 OPCF_{i,t-1} + \sum_k \beta_{5,k} INDUSTRYYEAR_{k,i,t} + \left(\alpha_j \frac{1}{TA_{i,t}} + \sum_k^5 \beta_{j,k} ROA\_IND_{k,i,t} + \sum_k^5 \beta_{j,k}\, \Delta GP\_IND_{k,i,t} + \beta_j OPACC_{t-1} + \beta_j OPCF_{i,t} + \beta_j OPCF_{i,t-1}\right) * \sum_k INDUSTRYYEAR_{k,i,t} + \varepsilon_{i,t}$$

Albeit the results suggest mixed evidence on the direction of discretionary accruals in financially distressed firms, I caution the reader that the results might appear mixed because of the estimation model. As argued by Collins et al. (2017) their modelling approach (which is adopted in this paper) might "throw the baby out with the bathwater". They use an example where growth firms are more prone to managing earnings, and thus controlling for growth may partly throw the baby out with the bathwater when testing for earnings management. Further, they show that their modelling approach effectively does not produce discretionary accruals different from zero in two extreme portfolios based on probability of default (highest and lowest quintile). However, not controlling for characteristics such as profitability, which is also used to model the probability of default will falsely classify a part of nondiscretionary accruals as discretionary accruals. Additionally, the objective of this paper is not to provide evidence on the direction of discretionary accruals choices, but rather its influence on earnings quality.

4.2 Do discretionary accruals contain information for financially distressed firms?

First, for completeness, I estimate Eq. (5) and Eq. (6) separately for each *DISTRESS* portfolio and present the results in Table A.7. In Panel A, I show the results for earnings persistence. Relative to current profitability, measured as net income to total assets, discretionary accruals are less persistent and the coefficient is rather stable for the *DISTRESS_2* through *DISTRESS_6* portfolios. For the *DISTRESS_7* to *DISTRESS_10* portfolios, the discretionary accrual component seems to become stickier. A similar observation is made in Panel B, where I investigate the predictive ability about future cash flows. The effect is strongest for the *DISTRESS_7* and the *DISTRESS_8* portfolios. These tables are reported purely for transparency, and the differences are formerly tested in the following.

In Table A.8 I estimate Eq. (5) and Eq. (6) for the firms in the *DISTRESS_10* (*DISTRESS_9* and *DISTRESS_10*) portfolios, relative to firms not in this portfolio (these portfolios), and use the Wald test to test the differences in *DACC* slopes. In Panel A, I consistently find that *DACC* of financially distressed firms predicts future profitability better than *DACC* of non-distressed firms. In Panel B, I find a similar result in predicting future cash flows, but only when I compare the *DISTRESS_9* and *DISTRESS_10* portfolios collectively to other portfolios. When comparing the *DISTRESS_10* to other portfolios, the difference in *DACC* slopes is not significant.

The opportunism hypothesis predicts that financially distressed firms use their discretion opportunistically, and that *DACC* of those firms should represent an accounting distortion that should not represent information about future profitability or cash flows. The results are not consistent with the opportunism hypothesis, because in most specifications *DACC* of financially distressed firms increases earnings quality. The results are consistent with the signaling hypothesis, where financially distressed firms use discretionary accruals to signal private information on firm prospects.

4.3 Additional tests

4.3.1 Dividing the sample by income-increasing/income-decreasing accruals

To further explore the dynamics of discretionary reporting in financially distressed firms I divide the sample by income-increasing and income-decreasing discretionary accruals, respectively. If firm managers opportunistically manage accruals to increase earnings, I expect

Table A.7: Earnings persistence and informativeness about future cash flows, per DISTRESS portfolio

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Panel A											
Eq. (5): Earnings persistence											
DISTRESS portfolio	**ALL**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
	ROA_{t+1}	ROA_{t+1}	ROA_{t+1}	ROA_{t+1}	ROA_{t+1}	ROA_{t+1}	ROA_{t+1}	ROA_{t+1}	ROA_{t+1}	ROA_{t+1}	ROA_{t+1}
ROA_t	0.585***	0.545***	0.525***	0.476***	0.483***	0.540***	0.503***	0.460***	0.502***	0.516***	0.483***
	(30.45)	(16.31)	(25.12)	(19.24)	(13.93)	(19.49)	(10.89)	(9.85)	(15.77)	(11.97)	(13.21)
$DACC_t$	-0.178***	-0.135***	-0.191***	-0.232***	-0.215***	-0.216***	-0.226***	-0.148***	-0.107***	-0.079***	0.016
	(-14.52)	(-3.82)	(-7.25)	(-8.51)	(-13.87)	(-8.47)	(-7.66)	(-4.34)	(-2.96)	(-3.25)	(0.42)
Intercept	0.012**	0.010	0.017***	0.004	0.010*	0.002	0.011***	0.008	0.010*	0.010	0.048***
	(2.51)	(1.19)	(2.75)	(0.71)	(1.88)	(0.54)	(2.79)	(1.27)	(1.79)	(0.83)	(5.18)
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	120,440	12,611	12,903	12,882	12,825	12,681	12,459	12,216	11,793	10,966	9,104
Adjust. R sq.	0.378	0.406	0.320	0.269	0.250	0.245	0.200	0.167	0.170	0.181	0.191
Panel B											
Eq. (6): Informativeness about future cash flows											
DISTRESS portfolio	**ALL**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
	$OPCF_{t+1}$	$OPCF_{t+1}$	$OPCF_{t+1}$	$OPCF_{t+1}$	$OPCF_{t+1}$	$OPCF_{t+1}$	$OPCF_{t+1}$	$OPCF_{t+1}$	$OPCF_{t+1}$	$OPCF_{t+1}$	$OPCF_{t+1}$
ROA_t	0.462***	0.455***	0.330***	0.329***	0.310***	0.297***	0.225***	0.270***	0.371***	0.471***	0.568***
	(28.93)	(18.59)	(9.03)	(11.55)	(8.93)	(7.12)	(4.20)	(6.10)	(8.36)	(15.81)	(11.18)
$DACC_t$	0.105***	0.027	0.031	0.036	0.115*	0.132**	0.089**	0.310***	0.383***	0.232***	0.164**
	(5.18)	(0.63)	(0.67)	(1.06)	(1.84)	(2.22)	(2.16)	(3.32)	(5.97)	(3.85)	(2.50)
Intercept	-0.028***	-0.042***	-0.005	-0.020***	-0.027***	-0.039***	-0.025	-0.034*	-0.070***	-0.043**	0.040
	(-4.18)	(-4.77)	(-0.50)	(-2.67)	(-3.74)	(-3.70)	(-1.61)	(-1.72)	(-3.17)	(-2.27)	(1.13)
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	120,440	12,611	12,903	12,882	12,825	12,681	12,459	12,216	11,793	10,966	9,104
Adjust. R sq.	0.091	0.179	0.075	0.056	0.042	0.037	0.031	0.029	0.039	0.052	0.094

This table estimates shows the earnings persistence and informativeness about future cash flows across *DISTRESS* portfolios. Bankrupt firms are excluded. Industry and year fixed effects are estimated but not reported. Continuous variables entering the estimations are winsorized at the lower and upper 1% level. Variable definitions are listed in appendix. Standard errors are clustered by firm and year (Gow et al. 2010). *t* statistics in parentheses. ***, **, * Represent significance levels at 0.01, 0.05, and 0.10, respectively.

Table A.8: Comparison of earnings persistence and informativeness about future cash flows

Panel A

Eq. (5): Earnings persistence

Sample:	DISTRESS_1 through DISTRESS_9	DISTRESS_10	DISTRESS_1 through DISTRESS_8	DISTRESS_9 and DISTRESS_10
	(1)	(2)	(3)	(4)
	ROA_{t+1}	ROA_{t+1}	ROA_{t+1}	ROA_{t+1}
ROA	0.585***	0.483***	0.580***	0.497***
	(28.04)	(13.21)	(27.43)	(17.74)
DACC	-0.204***	0.016	-0.205***	-0.016
	(-18.54)	(0.42)	(-16.96)	(-0.59)
Intercept	0.010**	0.048***	0.010**	0.025***
	(2.02)	(5.18)	(2.03)	(3.11)
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
N	111,336	9,104	100,370	20,070
Adjust. R sq.	0.371	0.191	0.365	0.207

Wald test of difference between DACC coefficient estimates

	H0: DACC(2)-DACC(1)=0	H0: DACC(4)-DACC(3)=0
Chi^2	44.766***	66.890***
p-value	0.000	0.000

Panel B

Eq. (6): Informativeness about future cash flows

Sample:	DISTRESS_1 through DISTRESS_9	DISTRESS_10	DISTRESS_1 through DISTRESS_8	DISTRESS_9 and DISTRESS_10
	(1)	(2)	(3)	(4)
	$OPCF_{t+1}$	$OPCF_{t+1}$	$OPCF_{t+1}$	$OPCF_{t+1}$
ROA	0.443***	0.568***	0.438***	0.519***
	(22.80)	(11.18)	(22.60)	(21.91)
DACC	0.075***	0.164**	0.064***	0.209***
	(5.40)	(2.50)	(4.72)	(4.20)
Intercept	-0.030***	0.040	-0.029***	-0.009
	(-4.83)	(1.13)	(-4.50)	(-0.46)
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
N	111,336	9,104	100,370	20,070
Adjust. R sq.	0.082	0.094	0.083	0.082

Wald test of difference between DACC coefficient estimates

	H0: DACC(2)-DACC(1)=0	H0: DACC(4)-DACC(3)=0
Chi^2	2.039	10.558***
p-value	0.153	0.001

This table shows the difference in *DACC* coefficient estimates between distressed firms and non-distressed firms. Bankrupt firms are excluded. Industry and year fixed effects are estimated but not reported. Continuous variables entering the estimations are winsorized at the lower and upper 1% level. Variable definitions are listed in appendix. Standard errors are clustered by firm and year (Gow et al. 2010). *t* statistics in parentheses. ***, **, * Represent significance levels at 0.01, 0.05, and 0.10, respectively.

that income-increasing discretionary accruals of financially distressed firms to a lower extent map into future profitability and cash flows. In contrast, if firm managers use discretionary

accruals to increase earnings and signal good firm prospects, I expect that income-increasing discretionary accruals map into future profitability to a high extent.

In Table A.9 I show the results of the earnings persistence regressions (Eq. (5)). In Panel A I report the results when discretionary accruals are income-increasing, and find that income-increasing discretionary accruals of financially distressed firms are more persistent than those of non-distressed firms. In Panel B I report the results when discretionary accruals are income-decreasing, and find that the persistence of discretionary accruals is not different for financially distressed firms relative to non-distressed firms.

In Table A.10 I tabulate the results regarding future cash flows (Eq. (6)). Panel A reports the results when discretionary accruals are income-increasing, and provide similar insights as the earnings persistence regressions: income-increasing discretionary accruals of financially distressed firms are more informative about future cash flows than those of non-distressed firms. In Panel B I report the results for the sample where discretionary accruals are negative. When comparing the *DISTRESS_10* portfolio to other portfolios, I observe no significant difference in the *DACC* slope. However, when I pool the *DISTRESS_10* and *DISTRESS_9* observations, and benchmark them against other portfolios, I find that the *DACC* slope is significantly higher.

Collectively, these tests provide consistent evidence that the effect observed in the main analysis is mainly driven by income-increasing discretionary accruals. This finding is highly inconsistent with the opportunism hypothesis, which predicts the exact opposite. However, this finding lends strong support to the signaling hypothesis, where financially distressed firms with good firm prospects use discretionary accruals to signal this information.

4.3.2 How do lenders price discretionary accruals?

In the following, I explore how lenders use discretionary accruals in the determination of an important aspect of a lending contract: the cost of debt, measured here as the interest expense scaled by debt. Conventional research on accounting quality and the cost of debt generally finds that lenders price protect their investment against borrower firms' discretionary accounting choices (Bharath et al. 2008; Francis et al. 2005; Vander Bauwhede et al. 2015)[13]. If lenders

[13] I note however that the results obtained here are not directly comparable to Bharath et al. (2008), Francis et al. (2005), and Vander Bauwhede et al. (2015), because I use signed abnormal accruals, whereas Bharath et al (2008) and Bauwhede et al. (2015) use unsigned abnormal accruals, and Francis et al. (2005) use the standard deviation of abnormal accruals.

Table A.9: Comparison of earnings persistence, per income-increasing/income-decreasing DACC

Panel A

Eq. (5): Earnings persistence. Income-increasing DACC (DACC>=0)

Sample:	DISTRESS_1 through DISTRESS_9	DISTRESS_10	DISTRESS_1 through DISTRESS_8	DISTRESS_9 and DISTRESS_10
	(1)	(2)	(3)	(4)
	ROA_{t+1}	ROA_{t+1}	ROA_{t+1}	ROA_{t+1}
ROA	0.619***	0.404***	0.628***	0.426***
	(29.21)	(13.28)	(29.53)	(18.05)
DACC	-0.349***	0.007	-0.386***	-0.027
	(-7.43)	(0.11)	(-7.52)	(-0.61)
Intercept	0.013***	0.015*	0.012***	0.012**
	(2.78)	(1.74)	(2.92)	(2.17)
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
N	54,240	5,411	47,233	12,418
Adjust. R sq.	0.414	0.091	0.416	0.112

Wald test of difference between DACC coefficient estimates

	H0: DACC(2)-DACC(1)=0	H0: DACC(4)-DACC(3)=0
Chi^2	46.641***	87.939***
p-value	0.000	0.000

Panel B

Eq. (5): Earnings persistence. Income-decreasing DACC (DACC<0)

Sample:	DISTRESS_1 through DISTRESS_9	DISTRESS_10	DISTRESS_1 through DISTRESS_8	DISTRESS_9 and DISTRESS_10
	(1)	(2)	(3)	(4)
	ROA_{t+1}	ROA_{t+1}	ROA_{t+1}	ROA_{t+1}
ROA	0.577***	0.611***	0.567***	0.567***
	(17.83)	(11.27)	(15.99)	(16.42)
DACC	-0.135**	-0.148*	-0.138**	-0.115*
	(-2.19)	(-1.77)	(-2.12)	(-1.87)
Intercept	0.013***	0.094***	0.013***	0.046***
	(3.34)	(4.37)	(3.43)	(2.94)
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
N	57,096	3,693	53,137	7,652
Adjust. R sq.	0.321	0.208	0.309	0.257

Wald test of difference between DACC coefficient estimates

	H0: DACC(2)-DACC(1)=0	H0: DACC(4)-DACC(3)=0
Chi^2	0.027	0.144
p-value	0.869	0.705

This table shows the difference in *DACC* coefficient estimates between distressed firms and non-distressed firms, contingent on *DACC* being positive (Panel A) or negative (Panel B). Bankrupt firms are excluded. Industry and year fixed effects are estimated but not reported. Continuous variables entering the estimations are winsorized at the lower and upper 1% level. Variable definitions are listed in appendix. Standard errors are clustered by firm and year (Gow et al. 2010). *t* statistics in parentheses. ***, **, * Represent significance levels at 0.01, 0.05, and 0.10, respectively.

view the discretionary accrual component of earnings as an accounting distortion, controlling for current ROA I expect a positive relation between discretionary accruals and cost of debt,

Table A.10: Comparison of informativeness about future cash flows, per income-increasing/income-decreasing DACC

Panel A

Eq. (6): Informativeness about future cash flows. Income-increasing DACC (DACC>=0)

Sample:	DISTRESS_1 through DISTRESS_9	DISTRESS_10	DISTRESS_1 through DISTRESS_8	DISTRESS_9 and DISTRESS_10
	(1)	(2)	(3)	(4)
	$OPCF_{t+1}$	$OPCF_{t+1}$	$OPCF_{t+1}$	$OPCF_{t+1}$
ROA	0.481***	0.511***	0.490***	0.500***
	(22.36)	(6.30)	(22.91)	(9.95)
DACC	-0.167***	0.048	-0.193***	0.018
	(-6.04)	(0.49)	(-5.48)	(0.21)
Intercept	-0.024***	0.042	-0.024***	0.005
	(-3.67)	(1.31)	(-3.51)	(0.24)
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
N	54,240	5,411	47,233	12,418
Adjust. R sq.	0.103	0.037	0.110	0.036

Wald test of difference between DACC coefficient estimates

	H0: DACC(2)-DACC(1)=0	H0: DACC(4)-DACC(3)=0
Chi^2	4.082**	6.845***
p-value	0.043	0.009

Panel B

Eq. (6): Informativeness about future cash flows. Income-decreasing DACC (DACC<0)

Sample:	DISTRESS_1 through DISTRESS_9	DISTRESS_10	DISTRESS_1 through DISTRESS_8	DISTRESS_9 and DISTRESS_10
	(1)	(2)	(3)	(4)
	$OPCF_{t+1}$	$OPCF_{t+1}$	$OPCF_{t+1}$	$OPCF_{t+1}$
ROA	0.465***	0.523***	0.452***	0.374***
	(18.29)	(5.14)	(14.93)	(7.04)
DACC	0.221***	0.301**	0.188***	0.510***
	(4.18)	(2.06)	(3.45)	(4.28)
Intercept	-0.025***	0.044	-0.024***	-0.021
	(-3.67)	(0.85)	(-3.44)	(-0.65)
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
N	57,096	3,693	53,137	7,652
Adjust. R sq.	0.063	0.111	0.058	0.116

Wald test of difference between DACC coefficient estimates

	H0: DACC(2)-DACC(1)=0	H0: DACC(4)-DACC(3)=0
Chi^2	0.278	7.878***
p-value	0.598	0.005

This table shows the difference in *DACC* coefficient estimates between distressed firms and non-distressed firms, contingent being positive (Panel A) or negative (Panel B). Bankrupt firms are excluded. Industry and year fixed effects are estimated but not reported. Continuous variables entering the estimations are winsorized at the lower and upper 1% level. Variable definitions are listed in appendix. Standard errors are clustered by firm and year (Gow et al. 2010). *t* statistics in parentheses. ***, **, * Represent significance levels at 0.01, 0.05, and 0.10, respectively.

because lenders price protect themselves against the borrowing firm's discretion exercised. In contrast, if financially distressed firms use discretionary accruals to signal private information

and lenders are able to unravel the information content of the signal, I expect discretionary accruals of financially distressed firms to be more negatively related to the cost of debt, relative to non-distressed firms. That is, I expect lenders to price the discretionary accrual component of earnings to a higher extent.

To investigate this, I re-estimate Eq. (5) substituting *ROA* with cost of debt (*CostDebt*)[14] on the left-hand side. Further, I add to the right hand side controls for negative income (*NEGROA*), total liabilities to total assets (*TLTA*), size (*Log(TA)*), the standard deviation of ROA (*StdROA*), asset composition, measured as tangible fixed assets to total assets (*PPE*), and cash to total assets (*CashTA*). I report the regression results in Table A.11. For the non-distressed firms (column 1 and 3) I find that signed *DACC* is associated with increased cost of debt, consistent with the notion that lenders price protect their investment against borrowers' accounting discretion. However, for financially distressed firms this relation reverses. In column 2 and 4 I find that *DACC* of financially distressed firms is negatively associated with future cost of debt. The Wald test shows that the difference in coefficient estimates between non-distressed and distressed firms is highly significant. The results suggest that lenders view discretionary accrual choices of financially distressed firms as informative about firm prospects, and lend further support for the signaling hypothesis.

4.3.3 Are discretionary accruals really discretionary?

One general concern about discretionary accruals is the extent to which the estimation is successful in dividing accruals into innate (or "normal") accruals and discretionary (or "abnormal") accruals (Ball 2013; Basu 2013; Jackson 2018). This leads to a concern that discretionary accruals capture a portion of normal accruals, and hence the results I obtain are not driven by firms' discretionary accrual choices. If the estimate of discretionary accruals truly captures the discretionary component of accruals and this component of earnings is the driver of the results, I would expect only the slope on discretionary accruals – and not the slope on normal accruals – to increase for financially distressed firms. To address this concern, I re-estimate Eq. (5) and Eq. (6) and add to the right side of the equations normal accruals (*NACC*), i.e. the predicted values from estimating Eq. (1).

[14] I approximate interest bearing debt as total liabilities net of trade payables because interest bearing debt is rarely specified in the data. The cost of debt is calculated as financial expenses divided by interest bearing debt. *CostDebt* is defined in appendix.

Table A.11: Lenders' response to discretionary accruals

Eq. (5) where CostDebt replaces ROA on the left-hand side, and with additional CostDebt related controls

Sample:	DISTRESS_1 through DISTRESS_9	DISTRESS_10	DISTRESS_1 through DISTRESS_8	DISTRESS_9 and DISTRESS_10
	(1) $CostDebt_{t+1}$	(2) $CostDebt_{t+1}$	(3) $CostDebt_{t+1}$	(4) $CostDebt_{t+1}$
ROA	-0.022***	-0.010	-0.021***	-0.013*
	(-7.93)	(-1.35)	(-7.39)	(-1.78)
DACC	0.023***	-0.026***	0.023***	-0.020**
	(6.00)	(-4.12)	(5.69)	(-2.48)
NegROA	0.005***	0.001	0.005***	0.001
	(6.27)	(0.75)	(5.79)	(1.41)
TLTA	-0.006***	-0.004	-0.008***	-0.002
	(-3.37)	(-1.38)	(-4.38)	(-0.83)
Log(TA)	-0.001***	-0.002**	-0.001**	-0.001***
	(-3.33)	(-2.42)	(-2.46)	(-2.86)
StdROA	0.015***	0.004	0.016***	0.003
	(5.50)	(1.50)	(5.10)	(1.25)
PPE	-0.008***	0.002	-0.009***	0.001
	(-4.68)	(0.98)	(-4.95)	(0.49)
CashTA	-0.018***	-0.035***	-0.017***	-0.034***
	(-8.99)	(-6.49)	(-8.89)	(-7.30)
Intercept	0.069***	0.069***	0.068***	0.070***
	(17.94)	(8.12)	(17.07)	(9.19)
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
N	87,455	7,760	78,207	17,008
Adjust. R sq.	0.054	0.057	0.054	0.061

Wald test of difference between DACC coefficient estimates

	H0: DACC(2)-DACC(1)=0	H0: DACC(4)-DACC(3)=0
Chi^2	33.689***	39.248***
p-value	0.000	0.000

This table shows how lenders use *DACC* when setting prices. Bankrupt firms are excluded. Industry and year fixed effects are estimated but not reported. Continuous variables entering the estimations are winsorized at the lower and upper 1% level. Variable definitions are listed in appendix. Standard errors are clustered by firm and year (Gow et al. 2010). *t* statistics in parentheses. ***, **, * Represent significance levels at 0.01, 0.05, and 0.10, respectively.

I report the results in Table A.12. In Panel A, I show the results of estimating earnings persistence regressions (Eq. (5)), and find that *DACC* of financially distressed firms predicts future profitability better than *DACC* of non-distressed firms, consistent with the main analysis. I find no significant difference in the *NACC* slopes comparing financially distressed firms with non-distressed firms. In Panel B, I show the results of estimating the informativeness of current earnings components about future cash flows. When comparing the most financially distressed firms in the *DISTRESS_10* portfolio to firms not in this portfolio (column 1 and 2) I do not find a significant difference in the *DACC* slopes, consistent with the main analysis. However, when comparing the firms in the *DISTRESS_10* and *DISTRESS_9* portfolios to firms not in these

Table A.12: Comparison of DACC and NACC coefficient estimates between distressed and non-distressed firms

Panel A

Eq. (5) with NACC added on the right hand-side

Sample:	DISTRESS_1 through DISTRESS_9	DISTRESS_10	DISTRESS_1 through DISTRESS_8	DISTRESS_9 and DISTRESS_10
	(1)	(2)	(3)	(4)
	ROA_{t+1}	ROA_{t+1}	ROA_{t+1}	ROA_{t+1}
ROA	0.586***	0.465***	0.581***	0.487***
	(28.17)	(11.75)	(27.60)	(17.37)
DACC	-0.200***	0.033	-0.202***	-0.004
	(-17.86)	(0.80)	(-16.30)	(-0.16)
NACC	-0.018***	-0.019**	-0.019***	-0.016***
	(-7.09)	(-2.55)	(-6.63)	(-3.84)
Intercept	0.011**	0.049***	0.011**	0.026***
	(2.27)	(5.08)	(2.31)	(3.19)
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
N	111,336	9,104	100,370	20,070
Adjust. R sq.	0.371	0.191	0.366	0.208

Wald test of difference between DACC coefficient estimates

	H0: DACC(2)-DACC(1)=0	H0: DACC(4)-DACC(3)=0
Chi^2	46.844***	71.255***
p-value	0.000	0.000

Wald test of difference between NACC coefficient estimates

	H0: NACC(2)-NACC(1)=0	H0: NACC(4)-NACC(3)=0
Chi^2	0.001	0.496
p-value	0.975	0.481

Panel B

Eq. (6) with NACC added on the right hand-side

Sample:	DISTRESS_1 through DISTRESS_9	DISTRESS_10	DISTRESS_1 through DISTRESS_8	DISTRESS_9 and DISTRESS_10
	(1)	(2)	(3)	(4)
	$OPCF_{t+1}$	$OPCF_{+1}$	$OPCF_{t+1}$	$OPCF_{t+1}$
ROA	0.440***	0.593***	0.435***	0.540***
	(21.88)	(11.29)	(21.79)	(20.05)
DACC	0.066***	0.140**	0.058***	0.184***
	(4.93)	(2.55)	(4.49)	(4.02)
NACC	0.049***	0.026	0.048***	0.036*
	(3.29)	(0.89)	(3.31)	(1.74)
Intercept	-0.032***	0.040	-0.031***	-0.010
	(-5.44)	(1.12)	(-5.10)	(-0.50)
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
N	111,336	9,104	100,370	20,070
Adjust. R sq.	0.084	0.094	0.085	0.083

Wald test of difference between DACC coefficient estimates

	H0: DACC(2)-DACC(1)=0	H0: DACC(4)-DACC(3)=0
Chi^2	1.358	7.877***
p-value	0.244	0.005

Wald test of difference between NACC coefficient estimates

	H0: NACC(2)-NACC(1)=0	H0: NACC(4)-NACC(3)=0
Chi^2	2.360	1.392
p-value	0.124	0.238

This table shows the difference in *DACC* and *NACC* coefficient estimates between distressed firms and non-distressed firms. Bankrupt firms are excluded. Industry and year fixed effects are estimated but not reported. Continuous variables entering the estimations are winsorized at the lower and upper 1% level. Variable definitions are listed in appendix. Standard errors are clustered by firm and year (Gow et al. 2010). *t* statistics in parentheses. ***, **, * Represent significance levels at 0.01, 0.05, and 0.10, respectively.

portfolios (column 3 and 4), I find that *DACC* is more informative for financially distressed firms. As with the earnings persistence regressions, I find no difference in the predictive ability of *NACC*. Collectively, prior results are not driven by normal accruals (i.e. the slope on *NACC*) alleviating a potential concern that *DACC* captures differences in the informativeness of normal accruals.

4.3.4 Alternative accrual and growth proxies

In untabulated tests, I re-estimate discretionary accruals (Eq. (1)) substituting comprehensive accruals (*OPACC*) with working capital accruals (*WCACC*) and substituting comprehensive operating cash flows (*OPCF*) with cash flows from operations (*OCF*). Further, I use these estimates of discretionary accruals to re-estimate the probability of default model (Eq. (2)), earnings persistence regressions (Eq. (5)), and informativeness about future cash flow regressions (Eq. (6)). In these regressions, prior conclusions remain unchanged. I consistently find that discretionary accruals contain more information about future profitability and future cash flows for financially distressed firms, than for non-distressed firms[15].

Further, in untabulated tests, I re-estimate discretionary accruals (Eq. (1)) substituting gross profit growth with employee growth and revenue growth, respectively, and use these estimates of discretionary accruals to re-estimate the probability of default model (Eq. (2)), earnings persistence regressions (Eq. (5)), and informativeness about future cash flow regressions (Eq. (6)). When I use employee growth instead of gross profit growth, I obtain similar results as the main analysis, i.e. discretionary accruals contain more information about future profitability and future cash flows for financially distressed firms, than for non-distressed firms[16]. When I use

[15] As with the main analysis, when I compare the slope on *DACC* of the *DISTRESS_10* firms to other firms, the difference in *DACC* persistence is not significant.

[16] In these estimations, when I compare the slope on *DACC* of the *DISTRESS_10* firms to other firms, the difference in *DACC* is marginally significant with a p-value of 5.1%. This result is different than the main analysis, and provides stronger evidence for the signaling hypothesis.

revenue growth instead of gross profit growth, I find that *DACC* of financially distressed firms is more informative about future profitability, but do not find any significant difference in *DACC* slopes about future cash flows. The lack of results about future cash flows is likely driven by a much smaller sample size: Because revenue data are not available for the vast majority of the observations the sample size decreases by 78%. However, the results are still inconsistent with the opportunism hypothesis, because *DACC* does not contain less information about future cash flows for financially distressed firms relative to non-distressed firms.

On balance, I interpret these robustness tests as evidence showing that any prior conclusions are not driven by the choice of accruals (comprehensive operating accruals) or choice of growth proxy (growth in gross profit).

4.3.5 Within firm comparison

To address a potential concern that financially distressed firms are inherently different from non-distressed firms, I re-estimate Eq. (5) and Eq. (6), where I restrict the sample to include only firms that (1) at one point in time was defined as financially distressed and (2) at one point in time was defined as non-distressed. With this approach, I can compare the informativeness of discretionary accruals of the same firm, at different levels of financial distress. In Table A.14 (appendix) I show the regression result. I consistently find that *DACC* of those firms are more informative about future profitability when they are financially distressed, relative to when the same firms are non-distressed. I find no significant difference in the *DACC* slope when predicting future cash flows.

5. CONCLUSION AND DISCUSSION

This paper investigates financially distressed firms' use of discretionary accrual choices and its implications on earnings quality. The motivation for this study relies on the notion that understanding the properties and information value of accruals is arguably one of the most important objectives of accounting research (Richardson et al. 2006), and that prior research has simply provided evidence on the direction of accounting choices in financially distressed firms, however has not tested the implications for earnings quality. In this paper, I find that discretionary accruals of financially distressed firms contain high information value about future profitability and future cash flows, relative to non-distressed firms. The results are driven by

income-increasing discretionary accruals, and lenders seem to value the information of discretionary accruals more when firms are financially distressed. On balance, I interpret the evidence as consistent with a signaling hypothesis, where financially distressed firms use discretionary accruals to signal their superior private information to firm stakeholders and thereby alleviate information asymmetries.

Despite the consistency of the results across various robustness tests, I caution the reader to interpret the findings with care. The results depend on my ability to distinguish accruals arising due to managerial discretion from innate accruals. However, (1) Collins et al. (2017) argue and provide empirical evidence that estimating accruals as a piecewise linear function of growth and profitability is a simple and efficient way to control for non-linear effects that ameliorates the misspecification problems raised in prior literature (see e.g. Ball 2013), and (2) I show that the results are driven by discretionary accruals, whereas the slope on normal accruals does not differ across financially distressed and non-distressed firms, respectively. Further, the results depend on my ability to identify financially distressed firms. However, the fit statistics discussed in section 3 suggest that the bankruptcy prediction model has a good fit, also compared to other bankruptcy prediction models developed earlier on a comparable dataset.

This paper does not examine if financially distressed firms substitute accrual earnings management with real earnings management, as suggested by recent research (Anagnostopoulou and Tsekrekos 2017; Campa and Camacho-Miñano 2015). Aside from the fact that the data required for estimating common real earnings management measures are not available, I find it dubious that cost-decreasing real transactions (for example "abnormally low" discretionary expenses – which are expenses not explained by revenue level or revenue changes) are due to opportunistic motivations in financially distressed firms. Such behavior may just as well reflect management's objective to cutting costs and survive.

In the light of the limitations mentioned above, the contributions of this paper are threefold. Prior research extensively examines the relation between financial distress proxies and proxies for discretionary accounting choices, and makes conclusions based on the directional relationship observed. However, without formally testing the implications of such accounting choices on accounting quality, such interpretations seem premature. The results of this paper thus shed light on financially distressed firm managers' underlying motivation for adjusting reported earnings, and suggest that accounting flexibility is used to signal private information, rather than hiding poor performance.

Beyond the obvious contributions to the literature on discretionary accounting choices in financially distressed firms, the results make a contribution to the earnings persistence literature. I replicate the findings of prior studies (Allen et al. 2013; Richardson et al. 2006; Richardson and Sloan 2005; Dechow and Dichev 2002; Xie 2001; Subramanyam 1996) and find that accruals, and especially discretionary accruals, are less persistent in a broad sample. However, this relation does not extend to financially distressed firms, and thus financial distress is an important determinant of the persistence of the discretionary accrual component.

Lastly, the results contribute to the literature on earnings management. Whereas much prior research use discretionary accruals as a proxy for earnings quality or earnings management[17] (which by definition is opportunistic), my results suggest that when firms experience financial distress discretionary accruals represent an important tool for firm managers to signal their private information on firm prospects.

[17] For example, in a comprehensive literature review Dechow et al. (2010) conclude that "almost one hundred papers in our database use abnormal accruals generated from an accruals model as a measure of earnings quality." (p 358, footnote 22).

6. REFERENCES

Agarwal, S., and R. Hauswald. 2010. Distance and private information in lending. *Review of Financial Studies* 23 (7): 2758–2788.

Allen, E. J., C. R. Larson, and R. G. Sloan. 2013. Accrual reversals, earnings and stock returns. *Journal of Accounting and Economics* 56 (1): 113–129.

Anagnostopoulou, S. C., and A. E. Tsekrekos. 2017. The effect of financial leverage on real and accrual-based earnings management. *Accounting and Business Research* 47 (2): 191–236.

Atwood, T. J., M. S. Drake, and L. A. Myers. 2010. Book-tax conformity, earnings persistence and the association between earnings and future cash flows. *Journal of Accounting and Economics* 50 (1): 111–125.

Badertscher, B. A., D. W. Collins, and T. Z. Lys. 2012. Discretionary accounting choices and the predictive ability of accruals with respect to future cash flows. *Journal of Accounting and Economics* 53 (1–2): 330–352.

Ball, R. 2013. Accounting informs investors and earnings management is rife: Two questionable beliefs. *Accounting Horizons* 27 (4): 847–853.

Barth, M. E., D. P. Cram, and K. K. Nelson. 2001. Accruals and the prediction of future cash flows. *The Accounting Review* 76 (1): 27–58.

Basu, S. 1997. The conservatism principle and the asymmetric timeliness of earnings. *Journal of Accounting and Economics* 24 (1): 3–37.

———. 2013. Devil's advocate: The most incorrect beliefs of accounting experts. *Accounting Horizons* 27 (4): 841–846.

Vander Bauwhede, H., M. De Meyere, and P. Van Cauwenberge. 2015. Financial reporting quality and the cost of debt of SMEs. *Small Business Economics* 45 (1): 149–164.

Beaver, W. H. 2002. Perspectives on recent capital market research. *The Accounting Review* 77 (2): 453–474.

Beaver, W. H., M. Correia, and M. F. McNichols. 2012. Do differences in financial reporting attributes impair the predictive ability of financial ratios for bankruptcy? *Review of Accounting Studies* 17 (4): 969–1010.

Beaver, W. H., M. F. McNichols, and J.-W. Rhie. 2005. Have financial statements become less informative? Evidence from the ability of financial ratios to predict bankruptcy. *Review of Accounting Studies* 10 (1): 93–122.

Becker, C. L., M. L. DeFond, J. Jiambalvo, and K. R. Subramanyam. 1998. The Effect of Audit Quality on Earnings Management. *Contemporary Accounting Research* 15 (1): 1–24.

Bernard, D. 2016. Is the risk of product market predation a cost of disclosure? *Journal of Accounting and Economics* 62 (2–3): 305–325.

Bharath, S. T., J. Sunder, and S. V. Sunder. 2008. Accounting quality and debt contracting. *The Accounting Review* 83 (1): 1–28.

Burgstahler, D. C., L. Hail, and C. Leuz. 2006. The importance of reporting incentives: Earnings management in European private and public firms. *The Accounting Review* 81 (5): 983–1016.

Campa, D., and M. del M. Camacho-Miñano. 2015. The impact of SME's pre-bankruptcy financial distress on earnings management tools. *International Review of Financial Analysis* 42: 222–234.

Campbell, S. V. 1997. An investigation of the direct costs of bankruptcy reorganization for closely held firms. *Journal of Small Business Management* 35 (3): 21–29.

Charitou, A., N. Lambertides, and L. Trigeorgis. 2007. Managerial discretion in distressed firms. *The British Accounting Review* 39 (4): 323–346.

Chen, F., O. K. Hope, Q. Li, and X. Wang. 2011. Financial reporting quality and investment efficiency of private firms in emerging markets. *The Accounting Review*.

Chen, W., P. Hribar, and S. Melessa. 2018. Incorrect Inferences When Using Residuals as Dependent Variables. *Journal of Accounting Research* 56 (3): 751–796.

Choi, J. H., J. B. Kim, and J. J. Lee. 2011. Value relevance of discretionary accruals in the Asian financial crisis of 1997-1998. *Journal of Accounting and Public Policy* 30 (2): 166–187.

Collins, D. W., R. S. Pungaliya, and A. M. Vijh. 2017. The effects of firm growth and model specification choices on tests of earnings management in quarterly settings. *The Accounting Review* 92 (2): 69–100.

DeAngelo, H., L. DeAngelo, and D. J. Skinner. 1994. Accounting choice in troubled companies. *Journal of Accounting and Economics* 17 (1–2): 113–143.

Dechow, P., W. Ge, and C. Schrand. 2010. Understanding earnings quality: A review of the proxies, their determinants and their consequences. *Journal of Accounting and Economics* 50 (2): 344–401.

Dechow, P. M. 1994. Accounting earnings and cash flows as measures of firm performance: The role of accounting accruals. *Journal of Accounting and Economics* 18 (1): 3–42.

Dechow, P. M., and I. D. Dichev. 2002. The quality of accruals and earnings: The role of accrual estimation errors. *The Accounting Review* 77 (Supplement): 35–59.

DeFond, M. L., and J. Jiambalvo. 1994. Debt covenant violation and manipulation of accruals. *Journal of Accounting and Economics* 17 (1–2): 145–176.

DeFond, M. L., and C. W. Park. 1997. Smoothing income in anticipation of future earnings. *Journal of Accounting and Economics* 23 (2): 115–139.

Desai, H., C. E. Hogan, and M. S. Wilkins. 2006. The reputational penalty for aggressive accounting: Earnings restatements and management turnover. *The Accounting Review* 81 (1): 83–112.

Dichev, I. D., and D. J. Skinner. 2002. Large-sample evidence on the debt covenant hypothesis. *Journal of Accounting Research* 40 (4): 1091–1123.

Dichev, I. D., and V. W. Tang. 2009. Earnings volatility and earnings predictability. *Journal of Accounting and Economics* 47 (1–2): 160–181.

Donelson, D. C., R. Jennings, and J. Mcinnis. 2017. Financial Statement Quality and Debt Contracting: Evidence from a Survey of Commercial Lenders. *Contemporary Accounting Research* 34 (4): 2051–2093.

Eckbo, B. E., and K. S. Thorburn. 2003. Control benefits and CEO discipline in automatic bankruptcy auctions. *Journal of Financial Economics* 69 (1): 227–258.

Eckbo, B. E., K. S. Thorburn, and W. Wang. 2016. How costly is corporate bankruptcy for the CEO? *Journal of Financial Economics* 121 (1): 210–229.

Fairfield, P. M., J. S. Whisenant, and T. L. Yohn. 2003. Accrued earnings and growth: Implications for future profitability and market mispricing. *The Accounting Review* 78 (1): 353–371.

Fischer, P. E., and R. E. Verrecchia. 2000. Reporting bias. *The Accounting Review* 75 (2): 229–245.

Francis, J., R. LaFond, P. Olsson, and K. Schipper. 2005. The market pricing of accruals quality. *Journal of Accounting and Economics* 39 (2): 295–327.

Frankel, R., and L. Litov. 2009. Earnings persistence. *Journal of Accounting and Economics* 47 (1–2): 182–190.

Gassen, J., and R. U. Fülbier. 2015. Do Creditors Prefer Smooth Earnings? Evidence from European Private Firms. *Journal of International Accounting Research* 14 (2): 151–180.

Gow, I. D., G. Ormazabal, and D. J. Taylor. 2010. Correcting for cross-sectional and time-series dependence in accounting research. *The Accounting Review* 85 (2): 483–512.

Guidry, F., A. J. Leone, and S. Rock. 1999. Earnings-based bonus plans and earnings management by business-unit managers. *Journal of Accounting and Economics* 26 (1–3): 113–142.

Gupta, J., A. Gregoriou, and J. Healy. 2015. Forecasting bankruptcy for SMEs using hazard function: To what extent does size matter? *Review of Quantitative Finance and Accounting* 45 (4): 845–869.

Ha, K., and W. B. Thomas. 2019. Classification Shifting and Earnings Predictability. *SSRN* (Working paper).

Hope, O.-K. 2015. Discussion of Do Creditors Prefer Smooth Earnings? Evidence from European Private Firms. *Journal of International Accounting Research* 14 (2): 181–184.

Hribar, P., and D. W. Collins. 2002. Errors in estimating accruals: Implications for empirical research. *Journal of Accounting Research* 40 (1): 105–134.

Jackson, A. B. 2018. Discretionary Accruals: Earnings Management.. or Not? *Abacus* 54 (2): 136–153.

Jaggi, B., and P. Lee. 2002. Earnings Management Response to Debt Covenant Violations and Debt Restructuring. *Journal of Accounting, Auditing & Finance* 17 (4): 295–324.

Jensen, M. C., and W. H. Meckling. 1976. Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics* 3 (4): 305–360.

Jha, A. 2013. Earnings management around debt-covenant violations - An empirical investigation using a large sample of quarterly data. *Journal of Accounting, Auditing and Finance* 28 (4): 369–396.

Jiang, J. (Xuefeng). 2008. Beating Earnings Benchmarks and the Cost of Debt. *The Accounting Review* 83 (2): 377–416.

Kalak, I. EL, and R. Hudson. 2016. The effect of size on the failure probabilities of SMEs: An empirical study on the US market using discrete hazard model. *International Review of Financial Analysis* 43: 135–145.

Karpoff, J. M., D. Scott Lee, and G. S. Martin. 2008. The consequences to managers for financial misrepresentation. *Journal of Financial Economics* 88 (2): 193–215.

Lara, J. M. G., B. G. Osma, and E. Neophytou. 2009. Earnings quality in ex-post failed firms. *Accounting and Business Research* 39 (2): 119–138.

Larson, C. R., R. Sloan, and J. Zha Giedt. 2018. Defining, measuring, and modeling accruals: a guide for researchers. *Review of Accounting Studies* 23 (3): 827–871.

Lee, K. W., B. Lev, and G. Yeo. 2007. Organizational structure and earnings management. *Journal of Accounting, Auditing and Finance* 22 (2): 293–331.

Lewellen, J., and R. J. Resutek. 2019. Why do accruals predict earnings? *Journal of Accounting and Economics* 67 (2–3): 336–356.

Li, V. 2019. The effect of real earnings management on the persistence and informativeness of earnings. *The British Accounting Review* 51 (4): 402–423.

Linck, J. S., J. Netter, and T. Shu. 2013. Can managers use discretionary accruals to ease financial constraints? Evidence from discretionary accruals prior to investment. *The Accounting Review* 88 (6): 2117–2143.

Liu, A. Z., K. R. Subramanyam, J. Zhang, and C. Shi. 2018. Do firms manage earnings to influence credit ratings? Evidence from negative credit watch resolutions. *The Accounting Review* 93 (3): 267–298.

Nelson, M. W., J. A. Elliott, and R. L. Tarpley. 2002. Evidence from auditors about managers' and auditors' earnings management decisions. *The Accounting Review* 77 (Supplement): 175–202.

OECD. 2017. *Entrepreneurship at a Glance 2017*. Entrepreneurship at a Glance. OECD Publishing.

Peek, E., R. Meuwissen, F. Moers, and A. Vanstraelen. 2013. Comparing Abnormal Accruals Estimates across Samples: An International Test. *European Accounting Review* 22 (3): 533–572.

Richardson, S. A., and R. G. Sloan. 2005. Accrual reliability , earnings persistence and stock prices. *Journal of Accounting and Economics* 39: 437–485.

Richardson, S. A., R. G. Sloan, M. T. Soliman, and I. Tuna. 2006. The implications of accounting distortions and growth for accruals and profitability. *The Accounting Review* 81 (3): 713–743.

Rodríguez-Pérez, G., and S. van Hemmen. 2010. Debt, diversification and earnings management. *Journal of Accounting and Public Policy* 29 (2): 138–159.

Rosner, R. L. 2003. Earnings Manipulation in Failing Firms. *Contemporary Accounting Research* 20 (2): 361–408.

Subramanyam, K. R. 1996. The pricing of discretionary accruals. *Journal of Accounting and Economics* 22 (1–3): 249–281.

Teoh, S. H., I. Welch, and T. J. Wong. 1998a. Earnings management and the underperformance of seasoned equity offerings. *Journal of Financial Economics* 50 (1): 63–99.

———. 1998b. Earnings Management and the Long-Run Market Performance of Initial Public Offerings. *The Journal of Finance* 53 (6): 1935–1974.

Trombetta, M., and C. Imperatore. 2014. The dynamic of financial crises and its non-monotonic effects on earnings quality. *Journal of Accounting and Public Policy* 33 (3): 205–232.

Watts, R. L., and J. L. Zimmerman. 1978. Towards a Positive Theory of the Determination of Accounting Standards Towards a Positive Theory of the Determination of Accounting. *The Accounting Review* 53 (1): 112–134.

Watts, R. L., and J. L. Zimmerman. 1979. The demand for and supply of accounting theories: the market for excuses. *The Accounting Review* 54 (2): 273–305.

Watts, R. L., and J. L. Zimmerman. 1990. Positive Accounting Theory: A Ten Year Perspective. *The Accounting Review* 65 (1): 131–156.

Xie, H. 2001. The Mispricing of Abnormal Accruals. *The Accounting Review* 76 (3): 357–373.

7. APPENDIX

Table A.13: Variable definitions

Variable	Measure of	Definition
Firm-specific		
ROA	Return on assets	$ROA = \frac{Net\ Income}{Total\ Assets_{t-1}}$
ΔGP	Growth in gross profit (revenue data not available for the majority of observations)	$\Delta GP = \frac{Gross\ Profit_t - Gross\ Profit_{t-1}}{Total\ Assets_{t-1}}$
OPACC	Comprehensive operating accruals (both current and non-current operating accruals)	$OPACC = \frac{NOA_t - NOA_{t-1}}{Total\ Assets_{t-1}}$ Where *NOA*=Net operating Assets=*OA-OL* Where *OA* = Operating Assets = total assets -cash and cash equivalents -properties held for sale -receivables from closely held parties *OL* = Operating Liabilities = total liabilities -long term interest bearing debt -current part of mortgage -current part of bank debt -liabilities to closely related parties -dividends if included in current liabilities
OPCF	Comprehensive operating cash flow	$OPCF = \frac{Net\ Income_t - (NOA_t - NOA_{t-1})}{Total\ Assets_{t-1}}$
DACC and NACC	Discretionary and "normal" comprehensive operating accruals	*DACC:* Residuals from estimating the following regression per industry-year (requiring at least 30 observations per industry-year) Eq. (1): $OPACC = \alpha_{0,i,t} + \alpha_1 \frac{1}{TA_{i,t}} + \sum_k^5 ROA\_IND_{k,i,t} + \sum_k^5 \Delta GP\_IND_{k,i,t}$ $+\beta_1 OPACC_{i,t-1} + \beta_2 OPCF_{i,t} + \beta_3 OPCF_{i,t-1} + \varepsilon_{i,t}$ Where *ROA_IND* and *GP_IND* are within industry-year quintiles. See Collins et al. (2017) *NACC:* Predicted values from Eq. (1).

TA	Total assets	
Log(TA)	Logarithm of total assets	
TLTA	Total liabilities to total assets	$TLTA = \frac{Total\ Liabilities_t}{Total\ Assets_t}$
EBITDATL	EBITDA to total liabilities	$EBITDATL = \frac{EBITDA}{Total\ Liabilities_t}$
CACL	Current assets to current liabilities	$CACL \frac{Current\ Asset_t}{Current\ Liabilities_t}$
P(def)	Probability of default	Predicted values of the following function (equation (2)): $BANKR_{i,t} = \alpha_0 + \beta_1 (ROA - DA)_{i,t} + \beta_2 TLTA_{i,t} + \beta_3 EBITDATL_{i,t} + \beta_4 CACL_{i,t} + \beta_5 \log(TA)_{i,t} + \sum INDUSTRY + \sum YEAR + \varepsilon_{i,t}$ The model is a modified version of Beaver et al. (2005) and is estimated using logistic regression.
DISTRESS	Indicator for within year probability of default decile (10 portfolios)	DISTRESS_1=1 if p(def) belongs to the 1st within-year ranked decile DISTRESS_2=1 if p(def) belongs to the 2nd within-year ranked decile … DISTRESS_10=1 if p(def) belongs to the 10th within-year ranked decile
Bankruptcy indicator		
BANKR	Indicator for the last annual report published preceding bankruptcy	*BANKR* is an indicator variable taking the value 1 if the annual report is the last report published preceding the bankruptcy filing, and zero otherwise
Alternative accrual and cash flow proxies		
WCACCR	Working capital accruals	$WCACCR = \frac{NWC_t - NWC_{t-1}}{Total\ Assets_{t-1}}$ Where *NWC*=Net Working Capital=*WCA*-*WCL* Where *WCA*=Working Capital Assets =Current assets -cash and cash equivalents -properties held for sale

		-receivables from closely related parties *WCL*=Working Capital Liabilities =Current liabilities -current part of mortgage -current part of bank debt -liabilities to closely related parties -dividends if included in current liabilities
OCF	Operating cash flow	$OCF = \frac{Net\ Income - (NWC_t - NWC_{t-1}) + Depreciation}{Total\ Assets_t}$
Alternative growth variables		
ΔREV	Growth in revenue (available only for a small fraction of the sample)	$\Delta REV = \frac{Operating\ Revenue_t - Operating\ Revenue_{t-1}}{Total\ Assets_{t-1}}$
ΔEMPL	Growth in employees (growth measure that cannot be manipulated with discretion in financial reporting)	$\Delta EMPL = \frac{EMPL_t - EMPL_{t-1}}{EMPL_{t-1}}$ Where *EMPL* = full time equivalent number of employees employed during the year.
Cost of debt and controls		
CostDebt	Cost of debt	Financial expenses to average debt net of trade payables. $CostDebt = \frac{Financial\ Expenses}{(Debt_t + Debt_{t-1})/2}$ Where *Debt*=Total Liabilities – Trade Payables
NegROA	Indicator for negative income	*NegROA* is an indicator variable that takes the value one if *ROA*<0, and zero otherwise.
StdROA	Smoothness of earnings	Standard deviation of *ROA*. Calculated using the five most recent years' data, requiring at least three years' observations.
PPE	Asset composition, tangible fixed assets to total assets	$PPE = \frac{Tangible\ Fixed\ Assets_t}{Total\ Assets_t}$
CashTA	Asset composition	$CASHTA = \frac{Cash\ and\ Cash\ Equivalents_t}{Total\ Assets_t}$

Table A.14: Within firm comparison

Panel A

Eq. (5): Earnings persistence

Sample:	DISTRESS_1 through DISTRESS_9	DISTRESS_10	DISTRESS_1 through DISTRESS_8	DISTRESS_9 and DISTRESS_10
	(1)	(2)	(3)	(4)
	ROA_{t+1}	ROA_{t+1}	ROA_{t+1}	ROA_{t+1}
ROA	0.531***	0.433***	0.490***	0.450***
	(33.12)	(12.99)	(33.53)	(16.43)
DACC	-0.151***	0.033	-0.189***	-0.015
	(-7.30)	(0.85)	(-12.28)	(-0.49)
Intercept	-0.031***	0.060***	-0.011*	0.038***
	(-4.11)	(5.71)	(-1.94)	(4.13)
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
N	21,158	7,754	30,955	15,854
Adjust. R sq.	0.264	0.165	0.247	0.173

Wald test of difference between DACC coefficient estimates

	H0: DACC(2)-DACC(1)=0	H0: DACC(4)-DACC(3)=0
Chi^2	16.799***	28.947***
p-value	0.000	0.000

Panel B

Eq. (6): Informativeness about future cash flows

Sample:	DISTRESS_1 through DISTRESS_9	DISTRESS_10	DISTRESS_1 through DISTRESS_8	DISTRESS_9 and DISTRESS_10
	(1)	(2)	(3)	(4)
	$OPCF_{t+1}$	$OPCF_{t+1}$	$OPCF_{t+1}$	$OPCF_{t+1}$
ROA	0.345***	0.508***	0.306***	0.479***
	(15.03)	(9.00)	(17.62)	(17.95)
DACC	0.269***	0.207***	0.177***	0.227***
	(7.47)	(2.86)	(5.23)	(4.21)
Intercept	-0.090***	0.058	-0.052***	0.007
	(-6.70)	(1.53)	(-6.13)	(0.43)
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
N	21,158	7,754	30,955	15,854
Adjust. R sq.	0.052	0.087	0.041	0.075

Wald test of difference between DACC coefficient estimates

	H0: DACC(2)-DACC(1)=0	H0: DACC(4)-DACC(3)=0
Chi^2	0.573	0.704
p-value	0.449	0.401

This table shows the difference in *DACC* coefficient within firms. The sample includes firms that at one point in time was financially distressed, and at another time was not financially distressed. Bankrupt firms are excluded. Industry and year fixed effects are estimated but not reported. Continuous variables entering the estimations are winsorized at the lower and upper 1% level. Variable definitions are listed in appendix. Standard errors are clustered by firm and year (Gow et al. 2010). *t* statistics in parentheses. ***, **, * Represent significance levels at 0.01, 0.05, and 0.10, respectively.

B. PAPER 2

Owner-managers' income shifting and cost of debt benefits

Morten Nicklas Bigler Jensen

Copenhagen Business School | Department of Accounting | mojen.acc@cbs.dk

Jeppe Christoffersen

Copenhagen Business School | Department of Accounting | jc.acc@cbs.dk

Thomas Plenborg

Copenhagen Business School | Department of Accounting | tp.acc@cbs.dk

ABSTRACT: This paper explores the causes and consequences of earnings management in owner-managed firms. We identify an institutional setting in which the owner-manager has discretion to shift income from salary to dividends and hence increase reported earnings, at almost no direct cost due to approximate tax neutrality between the two income streams. We find that income shifting is associated with the magnitude of debt, is more likely when a firm issues debt in the following year, and induce firm benefits in terms of lower cost of debt. These relations are stronger in magnitude around the zero earnings benchmark. Our findings extend the earnings management literature by documenting opportunistic behavior and economic consequences in firms with weak manager-shareholder agency conflicts.

KEYWORDS: Earnings Management; Owner-Managed firms; Cost of debt; Commercial Lending

---

We gratefully acknowledge and appreciate sharp, critical and constructive comments and suggestions provided by Frøystein Gjesdal (discussant), Chen Chen (discussant) Juha-Pekka Kallunki (opponent), Melanie Feldhues (opponent), Beatriz Garcia Osma, Ann Vanstraelen, Steven Young, Maximilian Mueller, Henrik Nilsson, Bjorn Jorgensen, seminar participants at Stockholm School of Economics November, 2018, participants at the EAA doctoral colloquium 2019, and conference participants at the AAA Annual Meeting 2019, the EAA annual congress 2019, the BAFA annual conference 2019, and the Nordic Accounting Conference 2018. An earlier version of this paper was circulated with the title "Earnings management in owner-managed firms: Are lenders fooled?"

1. INTRODUCTION

In recent years, accounting researchers have increasingly shown interest in earnings management outside of the traditional widely held public firm setting for which data is most readily available. Specifically a good number of researchers have turned their attention to widely-held private firms and narrowly held public and private firms. Most significantly settings in which management holds significant equity stakes have received the attention of researchers (e.g. Ghosh and Tang 2015; Haw et al. 2014; Srinidhi et al. 2014; Gopalan and Jayaraman 2012; Ali et al. 2007; Wang 2006). The attention is well-deserved given the prominence of such companies in the global economy combined with the agency aspects related to the resulting governance structures. Specifically the typical agency I problems, of managers acting in their own interest at the expense of owners, are diminished in such insider-controlled firms but only to give room for agency II problems of managers acting in the interest of the insiders at the expense of minority owners and other stakeholders (e.g. lenders) (Ali et al. 2007; Gopalan and Jayaraman 2012; Villalonga and Amit 2006).

In this paper, we significantly extend research on earnings management in insider-controlled firms. We do so in the rather pervasive but, to our knowledge, never researched context of owner-managed firms; firms which are fully owned by a single individual who is also the CEO of the company. The absence of non-manager owners presents interesting earnings management perspectives. On the one hand, the owner-manager has no equity-related incentives to manage earnings (except in the rare cases of an upcoming M&A or IPO). On the other hand, she can act in her own interest and manage earnings to improve accounting performance presented to the bank, without any constraints put upon her by either controlling or non-controlling shareholders. We develop hypotheses centered on what we consider fundamental overall questions pertaining to this setting: Absent equity-related earnings management incentives and scrutiny, does the propensity to use earnings management then depend on the firm's use of debt and can the owner-manager in fact mislead the bank and achieve cost of debt benefits?

In the development of our hypotheses we draw on and extend recent research on (particularly small) commercial lending (Berger et al. 2017; Donelson et al. 2017; Minnis and Sutherland 2017; Cassar et al. 2015). An important argument distilled from this literature is that while banks do have an interest in monitoring the accounting quality of any engagement, the likelihood that they will do so in smaller engagements is limited, where the costs of scrutinizing the accounts often outweigh the perceived benefits. Thus in the context of small business loans,

the owner-manager may in fact be able to achieve cost of debt benefits from managing earnings which in turn provides a strong incentive for doing so. We therefore present two main hypotheses. First, we hypothesize that owner-managers manage earnings, and have a higher propensity for doing so the larger the magnitude of debt (at least for relatively modest debt magnitudes). Second, we hypothesize that in engagements which are considered small by the bank (typical of owner-managed firms) earnings management will have a good chance of escaping bank officers' scrutiny and result in lower cost of debt.

Then we draw on and extend the literature on earnings discontinuities and develop and test hypotheses on the contingencies of the two main hypotheses on the earnings benchmarks of zero earnings and last year's earnings (e.g. Burgstahler and Chuk 2017; Dechow et al. 2010; Burgstahler and Dichev 1997). We argue that the relations predicted in the main hypotheses increase in magnitude around the two benchmarks and particularly so for the zero earnings benchmark which prior studies find is the most relevant benchmark in the debt setting where lenders care about downside risk rather than upside potential (Jiang 2008). While our earnings discontinuity hypotheses go beyond the overall research questions on earnings management use and implications, we find that they add credence to our overall conjectures. That is, we are able to develop, and find support for, specific hypotheses that are in accordance with phenomena that are well described in the accounting literature (e.g. Burgstahler and Chuk 2017; Jacob and Jorgensen 2007)[1], which testifies to the robustness of our main arguments.

We address, refine and test the above main arguments and hypotheses in a unique institutional (Danish) setting in which marginal tax rates of labor income and capital taxes are approximately neutral at the marginal level. We exploit this setting and identify earnings management as the scenario in which a firm manager lowers her salary by a significant amount (at least 5 percent) and increases dividends to at least offset the after-tax salary decrease, and term this behavior "salary-dividend earnings management" (SDEM, hereafter). By shifting the personal income channel from labor income to dividends the firm's reported earnings and the return on assets increase, and the balance sheet remains largely unaffected. At the same time, and crucial for our earnings management identification, the after-tax compensation of the manager is largely unaffected due to approximate tax neutrality. This allows us to directly

[1] While seminal papers on the phenomenon (e.g. Burgstahler and Dichev 1997) have been contested in some critical contributions (Gilliam et al. 2015; Durtschi and Easton 2009; Durtschi and Easton 2005), the criticism relates more to the empirical identification and measurement of the phenomenon than its actual existence and related theoretical arguments. In our hypotheses we rely on the prior findings that meeting benchmarks provide firms cost of debt benefits both for public debt (Jiang 2008) and private debt (Chin et al. 2018).

observe incidences of earnings management, enabling us to avoid reliance on the much criticized residuals-based abnormal accruals earnings management measures (Ball 2013; Basu 2013; Jackson 2018; Dichev et al. 2013). Further, in our Danish setting (i) owner-managed (limited liability) companies are required to produce accrual based financial reports, (ii) owner-managers of small firms (with a relatively high ratio of owner-manager salaries to net earnings) have a very potent means of managing earnings as they can alternate at own discretion with almost no direct cost between receiving compensation either as salaries or dividends, and (iii) researchers can obtain access to proprietary panel data on financial reports as well as managers' salaries received from their company.

Using a dataset with more than 98,000 firm-years for the period 2001-2015, we first demonstrate that SDEM is used and on average increases return on assets by 1.8 percentage points. Subsequently we test our first main hypothesis by regressing the indicator variable SDEM on a variable measuring the magnitude of debt (debt to total assets), its squared term, and control for measures approximating the capacity for earnings management. We find, in line with the hypothesis, that when the magnitude of debt is low and moderate an increase in debt is associated with increased propensity to use SDEM. However, when the magnitude of debt is high, a further increase in debt is associated with decreased propensity to use SDEM. Further, we find that the propensity to use SDEM is higher when the firm raises new debt capital in the following year.

Both from determinant regressions where we include indicators for salary adjusted earnings being just below a benchmark, and from graphically plotting the incidence of SDEM by bins of salary adjusted earnings, we find that owner-managers are more likely to use SDEM when salary adjusted earnings fall just below zero, but not when salary adjusted earnings changes fall just below zero. The findings give great confidence in the theoretical predictions and our interpretation of SDEM being earnings management.

Next, we explore the association between SDEM and future cost of debt to test our second main hypothesis. We use financial expenses scaled by average total liabilities net of trade payables to proxy for cost of debt (comparable approaches used by Francis et al. 2005; Minnis 2011; Gassen and Fülbier 2015; Vander Bauwhede et al. 2015). We regress cost of debt in period *t+1* and *t+2* on a current measure of SDEM and a broad range of controls. We find that firms that use SDEM in year *t* experience lower year *t+1* (*t+2*) cost of debt of 18 bps (32 bps), corresponding to 4 percent (7 percent) of the unconditional mean cost of debt in the sample. The magnitude increases significantly (approximately triples) when firms use SDEM to transform a

pre-managed loss into a reported profit; these firms experience lower one-year-ahead cost of debt of 68 bps, or about 15 percent lower cost of debt compared to the unconditional sample mean. We find limited evidence that firms using SDEM to avoid earnings decreases obtain incremental cost of debt benefits. The findings are in line with our predictions that particularly the zero earnings benchmark is important in a debt context.

Inferences regarding SDEM and the cost of debt benefits are robust to a battery of sensitivity tests, including alternative explanations of our findings; e.g. owner-managers using earnings management to signal future earnings (Bartov et al. 2002; Badertscher et al. 2012; Kasznik and McNichols 2002; Gunny 2010), contemporaneous income-increasing accrual earnings management (Burgstahler and Chuk 2017), and owner-managers obtaining cost of debt benefits because of their personal wealth or other personal characteristics, as well as alternative econometric estimations including propensity score matching (Shipman et al. 2017) and an instrumental variables approach (Bharath et al. 2008; Minnis 2011).

Our main contribution to the earnings management literature and the commercial lending literature is the theoretical and empirical demonstration that severe self-serving behavior can arise in owner-managed business settings where banks form the most significant capital supplier governance mechanism; one that indeed appears somewhat inadequate. An observation related to this is that in widely held firms the governing body (the shareholders) has the power to replace the self-serving manager while in the owner-managed firm the self-serving owner-manager can replace the governing body (the bank), particularly in a competitive banking environment.

Implications for banks and other users of financial reports (such as suppliers, customers and potential investors) are significant and in fact rather obvious: they should be aware that the governance mechanisms in owner-managed firms, which constitute a great proportion of the global economy, are relatively poor which may significantly decrease earnings quality and the extent to which the financials can be relied upon.

The regulatory implications are almost equally obvious as the findings raise the question of how financial disclosures enable stakeholders to discover and compensate for owner-managers' self-serving behavior. This study specifically suggests a need for disclosing owner-manager salaries or significant salary changes. However, a wider interpretation of this study calls for regulators to consider whether current frameworks and standards sufficiently reflect that information prepared to meet shareholders' needs cannot per se be assumed to meet the information needs of other users.

The remainder of the paper proceeds as follows. The next section reviews related literature and develops hypotheses. Section 3 discusses the setting, reviews data and presents the research design. Section 4 presents results and sensitivity tests, and section 5 discusses limitations and concludes.

2. HYPOTHESIS DEVELOPMENT AND RELATED RESEARCH

2.1 The influence of debt on SDEM

In settings with public equity capital markets earnings management incentives are widely researched, and most research designs investigate earnings management arising from agency conflicts between owners (shareholders) and managers (see review by Dechow et al. 2010). However, such agency conflicts are practically absent in owner-managed firms, in which agency conflicts arise between the owner-manager and other firm stakeholders, such as lenders; banks being the most significant source of capital (OECD 2017a)[2]. Thus the presence and magnitude of debt is expected to influence the financial reporting decisions of owner-managed firms.

In our setting, the owner-manager is approximately indifferent between labor income and dividends because taxation of labor income and capital income (at the personal level taxed as corporate income and dividend income) is largely aligned. While dividends are disclosed in the annual report, manager salary, however, is not. To the extent that the owner-manager expects that the bank will not require salary data (private information) the owner-manager has incentive to use SDEM. We expect the owner-manager's propensity to use SDEM to increase in the magnitude of debt, because the benefits in the form of lower expected interest rates are higher, and because lenders are not expected to unravel the owner-manager's use of SDEM when their debt investment is not at stake.

However, this effect is expected to reverse when debt is high, because financially risky firms (i.e. firms with high magnitudes of debt) are subject to lender scrutiny due to increased agency costs between firm owners and lenders (Haw et al. 2014), which is expected to increase borrower firms' perceived risk of managing earnings and mitigate their propensity to manage earnings. Further, the capacity for using SDEM is limited when debt is high because equity is

[2] This relation is even more pronounced in European firms compared to US firms.

low, and hence paying dividends is associated with litigation risk[3] and risk of breaching capital based debt covenants.

> ***H1****: The relationship between the magnitude of debt and the propensity to use salary-dividend earnings management has an inverted u-shape.*

2.2 Consequences of SDEM for the cost of debt

Financial statements and their quality are important factors in the lending decision. For example, Agarwal and Hauswald (2010) use a dataset on loan applications and outcomes from private SME firms, provided by a major US small-business lender, and find that 70-80 percent of the bank's score of (potential) borrowers is based on hard information. Donelson et al. (2017) survey 492 US lending officers and provide similar insights: they find that their survey respondents make credit decisions "more on the basis of financial statements than on the soft information provided by relationship lending" (p 2053). Further, prior research has found that attributes of private firms' financial statements, such as audit status (audit vs. non-audited), reporting format (accrual-based vs. cash flow based), earnings smoothness, and earnings quality, influence firms' credit access and cost of debt (Minnis 2011; Allee and Yohn 2009; Gassen and Fülbier 2015; Vander Bauwhede et al. 2015). Income and cash flow statement items (i.e. items that are influenced by SDEM) are considered important for lenders because they function as debt covenant trip wires (Dyreng et al. 2017; Christensen and Nikolaev 2012) and feed into banks' credit scoring models[4].

Although banks have the ability and an obvious interest in monitoring financial statement quality, the costs associated with scrutiny of financial reports limit banks' capacity of carefully looking into each borrower firm's financials. In our setting (explained in detail in section 3) all limited liability firms are mandated to publish financial reports. With easy access to financial statement data lenders' processing costs of financial statement data are very low (Kaya and

[3] Legally, dividends cannot be paid if it leaves the company without adequate financial resources (see: https://www.ret-raad.dk/blog/hvornaar-maa-man-udlodde-udbytte-i-et-selskab). Further, dividend payments may lead to debt covenant violations, or attract lenders' attention.

[4] We are not aware of any research that specifically aims to uncover banks' credit scoring models. However, from our interviews (discussed later) we learn that such data feed into the credit scoring models of all interviewee banks. Further providing indirect evidence, (1) Kraft (2015) shows that Moody's use and adjust both profitability and cash flow measures in their credit rating process, and (2) profitability/cash flow measures are standard variables in probability of default models (Beaver et al. 2005; Shumway 2001).

Pronobis 2016)[5], and thus the relative cost of obtaining and analyzing soft and other private information is high, which might lead to fixation on reported numbers or information disclosed in the annual report. The cost of scrutiny is particularly pronounced in small (for the bank) loans, typical for owner-managed firms. For example, Donelson et al. (2017) use a survey design of commercial lenders and find that financial statement quality is viewed as significantly less important when loan officers are dealing with small loans compared to those dealing with large loans.

In a broader context, prior research provides evidence on the variation in banks' demand for information: Banks are less likely to (1) request financial statements after loan origination when borrower credit risk is very low or very high (Minnis and Sutherland 2017), (2) demand high-quality (audited) financial reports in regions and industries in which the bank has more loan-exposure because concentration fosters lending expertise (Berger et al. 2017), and (3) collect financial statements during periods of economic growth (Lisowsky et al. 2017).

We infer from this literature stream that, in a small business loan context, the demand for financial statement information and applied scrutiny varies between borrowers, and expect that this lack of consistent scrutiny[6], bundled with lenders' reliance on published financial statements (and the information in those) allows opportunistic borrower firm managers to *on average* extract rents from lenders. That is, to the extent that lenders rely on reported financials we expect firms using SDEM to obtain cost of debt benefits.

> ***H2****: Firms engaging in salary-dividend earnings management obtain lower future cost of debt*

2.3 Moderating effects: meeting or beating benchmarks

An extensive amount of evidence documents discontinuities in earnings distributions (Burgstahler and Chuk 2017; Dechow et al. 2010; Burgstahler and Dichev 1997). These earnings discontinuities are observed around certain earnings benchmarks, such as zero earnings, last year's earnings, and expected earnings.

[5] Currently, financial statement data are available in XBRL format easily available at cvr.dk. Further, from our interviews (as discussed later) we learn that several banks indeed extract borrower firms' financial statement data from central databases.

[6] From informal interviews with lending officers we learn that banks systematically gather "soft" information that they use in estimating credit scoring models and in their lending decision (for example management quality). Manager salary, however, is not a piece of information that is collected systematically by any of the interviewees. Further, banks rely on internally generated credit scoring models rather than external credit ratings, at least for smaller entities.

Both analytical (Dye 2002; Guttman et al. 2006) and empirical research (Barth et al. 1999; Bartov et al. 2002) provide evidence on the benefits of meeting or beating earnings benchmarks. Exploring non-equity related benchmark beating, Coppens and Peek (2005) plot earnings distributions for private firms (where equity incentives are less pronounced) and find evidence for a discontinuity around zero earnings (loss avoidance) but not around zero earnings changes (decrease avoidance), and Jiang (2008) finds that US public firms meeting or beating earnings benchmarks – zero earnings, last year's earnings, and expected earnings – obtain higher credit ratings and lower initial bond spreads (i.e. cost of debt benefits)[7], supporting the view that lenders use heuristic benchmarks in their credit evaluation. Jiang finds that the effect is strongest when firms beat the zero earnings benchmark because lenders care about downside risk rather than upside potential.

For those reasons, we expect the H1 and H2 hypothesized relationships to be moderated around earnings benchmarks. First, we expect firms with pre-managed earnings just below a benchmark to have a high propensity to use SDEM. Second, we expect firms transforming pre-managed earnings below a benchmark to reported earnings above a benchmark to incrementally benefit from earnings management. As lenders care about downside risk rather than upside potential (Jiang 2008) we expect the effects to be stronger for the zero earnings benchmark than for the last year's earnings benchmark.

H3*: The propensity to use salary-dividend earnings management increases when pre-managed earnings are just below earnings benchmarks*

H4*: Firms using salary-dividend earnings management to meet or beat earnings benchmarks obtain lower future cost of debt than other firms using salary-dividend earnings management*

H5*: The H3 and H4 hypothesized effects are stronger for the zero earnings benchmark than the last year's earnings benchmark*

[7] Chin et al. (2018) provide evidence on the *private* loan term benefits (both price and non-price) obtained by firms meeting or beating analyst forecasts.

3. SETTING, DATA AND RESEARCH DESIGN

3.1 Owner-managed firms and institutional setting

Private firms represent the majority of the economy in most Western countries. In the OECD area SMEs (primarily private firms) constitute ~99% of all firms, representing 60% of employment and 50-60% of value added (OECD 2017b)[8]. Most private firms are operated by a manager, who is also the owner of the company[9]. The nature of the arising agency conflicts from such ownership structure comprises an interesting setting to investigate earnings management practices.

We address our research questions in a Danish setting, which provides several benefits: (i) marginal tax rates of labor income and capital taxes are approximately neutral at the marginal level[10] (ii) owner-managed (limited liability) companies are mandated to produce accrual based financial reports, and thus the choice between cash flow and accrual based reporting is not influencing our results (Allee and Yohn 2009). (iii) Owner-managers of small firms (with a relatively high ratio of owner-manager salaries to net earnings) have a very potent means of managing earnings as they at own discretion can alternate between receiving compensation either as salaries or dividends. (iv) We have access to proprietary panel data on the salary that firm managers receive from their firm and their total income in Denmark. Most importantly, through manager-firm links we are able to merge data on managers with financial data of the firms they manage. The dataset allows us to directly observe incidences of earnings management and avoid reliance on criticized residuals-based abnormal accruals measures (Ball 2013; Basu 2013; Jackson 2018; Dichev et al. 2013).

---

[8] On the importance of private firms see also Minnis (2011) and Hope et al. (2017).

[9] According to the US census "Survey of small business owners (SBO)" 65% of SBOs' primary function is "managing day-to-day operations".
https://www.census.gov/library/publications/2012/econ/2012-sbo.html#par_reference_25 ➔ primary functions in business ➔ "Percent of number of owners of respondent firms with or without paid employees". Bennedsen and Nielsen (2015) find that 81% of controlling business owners in Denmark is also the firm's manager.

[10] (1-corporate_tax) * (1-dividend_tax) ~ (1-labor_income_tax) at marginal levels. In the Danish setting the tax neutrality is prioritized and recognized in the design of the tax system, and is termed "the major shareholder problem" (translated from Danish). For example, already in 1993 the tax reform proposed "homogenous taxation of different sorts of income streams to negate tax arbitrage"
(https://www.skm.dk/aktuelt/temaer/1994-skatteomlaegningen, translated from Danish).
Currently, the major shareholder problem is mentioned in the "Tax economic statement 2017" and solved by approximate tax neutrality (http://www.skm.dk/media/1516299/samlet_sr17_25-08-17.pdf, p 39). Additionally, health insurance is part of the tax payment and does not disturb the choice between salary and dividends.

3.2 Data sources

The final dataset is comprised of three separate datasets, which we match through unique personal identifiers (CPR numbers[11]) and unique firm identifiers (CVR numbers[12]) to link individuals (managers and owners) to the firms in which they work. Firm financials: From the ORBIS database, managed by Bureau Van Dijk, we obtain annual report data of all firms incorporated in Denmark for the period 1998-2016. From EXPERIAN, we obtain enriched line item accounting data on current assets and current liabilities enabling us to compute accruals[13]. Firm managers and ownership data: We acquire data from The Danish Business Authority on firm managers and ownership data[14]. Manager salary: Through our researcher access provided by Statistics Denmark we obtain confidential data on firm-managers' salary, only available to researchers.

We merge the three datasets and apply several screens in the identification of the final sample: We exclude (1) financial reports not covering 12 months, (2) hobby firms with total assets below DKK 1m (~EUR 134t), (3) firms with total assets above DKK 75m (~EUR 10m), because managers are expected to be able to influence earnings of relatively small firms, (4) CEO turnover related years, because owner-managers cannot use SDEM in these years, (5) extreme observations, potentially due to mergers or acquisitions that we cannot observe, (6) firm-year observations with insufficient data to calculate the SDEM measure, (7) certain industries (financial, utilities, and state-owned) consistent with prior research, (8) subsidiaries, to avoid double counting of firms, (9) listed firms, (10) firm-year observations with missing data to estimate Eq. (1) and Eq. (2), and (11) firms that are not owner-managed. The screening procedure is outlined in Table B.1.

[11] All persons born or residing in Denmark are assigned unique individual national identification numbers. CPR numbers are private information. In Denmark, CPR-numbers are used by banks, employers when paying salary, governmental bodies, etc., enabling us to merge information on individuals from a wide variety of sources.
[12] All legal business entities in Denmark are assigned a unique CVR-number. CVR numbers are publicly disclosed.
[13] Non-current line items required for accrual estimation are available in the ORBIS dataset
[14] Data from the Danish Business Authority are publicly available at cvr.dk. We acquire a machine readable dataset and have it delivered through Statistics Denmark's "Researcher Service". By doing so, executive and ownership data are delivered with proprietary CPR numbers, which are anonymization by a proprietary key held by Statistics Denmark. Because CPR numbers are anonymized and coded by Statistics Denmark with a similar key across all datasets, we are able to generate a dataset on individuals including the salary they receive from their company, their personal wealth, their educational level, their criminal record, their gender, their age, their residence municipality, as well as other information. Importantly, we can link these data to the company in which the individual works, and to the financials of that company. In appendix, we describe how we identify the CEO when several managers are filed with the Danish Business Authority. The majority of CEO observations (around 90%) are identified directly through unique CEO identifiers.

Table B.1: Sample selection

Note	Screen applied	Observations dropped	Sample size	Decrease in sample size, %
	Firm-years with employer-employee link		1,013,945	
	Keep financial reports with 12 months	308,515	705,430	30%
1	Keep firm-years with ta>1m	161,429	544,001	23%
2	Keep firm-years with ta<75m	43,671	500,330	8%
3	Remove CEO turnover years	66,275	434,055	13%
4	Remove extreme variables	65,816	368,239	15%
5	Keep observations with data available to calculate SDEM	116,071	252,168	32%
6	Remove certain industries	21,378	230,790	8%
7	Remove subsidiaries	2,218	228,572	1%
	Remove listed firms	32	228,540	0%
	Keep observations with variables available for estimating Eq. (1) and Eq. (2)	96,018	132,522	42%
	Keep owner-managed firms	34,017	98,505	26%

This table shows the sample selection procedure. Notes: (1) We exclude observations with less than DKK 1m in total assets to remove small hobby companies. (2) We expect that managers are able to influence earnings of relatively small firms. (3) We remove CEO turnover related observations for the years *t-1* through *t+1*, where year *t* is a CEO turnover year, because we cannot observe SDEM for these years (we compare year on year salary and dividend changes). (4) In addition to winsorizing procedures, we apply several screens to avoid regressions being influenced by extreme outliers potentially due to M&A activities. We remove the following: negative equity, ROA<-0.5, ROA>0.8, changes in gross profit scaled by lagged assets >1 (growth), changes in gross profit scaled by lagged assets <1 (growth), CEO salary to total assets>1, and CEO salary> DKK3m (EUR 0.4m) which is higher than the 99th percentile. (5): The data include dividend changes from year *t-1* to year *t*, dividend changes from year *t* to year *t+1*, and salary changes from year *t-1* to year *t*. (6) Consistent with prior accounting and finance research we exclude certain regulated industries (financials and utilities), and further exclude state-owned companies. (7) To avoid double counting we exclude subsidiaries.

3.3 Key variable definitions and descriptive statistics

In the following we discuss the key measures used throughout the paper. We show descriptive statistics in Table B.2, and summarize variable definitions in Table B.11 (appendix). The variable selection process is based on prior research on the characteristics of earnings management firms and on covariates associated with cost of debt. Obviously, we cannot include in our analysis market-based variables.

3.3.1 Owner-managers

As outlined above we limit the sample to owner-managers. We identify owner-managers in the following way: First, we use the data on ownership that we obtain from the Danish Business Authority. We create ultimate ownership percentages through direct links (individual owns company) and indirect links (individual owns company X that owns company Y that owns company Z…). From these data, we identify an owner-manager as a person that owns at least

Table B.2: Descriptive statistics

	All observations (unconditional)						SDEM=1 (conditional)					
	(1) N	(2) Mean	(3) S.D.	(4) P25	(5) P50	(6) P75	(7) N	(8) Mean	(9) S.D.	(10) P25	(11) P50	(12) P75
Earnings management and earnings benchmarks												
SDEM	98,505	0.082	0.274	0.000	0.000	0.000	8,065	1.000	0.000	1.000	1.000	1.000
LossAvoid	98,505	0.005	0.071	0.000	0.000	0.000	8,065	0.063	0.242	0.000	0.000	0.000
Decreaseavoid	98,505	0.006	0.075	0.000	0.000	0.000	8,065	0.070	0.255	0.000	0.000	0.000
SalaryTA	98,505	0.116	0.102	0.043	0.086	0.157	8,065	0.116	0.102	0.044	0.085	0.155
ΔSalaryTA	98,505	0.002	0.026	-0.003	0.000	0.007	8,065	-0.018	0.020	-0.022	-0.011	-0.005
SmallLoss	98,505	0.063	0.243	0.000	0.000	0.000	8,065	0.070	0.255	0.000	0.000	0.000
SmallDecrease	98,505	0.111	0.315	0.000	0.000	0.000	8,065	0.107	0.309	0.000	0.000	0.000
Cost of debt and leverage												
$CostDebt_{t+1}$	98,505	0.044	0.038	0.019	0.037	0.057	8,065	0.042	0.039	0.017	0.034	0.053
DebtTA	98,505	0.482	0.215	0.315	0.488	0.647	8,065	0.468	0.208	0.308	0.473	0.624
TLTA	98,505	0.617	0.219	0.466	0.648	0.792	8,065	0.601	0.211	0.451	0.627	0.766
$NewDebt_{t+1}$	98,505	0.328	0.470	0.000	0.000	1.000	8,065	0.372	0.483	0.000	0.000	1.000
ROA and its components												
ROA	98,505	0.075	0.123	0.005	0.053	0.130	8,065	0.107	0.130	0.023	0.079	0.164
OPCF	98,505	0.053	0.221	-0.058	0.046	0.166	8,065	0.092	0.229	-0.031	0.078	0.211
OPACC	98,505	0.022	0.197	-0.080	0.008	0.112	8,065	0.015	0.201	-0.088	0.006	0.111
$DACC_{GP}$	80,699	-0.000	0.071	-0.037	-0.002	0.036	6,755	0.012	0.073	-0.027	0.008	0.049
$DACC_{EG}$	80,006	-0.000	0.085	-0.047	-0.002	0.044	6,711	0.010	0.088	-0.040	0.006	0.057
ABS_DACC_{GP}	80,699	0.051	0.048	0.016	0.037	0.071	6,755	0.054	0.050	0.017	0.039	0.074
ABS_DACC_{EG}	80,006	0.062	0.057	0.020	0.045	0.087	6,711	0.066	0.060	0.022	0.048	0.092
ΔROA	98,505	0.005	0.116	-0.050	0.001	0.054	8,065	0.022	0.124	-0.040	0.014	0.076
Other controls												
StdROA	98,505	0.091	0.092	0.038	0.066	0.112	8,065	0.094	0.094	0.040	0.068	0.116
PPE	98,505	0.258	0.249	0.056	0.165	0.410	8,065	0.247	0.241	0.057	0.159	0.385
CashTA	98,505	0.144	0.185	0.004	0.062	0.226	8,065	0.158	0.188	0.006	0.084	0.251
TA (mDKK)	98,505	8.928	11.144	2.514	4.755	10.155	8,065	9.995	11.686	2.983	5.613	11.802
Personals												
PersEquityTA	98,505	0.270	0.548	0.000	0.101	0.369	8,065	0.276	0.540	0.004	0.111	0.375
Age	98,371	49.685	9.307	43.000	50.000	57.000	8,051	50.334	9.479	43.000	50.000	58.000
Criminal	98,505	0.213	0.409	0.000	0.000	0.000	8,065	0.199	0.399	0.000	0.000	0.000
Female	98,505	0.071	0.257	0.000	0.000	0.000	8,065	0.063	0.242	0.000	0.000	0.000
HighEduc	98,505	0.078	0.268	0.000	0.000	0.000	8,065	0.094	0.292	0.000	0.000	0.000

95% of the company[15] and is the CEO. For the firm-year observations where ownership data are missing[16], the current CEO is identified as an owner-manager if she was also a CEO on the date the firm was founded.

3.3.2 Salary-dividend earnings management (SDEM)

We define the event of earnings management as an indicator variable SDEM taking the value one if (1) the owner-manager decreases her salary significantly (at least by 5 percent and at least by DKK 10t[17] (EUR 1.3t)), (2) the salary decrease does not shift the owner-manager's marginal labor income to a lower tax bracket[18], and (3) the owner-manager contemporarily increases dividends to at least offset the after-tax salary decrease, and zero otherwise. Marginal tax rates for labor income vs. capital income along with a numerical example are presented in appendix.

Dividends can be distributed as ordinary dividends when the annual report is approved for publication (i.e. dividends related to the income of year *t* are distributed in year *t+1* when the annual report is published) or as extraordinary dividends (i.e. dividends related to the income of year *t* are distributed during year *t*). Therefore, we allow the manager to pay out the dividends either during the fiscal year of the salary decrease or in the following year. We estimate dividends from balance sheet and income statement items.

We observe SDEM in around 8 percent of the firm-year observations, and find that SDEM on average increases earnings scaled by assets by 1.8 percentage points. Further, we observe that managers partly reverse their salary decreases from SDEM years in the following year: For all SDEM observations we observe an average salary change of -16% in the SDEM year followed by an average salary increase by 8% in the following year. Further, in Figure B.1 we show the development of salary/TA and dividend/TA for SDEM firms and their propensity score matched

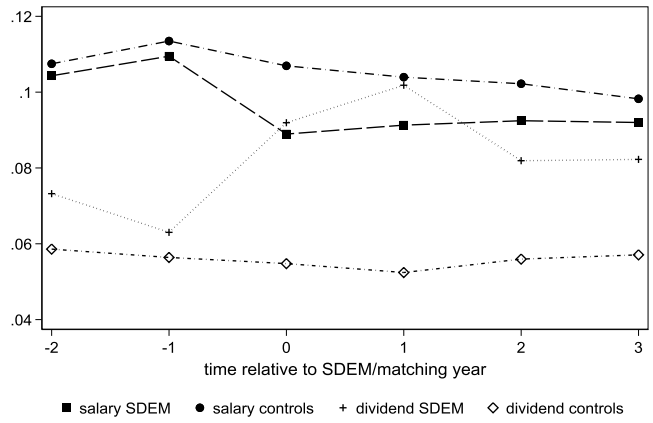
[15] We use 95% rather than 100% because of potential rounding of ownership stakes. Further, we assess this identification as conservative, because other ownership structures which assimilate the owner-manager structure are excluded. These quasi owner-manager ownership structures include married couples owning a business together, family members owning a business together, or even close friends owning a business together.

[16] In December 2014 new regulation was enforced which required firm owners to file ownership data with the Danish Business Authority, with a retrospective effect, meaning that managers had to disclose the starting date of their ownership. Hence, the ownership data which we acquire from the Danish Business Authority is limited in coverage back in time.

[17] We impose 5% and a monetary amount to define a significant salary decrease. Comparable approaches (as well as a similar cutoff of 5%) are used in the literature to define significant R&D jumps (Eberhart et al. 2004; Dube 2019).

[18] We have data on (1) the managers' income from the firm, and (2) the manager's total taxable labor income from Denmark. The cases where the owner-manager lowers her salary from the firm so that the marginal labor income (of total taxable labor income) is shifted to a lower labor income tax bracket are probably due to tax optimization rather than earnings management, and therefore we do not include those cases in the SDEM definition.

Figure B.1: Salary and dividend changes (scaled by total assets) by SDEM firms and their matched peers



This figure shows the level of salary (salary/TA) and dividend (dividend/TA) preceding, during, and following the SDEM year for SDEM firms and the matching year for matching firms. Year t=0 (x-axis) refers to the SDEM year for SDEM firms, and the matching year for control firms. Control firms are matched with propensity score matching, as described later in the paper. Descriptive statistics of the two propensity score matched samples are presented in Table B.9.

peers[19]. In this figure, we observe partly reversal of both salary and dividends following the SDEM year[20]. However both salary and dividends remain on a higher level following the SDEM year than in the years before the SDEM year.

3.3.3 Magnitude of debt and Cost of debt

Data coverage on actual interest bearing debt (or bank debt) is very limited in our dataset, and therefore we proxy it by calculating total liabilities net of trade payables. We scale by assets and term this measure *DebtTA*. Similarly, the actual interest rate on debt is not provided in the dataset, so we proxy it as financial expenses divided by average total liabilities net of trade payables, and term this measure *CostDebt*. The procedure of estimating the cost of debt as financial expenses scaled by debt is comparable to that in related studies (Francis et al. 2005; Minnis 2011; Gassen and Fülbier 2015; Vander Bauwhede et al. 2015). However, we differ from those studies in that we scale financial expenses by debt net of trade payables and not bank debt due to data limitations. We acknowledge that our approach contains significant noise and truncate the *CostDebt* construct at 0 percent and 30 percent to avoid extreme observations from

[19] We discuss how we propensity score match in section 3, and show the results of the matching in Table B.9.
[20] Recall that dividend increases are allowed both for year *t* and year *t+1* for the SDEM definition, and therefore the dividend reversal happens in year *t+2*.

a noisy measure blurring our results (see e.g. Gassen and Fülbier 2015)[21]. We observe an average *CostDebt* of 0.044, which is lower than observed in comparable studies[22]. The difference is likely due to our definition of debt and thus *CostDebt* is probably understated. However, empirical estimations in section 4 give confidence that *CostDebt*, although a noisy measure, is a valid proxy of the variations in the true (and for us unobservable) cost of debt.

3.3.4 Earnings measures and earnings benchmarks:

We make two overall adjustments to earnings and cash flows. First, we compute earnings and cash flows net of salary changes (variable names are added with the term "netsalary"), which proxy the performance signal the manager receives before making the decision to use SDEM. We use these measures to estimate the propensity to use SDEM. Second, we generate pre-managed earnings and cash flows: these measures adjust for salary changes (variable names are added with the term "premanaged"), but only when observations are identified as SDEM observations. We use these measures when we (i) investigate the impact of SDEM on future cost of debt, controlling for the underlying performance (i.e. pre-managed), and (ii) to identify the incidences in which the owner-manager uses SDEM to transform losses (earnings decreases) into profits (earnings increases).

3.4 Research design

3.4.1 The influence of debt on SDEM:

The following model estimates characteristics associated with SDEM and is used to test H1 and H3. As hypothesized in section 2, we expect the propensity to use SDEM and debt to have an inverted U-shape relation, and expect an increased propensity to use SDEM just below certain earnings benchmarks. We control for variables measuring capacity of SDEM and costs of earnings management (Chen et al. 2018; Jung et al. 2013).

$$SDEM_{it} = \alpha_0 + \beta_1 DebtTA_{it} + \beta_2 DebtTA_{it}{}^2 + \beta_3 SmallLoss\ or\ SmallDecrease_{it} + CONTROLS_{it} + \sum INDUSTRY + \sum YEAR + \varepsilon_{it} \quad (1)$$

[21] Gassen and Fülbier (2015) cut their interest rate measure at 0 and 20 percent. Our results – both magnitudes and significance levels – are practically unchanged when we winsorize observations at these levels [untabulated].
[22] For example Minnis (2011) observe average interest rates of 7.3 percent, and Gassen and Fülbier (2015) report average interest rates of 8.9 percent.

Where *i* denotes the firm and *t* denotes the fiscal year. *SmallLoss* (*SmallDecrease*) is an indicator variable that takes the value one if *netsalaryROA* (*ΔnetsalaryROA*) ∈[-0.02;0[, and zero otherwise. β_2 is excluded when testing H1. *SmallLoss* and *SmallDecrease* are used to test H3. *CONTROLS* include *netsalaryROA*, *ΔnetsalaryROA*, *netsalaryOPCF*, *CashTA*, *SalaryTA*, and *logTA*. *INDUSTRY* and *YEAR* are industry and year fixed effects, respectively. All variables are defined in appendix.

3.4.2 Consequences of SDEM on the cost of debt:

To investigate if SDEM induces cost of debt benefits, we estimate several different estimation models including pooled OLS (main analysis), propensity score matching (both with levels regressions and difference-in-difference regressions), and an endogenous choice model. Surveying prior research we identify several measures associated with the cost of debt[23].

In the main analysis we estimate the following model with pooled OLS. We include industry and year indicators and cluster standard errors by firm and year to account for both cross-sectional and serial correlation in residuals (Gow et al. 2010)[24].

$$CostDebt_{i(t+f)} = \alpha_0 + \beta_1 SDEM_{it} + \beta_2 LossAvoid\ or\ DecreaseAvoid_{it} + CONTROLS_{it} + \sum INDUSTRY + \sum YEAR + \varepsilon_{it} \quad (2)$$

Where *i* denotes the firm, *t* denotes the fiscal year, and *f* indicates the time horizon of cost of debt (1=one-year ahead cost of debt, 2=two-years-ahead cost of debt). *LossAvoid* (*DecreaseAvoid*) is an indicator variable that takes the value one if *premanagedROA*<0 (*ΔpremanagedROA*<0) and *reportedROA*≥0 (*ΔreportedROA*≥0), and zero otherwise. β_2 is excluded when testing H2. *LossAvoid* and *DecreaseAvoid* are used to test H4. Controls include *neg_premanagedROA*, *premanagedROA* (and their interaction), *TLTA*[25], *logTA*, *premanagedOPCF*, *StdROA*[26], *CashTA*, and *PPE*. All variables are defined in appendix. In

[23] E.g. Bauwhede et al. (2015), Gassen and Fülbier (2015), Bharath et al. (2008), Jiang (2008), and Francis et al. (2005). We do not calculate interest coverage and current ratio (see Minnis 2011). The information content of interest coverage is limited when the numerator (EBIT or EBITDA) is negative. Current ratio is a measure of asset composition, and we employ alternative estimates of asset compositions. In untabulated analyses we replace our control variables with the variables used by Minnis (2011) and results are practically unchanged, both inferences and magnitudes.

[24] Results are unchanged when using Fama MacBeth regression with Newey-West standard errors [untabulated].

[25] We use *TLTA* rather than *DebtTA* as lenders are expected to include all debt when assessing the risk of borrower firms.

[26] The standard deviation of *ROA* is also used by for example Francis et al. (2005) and Jiang (2008).

robustness tests, we additionally use propensity score matching and an endogenous choice model.

4. RESULTS

4.1 The influence of debt on SDEM

In the following we explore the variables associated with SDEM by estimating Eq. (1). We report the estimation results in Table B.3. The slope on *DebtTA* is positive and the slope on $DebtTA^2$ is negative: Our interpretation is that, consistent with *H1*, the propensity to use SDEM is increasing with debt when debt is low or moderate, and decreasing with debt when debt is high. In Figure B.2 we plot the marginal effects of *DebtTA* on the propensity to use SDEM, and find that debt has a positive effect on the propensity to use SDEM until *DebtTA*~0.35.

Next, we test H3: First, in Figure B.3, Panel A (Panel B), we plot the percentage of observations that use SDEM by *netsalaryROA* (*ΔnetsalaryROA*) bins. In Panel A we observe a peak in the prevalence of SDEM just below the zero-earnings benchmark, but not in Panel B just below the last year's earnings benchmark. Next, we include the indicator variables *SmallLoss* and *SmallDecrease* (one at a time) in regressions. The estimation tables regarding *SmallLoss* (*SmallDecrease*) are displayed in column 3 and 4 (column 5 and 6) of Table B.3, and provide support for the interpretation of the figures above. The probability of using SDEM increases by 1.6 percentage points, or about 20 percent of the unconditional mean of SDEM (0.0163/0.0819), when the manager receives an earnings signal before the SDEM decision that is just below zero. This evidence provides further support for H3, however only for the zero earnings benchmark.

As an additional test, in column (7) and (8) we test if firms are more likely to use SDEM when they are about to raise new debt. We find that the issuance of new debt[27] in the following year is associated with an increased propensity to use SDEM of 1.3 percentage points, or about 16% of the unconditional mean of SDEM (0.0133/0.0819). Although not a formal hypothesis, the finding that firms are more likely to use SDEM preceding new finance issues bolsters our confidence in SDEM being earnings management. The table also reveals that the propensity to use SDEM is (as expected) increasing in the control variables proxying capacity to use SDEM (*netsalaryROA*, *netsalaryOPCF*, *SalaryTA*, and *CashTA*). The use of SDEM loads positively on

[27] We define the variable *NewDebt* as an indicator variable that takes the value one if the change in debt (total liabilities minus trade payables) scaled by lagged assets is higher than 0.05, and zero otherwise.

Table B.3: Covariates associated with salary dividend earnings management

	(1) SDEM Coeff.	(2) SDEM Marg. effect	(3) SDEM Coeff.	(4) SDEM Marg. effect	(5) SDEM Coeff.	(6) SDEM Marg. effect	(7) SDEM Coeff.	(8) SDEM Marg. effect
DebtTA	**0.7351*****		**0.7596*****		**0.7316*****		**0.6889*****	
	(3.09)		**(3.18)**		**(3.08)**		**(2.89)**	
DebtTA^2	**-1.1330*****		**-1.1685*****		**-1.1288*****		**-1.0597*****	
	(-4.45)		**(-4.57)**		**(-4.43)**		**(-4.16)**	
SmallLoss			**0.2190*****	**0.0163*****				
			(4.71)	**(4.70)**				
SmallDecrease					**-0.0601***	**-0.0045***		
					(-1.75)	**(-1.76)**		
NewDebt$_{t+1}$							**0.1791*****	**0.0133*****
							(6.55)	**(6.57)**
netsalaryROA	0.4822***	0.0358***	0.5613***	0.0417***	0.4737***	0.0352***	0.4278**	0.0317**
	(2.78)	(2.78)	(3.40)	(3.41)	(2.76)	(2.76)	(2.42)	(2.42)
ΔnetsalaryROA	-0.8142***	-0.0604***	-0.8301***	-0.0616***	-0.8159***	-0.0606***	-0.7801***	-0.0579***
	(-4.66)	(-4.67)	(-4.78)	(-4.79)	(-4.67)	(-4.68)	(-4.45)	(-4.46)
netsalaryOPCF	0.3779***	0.0281***	0.3767***	0.0280***	0.3782***	0.0281***	0.3929***	0.0292***
	(4.43)	(4.43)	(4.41)	(4.42)	(4.43)	(4.44)	(4.53)	(4.54)
CashTA$_{t-1}$	0.2370***	0.0176***	0.2392***	0.0178***	0.2366***	0.0176***	0.2681***	0.0199***
	(2.98)	(2.98)	(3.00)	(3.01)	(2.98)	(2.98)	(3.33)	(3.33)
SalaryTA$_{t-1}$	1.5389***	0.1142***	1.5413***	0.1144***	1.5336***	0.1138***	1.5215***	0.1129***
	(6.66)	(6.68)	(6.66)	(6.68)	(6.65)	(6.67)	(6.63)	(6.65)
logTA	0.2996***	0.0222***	0.3001***	0.0223***	0.3007***	0.0223***	0.3005***	0.0223***
	(9.98)	(10.07)	(10.05)	(10.14)	(9.98)	(10.07)	(10.03)	(10.12)
Intercept	-5.5367***		-5.5606***		-5.5376***		-5.5876***	
	(-22.07)		(-22.35)		(-22.07)		(-22.41)	
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
N	98,505	98,505	98,505	98,505	98,505	98,505	98,505	98,505
Pseudo R. sq.	0.0204	0.0204	0.0207	0.0207	0.0204	0.0204	0.0213	0.0213
AUROC	0.6106	0.6106	0.6117	0.6117	0.6108	0.6108	0.6135	0.6135
SDEM prevalence	0.0819		0.0819		0.0819		0.0819	

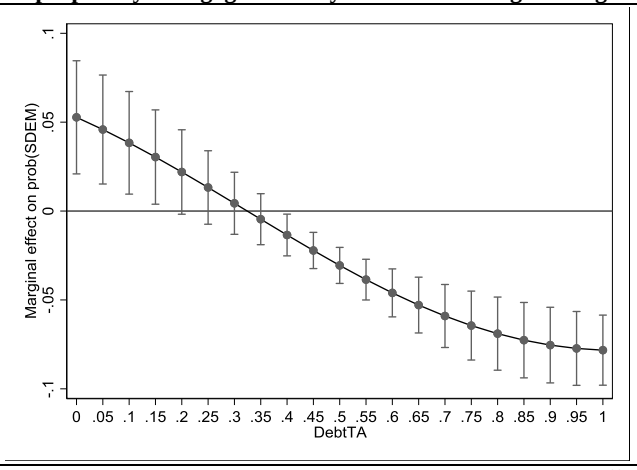
This table shows the determinants of SDEM. Both coefficients from the logistic regression and marginal effects are displayed. *SDEM* is an indicator of salary dividend earnings management. *DebtTA* is total liabilities net of trade payables scaled by assets. *SmallLoss* is an indicator that takes the value one if *netsalaryROA*∈[-0.02;0[, and zero otherwise. *SmallDecrease* is an indicator that takes the value one if *ΔnetsalaryROA*∈[-0.02;0[, and zero otherwise. *NewDebt* is an indicator that takes the value one if ($debt_t$-$debt_{t-1}$)/TA_{t-1}>0.05, and zero otherwise. The remaining variables are defined in appendix. Standard errors are clustered by firm and year (Gow et al. 2010). *t* statistics in parentheses. ***, **, * Represent significance levels at 0.01, 0.05, and 0.10, respectively (two-tailed test). All continuous variables are winsorized at the 1 and 99 percent level.

firm size as measured by *logTA*, possibly because larger firms have more equity enabling them to pay dividends (and use SDEM).

4.2 Consequences of SDEM for the cost of debt

Now, we turn to analyze the cost of debt consequences of SDEM. In Table B.4 we estimate Eq. (2) with pooled OLS. The columns 1 through 3 (4 through 6) show the effect on one-year-ahead (two-years-ahead) cost of debt. We observe, consistent with H2, that the SDEM indicator

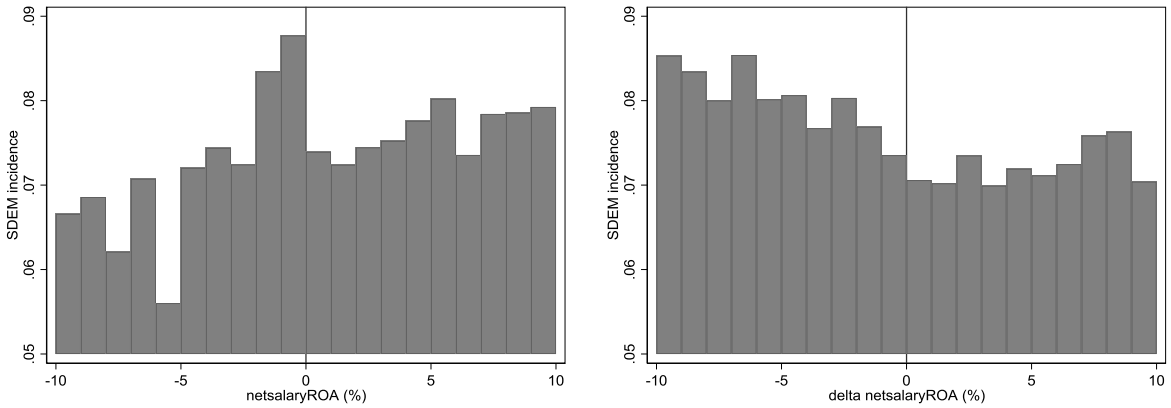
Figure B.2: The effect of debt on propensity to engage in salary dividend earnings management



This figure shows the relation between debt and propensity to use SDEM. The graph shows the marginal effect (using the delta method) from the logistic estimation of Eq. (1).

Figure B.3: SDEM observations (%) by ROA [earnings (net of salary changes) scaled by assets] and ΔROA [earnings changes (net of salary changes) scaled by assets]

Panel A: *Panel B:*



This figure shows the percentage of firm-year observations that use *SDEM* (y-axis) per *netsalaryROA* or *ΔnetsalaryROA* bin (x-axis). Panel A shows the mean SDEM per *salaryROA*, i.e. *ROA* adjusted for the owner-manager's salary changes. Panel B shows the mean SDEM per *ΔnetsalaryROA*, i.e. the change in net income adjusted for the owner-manager's salary changes, scaled by lagged assets. The analysis is restricted to include *netsalaryROA* (*ΔnetsalaryROA*) in the interval [-10 ; 10] percent.

is negatively associated with cost of debt: In firm-years in which the owner-manager uses SDEM the firm obtains lower one-year-ahead cost of debt of about 18 bps[28] (column 1), or about 4 percent lower than the unconditional sample mean (0.0018/0.0443). When we look more

[28] The magnitudes reported here are probably biased downwards because of the noisy measure of interest bearing debt and hence the *CostDebt* measure. That is, the true magnitude (in bps) of the SDEM effect on cost of debt might be even higher than reported here.

carefully into the underlying data, we find that the effect is driven both by a decrease in financial expenses (numerator of *CostDebt*) and an increase in debt (denominator of *CostDebt*) in year *t+1* relative to year *t*. SDEM firms experience a median year-on-year change in financial expenses of -2.8 percent and a median year-on-year change in debt of 2.2 percent.

The indicator *LossAvoid* is the subsample of SDEM observations in which managers use SDEM to transform a pre-managed loss into a reported profit, and the coefficient reflects the *incremental benefit* obtained when SDEM is used to avoid reporting a loss: For these observations the magnitude is much higher at about 68 bps (0.0014+0.0054), corresponding to a decrease in *CostDebt* of 15 percent relative to the sample mean (0.0068/0.0443). We believe this magnitude is highly significant in economic terms. Additionally we find some evidence that firms that transform pre-managed earnings decreases into earnings increases obtain an additional cost of debt benefit. However, the effect is only marginally significant (p-value ~0.052, two-tailed test). These results provide support for H4, especially for firms that use SDEM to avoid reporting a loss.

All other variables relate to future cost of debt in predictable ways and increase confidence in the noisy measure of cost of debt. Future cost of debt loads negatively on current profitability measures. Notably, in column (1) through (3) we observe a positive *neg_premanagedROA* coefficient of 0.047-0.500, which indicates that loss firms experience higher cost of debt of about 47-50 bps relative to profit firms, corresponding to approx. 11 percent of the average cost of debt in the sample. We point out that the slope on *LossAvoid* is practically similar in magnitude to the slope on *neg_premanagedROA*, indicating that firms that use SDEM to transform a pre-managed loss into a reported profit effectively avoid the penalizing effect of loss reporting.

Further, the negative relation between *premanagedROA* and *CostDebt* is attenuated when *premanagedROA* is negative (slope on *premanagedROA*neg_premanagedROA* is positive[29]). Collectively, the results suggest that loss firms are immediately penalized with a higher cost of debt when missing the arbitrary zero earnings benchmark, but that the magnitude of the loss matters to a lower extend, emphasizing the importance to firms of avoiding negative earnings reports (see e.g. Jiang 2008). In untabulated analyses we do not find such a result for negative earnings changes.

[29] An F-test of the coefficients of *premanagedROA* (-0.0335, column 1) and *premanagedROA*neg_premanagedROA* (0.0180, column 1) shows that the slope is still significantly different from zero when earnings are negative.

Table B.4: Salary Dividend Earnings Management and future Cost of Debt

	(1) $CostDebt_{t+1}$	(2) $CostDebt_{t+1}$	(3) $CostDebt_{t+1}$	(4) $CostDebt_{t+2}$	(5) $CostDebt_{t+2}$	(6) $CostDebt_{t+2}$
SDEM	**-0.0018*** **	**-0.0014*** **	**-0.0016*** **	**-0.0032*** **	**-0.0031*** **	**-0.0032*** **
	(-4.17)	**(-3.41)**	**(-3.38)**	**(-7.95)**	**(-8.55)**	**(-8.23)**
LossAvoid		**-0.0054*** **			**-0.0013**	
		(-3.66)			**(-0.86)**	
DecreaseAvoid			**-0.0028***			**0.0006**
			(-1.94)			**(0.46)**
premanagedROA	-0.0335***	-0.0335***	-0.0335***	-0.0223***	-0.0223***	-0.0223***
	(-11.38)	(-11.38)	(-11.40)	(-8.43)	(-8.43)	(-8.43)
neg_premanagedROA	0.0047***	0.0050***	0.0047***	0.0040***	0.0040***	0.0040***
	(10.20)	(10.63)	(10.20)	(6.64)	(6.79)	(6.64)
premanagedROA *neg_premanagedROA	0.0180***	0.0197***	0.0181***	0.0171***	0.0175***	0.0171***
	(2.70)	(3.02)	(2.71)	(3.43)	(3.56)	(3.43)
TLTA	0.0072***	0.0072***	0.0072***	0.0121***	0.0121***	0.0121***
	(3.17)	(3.16)	(3.17)	(5.06)	(5.05)	(5.06)
logTA	-0.0001	-0.0001	-0.0001	-0.0006**	-0.0006**	-0.0006**
	(-0.40)	(-0.42)	(-0.41)	(-2.28)	(-2.29)	(-2.27)
premanagedOPCF	-0.0009	-0.0010	-0.0010	-0.0034*	-0.0034*	-0.0034*
	(-0.88)	(-0.89)	(-0.88)	(-1.67)	(-1.67)	(-1.67)
StdROA	0.0186***	0.0186***	0.0185***	0.0131***	0.0131***	0.0131***
	(5.52)	(5.52)	(5.52)	(5.33)	(5.34)	(5.33)
PPE	-0.0037**	-0.0037**	-0.0037**	-0.0037**	-0.0037**	-0.0037**
	(-2.51)	(-2.53)	(-2.51)	(-2.54)	(-2.54)	(-2.54)
CashTA	-0.0242***	-0.0242***	-0.0242***	-0.0194***	-0.0194***	-0.0194***
	(-10.47)	(-10.49)	(-10.47)	(-7.44)	(-7.44)	(-7.45)
Intercept	0.0578***	0.0578***	0.0578***	0.0526***	0.0526***	0.0526***
	(15.66)	(15.70)	(15.69)	(18.77)	(18.77)	(18.76)
Industry FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
N	98,505	98,505	98,505	81,361	81,361	81,361
Adjust R. sq.	0.0878	0.0879	0.0879	0.0807	0.0807	0.0807
Average CostDebt	0.0443	0.0443	0.0443	0.0438	0.0438	0.0438

This table shows the OLS regression of future cost of debt on SDEM and other controls. *CostDebt* is financial expenses scaled by average liabilities net of trade payables. *SDEM* is an indicator of salary dividend earnings management. *LossAvoid* indicates that firms use SDEM to avoid reporting losses. *DecreaseAvoid* indicates that firms use SDEM to avoid reporting earnings decreases. The remaining variables are defined in appendix. Standard errors are clustered by firm and year (Gow et al. 2010). *t* statistics in parentheses. ***, **, * Represent significance levels at 0.01, 0.05, and 0.10, respectively (two-tailed test). All continuous variables are winsorized at the 1 and 99 percent level.

Further, future cost of debt loads positively on current *TLTA* (leverage)[30] and *StdROA* (earnings volatility)[31]. Future cost of debt also decreases in the level of cash and in the portion of tangible fixed assets.

[30] This finding is partly consistent with prior research: for example, Minnis (2011) observe a negative relation between leverage and cost of debt in their main analysis [table 7], but find a positive relation when using an alternative profitability measure (in the regression) with lower correlation to leverage [footnote 24]. In a similar vein, Francis et al. (2005) find a negative relation in their main analysis [table 2], but find a positive relation when truncating their (noisy) cost of debt measure at the 5th and 95th percentiles [footnote 5].

[31] Consistent with prior papers linking current firm attributes to future cost of debt (see e.g. Jiang 2008; Francis et al. 2005).

4.3 Alternative explanations

In the following we make several attempts to test the robustness of the consequences of SDEM, by addressing alternative explanations for our findings. We control for future performance, control for discretionary accruals, control for personal characteristics including wealth of the owner-manager, and attempt to rule out tax optimization driving the results.

4.3.1 Controlling for future performance:

Prior research on earnings management provides evidence that managers in some situations manage earnings to signal future performance or manage expectations (Bartov et al. 2002; Badertscher et al. 2012), and thus the lower observed future cost of debt could be due to superior future performance of earnings management firms (Kasznik and McNichols 2002; Gunny 2010). Although these alternative explanations do not fit well with the opportunistic nature of SDEM, we re-estimate Eq. (2) and include a variable of the average *ROA* for year *t+1* and *t+2* [$FutureROA_{t+1;t+2}$] and report the results in Table B.5. The slopes on SDEM and *LossAvoid* remain statistically significant, and the *DecreaseAvoid* slope becomes insignificant. The magnitude of SDEM on one-year-ahead cost of debt decreases to 12 bps (vs. 18 bps in the main analysis), and the magnitude of *LossAvoid* decreases to 55 bps (vs. 68 bps in the main analysis) but both remain statistically significant. As expected, $FutureROA_{t+1;t+2}$ is negatively related to future cost of debt. The results suggest that prior conclusions are not driven by superior future performance of SDEM firms. Also, we observe correlations between SDEM and ROA_{t+1} (ROA_{t+2}) at low levels of 0.063 (0.049), and correlations between SDEM and ΔROA_{t+1} (ΔROA_{t+2}) at negative levels of -0.002 (-0.016) which fits poorly with a signaling explanation.

4.3.2 Controlling for discretionary accruals:

Prior research often uses discretionary accruals as a measure of earnings quality (Dechow et al. 2010)[32] or as a measure of earnings management (for a recent example, see Liu et al. 2018). SDEM firms might obtain lower cost of debt because of accrual earnings management or higher accounting quality, and therefore we re-estimate Eq. (2) and add four different measures of discretionary accruals to the right-hand side of the equation (one at a time). We describe the accrual estimation process and show accrual estimation tables in appendix. The results from

[32] For example, Dechow et al. (2010) note that "almost one hundred papers in [their] database use 'abnormal' accruals generated from an accruals model as a measure of earnings quality." (footnote 22, p 358)

Table B.5: Salary Dividend Earnings Management and future Cost of Debt, controlling for future performance

	(1) $CostDebt_{t+1}$	(2) $CostDebt_{t+1}$	(3) $CostDebt_{t+1}$	(4) $CostDebt_{t+2}$	(5) $CostDebt_{t+2}$	(6) $CostDebt_{t+2}$
SDEM	**-0.0012*****	**-0.0009****	**-0.0010****	**-0.0020*****	**-0.0021*****	**-0.0021*****
	(-2.79)	**(-2.07)**	**(-2.28)**	**(-5.69)**	**(-6.18)**	**(-6.12)**
LossAvoid		**-0.0046*****			**0.0004**	
		(-3.32)			**(0.31)**	
DecreaseAvoid			**-0.0020**			**0.0016**
			(-1.52)			**(1.20)**
$FutureROA_{t+1;t+2}$	-0.0413***	-0.0413***	-0.0413***	-0.0602***	-0.0602***	-0.0602***
	(-12.53)	(-12.50)	(-12.52)	(-14.07)	(-14.09)	(-14.07)
premanagedROA	-0.0171***	-0.0172***	-0.0172***	0.0043	0.0043	0.0043
	(-5.95)	(-5.97)	(-5.95)	(1.20)	(1.21)	(1.21)
neg_premanagedROA	0.0041***	0.0043***	0.0041***	0.0032***	0.0032***	0.0032***
	(8.80)	(9.11)	(8.79)	(5.16)	(5.19)	(5.17)
premanagedROA *neg_premanagedROA	0.0054	0.0070	0.0055	-0.0052	-0.0054	-0.0053
	(0.79)	(1.05)	(0.80)	(-0.96)	(-0.99)	(-0.97)
TLTA	0.0067***	0.0067***	0.0067***	0.0117***	0.0117***	0.0117***
	(2.68)	(2.67)	(2.68)	(4.86)	(4.86)	(4.86)
logTA	-0.0000	-0.0000	-0.0000	-0.0006**	-0.0006**	-0.0006**
	(-0.08)	(-0.10)	(-0.09)	(-2.08)	(-2.08)	(-2.06)
premanagedOPCF	0.0001	0.0001	0.0001	-0.0022	-0.0022	-0.0022
	(0.10)	(0.09)	(0.09)	(-1.19)	(-1.19)	(-1.19)
StdROA	0.0205***	0.0205***	0.0204***	0.0134***	0.0134***	0.0134***
	(6.57)	(6.57)	(6.58)	(5.61)	(5.61)	(5.61)
PPE	-0.0038**	-0.0038**	-0.0038**	-0.0048***	-0.0048***	-0.0048***
	(-2.54)	(-2.55)	(-2.54)	(-3.24)	(-3.24)	(-3.24)
CashTA	-0.0231***	-0.0231***	-0.0231***	-0.0172***	-0.0172***	-0.0172***
	(-8.84)	(-8.85)	(-8.84)	(-6.66)	(-6.66)	(-6.66)
Intercept	0.0581***	0.0582***	0.0582***	0.0534***	0.0534***	0.0534***
	(14.93)	(14.96)	(14.95)	(18.34)	(18.33)	(18.31)
Industry FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
N	88,418	88,418	88,418	80,470	80,470	80,470
Adjust R. sq.	0.0992	0.0992	0.0992	0.1050	0.1050	0.1050
Average CostDebt	0.0443	0.0443	0.0443	0.0438	0.0438	0.0438

This table shows the OLS regression of future cost of debt on SDEM and other controls. *CostDebt* is financial expenses scaled by average liabilities net of trade payables. *SDEM* is an indicator of salary dividend earnings management. *LossAvoid* indicates that firms use SDEM to avoid reporting losses. *DecreaseAvoid* indicates that firms use SDEM to avoid reporting earnings decreases. *FutureROAt+1;t+2* is the average return on assets (*ROA*) for the years *t+1* and *t+2*.The remaining variables are defined in appendix. Standard errors are clustered by firm and year (Gow et al. 2010). *t* statistics in parentheses. ***, **, * Represent significance levels at 0.01, 0.05, and 0.10, respectively (two-tailed test). All continuous variables are winsorized at the 1 and 99 percent level.

the regressions controlling for discretionary accruals are presented in Table B.6. To preserve space control variables are estimated but not reported. We observe that the magnitude of SDEM generally increases when controlling for discretionary accruals (both signed and unsigned).

The coefficients of the four *DACC* measures are interesting themselves: We find that *DACC* is positively associated with future cost of debt, both when we use signed (accrual earnings management) and unsigned (accrual quality) *DACC*. This is particularly intriguing, as the summary statistics presented in Table B.2 suggest that SDEM firms contemporarily use accrual

Table B.6: Salary Dividend Earnings Management and future Cost of Debt, controlling for discretionary accruals

Panel A: activity proxy=gross profit growth

	(1) $CostDebt_{t+1}$	(2) $CostDebt_{t+1}$	(3) $CostDebt_{t+1}$	(4) $CostDebt_{t+1}$	(5) $CostDebt_{t+1}$	(6) $CostDebt_{t+1}$
SDEM	-0.0021***	-0.0017***	-0.0019***	-0.0019***	-0.0015***	-0.0017***
	(-5.31)	(-4.09)	(-4.16)	(-4.39)	(-3.37)	(-3.48)
LossAvoid		-0.0071***			-0.0067***	
		(-3.85)			(-3.65)	
DecreaseAvoid			-0.0028*			-0.0024
			(-1.65)			(-1.43)
$DACC_{GP}$	0.0297***	0.0299***	0.0298***			
	(5.56)	(5.60)	(5.57)			
ABS_DACC_{GP}				0.0217***	0.0216***	0.0217***
				(4.42)	(4.40)	(4.42)
Controls	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
N	80,699	80,699	80,699	80,699	80,699	80,699
Adjust R. sq.	0.0913	0.0915	0.0913	0.0902	0.0904	0.0903

Panel B: activity proxy=employee growth

SDEM	-0.0021***	-0.0017***	-0.0019***	-0.0019***	-0.0014***	-0.0017***
	(-4.69)	(-3.40)	(-3.83)	(-4.02)	(-2.91)	(-3.31)
LossAvoid		-0.0075***			-0.0068***	
		(-4.39)			(-4.18)	
DecreaseAvoid			-0.0029*			-0.0022
			(-1.70)			(-1.35)
$DACC_{EMPL}$	0.0482***	0.0484***	0.0483***			
	(7.67)	(7.73)	(7.68)			
ABS_DACC_{EMPL}				0.0141***	0.0139***	0.0140***
				(2.86)	(2.82)	(2.85)
Controls	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
N	80,006	80,006	80,006	80,006	80,006	80,006
Adjust R. sq.	0.0932	0.0934	0.0932	0.0899	0.0901	0.0899

This table shows the OLS regression of future cost of debt on SDEM and other controls. *CostDebt* is financial expenses scaled by average liabilities net of trade payables. *SDEM* is an indicator of salary dividend earnings management. *LossAvoid* indicates that firms use SDEM to avoid reporting losses. *DecreaseAvoid* indicates that firms use SDEM to avoid reporting earnings decreases. *DACC* reflects discretionary accruals with two different growth proxies, where *GP* refers to gross profit growth and *EMPL* refers to employee growth. *ABS_DACC* is absolute values. The discretionary accrual estimation procedure is outlined in appendix. Controls include *premanagedROA*, *neg_premanagedROA*, *premanagedROA*neg_premanagedROA*, *TLTA*, *logTA*, *premanagedOPCF*, *StdROA*, *PPE*, and *CashTA*. The variables are defined in appendix. Standard errors are clustered by firm and year (Gow et al. 2010). *t* statistics in parentheses. ***, **, * Represent significance levels at 0.01, 0.05, and 0.10, respectively (two-tailed test). All continuous variables are winsorized at the 1 and 99 percent level.

earnings management to increase earnings[33]. We interpret this important result in the following way: lenders are able to estimate accrual earnings management and the accrual quality of borrowers and compensate themselves for informational risks by charging higher interest rates

[33] In untabulated tests, we find that discretionary accruals are particularly income-increasing in the SDEM year compared to surrounding years. We observe $DACC_{GP}$ ($DACC_{EG}$) of 0.01%, 1.2%, and 0.3% (0.2%, 1.0%, and 0.4%) for the years *t-1*, *t*, and *t+1*, respectively, where year *t* is the SDEM year.

(consistent with Bharath et al. 2008; Francis et al. 2005; Vander Bauwhede et al. 2015). However, lenders on average do not unravel and detect SDEM and hence firms using SDEM are able to mislead lenders and obtain benefits in the form of lower future interest rates.

4.3.3 Controlling for the owner-manager's personal characteristics

We control for personal characteristics of the owner-manager, because such characteristics might matter for the loan decision. We re-estimate Eq. (2) and add to the right-hand side controls for the owner-manager's personal wealth[34], age of the owner-manager, presence of a criminal record, gender, and educational level. We present the results in Table B.7, and find that prior results remain practically unchanged (both magnitudes and levels of statistical significance). Interestingly, we find that the firm's cost of debt is negatively related to the owner-manager's personal wealth and age. Owner-managers with a criminal record experience higher cost of debt.

4.3.4 Isolating non-tax driven SDEM

The SDEM measure relies on an assumption of approximate tax neutrality between salary and dividends, which is true when both the salary and dividends are taxed in the highest tax bracket. That is, only labor income that is shifted from the highest income tax bracket to dividend income in the highest tax bracket is approximate tax neutral[35]. In the following we generate the indicator variable *SDEM_tax* that takes the value one if SDEM=1, the owner-manager's marginal salary falls in the highest tax bracket (after the salary decrease), and the marginal dividend falls in the highest tax bracket (after the dividend increase)[36], and zero otherwise. We report the results of estimating Eq. (2) substituting SDEM with *SDEM_tax* in Table B.8 and observe that any prior findings remain unchanged. Thus, we find it very unlikely that SDEM and the related implications are driven by tax optimization incentives.

[34] To calculate the personal wealth of an individual, we calculate personal equity and scale it with total assets of the firm.

[35] As noted in section 3 in all prior analyses we exclude observations where the owner-manager moves from a high labor income tax bracket to a lower labor income tax bracket by shifting income from salary to dividends. Further, a shift from salary to dividends is *costly* when the owner-managers pays labor tax in the lowest tax bracket, because the tax rate of [tax on dividends + company tax] is higher than the labor tax rate in the lowest tax bracket.

[36] Married owner-managers can use their spouses' tax allowance for dividend income. We have data on marriage, and therefore factor this into the identification of when the owner-manager pays dividends that fall in the highest dividend tax bracket.

Table B.7: Salary Dividend Earnings Management and future Cost of Debt, controlling for personal characteristics

	(1) $CostDebt_{t+1}$	(2) $CostDebt_{t+1}$	(3) $CostDebt_{t+1}$	(4) $CostDebt_{t+2}$	(5) $CostDebt_{t+2}$	(6) $CostDebt_{t+2}$
SDEM	**-0.0016*****	**-0.0013*****	**-0.0014*****	**-0.0030*****	**-0.0030*****	**-0.0031*****
	(-3.91)	**(-3.12)**	**(-3.17)**	**(-7.63)**	**(-8.24)**	**(-7.92)**
LossAvoid		**-0.0054*****			**-0.0012**	
		(-3.73)			**(-0.80)**	
DecreaseAvoid			**-0.0028***			**0.0007**
			(-1.93)			**(0.51)**
PersEquityTA	-0.0027***	-0.0027***	-0.0027***	-0.0032***	-0.0032***	-0.0032***
	(-6.15)	(-6.13)	(-6.14)	(-6.02)	(-6.02)	(-6.03)
Log(age)	-0.0047**	-0.0047**	-0.0047**	-0.0036*	-0.0036*	-0.0036*
	(-2.34)	(-2.35)	(-2.34)	(-1.83)	(-1.84)	(-1.83)
Criminal	0.0024***	0.0024***	0.0024***	0.0022***	0.0022***	0.0022***
	(3.98)	(3.98)	(3.97)	(3.51)	(3.51)	(3.51)
Female	0.0003	0.0002	0.0003	0.0007	0.0007	0.0007
	(0.30)	(0.30)	(0.30)	(0.81)	(0.81)	(0.81)
HighEduc	-0.0012	-0.0012	-0.0012	-0.0011	-0.0011	-0.0011
	(-1.35)	(-1.33)	(-1.34)	(-1.16)	(-1.15)	(-1.16)
Controls	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
N	98,371	98,371	98,371	81,267	81,267	81,267
Adjust R. sq.	0.0909	0.0910	0.0909	0.0842	0.0842	0.0842
Average CostDebt	0.0443	0.0443	0.0443	0.0438	0.0438	0.0438

This table shows the OLS regression of future cost of debt on SDEM, personal characteristics of the owner-manager, and other controls. *CostDebt* is financial expenses scaled by average liabilities net of trade payables. *SDEM* is an indicator of salary dividend earnings management. *LossAvoid* indicates that firms use SDEM to avoid reporting losses. *DecreaseAvoid* indicates that firms use SDEM to avoid reporting earnings decreases. *PersEquityTA* is the personal equity (i.e. personal assets, such as real estate, bank deposits, etc. minus personal debt, such as mortgage, student debt, and other debt to any financial institution) scaled by the total assets of the owner-manager's firm. *Log(age)* is the logarithm of the owner-manager's age. *Criminal* is an indicator that takes the value one if the owner-manager has a criminal record (we exclude traffic related offences, such as parking or speeding tickets in the definition), and zero otherwise. *Female* is an indicator that takes the value one if the owner-manager is a woman, and zero otherwise. *HighEduc* is an indicator that takes the value one if the owner-manager has a high education (bachelor, master, or PhD level), and zero otherwise. Controls include *premanagedROA*, *neg_premanagedROA*, *premanagedROA*neg_premanagedROA*, *TLTA*, *logTA*, *premanagedOPCF*, *StdROA*, *PPE*, and *CashTA*. Variables are defined in appendix. Standard errors are clustered by firm and year (Gow et al. 2010). *t* statistics in parentheses. ***, **, * Represent significance levels at 0.01, 0.05, and 0.10, respectively (two-tailed test). All continuous variables are winsorized at the 1 and 99 percent level.

4.4 Alternative econometric estimations

In the following we make several attempts to test the robustness of the consequences of SDEM, by estimating the effect of SDEM with different econometric designs. We use propensity score matching, and estimate an endogenous choice model.

4.4.1 Propensity score matching:

We use propensity score matching to alleviate concerns about functional form bias, by balancing potentially confounding or misspecified covariates between treatment groups (Shipman et al. 2017). We identify firm-years in which managers use SDEM to increase

Table B.8: Salary Dividend Earnings Management and future Cost of Debt, when marginal labor income and marginal dividend fall in the highest tax bracket

	(1) $CostDebt_{t+1}$	(2) $CostDebt_{t+1}$	(3) $CostDebt_{t+1}$	(4) $CostDebt_{t+2}$	(5) $CostDebt_{t+2}$	(6) $CostDebt_{t+2}$
SDEM_tax	**-0.0028*** **	**-0.0024*** **	**-0.0026*** **	**-0.0038*** **	**-0.0036*** **	**-0.0039*** **
	(-6.88)	**(-5.54)**	**(-6.14)**	**(-8.72)**	**(-8.87)**	**(-9.18)**
LossAvoid_tax		**-0.0070*** **			**-0.0037** **	
		(-3.74)			**(-2.23)**	
DecreaseAvoid_tax			**-0.0030***			**0.0005**
			(-1.78)			**(0.26)**
premanagedROA	-0.0334***	-0.0334***	-0.0334***	-0.0224***	-0.0224***	-0.0224***
	(-11.39)	(-11.41)	(-11.39)	(-8.42)	(-8.43)	(-8.43)
neg_premanagedROA	0.0047***	0.0049***	0.0047***	0.0038***	0.0039***	0.0038***
	(10.32)	(10.54)	(10.31)	(6.45)	(6.68)	(6.45)
premanagedROA *neg_premanagedROA	0.0177***	0.0193***	0.0178***	0.0161***	0.0170***	0.0161***
	(2.63)	(2.93)	(2.65)	(3.25)	(3.44)	(3.26)
TLTA	0.0072***	0.0072***	0.0072***	0.0121***	0.0121***	0.0121***
	(3.17)	(3.16)	(3.17)	(5.05)	(5.05)	(5.05)
logTA	-0.0001	-0.0001	-0.0001	-0.0006**	-0.0006**	-0.0006**
	(-0.34)	(-0.35)	(-0.35)	(-2.19)	(-2.21)	(-2.19)
premanagedOPCF	-0.0009	-0.0010	-0.0009	-0.0033*	-0.0034*	-0.0033*
	(-0.88)	(-0.89)	(-0.88)	(-1.66)	(-1.66)	(-1.66)
StdROA	0.0186***	0.0186***	0.0186***	0.0131***	0.0131***	0.0131***
	(5.55)	(5.55)	(5.55)	(5.36)	(5.37)	(5.35)
PPE	-0.0037**	-0.0037**	-0.0037**	-0.0037**	-0.0037**	-0.0037**
	(-2.54)	(-2.56)	(-2.54)	(-2.57)	(-2.57)	(-2.57)
CashTA	-0.0242***	-0.0242***	-0.0242***	-0.0194***	-0.0194***	-0.0194***
	(-10.46)	(-10.48)	(-10.47)	(-7.44)	(-7.43)	(-7.44)
Intercept	0.0577***	0.0577***	0.0577***	0.0525***	0.0525***	0.0524***
	(15.62)	(15.67)	(15.65)	(18.81)	(18.80)	(18.78)
Industry FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
N	98,505	98,505	98,505	81,361	81,361	81,361
Adjust R. sq.	0.0880	0.0881	0.0880	0.0808	0.0808	0.0808

This table shows the OLS regression of future cost of debt on *SDEM_tax* and other controls. *SDEM_tax* is an indicator that takes the value one if *SDEM=1*, the owner-manager's marginal labor income falls in the highest tax bracket, and the owner-manager's marginal dividend income falls in the highest tax bracket, and zero otherwise. Married owner-managers can use their spouses' tax allowances for dividend income, which we factor this into the identification of when the owner-manager pays dividends that fall in the highest dividend tax bracket. *LossAvoid_tax* is an indicator that takes the value one if *LossAvoid*=1 and *SDEM_tax*=1, and zero otherwise. *DecreaseAvoid_tax* is an indicator that takes the value one if *DecreaseAvoid*=1 and *SDEM_tax*=1, and zero otherwise. *premanagedROA, neg_premanagedROA, and premanagedOPCF* are re-defined with the *SDEM_tax* indicator instead of the SDEM indicator. The remaining variables are defined in appendix. Standard errors are clustered by firm and year (Gow et al. 2010). *t* statistics in parentheses. ***, **, * Represent significance levels at 0.01, 0.05, and 0.10, respectively (two-tailed test). All continuous variables are winsorized at the 1 and 99 percent level.

earnings, and match them with a portfolio of non-SDEM firms[37]. Specifically we match on the variables used earlier to estimate the propensity to use SDEM (Eq. (1)) and in addition include current *CostDebt.* We locate matches within the same fiscal year and industry, require non-

[37] For matching firms we require that they do not use SDEM for the years *t-2* through *t+2*, where *t* is the SDEM year of treatment firms (and thus the year the matching portfolio is generated).

missing *CostDebt* observations for the years *t-2* through *t+2* where *t* is the SDEM (matching) year, use a tight caliper of 0.005, 1-1 matching, and match without replacement.

After the matching procedure, the difference between the predicted probability of SDEM is <0.001 (p-value=1.000) indicating successful matching. For the treated sample we find support (i.e. a match) for 5,820 of 5,902 firm-year observations, for which the data are available. Descriptive statistics on the two matched samples are presented in Table B.9, Panel A, along with the difference in means of the matching variables. SDEM firms have lower *ΔsalaryTA* of 1.8 percentage points, indicating that SDEM firms relative to control firms use SDEM to increase *ROA* by 1.8 percentage points. Importantly, current year's cost of debt does not differ between the two samples. This finding is important: since the cost of debt in year *t* is not different between the two samples, future differences must be due to current changes affecting the sample firms' cost of debt.

Because SDEM firms have slightly higher *netsalaryROA* and slightly lower *SalaryTA*, in the second stage we include all matching variables to remove any remaining differences between the two samples (Shipman et al. 2017) and present the results in Panel B of Table B.9. In column (1) and (2) we observe that SDEM is (still) significantly related to future cost of debt with slightly lower magnitudes: firms using SDEM in year *t* obtain lower cost of debt in year *t+1* (*t+2*) of 14 bps (24 bps) (vs. 18 bps and 32 bps in the main analysis, respectively). Additionally, in column (3) we show the results of difference-in-difference estimation, and find that SDEM firms experience a decrease in the cost of debt from year *t* to year *t+1* of 27 bps relative to the control firms (i.e. the difference in difference), captured by the slope on *TREATED*POST*.

Additionally, in Figure B.4 we plot the cost of debt for the two samples for the years *t-2* through *t+2* and observe that the cost of debt are converging for the two samples preceding the SDEM year, whereas the cost of debt diverges following the SDEM year. Collectively, the results from the propensity score matching analysis provide compelling support for our prior conclusions.

Next, we replicate the above propensity score matching procedure for the firms using SDEM to avoid reporting a loss, but make some important changes: We match loss avoidance firms' pre-managed *ROA* with non-SDEM firms' reported *ROA*, and require non-SDEM firms' reported *ROA* to be below zero. That is, firms in the treated sample are firms with pre-managed earnings below zero, but reported earnings above zero (*LossAvoid*=1), and firms in the control sample have reported earnings below zero. In untabulated analyses, we find that *LossAvoid* is

Table B.9: Propensity score matching: Treated sample (SDEM) vs. control sample (PSM matched)

Panel A: Descriptive statistics

	Treated (SDEM)			Control (MATCH)			Treated-Control		
	N	mean	p50	N	mean	p50	Diff	t-value [diff]	Match var?
netsalaryROA	5,820	0.081	0.058	5,820	0.076	0.056	0.005**	(2.36)	YES
ΔnetsalaryROA	5,820	0.003	0.001	5,820	0.001	0.001	0.003	(1.37)	YES
DebtTA	5,820	0.490	0.497	5,820	0.488	0.492	0.003	(0.70)	YES
logTA	5,820	8.774	8.695	5,820	8.756	8.694	0.018	(0.96)	YES
netsalaryOPCF	5,820	0.065	0.058	5,820	0.060	0.054	0.004	(1.09)	YES
$SalaryTA_{t-1}$	5,820	0.108	0.080	5,820	0.112	0.076	-0.004**	(-2.04)	YES
$CashTA_{t-1}$	5,820	0.127	0.057	5,820	0.124	0.049	0.003	(0.91)	YES
Employees	5,762	13.506	9.000	5,757	13.680	8.000	-0.174	(-0.60)	NO
ΔSalaryTA	5,820	-0.016	-0.010	5,820	0.002	0.001	-0.018***	(-49.17)	EM†
$CostDebt_t$	5,820	0.044	0.038	5,820	0.044	0.040	-0.000	(-0.14)	YES
N							11,640		

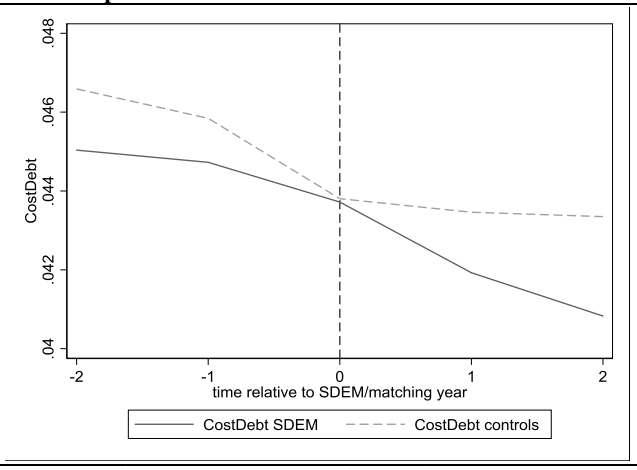
Panel B: Regressions

	Pooled OLS regressions		*DiD regression*
	(1) $CostDebt_{t+1}$	(2) $CostDebt_{t+2}$	(3) $CostDebt_{t+1}$
SDEM	**-0.0014*** **	**-0.0024*** **	
	(-2.63)	**(-3.37)**	
TREATED*POST			**-0.0027*** **
			(-4.37)
TREATED			0.0014***
			(3.67)
POST			0.0010
			(1.57)
premanagedROA	-0.0117**	-0.0130**	-0.0112**
	(-2.11)	(-2.38)	(-2.24)
ΔpremanagedROA	0.0043	0.0071	0.0061
	(0.87)	(1.19)	(1.22)
DebtTA	-0.0281***	-0.0300***	-0.0320***
	(-3.25)	(-3.90)	(-5.33)
$DebtTA^2$	0.0262***	0.0279***	0.0300***
	(3.38)	(4.08)	(6.26)
logTA	-0.0004	0.0005	-0.0004
	(-1.32)	(1.36)	(-1.03)
netsalaryOPCF	-0.0095***	-0.0073***	-0.0089***
	(-5.71)	(-5.31)	(-5.80)
$SalaryTA_{t-1}$	-0.0039	0.0055	-0.0027
	(-1.40)	(1.45)	(-0.76)
$CashTA_{t-1}$	-0.0122***	-0.0143***	-0.0129***
	(-5.29)	(-4.68)	(-7.27)
$CostDebt_t$	0.5303***	0.4207***	0.5104***
	(9.98)	(9.58)	(9.63)
Intercept	0.0334***	0.0300***	0.0340***
	(7.32)	(6.78)	(9.58)
N	11,640	11,640	19,454

This table shows the results of propensity score matching. Panel A shows descriptive statistics per SDEM firms and propensity score matched controls. Panel B shows the results from regressing CostDebt for the year *t+1* (*t+2*) on SDEM and matching variables in column (1) (column (2)). Column (3) shows the results of a difference-in-difference estimation using the matched sample and the control sample. *TREATED* is an indicator that takes the value one for the SDEM year *t* and *t-1*, and zero otherwise. *POST* is an indicator that takes the value one for the SDEM year *t* and matched firm-year *t*, and zero otherwise. The remaining variables are defined in appendix. In Panel B Standard errors are clustered by firm and year (Gow et al. 2010). *t* statistics in parentheses. ***, **, * Represent significance levels at 0.01, 0.05, and 0.10, respectively (two-tailed test). All continuous variables are winsorized at the 1 and 99 percent level. Beyond the variables listed above, treated observations are matched with control observations within the same industry and fiscal year.

† *ΔSalaryTA* is magnitude of SDEM and is hence not used as matching variable.

Figure B.4: Cost of debt over time: Sample of SDEM observations vs. PSM matched control sample



This figure shows the development in the cost of debt between a sample of SDEM firms and a propensity score matched control sample. Year t=0 (x-axis) refers to the SDEM year for SDEM firms, and the matching year for control firms. Control firms are matched with propensity score matching. Descriptive statistics of the two propensity score matched samples are presented in Table B.9.

associated with lower one-year-ahead cost of debt of 66 bps (p-value=0.015, two-tailed test), and a difference-in-difference estimator of 56 bps. However, the difference-in-difference estimator is insignificant at conventional levels (p-value=0.18, two-tailed test), which is likely because of the low sample size covering only 362 matched pairs (724 firm-years).

4.4.2 Addressing endogeneity:

To further corroborate causality between SDEM and future cost of debt we employ an endogenous switching model. Essentially, the decision to use SDEM is a firm-level choice (i.e. is not randomly distributed) and is potentially endogenously determined with the cost of debt. We use an endogenous binary-variable model, where in the first stage the choice to use SDEM (the propensity to use SDEM) is modelled, and in the second stage the impact of SDEM on future cost of debt is estimated[38]. The first stage is estimated using Eq. (1) (*SDEM* as a function of *DebtTA* and controls) extended with an instrumental variable, and the second stage is estimated using Eq. (2) ($CostDebt_{t+1}$ as a function of SDEM and controls). The approach we employ has similarities to the techniques used by Bharath et el. (2008) and Minnis (2011), but is more constrained as we do not allow covariates to vary between the group of SDEM firms and the group of other firms. The model is composed of an equation for the outcome $CostDebt_{t+1}$ and an equation for the endogenous treatment *SDEM*,

[38] We estimate the model using the stata command *etregress*

$$CostDebt_{it+1} = \delta \widehat{SDEM}_{it} + CONTROLS_{it}\beta + \epsilon_{it} \quad (3)$$

$$SDEM_{it} = \begin{cases} 1, \text{if } instrument_{it}\gamma + controls_{it}\gamma + u_{it} > 0 \\ 0, \text{otherwise} \end{cases}$$

The instrument we use – a variable that is related to the earnings management decision, but is not directly related to the cost of debt variable – is intended to proxy the probability that a manager has knowledge about managing earnings through SDEM. For this, we use the variable *ShareOfSDEM*; the share of managers within the same municipality that use SDEM. We require at least 50 identified firm-managers (the denominator) per municipality-year.

The results of both the first stage (Panel B) and second stage (Panel A) of the estimation are presented in Table B.10. The instrument we use, *ShareOfSDEM*, is highly significant in predicting *SDEM*. When using this estimation technique the impact of SDEM on future cost of debt *increases* in magnitude: the magnitude of SDEM increases to 35 bps (vs. 18 bps in the main analysis). In these regressions, the indicator *LossAvoid* is only marginally significant. This result is likely influenced by the fact that *SDEM* is instrumented, whereas *LossAvoid* (a subcategory of SDEM observations) is not.

4.5 Interview evidence

To this end, we have provided a battery of empirical evidence supporting our hypothesis that SDEM firms are able to obtain cost of debt benefits. To explore the channel through which firms are able to obtain cost of debt benefits, we conduct interviews with four of the five Danish "systematic important" banks and thus our interviews cover a very large share of the Danish loan market. We provide descriptive information as well as an interview guide and notes from the interviews in appendix.

From these interviews we learn the following key points, largely supporting our findings: (1) Banks to a large extent rely on financial statements and reported numbers. Financial statements contribute to about 70-80% of the credit score. Some banks extract financial statement information from central databases, and some manually enters the information based on publicly available reports. Both sources contain accounting information *as reported*. (2) Banks can and do adjust reported numbers. Adjustments typically happen on the balance sheet, and lenders typically look for changes in accounting standards or unexplained changes in working capital. (3) Banks collect private information such as revenue data and EBITDA data (which are not always publicly disclosed in the annual report), and soft information such as assessments of

Table B.10: Endogenous choice model

Panel A: Second Stage

	(1) $CostDebt_{t+1}$	(2) $CostDebt_{t+1}$	(3) $CostDebt_{t+1}$
$\widehat{SDEM}$	**-0.0035*** **	**-0.0033*** **	**-0.0035*** **
	(-4.65)	**(-4.23)**	**(-4.52)**
LossAvoid		-0.0029*	
		(-1.73)	
DecreaseAvoid			-0.0002
			(-0.17)
premanagedROA	-0.0169***	-0.0169***	-0.0169***
	(-11.30)	(-11.31)	(-11.29)
neg_premanagedROA	0.0016***	0.0017***	0.0016***
	(4.05)	(4.35)	(4.06)
premanagedROA *neg_premanagedROA	0.0176***	0.0188***	0.0176***
	(3.72)	(3.92)	(3.72)
DebtTA	-0.0038***	-0.0038***	-0.0038***
	(-5.70)	(-5.72)	(-5.70)
logTA	-0.0002*	-0.0002*	-0.0002*
	(-1.81)	(-1.86)	(-1.82)
premanagedOPCF	-0.0014**	-0.0014**	-0.0014**
	(-2.21)	(-2.22)	(-2.21)
StdROA	0.0085***	0.0085***	0.0085***
	(5.41)	(5.41)	(5.41)
PPE	-0.0023***	-0.0023***	-0.0023***
	(-4.86)	(-4.88)	(-4.86)
CashTA	-0.0142***	-0.0142***	-0.0142***
	(-16.64)	(-16.64)	(-16.64)
$CostDebt_t$	0.5096***	0.5096***	0.5096***
	(68.16)	(68.15)	(68.16)
Intercept	0.0350***	0.0350***	0.0350***
	(20.76)	(20.77)	(20.76)
Industry FE	YES	YES	YES
Year FE	YES	YES	YES

Panel B: First Stage

	(4) SDEM	(5) SDEM	(6) SDEM
ShareOfSDEM	**6.4639*** **	**6.4573*** **	**6.4663*** **
	(21.61)	**(21.60)**	**(21.63)**
SmallLoss		0.1239***	
		(4.72)	
SmallDecrease			-0.0399*
			(-1.91)
DebtTA	0.2958*	0.3095**	0.2939*
	(1.95)	(2.03)	(1.93)
$DebtTA^2$	-0.4899***	-0.5094***	-0.4875***
	(-3.22)	(-3.34)	(-3.20)
netsalaryROA	0.2468***	0.2929***	0.2416***
	(3.18)	(3.75)	(3.12)
ΔnetsalaryROA	-0.4137***	-0.4209***	-0.4155***
	(-5.42)	(-5.50)	(-5.45)
netsalaryOPCF	0.1879***	0.1869***	0.1881***
	(5.49)	(5.46)	(5.50)
$CashTA_{t-1}$	0.1231***	0.1239***	0.1228***
	(2.85)	(2.87)	(2.84)

$SalaryTA_{t-1}$	0.7200***	0.7222***	0.7168***
	(7.92)	(7.94)	(7.88)
logTA	0.1468***	0.1471***	0.1476***
	(15.37)	(15.38)	(15.45)
Intercept	-3.2545***	-3.2769***	-3.2552***
	(-27.74)	(-27.93)	(-27.74)
Industry FE	YES	YES	YES
Year FE	YES	YES	YES
N	81,819	81,819	81,819

This table shows both the first and second stage of the endogenous choice model estimation.

First stage: *ShareOfSDEM* is the instrument, and is the percentage of firms within the owner-manager's residential municipality that use SDEM, and is calculated per municipality year. *SDEM* is an indicator of salary dividend earnings management. *SmallLoss* is an indicator that takes the value one if *netsalaryROA*∈[-0.02;0[, and zero otherwise. *SmallDecrease* is an indicator that takes the value one if *ΔnetsalaryROA*∈[-0.02;0[, and zero otherwise. The remaining variables are defined in appendix.

Second stage: $\widehat{SDEM}$ is the instrumented SDEM variable from the first stage. *CostDebt* is financial expenses scaled by average liabilities net of trade payables. *LossAvoid* indicates that firms use SDEM to avoid reporting losses. *DecreaseAvoid* indicates that firms use SDEM to avoid reporting earnings decreases. The remaining variables are defined in appendix.

Standard errors are clustered by firm. *t* statistics in parentheses. ***, **, * Represent significance levels at 0.01, 0.05, and 0.10, respectively (two-tailed test). All continuous variables are winsorized at the 1 and 99 percent level.

management quality, market position, supply chain, customers, suppliers, and other general risks. However, no bank indicated that salary was consistently collected. (4) Banks are concerned about owner-managers paying an abnormally high salary and hence squeeze dry the company, rather than owner-managers using salary strategically to influence reported earnings. (5) Salary and dividend levels are not really a concern if the borrower firm's performance is good. (6) Credit scoring models of banks "penalize" firms with negative income. (7) The majority the banks agree that SDEM could induce benefits in the form of cost of debt. Further, Danish banks rely on internally developed credit scoring models rather than ratings provided by rating agencies, at least for small engagements.

5. LIMITATIONS, DISCUSSION, AND CONCLUSION

5.1 Limitations

5.1.1 Potential omitted variables:

Prior literature identifies several variables as significant factors influencing a firm's loan interest expense, which are unavailable for the sample firms. Such variables include loan terms, collateral, distance to the bank, length of bank relationship, and audit (including quality of audit). We point out, however, that potential omitted variables driving our results must correlate positively with SDEM and negatively with cost of debt. Also, alternative stories must explain

the changes in cost of debt that we observe when we use propensity score matching and difference-in-difference estimations.

The presence of an audit as an explanation for the results does not seem plausible. For example, Minnis (2011) finds that firms with audited financial statements obtain lower cost of debt, and Becker et al. (1998) and Caramanis and Lennox (2008) document a negative relation between audit and earnings management. If audited financial statements drive the results we observe, the choice to audit must coincide with the year in which the firm uses SDEM, which seems counterintuitive to prior research.

5.1.2 Limitations of the SDEM measure:

Albeit we view SDEM as a novel and direct way of identifying earnings management in owner-managed firms, and find that the prevalence of SDEM is higher around the zero earnings benchmark and preceding new debt issuance (i.e. events that prior research links to earnings management) we acknowledge several limitations of the SDEM measure: (1) We do not take into account the potential impact of non-salary expenses, such as social security contributions. However, in Denmark healthcare is available to everybody and is not paid as a separate insurance (independent on your tax contribution/salary) and other social security contribution are low compared to most other countries[39], and are often not linearly linked to the salary level. (2) We do not take into account the timing of tax payments: Tax related to firm losses are not paid out immediately but are carried forward to offset future firm income. Further, we cannot observe whether managers pay out dividends to their private account or pay out dividends to their holding company. In the latter case the owner-manager can shift the tax burden to future years. Albeit timing issues exist, the effective tax rate over time is not changed. (3) Due to data limitations we estimate dividends from changes in equity and income figures, and thus risk that dividend calculations are distorted by other comprehensive income such as fair value adjustments recognized directly on equity. (4) We observe only salary paid from the legal entity itself (the operational company) and hence we do not take into account in our analysis any salary paid from related (for example holding) companies.

[39] https://www.bdo.dk/en-gb/insights/tax-and-vat/danish-social-security-contributions

5.2 Discussion and conclusion

In this paper we investigate earnings management practices in owner-managed firms: a setting in which manager-shareholder agency conflicts are practically absent, but in which agency conflicts between the owner-manager and lenders are severe. We use a novel measure of earnings management (when owner-managers shift income from salary to dividends) and exploit a unique Danish setting in which owner-managers have discretion to shift income at no or at only marginal direct cost, and where researchers can gain access to salary data.

We use this setting to generate a novel earnings management measure, the SDEM measure, and find that owner-managed firms indeed use earnings management, and are able to obtain cost of debt benefits by doing so. Further, such behavior is strengthened when pre-managed earnings are just below zero, and firms using SDEM to transform a loss into a reported profit almost triple their SDEM induced cost of debt benefit.

We contribute to the earnings management literature and the commercial lending literature by addressing the severe agency conflicts arising between firm managers and lenders when the firm-manager is also the owner of the firm, and by showing that these agency conflicts influence the financial reporting of owner-managed firms. Despite these rather obvious agency conflicts, we show that owner-managers are on average successful in misleading even sophisticated investors (i.e. the bank) and obtain cost of debt benefits. This finding applies only to sophisticated earnings management (SDEM, where owner-salary levels are not publicly available) but not to accrual earnings management.

We also extend the earnings management literature by introducing a novel measure of earnings management particularly relevant for small, private firms. Although not applicable in all countries, we show in appendix that tax alignment is present in several large OECD countries, such as Australia, New Zealand, Canada, Spain, Germany, and Norway. Also, we make a contribution to the literature on earnings discontinuities, by providing evidence on owner-managed firms' use of earnings management to avoid negative earnings reports, but not to avoid earnings decreases, and that avoiding negative earnings reports (but that avoiding earnings decreases does not) provide economic benefits to the firm in the form of significantly lower interest rates.

Our findings have implications for banks and other users of financial reports (such as suppliers, customers, and potential investors) and are rather obvious: they should be aware of the severe lack of governance mechanisms in owner-managed firms and its diverted effects on

the financial reporting. The findings also have regulatory implications: For example, the conceptual framework of IASB states that the objective of financial reporting is to "provide financial information that is useful to users in making decisions relating to providing resources to the entity"[40], and our findings raise the question to which extend owner-managed firms should disclose specific financial information, such as manager salary or significant salary changes.

[40] https://www.ifrs.org/-/media/project/conceptual-framework/fact-sheet-project-summary-and-feedback-statement/conceptual-framework-project-summary.pdf

6. REFERENCES

Agarwal, S., and R. Hauswald. 2010. Distance and private information in lending. *Review of Financial Studies* 23 (7): 2758–2788.

Ali, A., T. Y. Chen, and S. Radhakrishnan. 2007. Corporate disclosures by family firms. *Journal of Accounting and Economics* 44 (1–2): 238–286.

Allee, K. D., and T. L. Yohn. 2009. The Demand for Financial Statements in an Unregulated Environment: An Examination of the Production and Use of Financial Statements by Privately Held Small Businesses. *The Accounting Review* 84 (1): 1–25.

Badertscher, B. A., D. W. Collins, and T. Z. Lys. 2012. Discretionary accounting choices and the predictive ability of accruals with respect to future cash flows. *Journal of Accounting and Economics* 53 (1–2): 330–352.

Ball, R. 2013. Accounting informs investors and earnings management is rife: Two questionable beliefs. *Accounting Horizons* 27 (4): 847–853.

Ball, R., and L. Shivakumar. 2006. The role of accruals in asymmetrically timely gain and loss recognition. *Journal of Accounting Research* 44 (2): 207–242.

Barth, M. E., J. A. Elliott, and M. W. Finn. 1999. Market Rewards Associated with Patterns of Increasing Earnings. *Journal of Accounting Research* 37 (2): 387.

Bartov, E., D. Givoly, and C. Hayn. 2002. The rewards to meeting or beating earnings expectations. *Journal of Accounting and Economics* 33 (2): 173–204.

Basu, S. 2013. Devil's advocate: The most incorrect beliefs of accounting experts. *Accounting Horizons* 27 (4): 841–846.

Vander Bauwhede, H., M. De Meyere, and P. Van Cauwenberge. 2015. Financial reporting quality and the cost of debt of SMEs. *Small Business Economics* 45 (1): 149–164.

Beaver, W. H., M. F. McNichols, and J.-W. Rhie. 2005. Have financial statements become less informative? Evidence from the ability of financial ratios to predict bankruptcy. *Review of Accounting Studies* 10 (1): 93–122.

Becker, C. L., M. L. DeFond, J. Jiambalvo, and K. R. Subramanyam. 1998. The Effect of Audit Quality on Earnings Management. *Contemporary Accounting Research* 15 (1): 1–24.

Bennedsen, M., and K. M. Nielsen. 2015. *Ejerledelse I Danmark, Rapport 1: Ejerledelse - baggrund og udbredelse*.

Berger, P. G., M. Minnis, and A. Sutherland. 2017. Commercial lending concentration and bank expertise: Evidence from borrower financial statements. *Journal of Accounting and Economics* 64 (2–3): 253–277.

Bharath, S. T., J. Sunder, and S. V. Sunder. 2008. Accounting quality and debt contracting. *The Accounting Review* 83 (1): 1–28.

Burgstahler, D., and E. Chuk. 2017. What Have We Learned About Earnings Management? Integrating Discontinuity Evidence. *Contemporary Accounting Research* 34 (2): 726–749.

Burgstahler, D., and I. Dichev. 1997. Earnings management to avoid earnings decreases and losses. *Journal of Accounting and Economics* 24 (1): 99–126.

Caramanis, C., and C. Lennox. 2008. Audit effort and earnings management. *Journal of Accounting and Economics* 45 (1): 116–138.

Cassar, G., C. D. Ittner, and K. S. Cavalluzzo. 2015. Alternative information sources and information asymmetry reduction: Evidence from small business debt. *Journal of Accounting and Economics* 59 (2–3): 242–263.

Chen, W., P. Hribar, and S. Melessa. 2018. Incorrect Inferences When Using Residuals as Dependent Variables. *Journal of Accounting Research* 56 (3): 751–796.

Chin, C.-L., M.-H. Chen, and P.-H. Yu. 2018. Does meeting analysts' forecasts matter in the private loan market? *Journal of Empirical Finance* 48: 321–340.

Christensen, H. B., and V. V. Nikolaev. 2012. Capital versus performance covenants in debt contracts. *Journal of Accounting Research* 50 (1): 75–116.
Coppens, L., and E. Peek. 2005. An analysis of earnings management by European private firms. *Journal of International Accounting, Auditing and Taxation* 14 (1): 1–17.
Dechow, P., W. Ge, and C. Schrand. 2010. Understanding earnings quality: A review of the proxies, their determinants and their consequences. *Journal of Accounting and Economics* 50 (2): 344–401.
Dichev, I. D., J. R. Graham, C. R. Harvey, and S. Rajgopal. 2013. Earnings quality: Evidence from the field. *Journal of Accounting and Economics* 56 (2–3): 1–33.
Donelson, D. C., R. Jennings, and J. Mcinnis. 2017. Financial Statement Quality and Debt Contracting: Evidence from a Survey of Commercial Lenders. *Contemporary Accounting Research* 34 (4): 2051–2093.
Dube, S. 2019. R&D Investments and Forward-Looking Disclosures. *Presented at the AAA Annual Meeting 2019*.
Durtschi, C., and P. Easton. 2005. Earnings management? the shapes of the frequency distributions of earnings metrics are not evidence ipso facto. *Journal of Accounting Research* 43 (4): 557–592.
———. 2009. Earnings management? erroneous inferences based on earnings frequency distributions. *Journal of Accounting Research* 47 (5): 1249–1281.
Dye, R. A. 2002. Classifications Manipulation and Nash Accounting Standards. *Journal of Accounting Research* 40 (4): 1125–1162.
Dyreng, S. D., R. Vashishtha, and J. Weber. 2017. Direct Evidence on the Informational Properties of Earnings in Loan Contracts. *Journal of Accounting Research* 55 (2): 371–406.
Eberhart, A. C., W. F. Maxwell, and A. R. Siddique. 2004. An Examination of Long-Term Abnormal Stock Returns and Operating Performance Following R&D Increases. *The Journal of Finance* 59 (2): 623–650.
Francis, J., R. LaFond, P. Olsson, and K. Schipper. 2005. The market pricing of accruals quality. *Journal of Accounting and Economics* 39 (2): 295–327.
Gassen, J., and R. U. Fülbier. 2015. Do Creditors Prefer Smooth Earnings? Evidence from European Private Firms. *Journal of International Accounting Research* 14 (2): 151–180.
Ghosh, A. Al, and C. Y. Tang. 2015. Assessing financial reporting quality of family firms: The auditors' perspective. *Journal of Accounting and Economics* 60 (1): 95–116.
Gilliam, T. A., F. Heflin, and J. S. Paterson. 2015. Evidence that the zero-earnings discontinuity has disappeared. *Journal of Accounting and Economics* 60 (1): 117–132.
Gopalan, R., and S. Jayaraman. 2012. Private control benefits and earnings management: Evidence from insider controlled firms. *Journal of Accounting Research* 50 (1): 117–157.
Gow, I. D., G. Ormazabal, and D. J. Taylor. 2010. Correcting for cross-sectional and time-series dependence in accounting research. *The Accounting Review* 85 (2): 483–512.
Gunny, K. A. 2010. The relation between earnings management using real activities manipulation and future performance: Evidence from meeting earnings benchmarks. *Contemporary Accounting Research* 27 (3): 855–888.
Guttman, I., O. Kadan, and E. Kandel. 2006. A Rational Expectations Theory of Kinks in Financial Reporting. *The Accounting Review* 81 (4): 811–848.
Haw, I. M., J. J. Lee, and W. J. Lee. 2014. Debt Financing and Accounting Conservatism in Private Firms. *Contemporary Accounting Research* 31 (4): 1220–1259.
Hope, O.-K., W. B. Thomas, and D. Vyas. 2017. Stakeholder demand for accounting quality and economic usefulness of accounting in U.S. private firms. *Journal of Accounting and Public Policy* 36 (1): 1–13.
Jackson, A. B. 2018. Discretionary Accruals: Earnings Management.. or Not? *Abacus* 54 (2):

136–153.
Jacob, J., and B. N. Jorgensen. 2007. Earnings management and accounting income aggregation. *Journal of Accounting and Economics* 43 (2–3): 369–390.
Jiang, J. (Xuefeng). 2008. Beating Earnings Benchmarks and the Cost of Debt. *The Accounting Review* 83 (2): 377–416.
Jung, B., N. Soderstrom, and Y. S. Yang. 2013. Earnings smoothing activities of firms to manage credit ratings. *Contemporary Accounting Research* 30 (2): 645–676.
Kasznik, R., and M. F. McNichols. 2002. Does Meeting Earnings Expectations Matter? Evidence from Analyst Forecast Revisions and Share Prices. *Journal of Accounting Research* 40 (3): 727–759.
Kaya, D., and P. Pronobis. 2016. The benefits of structured data across the information supply chain: Initial evidence on XBRL adoption and loan contracting of private firms. *Journal of Accounting and Public Policy* 35 (4): 417–436.
Kothari, S. P., A. J. Leone, and C. E. Wasley. 2005. Performance matched discretionary accrual measures. *Journal of Accounting and Economics* 39 (1): 163–197.
Kraft, P. 2015. Rating agency adjustments to GAAP financial statements and their effect on ratings and credit spreads. *The Accounting Review* 90 (2): 641–674.
Larson, C. R., R. Sloan, and J. Zha Giedt. 2018. Defining, measuring, and modeling accruals: a guide for researchers. *Review of Accounting Studies* 23 (3): 827–871.
Lisowsky, P., M. Minnis, and A. Sutherland. 2017. Economic Growth and Financial Statement Verification. *Journal of Accounting Research* 55 (4): 745–794.
Liu, A. Z., K. R. Subramanyam, J. Zhang, and C. Shi. 2018. Do firms manage earnings to influence credit ratings? Evidence from negative credit watch resolutions. *The Accounting Review* 93 (3): 267–298.
Minnis, M. 2011. The Value of Financial Statement Verification in Debt Financing: Evidence from Private U.S. Firms. *Journal of Accounting Research* 49 (2): 457–506.
Minnis, M., and A. Sutherland. 2017. Financial Statements as Monitoring Mechanisms: Evidence from Small Commercial Loans. *Journal of Accounting Research* 55 (1): 197–233.
OECD. 2017a. *Financing SMEs and Entrepreneurs 2017: An OECD Scoreboard*. Financing SMEs and Entrepreneurs. OECD Publishing.
———. 2017b. *Entrepreneurship at a Glance 2017*. Entrepreneurship at a Glance. OECD Publishing.
Shipman, J. E., Q. T. Swanquist, and R. L. Whited. 2017. Propensity score matching in accounting research. *The Accounting Review* 92 (1): 213–244.
Shumway, T. 2001. Forecasting bankruptcy more accurately: A simple hazard model. *The Journal of Business* 74 (1): 101–124.
Srinidhi, B. N., S. He, and M. Firth. 2014. The effect of governance on specialist auditor choice and audit fees in U.S. family firms. *The Accounting Review* 89 (6): 2297–2329.
Villalonga, B., and R. Amit. 2006. How do family ownership, control and management affect firm value? *Journal of Financial Economics* 80 (2): 385–417.
Wang, D. 2006. Founding family ownership and earnings quality. *Journal of Accounting Research* 44 (3): 619–656.

7. APPENDIX

Table B.11: Variable definitions

Variable	Measure of	Definition
Earnings management, earnings benchmarks, and earnings variables		
SDEM	Indicator of earnings management	*SDEM* is an indicator variable that takes the value one if (i) salary is cut by min. 5%, (ii) salary is cut by minimum 10,000 DKK, (iii) the salary decrease does not shift the owner-manager's marginal labor income to a lower tax bracket, and (iv) $[\Delta dividends_t \; or \; \Delta dividends_{t+1}]$ are increased by min. $SalaryDecrease * (1 - taxrate_{company})$, and zero otherwise.
TA	Total assets	
ROA	ROA as reported	$ROA = \frac{Net\ Income}{TA_{t-1}}$
netsalaryROA	ROA before salary changes	$netsalaryROA = \frac{Net\ Income - \Delta Salary}{TA_{t-1}}$
premanagedROA	ROA adjusted for salary if SDEM=1	$premanagedROA = \frac{Net\ Income - \Delta Salary}{TA_{t-1}}$ $if\ SDEM = 1$ $else\ premanagedROA = ROA$
ΔROA	Changes in ROA	$\Delta ROA = \frac{Net\ Income_t - Net\ Income_{t-1}}{TA_{t-1}}$
ΔnetsalaryROA	Changes in ROA before salary changes	$\Delta netsalaryROA = \frac{Net\ Income_t - \Delta Salary - Net\ Income_{t-1}}{TA_{t-1}}$
ΔpremanagedROA	Changes in ROA adjusted for salary if SDEM=1	$\Delta premanagedROA = \frac{Net\ Income_t - \Delta Salary - Net\ Income_{t-1}}{TA_{t-1}}$ $if\ SDEM = 1$ $else\ \Delta premanagedROA = \Delta ROA$
LossAvoid	Indicator of beating the zero earnings benchmark by using SDEM	*LossAvoid* is an indicator variable that takes the value one if *premanagedROA*<0 and *reportedROA*≥0, and zero otherwise.
DecreaseAvoid	Indicator of beating the last year's earnings benchmark by using EM	*DecreaseAvoid* is an indicator variable that takes the value one if *ΔpremanagedROA*<0 and *ΔreportedROA*≥0, and zero otherwise.
SalaryTA	Potential for SDEM	$SalaryTA = \frac{Salary}{TA_{t-1}}$
ΔSalaryTA	Impact of SDEM on ROA	$\Delta SalaryTA = \frac{\Delta Salary}{TA_{t-1}}$
SmallLoss	Indicator of small pre-managed loss	*SmallLoss* is an indicator that takes the value one if *netsalaryROA*∈[-0.02;0[, and zero otherwise

SmallDecrease	Indicator of small pre-managed earnings decrease	*SmallDecrease* is an indicator that takes the value one if *ΔnetsalaryROA*∈[-0.02;0[, and zero otherwise
Cost of debt and leverage variables		
DebtTA	Debt to total assets	$DebtTA = \frac{Total\ Liabilities - Trade\ Payables}{TA}$
TLTA	Total liabilities to total assets	$TLTA = \frac{Total\ Liabilities}{TA}$
CostDebt	Cost of debt	Financial expenses to average debt net of trade payables. $CostDebt = \frac{Financial\ expenses}{(Debt_t + Debt_{t-1})/2}$ Where *Debt=Total Liabilities – Trade Payables*
NewDebt	Indicator that the firm raises new debt in the following year	The calculation is based on the debt used to define *DebtTA* and *CostDebt*. $NewDebt = 1\ if\ \frac{(Debt_t - Debt_{t-1})}{TA_{t-1}} > 0.05$ else, *NewDebt* = 0
Components of ROA		
NOA	Net operating assets (the "magnitude" of accrual-related line items)	$NOA = \frac{NOA\_BS_t - NOA\_BS_{t-1}}{TA_{t-1}}$ Where *NOA_BS* is Net Operating Assets before scaling $NOA\_BS = OA - OL$ Where *OA* = Operating Assets = total assets -cash and cash equivalents -properties held for sale -receivables from closely held parties *OL* = Operating Liabilities = total liabilities -long term interest bearing debt -current part of mortgage -current part of bank debt -liabilities to closely related parties -dividends if included in current liabilities
OPACC	Operating accruals	$OPACC = \frac{NOA\_BS_t - NOA\_BS_{t-1}}{TA_{t-1}}$ Where NOA_BS is NOA before scaling with total assets
OPCF	Operating cash flow (all cash flows generated from operating activities)	$OPCF = \frac{Net\ Income_t - (NOA\_BS_t - NOA\_BS_{t-1})}{TA_{t-1}}$

netsalaryOPCF	*OPCF* before salary changes	$netsalaryOPCF = \frac{OPCF\_BS - \Delta Salary}{TA_{t-1}}$ Where $OPCF\_BS$ is *OPCF* before scaling with total assets
premanagedOPCF	*OPCF* adjusted for salary if SDEM=1	$premanagedOPCF = \frac{OPCF\_BS - \Delta Salary}{TA_{t-1}}$ $if\ SDEM = 1$ $else\ premanagedOPCF = OPCF$
DACC	Discretionary accruals	Residuals from the following estimation model $OPACC_{it} = \alpha_0 + \beta_1 growth_{it} + \beta_2 growth_{it} * NOA_{it-1} + \beta_3 OPCF_{it-2} + \beta_4 OPCF_{it-1} + \beta_5 OPCF_{it} + \beta_6 negOPCF_{it} + \beta_7 OPCF_{it} * negOPCF_{it} + \beta_8 OPCF_{it+1} + \beta_9 OPCF_{it+2} + \beta_{10} ROA_{it-1} + \sum INDUSTRY + \sum YEAR + \varepsilon_{it}$ *negOPCF* is an indicator of negative *OPCF*. Growth is either: Gross profit growth: [ΔGP] $\Delta GP = \frac{gross\ profit_t - gross\ profit_{t-1}}{total\ assets_{t-1}}$ Or Employee growth [ΔEMPL] $\Delta EMPL = \frac{Employees_t - Employees_{t-1}}{Employees_{t-1}}$ Where *Employees* is the number of full time equivalent employees. $DACC_{GP}$ refers to the residuals estimated with *ΔGP*. $DACC_{EMPL}$ refers to the residuals estimated with *ΔEMPL.*
NACC	Normal accruals	The fitted values from the OPACC regression above.
Control variables		
StdROA	Smoothness of earnings	Standard deviation of ROA. Calculated using the five most recent years' data, requiring at least three years' observations.
PPE	Asset composition	Tangible fixed assets to total assets.
CashTA	Asset composition	$CashTA = \frac{Cash\ and\ cash\ equivalents}{TA}$
FutureROA[t+1;t+2]	Future profitability	Average of ROA_{t+1} and ROA_{t+2}
logTA	Size	Logarithm of total assets.
ShareOfSDEM	Instrument: Share of managers using SDEM within the same municipality. Measure of "probability of having knowledge of SDEM"	$ShareOfSDEM_{m,t} \frac{SDEM\ observations_{m,t}}{Identified\ CEOs\ in\ the\ municipality_{m,t}}$ The number of SDEM observations within municipality *m* in time *t*, scaled by the total number of identified CEOs within municipality *m* in time *t*.
Personals		
PersEquityTA	Owner-manager's personal equity scaled by total assets	The variable proxies the wealth of the owner-manager on the individual level, and potential for personal collateral relative to the size of the company. $PersEquityTA = \frac{PersEquity}{TA}$ *PersEquity*=Personal Assets-Personal Liabilities

		Where, Personal Assets include bank deposits, traded securities (shares, bonds, etc.), and cash value of property/house. Boat value, car value, and pensions are not included in the calculation. Personal Liabilities include all debt to financial institutions, including bank debt, debt to other financial institutions, study debt, and mortgage. Private debt (for example debt to parents) data are naturally not available.
Age	Owner-manager's age	
Log(age)	Logarithm of *Age*	
Criminal	Owner-manager has a criminal record	*Criminal* is an indicator variable that takes the value one if the owner-manager has a prior criminal record, and zero otherwise. Traffic-related offences (for example speeding tickets or parking tickets) are excluded from the definition.
Female	Owner-manager is female	*Female* is an indicator variable that takes the value one if the owner-manager is female, and zero otherwise.
HighEduc	Owner-manager has a university education (Bachelor, Master, PhD)	*HighEduc* is an indicator variable that takes the value one if the owner-manager holds either a bachelor's degree, a master's degree, or a PhD degree, and zero otherwise.
Other constructs		
DIV	Dividends	$Net\ income - (\Delta SHF - \Delta SHCAP)$ Where *SHF* = shareholders' funds (equity) *SHCAP* = share capital
ΔGP	Gross profit growth (activity level)	$\Delta GP = \frac{gross\ profit_t - gross\ profit_{t-1}}{total\ assets_{t-1}}$
ΔEMPL	Employee growth (activity level)	$\Delta EMPL = \frac{Employees_t - Employees_{t-1}}{Employees_{t-1}}$ Where *Employees* is measured as full time equivalents.

CEO identification strategy

Private firms are mandated to file to the Danish Business Authority the names, addresses and CPR-numbers (unique personal identification numbers) of the firm's executive management, but are not mandated to state the specific roles of each management team member, i.e. sometimes the data do not reveal the CEO, CFO, etc. The majority (89.86%) of CEOs are identified because there is only one executive manager identified per firm-year. For the remaining non-unique firm-year observations we identify the CEO as (numbers in parenthesis denote the percentage of observations identified through each step): (1) The executive who has filed with the Danish Business Authority his/her status as CEO (and not just "executive") (1.46%), (2) the executive who has filed with the Danish Business Authority his/her status as "director" instead of "member of direction" (0.08%), (3) the executive with the most ownership (4.01%), (4) the executive with the highest salary (4.02%), (5) the executive with the highest position classification provided by Statistics Denmark[41] (0.35%), (6) the executive with longest tenure (0.21%). Any remaining firms in which a single CEO is not yet identified are removed from the sample.

Discretionary accruals estimation

We estimate discretionary accruals to proxy for discretionary earnings management and accrual quality. In the estimation we follow Larson et al. (2018) and implement minor adjustments.

$$OPACC_{it} = \alpha_0 + \beta_1 growth_{it} + \beta_2 growth_{it} \times NOA_{it-1} + \beta_3 OPCF_{it-2} + \beta_4 OPCF_{it-1} + \beta_5 OPCF_{it} + \beta_6 negOPCF_{it} + \beta_7 OPCF_{it} \times negOPCF_{it} + \beta_8 OPCF_{it+1} + \beta_9 OPCF_{it+2} + \beta_{10} ROA_{it-1} + \sum INDUSTRY + \sum YEAR + \varepsilon_{it} \quad (4)$$

Where *i* denotes the firm and *t* denotes the fiscal year. *OPACC* is total operating accruals, *OPCF* is total operating cash flow, and *NOA* is net operating assets. Growth is either the change in gross profit scaled by lagged assets [*ΔGP*] or the year on year percentage growth in employees [*ΔEmpl*]. *negOPCF* indicates negative *OPCF* and serves to control for asymmetric timeliness in recognition of good and bad news (Ball and Shivakumar 2006)[42]. We include lagged *ROA* to control for the impact of performance on the accrual process (Kothari et al. 2005). *INDUSTRY*

[41] We learn from discussions with Statistics Denmark representatives that their position classification data are low quality, and use only this approach as a last resort

[42] Larson et al. (2018) use market-to-lagged-book values (which are obviously not available for private firms) to control for asymmetry in profit/loss recognition.

and *YEAR* indicator variables control for fixed effects. *OPACC*, *OPCF* and *NOA* are scaled by lagged assets.

We estimate Eq. (4) with OLS and use the residuals as measure of discretionary accruals. The results of this regression are listed in Table B.12. We note that that all coefficients are significant and with the expected sign (see Larson et al. 2018), and observe a high adjusted R^2 of 0.78-0.85[43].

Table B.12: Accrual estimation

	(1) OPACC	(2) OPACC
ΔGP	0.2488***	
	(30.34)	
ΔGP*NOA_{t-1}	0.0306***	
	(3.06)	
ΔEmpl		0.0408***
		(15.09)
ΔEmpl*NOA_{t-1}		0.0133***
		(3.07)
$OPCF_{t-2}$	0.0381***	0.0382***
	(20.85)	(12.58)
$OPCF_{t-1}$	0.0635***	0.0633***
	(15.85)	(14.44)
OPCF	-0.7686***	-0.6750***
	(-108.65)	(-57.44)
$OPCF_{t+1}$	0.0584***	0.0716***
	(13.99)	(12.66)
$OPCF_{t+2}$	0.0279***	0.0342***
	(15.34)	(13.07)
ROA_{t-1}	0.3609***	0.2681***
	(29.25)	(14.39)
negOPCF	-0.0043***	-0.0059***
	(-3.39)	(-4.17)
negOPCF*OPCF	-0.1617***	-0.2551***
	(-21.25)	(-28.36)
Intercept	0.0189***	0.0228***
	(4.76)	(3.95)
Industry FE	YES	YES
Year FE	YES	YES
N	80,699	80,006
Adjust R. sq.	0.8509	0.7882

This table shows the OLS regression of operating accruals on variables that explain accruals. *OPACC* is total operating accruals. *ΔGP* is the change in gross profit scaled by lagged assets. *ΔEmpl* is the change in the number of full-time equivalent employees scaled by lagged number of employees. *NOA* is net operating assets. *OPCF* is cash flows calculated from the balance sheet approach including all line items related to operations, scaled by lagged assets. *ROA* is return on assets. *negOPCF* is an indicator variable for negative *OPCF*. Standard errors are clustered by firm and year (Gow et al. 2010). *t* statistics in parentheses. ***, **, * Represent significance levels at 0.01, 0.05, and 0.10, respectively (two-tailed test). All continuous variables are winsorized at the 1 and 99 percent level.

[43] Larson et al. (2018) find that their determinants explain 38.5 percent of the variation in operating accruals (table 5). The fit statistics we observe are likely affected by the inclusion of industry and year fixed effects.

Marginal tax rates over time, Denmark

	Labor income tax					Capital income								Comparison (labor vs. capital income)					
						Dividend income					Company tax	Dividend + company tax			Lowest dividend bracket (dividend)			Highest dividend bracket (dividend)		
	Percent, tax bracket			Thresholds (DKKt)		Percent, tax bracket			Thresholds (DKKt)			Percent, tax bracket			*Labor tax bracket:*			*Labor tax bracket:*		
Year	1	2	3	1 to 2	2 to 3	1	2	3	1 to 2	2 to 3		1	2	3	1	2	3	1	2	3
2018	39.52%		56.49%		498.9	27%	42%		52.9		22.0%	43.1%	54.8%	n.a.	-3.5%		13.4%	-15.2%		**1.7%**
2017	40.26%		56.43%		479.6	27%	42%		51.7		22.0%	43.1%	54.8%	n.a.	-2.8%			-14.5%		**1.7%**
2016	40.30%		56.44%		467.3	27%	42%		50.6		22.0%	43.1%	54.8%	n.a.	-2.8%		13.4%	-14.5%		**1.7%**
2015	40.29%		56.45%		459.2	27%	42%		49.9		23.5%	44.2%	55.6%	n.a.	-3.9%		12.3%	-15.3%		**0.8%**
2014	40.11%		56.22%		449.1	27%	42%		49.2		24.5%	44.9%	56.2%	n.a.	-4.8%		11.3%	-16.1%		**0.0%**
2013	40.26%		56.23%		421	27%	42%		48.3		25.0%	45.3%	56.5%	n.a.	-5.0%		11.0%	-16.2%		**-0.3%**
2012	40.87%		56.05%		389.9	27%	42%		48.3		25.0%	45.3%	56.5%	n.a.	-4.4%		10.8%	-15.6%		**-0.4%**
2011	40.88%		56.06%		389.9	28%	42%		48.3		25.0%	46.0%	56.5%	n.a.	-5.1%		10.1%	-15.6%		**-0.4%**
2010	40.90%		56.06%		389.9	28%	42%		48.3		25.0%	46.0%	56.5%	n.a.	-5.1%		10.1%	-15.6%		**-0.4%**
2009	42.08%	57.31%	62.83%	347.2	347.2	28%	43%	45%	48.3	106.1	25.0%	46.0%	57.3%	58.8%	-3.9%	11.3%	16.8%	-15.2%	0.1%	**4.1%**
2008	42.56%	49.42%	62.96%	279.8	335.8	28%	43%	45%	46.7	102.6	25.0%	46.0%	57.3%	58.8%	-3.4%	3.4%	17.0%	-14.7%	-7.8%	**4.2%**
2007	42.86%	49.21%	62.96%	272.6	327.2	28%	43%		45.5		25.0%	46.0%	57.3%	n.a.	-3.1%	3.2%	17.0%	-14.4%	-8.0%	**5.7%**
2006	42.88%	49.23%	62.96%	265.5	318.7	28%	43%		44.3		28.0%	48.2%	59.0%	n.a.	-5.3%	1.1%	14.8%	-16.1%	-9.7%	**4.0%**
2005	42.89%	49.24%	62.95%	259.5	311.5	28%	43%		43.3		28.0%	48.2%	59.0%	n.a.	-5.3%	1.1%	14.8%	-16.1%	-9.7%	**4.0%**
2004	42.86%	49.21%	62.95%	254	304.8	28%	43%		42.4		30.0%	49.6%	60.1%	n.a.	-6.7%	-0.4%	13.4%	-17.2%	-10.9%	**2.9%**
2003	43.71%	49.23%	62.96%	198	295.3	28%	43%		41.1		30.0%	49.6%	60.1%	n.a.	-5.9%	-0.4%	13.4%	-16.4%	-10.9%	**2.9%**
2002	43.69%	49.21%	62.96%	191.2	285.2	28%	43%		39.7		30.0%	49.6%	60.1%	n.a.	-5.9%	-0.4%	13.4%	-16.4%	-10.9%	**2.9%**
2001	44.92%	50.38%	63.36%	177.9	276.9	28%	40%		38.5		30.0%	49.6%	58.0%	n.a.	-4.7%	0.8%	13.8%	-13.1%	-7.6%	**5.4%**
2000	45.20%	50.66%	63.35%	164.3	267.6	25%	40%		37.2		32.0%	49.0%	59.2%	n.a.	-3.8%	1.7%	14.4%	-14.0%	-8.5%	**4.2%**
1999	45.47%	50.93%	63.34%	151	258.4	25%	40%		36		32.0%	49.0%	59.2%	n.a.	-3.5%	1.9%	14.3%	-13.7%	-8.3%	**4.1%**
1998	45.16%	50.68%	62.01%	139	251.2	25%	40%		35		34.0%	50.5%	60.4%	n.a.	-5.3%	0.2%	11.5%	-15.2%	-9.7%	**1.6%**
1997	46.51%	52.03%	63.85%	135.3	244.6	25%	40%		34		34.0%	50.5%	60.4%	n.a.	-4.0%	1.5%	13.4%	-13.9%	-8.4%	**3.5%**
1996	47.09%	51.74%	65.31%	134.5	243.1	25%	40%		33.8		34.0%	50.5%	60.4%	n.a.	-3.4%	1.2%	14.8%	-13.3%	-8.7%	**4.9%**
1995	46.98%	54.50%	66.36%	130.9	236.6	30%	40%		32.9		34.0%	53.8%	60.4%	n.a.	-6.8%	0.7%	12.6%	-13.4%	-5.9%	**6.0%**
1994	47.51%	56.53%	67.42%	130	234.9	30%	40%		32.7		34.0%	53.8%	60.4%	n.a.	-6.3%	2.7%	13.6%	-12.9%	-3.9%	**7.0%**

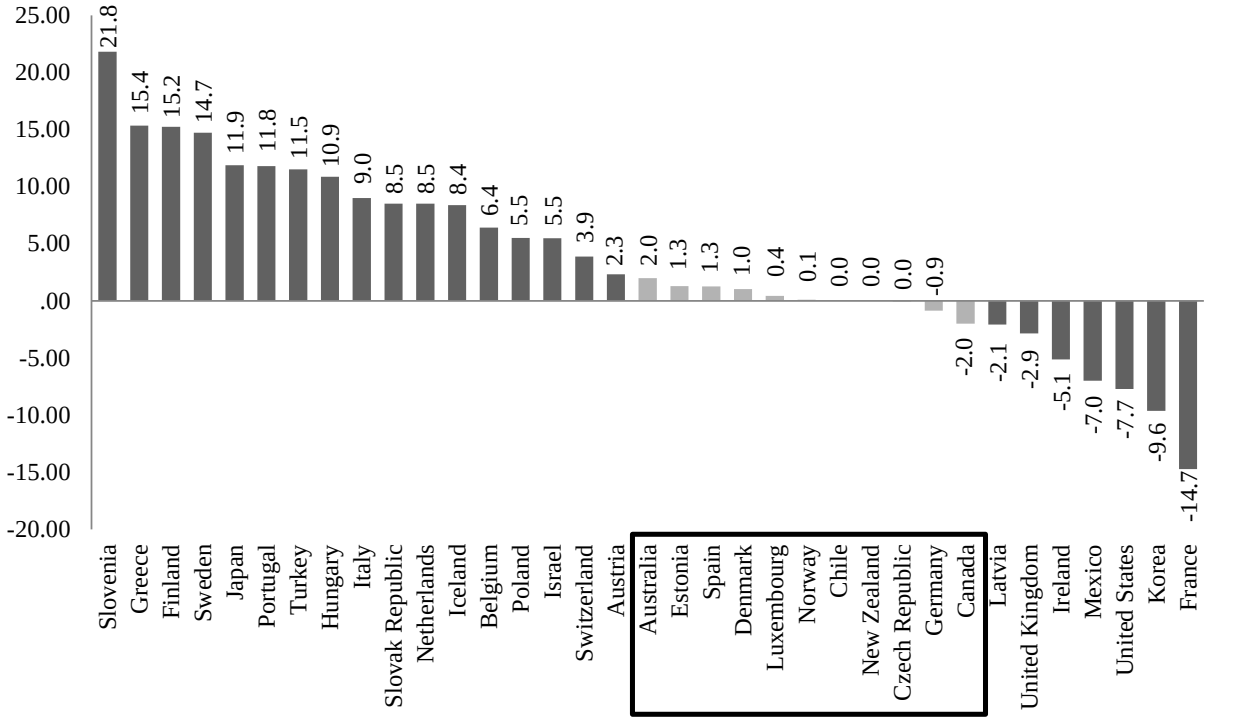
Numerical example

Company tax	0.2450
Dividend tax	0.4200
1-((1-company tax) * (1-dividend tax))	0.5621
Personal tax	0.5622

Simulation (using 2014 marginal tax rates)

	Pay salary	Pay dividend
Firm income before tax and salary	1200	1200
Salary	-800	0
EBT	400	1200
Tax	-98	-294
E	302	906
Equity beginning	2000	2000
+ E	302	906
- Div	0	-604
Equity end	2302	2302
Personal income after tax	**350.24**	**350.32**
Decomposition of taxes paid:		
Company tax	-98	-294
Dividend tax	0	-254
Personal tax	-450	0
Total	-548	-548

Figure B.5: Difference between marginal tax rates of labor income and capital income (first taxed at the firm level as corporate tax and then taxed at the personal level as dividends/capital gains)



This figure shows level of tax alignment between top marginal tax rates of labor income and capital income. Top marginal labor income tax rates are collected from OECD, table I.7, column 2 ("all-in-rate"). Top marginal capital income tax rates are collected from OECD, table II.4
Source: OECD, 2017 numbers

Interview details

To further understand how SDEM firms obtain benefits in the form of lower cost of debt we conduct four semi-structured interviews with four of the five largest systematic Danish banks. Thus, our interviews include representatives for the vast majority of the Danish lending market. Because the interviewees reveal proprietary and business sensitive information all interviewees prefer to be anonymous, and we have not recorded any of the interviews. In the following, we provide descriptive information of the interviews, the interview guide that we used, and insights based on our notes. To avoid the identification of any specific bank, we aim to keep our descriptions and insights on a general level.

Descriptive information

Interview form	The interviews were conducted with the semi-structured approach, where we prepared an interview guide preceding the interviews but allowed the interviewees to speak freely. To avoid blurring the interviewees' answers, we introduced our overall aim – to understand the lending decisions – and let the interviewees know that we were investigating earnings management in private firms. Importantly though, we did not reveal that we are specifically investigating owner-managers that shift their income from salary to dividends. During the interview we asked how lenders use salary information, dividend information, how they treat different ownership structures, and in the end we revealed that we looked at SDEM and asked for their opinion.
Interviewers	Two of the four interviews were conducted with two of the authors present, and two interviews were conducted with only one of the authors present.
Interviewees	At one interview four interviewees were present, at one interview three interviewees were present, at one interview two interviewees were present, and at one interview one interviewee was present. The interviewees covered a range of positions and tasks, including top management of rating (back office), management of business customers, financial analysts (back office), and lending officers (front office). The interviewees were responsible for loan exposures in the range DKK 250t – DKK 500m (EUR 33t – EUR 67m). We specifically asked about loans in the lower range.
Timing of interviews	One interview was conducted in the fall of 2018, and three were conducted during the summer of 2019.
Interview length	The interviews had a length of 45-60 minutes.
Site	Three interviews were conducted on site (i.e. at the bank's headquarters) and one was conducted via telephone.

Interview notes

From the interviews we wrote notes and coded those notes with NVIVO. The following reveals the insights that we uncover from those interviews. To uphold the anonymity of the interviewee banks the term "some banks" may refer to one or more banks.

Lending process	The lending processing takes between 3 hours and one and a half day, depending on the complexity and size of the company. Some banks extract financial statement information from centralized data providers, while others manually enter the information from publicly available annual reports. In those banks that manually enter the information, the lending officer (front office) typically does it him/herself for small engagements, while is it the job of the financial analysts for larger engagements. The information is processed in a credit rating model that produces a rating that is presented to the lending officer. Within certain size limits, the lending officer has discretion to change the credit rating. Above certain credit ratings, the deviation from the prediction of the credit rating model must be approved centrally.
Monitoring over time	Some banks have annual meetings with all borrowing firms. Other banks use an automated model that predicts engagements that are selected for loan renegotiation/renewal. Other banks discretionarily pick borrower firms for follow-ups. Loan covenants or non-legally binding trip-wires are used in loan contracts, also for small private firms. However, banks differ in in when covenants or other trip-wires are used. Some banks use such mechanisms for the majority of their business loans, whereas other banks use them for risky borrower firms. Loans can typically be called with few months at the discretion of the bank. The competition level is currently perceived as high, and it is possible that good customers automatically see their cost of debt decreased. Because of the fierce competition, some banks find it difficult to increase the interest, and require more collateral instead.
Hard information vs. soft information, and other private information.	All banks view financial statements as the central element in the lending decision. Banks assess that financial statements contribute to about 70%-80% of the credit score. Some banks expressed that they were moving away from a human factor and more towards hard information. It is possible that lending officers have an incentive to increase the rating to issue more loans and hence obtain more compensation. Other banks note that the quality assessment of borrower firm management is becoming relatively more important. All banks include qualitative information in their credit scoring to some extent. Qualitative information includes management quality, market position, supply chain, customers, suppliers, and general risks. One

	interviewee mentioned that although much automatization is ongoing in the lending market, business lending is still a "craftsmanship". Banks frequently ask for periodic reports, for example quarterly or monthly reports. However, this typically applies to larger establishments. Further, banks ask for revenue data and EBITDA (which are not always disclosed in the financial reports because they are not legally mandatory). Cash flow statements are automatically calculated from balance sheet numbers by the banks' software systems. Budgets are sometimes collected, but do not seem to matter a lot in the credit decision.
Adjustments to reported numbers	Adjustments can vary significantly between industries. At several banks we heard that they try to follow external guidelines in the lending decision, such as S&P or Moody's (we note that S&P and Moody's do not mention income shifting). Some banks use scenario analysis regarding the credit rating. For example credit ratings are calculated with and without goodwill. Adjustments happen frequently on the balance sheet, not so often on performance measures. Lenders typically look for changes in accounting practices and practically all lenders mentioned that they look for unexplained changes in working capital accounts (closely related to accrual earnings management). Non-recurring expenses are typically excluded, but we see variation between banks on this practice. Further, banks look into and sometimes adjust for goodwill (or make sensitivity analyses as described above), work in progress, tax assets, and other debt. However, it was also pointed out that time and resources are limited, and the time spent on adjusting numbers (and the lending decision in general) depend on the size of the loan. Notably, no interviewees mentioned the manager's salary – even when we asked "do you look for something particular when the owner and the manager is the same person?"
Loss firms	Loss firms are typically penalized by banks. Some banks in their credit rating model have "bins" of earnings – and one bin naturally starts at zero. Others have an indicator for "loss" in their credit rating model. Interviewees generally agree that it is "difficult" to get a loan if earnings are negative. One interviewee mentioned him/herself that it is difficult for loss firms,

	and firms with negative equity, to get funding, because the bank is legally required to hold more capital when lending to those firms. One interviewee mentioned that "a loss is a loss – the magnitude is not so important". Banks assess if the loss is non-recurring or persistent.
SDEM	When we asked about how banks view the borrowing firm's manager's salary (we asked both in general and when the owner and the manager is the same person), the general concern was that the manager was draining the firm (i.e. paying an abnormally high salary). No banks answered that they looked at changes in salary and its potential influence on reported earnings. If the performance in the company looks good, salary is not really a concern. When we asked about dividends, some banks mentioned that it is the standard that dividends must be approved by the bank before they can be paid out. However, not all banks had such a policy. As with the salary level, the attention dividends attract depend on the performance of the firm. Extraordinary dividends typically attract attention. **SDEM** In the end, we revealed what we were investigating – income shifting from salary to dividends and lower cost of debt. Three of four banks agreed that this could indeed induce cost of debt benefits. One bank disagreed, and argued that the bank would capture such accounting gimmicks and *qualitatively* adjust the numbers – although the bank did not consistently require salary data from borrowing firms (and hence cannot consistently unravel SDEM).

Interview guide

The following outlines the interview guide that we have used to guide our interviews. The interviews were conducted in Danish, and the interview guide is translated to English here.

- Introduction of ourselves: We are investigating earnings management in private firms. We will tell you in the end what we are specifically examining.
- Generally: What are your roles? Size of loan engagements?
    - Please explain the lending process. What happens if I walk into your shop and want a loan for my company?
    - What happens when the loan is issued? How do you monitor your loans?
- Hard information

    - How important is the annual report (are the financial statements)?
    - How do you get data from the annual report? Who gathers the information and enters it into the system?
    - Do you adjust the reported numbers? If so, how? Who makes adjustments?
        - Please mention the last three adjustments you made to reported numbers
    - How do you treat loss firms?
- Soft information
    - What information do you collect beside the annual report? What do you look for?
    - How much discretion does the lending officer have to deviate from the credit score? Why do lending officers deviate?
- Corporate governance
    - How does the board of directors influence the credit evaluation?
    - How does the ownership structure influence the credit evaluation?
    - Do you treat owner-managed firms in a special way? Any specific things you look after in this setting?
- Risk compensation
    - How do you compensate yourself from borrower firms' risk?
    - Interest rates?
    - Collateral? How much, what, when? Do you take collateral in firm managers' private assets (such as house)?
    - Debt covenants
- Auditing
    - Do you require borrowing firms to be audited?
    - How much does an audit matter?
- SDEM:
    - Do you care about the salary of the firm manager?
    - How do you interpret dividends?
    - We look at SDEM – could this really have an effect?

C. PAPER 3

Criminal executives, criminal employees, corporate culture, and earnings management

Morten Nicklas Bigler Jensen

Copenhagen Business School | Department of Accounting | mojen.acc@cbs.dk

ABSTRACT: It is well established in the literature that executives influence corporate culture and firm behavior. In this paper, I predict and find that traits of rank-and-file employees capture a distinct but correlated aspect of corporate culture beyond what is explained by executive traits. Controlling for executives' criminal record, I find that firms with criminal employees are more likely to use earnings management. This effect is concentrated in firms where both executives and employees are relatively criminal. My results highlight the importance of employees in financial reporting, and show how employee traits can be used to capture corporate culture.

KEYWORDS: Corporate Culture; Earnings Management; Executive Traits; Employee Traits

I gratefully acknowledge and appreciate sharp, critical and constructive comments and suggestions provided by Juha-Pekka Kallunki (opponent), Melanie Feldhues (opponent), Jeppe Christoffersen, Thomas Plenborg, Bjorn Jorgensen, Britt Larsen and symposium participants at "the three star symposium" (SDU, Odense 2019). An earlier version of this paper was circulated with the title "The governing effect of rank and file employees on earnings management"

1. INTRODUCTION

Following major corporate scandals the topic of corporate culture and business ethics has gained increased attention from the popular press, business schools, regulatory bodies such as the SEC[1], and corporate managers[2]. Corporate culture, commonly defined as the shared values and beliefs of employees (Liu 2016; Van Den Steen 2010), is an important determinant of opportunistic firm behavior. Anecdotal evidence suggests that unethical culture is linked to opportunistic firm behavior, and that such behavior requires cooperation of many employees. For example, the employees of HealthSouth were told to generate fictitious entries lower than $5,000 per time to avoid attention from auditors, and to move expenses to capital accounts. Overstating income of $2.7 billion indisputably required the participation of many employees and a certain corporate culture. [3]

Despite the importance of corporate culture on firm behavior and thus financial reporting outcomes, empirical accounting and finance research on the topic has been limited, likely because culture is difficult to quantify. Prior research has resorted to focus on traits of firm executives (Liu 2016; Biggerstaff et al. 2015) relying on an assumption that rank-and-file employees share values and beliefs with top managers[4], or used geographic proxies such as religiosity (McGuire et al. 2012; Dyreng et al. 2012), which are not firm specific.

Executives' beliefs are important determinants of corporate culture because executives tend to hire employees with similar beliefs through screening and self-sorting mechanisms (Van Den Steen 2010). However, significant variation in this relation exists, and employee beliefs represent an important aspect of corporate culture not explained by executives' beliefs. Prior theoretical research on corporate culture argues that top management beliefs capture how things are ought to be, whereas employee beliefs define how things actually are (O'Reilly 1989), and corporate culture can persist even after the original managers who contributed to defining the corporate culture have left the firm (Van Den Steen 2010). In this paper, I show how executive

---

[1] Linda C. Thomsen, Director, Division of Enforcement, SEC: "Finally, what we have learned from stock options backdating — and from every other scandal in the financial markets in recent years — is that character matters." https://www.sec.gov/news/speech/2006/spch103006lct.htm

[2] William C. Dudley, President and CEO, New York Fed: A full speech about culture in financial institutions http://www.newyorkfed.org/newsevents/speeches/2014/dud141020a.html
Gred Smith, former CEO of Goldman Sachs: A speech of his motivations to leave the company, blaming change in culture to be the key driver. https://www.nytimes.com/2012/03/14/opinion/why-i-am-leaving-goldman-sachs.html

[3] See case description at https://stakeholder11.wordpress.com/2014/11/24/healthsouth-inc-a-case-of-corporate-fraud/

[4] As explicitly stated by Liu (2016) "*it is reasonable to assume that lower level employees have similar values as their leaders"* (p 310)

traits and employee traits both separately and jointly are associated with financial reporting behavior in the form of earnings management.

I identify several channels through which employees may influence financial reporting: First, employees affect financial reporting through their participating role in the generation of financial reporting data, as the firm's final earnings report is compiled of several sub-reports within the firm. Through this channel, employees can choose to (1) submit (or not submit) opportunistic sub-reports, and (2) comply (or not comply) with opportunistic managers' request to help managing earnings. Second, employees play an important governance role and may (or may not) take corrective action or report intentional financial misreporting[5]. I expect such employee choices to be influenced by the corporate culture, because individuals seek to conform to group norms (Liu 2016; Hackman 1992; O'Reilly 1989).

I acknowledge that earnings management is not fraud per se, but lies in the grey area between truthful reporting and fraud at the extremes. However, I point out that fraud, defined by SAS 99 as *"an intentional act that results in a material misstatement in financial statements"*, and earnings management, defined by Healy and Wahlen (1999) as *"when managers use judgment in financial reporting […] to mislead some stakeholders about the underlying economic performance of the company […]"*, are two closely related concepts, and accordingly prior research links corporate culture to both earnings management and fraud (Biggerstaff et al. 2015; Liu 2016).

To measure individuals' beliefs and values I rely on comprehensive criminal registers from Denmark covering all crimes convicted by a Danish court dating back to 1980 of all Danish citizens and foreigners registered with a Danish address. Through employer-employee links provided by Statistics Denmark, I am able to link individual employees and their criminal record to the firm in which they work, and finally the financial reports of those firms. Theoretical research on criminality predicts that criminal behavior is driven by a lack of self-control, and that individuals lacking self-control are characterized as impulsive, insensitive, risk-taking, and short-sighted (Gottfredson and Hirschi 1990), all characteristics that are closely related to opportunism and short-termism inherent in earnings management behavior. Accordingly, Davidson et al. (2015) find that firms with criminal executives are more likely to misreport.

[5] For example, in the case of HealthSouth an employee was the one of the first to inform the firm's auditors about "severe accounting problems in the Accounting Department".

First, I examine the channels through which corporate culture influences individual behavior. Consistent with screening and self-sorting (Van Den Steen 2010) I document that criminal executives tend to employ criminal employees: The proportion of employees with a criminal record is about 36% higher in firms where the majority of executives have a criminal record, relative to firms where criminal executives are the minority. However, I observe substantial variation in this relation[6], highlighting the importance of assessing both executive traits and employee traits when investigating corporate culture. Then, consistent with social norm theory, predicting that individuals seek to conform to group norms (O'Reilly 1989; Hackman 1992; Elster 1989), I find that individuals are more likely to commit crime when they work in a firm with more criminal employees. This relation holds for individuals with a prior record and for individuals who have never committed crime before.

After exploring these channels, I turn to examine how corporate culture influences firm behavior in the form of earnings management. Stimulated by Larson et al. (2018) I model comprehensive discretionary accruals (*DACC*) as the proportion of comprehensive operating accruals not explained by current cash flows, two leads and lags of cash flows, growth in employees (both current and for the following year), and lagged performance. I examine signed discretionary accruals during events where the firm raises new finance, a setting in which prior beliefs exist that incentives to opportunistically increase earnings are present.

In simple univariate mean comparisons during a firms' issuance of new finance, I find that *DACC* of firms with a criminal executive team (majority of executives have a criminal record) are positive and larger than *DACC* of firms with a non-criminal executive team. To explore the influence of employees and executives collectively as well as separately, I additionally split the sample by the relative criminality of the workforce, where a firm's workforce is defined as relatively criminal if the percentage of employees with a criminal record is above the within-year median. In these univariate tests, I find that firms with both a criminal executive team and a criminal workforce increase earnings the most. Notably, firms with a criminal executive team and a non-criminal workforce do not use discretion in the accrual estimation to increase earnings. The results suggest that traits of a firm's employees capture one important element of corporate culture, not fully explained by the traits of firm executives.

[6] For example, when the majority of executives are criminal, the standard deviation of the percentage of criminal employees corresponds to approximately two thirds of the mean.

Then, I turn to multiple regressions. I estimate accruals in a one-step procedure (Chen et al. 2018) controlling for (1) variables used previously to estimate discretionary accruals, (2) other firm-specific variables used previously in the earnings management literature (logarithm of total assets, gearing, earnings variability and tangibility of assets), and (3) industry and year fixed effects. In regressions where I include only executive effects, I find that the percentage of executives with a criminal background is positively associated with discretionary accruals when the firm raises new finance (captured by the slope on an interaction of a new finance indicator and a variable measuring the percentage of executives with a criminal record). Albeit investigating a different outcome variable the results are consistent with Davidson et al. (2015), who find that criminal executives are more likely to misreport. Then I add to the estimation a variable capturing the percentage of employees with a criminal record, and find that it is positively related (incremental to the effects of executives) to accruals when the firm issues new finance.

Next, I investigate the combined effect of the executive team and employees. Similar to the univariate analysis, I split the sample into four groups by conditioning on firms' with (1) a criminal (non-criminal) executive team and (2) a criminal (non-criminal) workforce. In these regressions, across several different estimations, I consistently find that firms with both a criminal executive team and a criminal workforce are positively associated with income-increasing accruals compared to each of the other three groups. The results provide similar insights as the univariate statistics described above.

The latter results are largely robust in regressions where I control for firm fixed effects, control for other governance mechanisms, and where I limit the sample to firm-year observations related to the issuance of new finance. Further, in indications outside discretionary accruals, I find some evidence that firms with criminal executives and criminal employees are more likely to meet or beat last year's earnings, but not more likely to meet or beat the zero earnings benchmark. Also, these firms have lower earnings persistence indicating lower earnings quality.

The findings of this paper make an important contribution to the literature on corporate culture and financial reporting. The findings complement and extend research that relies on executive traits to capture corporate culture (Liu 2016; Biggerstaff et al. 2015) by showing that traits of rank-and-file employees capture a part of corporate culture not explained by executive traits. Future research might benefit from looking beyond executive traits when examining corporate culture and financial reporting. This applies even to settings in which data availability

is not as comprehensive as in this study. For example, researchers have recently started to extract data from LinkedIn on for example executives (Hope et al. 2019; Nguyen et al. 2019) and loan officers (Campbell et al. 2019), and a similar approach could be used to extract data on rank-and- file employees.

Companies are mandated to disclose detailed information about non-human investments in the annual report, for example the value and age of production facilities. The findings of this paper suggest that employees exert an influence on financial misreporting: A result that has implications for regulators and raises the question if companies should disclose in the annual report information on human capital; a significant capital factor in a knowledge economy that is subject to low disclosure requirements. Such disclosures could help resolve information asymmetries. The results thus contribute to recent literature on the information value of human capital disclosure (Gutiérrez et al. 2019).

The remainder of this paper proceeds as follows: The next section discusses related research and develops empirical predictions. Sample composition and key measures are outlined in section 3. Section 4 outlines the research design and presents the results. Section 5 discusses results and limitations, and concludes.

2. BACKGROUND AND EXPECTATIONS

2.1 Criminal record

The criminology literature lends support to the idea that criminal behavior is an observable outcome of a certain inherent personal trait. Gottfredson and Hirschi (1990)[7] argue that a lack of self-control is the essential element of criminality, independent of the nature of the crime, and base their theory on the assumption (and observations) that crime provides easily accomplished, immediate gratification, and that these motivations for crime even extend to white-collar crime, which is empirically supported by Blickle et al. (2006). The theory suggests that a lack of self-control increases the propensity of individuals to obtain easy, immediate gratification through crimes, and permeates a nexus of an individual's analogue behaviors such as the tendency to smoke, excessive drinking, driving fast, and gambling. Those individuals lacking self-control are characterized as impulsive, insensitive, risk-taking, and short-sighted, all characteristics that are closely related to opportunism and short-termism inherent in earnings management behavior.

[7] Gottfredson and Hirschi's book "A general theory of crime" is considered fundamental in the criminal literature (Pratt and Cullen 2006) with more than 12,500 citations on Google Scholar (31 July 2019).

In a meta-analysis based on 21 studies and 126 size effects Pratt and Cullen (2006) provide empirical evidence supporting Gottfredson and Hirschi's general theory of crime, across several empirical measures used to quantify "lack of self-control". Consistently, accounting and finance research links criminal behavior of executives to firm behavior (Davidson et al. 2015; Kallunki et al. 2018), and show that opportunistic behavior is rather a "sticky" trait than a domain specific outcome (Ali and Hirshleifer 2017).

2.2 Corporate culture and executives

Corporate culture is commonly defined as the shared values and beliefs of employees (Van Den Steen 2010; Liu 2016). Van den Steen (2010) shows analytically how corporate culture evolves, and derives that organizations have a tendency to develop homogenous beliefs (i.e. corporate culture). Two mechanisms through which the corporate culture evolves are screening (a manager will hire an employee with similar beliefs) and self-sorting (employees tend to choose to work with firms with similar beliefs), suggesting that firm managers are important determinants for corporate culture. Labor economics research provides extensive evidence on the sorting mechanism in labor markets[8].

Within the finance and accounting literature, researchers find that corporate culture is an important contributor to firm (mis)behavior. For example, the survey and interview evidence of Graham, Grennan, et al. (2016) and Graham, Harvey, et al. (2016) indicate that executives view corporate culture as one of the top drivers of firm value, and that executives believe that corporate culture influences corporate ethics and proxies for earnings management. Specifically, they report that 85% of their respondents believe that poor culture increases the likelihood that employees might act "unethically", which they proxy by compliance, tax aggressiveness, quality of financial reporting, and importance of meeting or beating earnings benchmarks. From the psychology literature, in a comprehensive meta-analysis Kish-Gephart et al. (2010) provide evidence that unethical culture is linked to unethical corporate outcomes, such as misrepresentation in financial reports or lying to customers.

[8] For example, prior labor economics research provides evidence that risk-averse workers sort into occupations with low earnings risk, and vice versa (Bonin et al. 2007; Cornelissen et al. 2011), that workers sort into certain jobs that match their profiles and thereby increase their wage (Dechter 2015; Jinkins and Morin 2018), and that honest workers self-sort into the public sector (results based on a low corruption country) (Barfort et al. 2019).

A large body of quantitative research measures corporate culture based on executives' beliefs and values. For example, Biggerstaff et al. (2015) find that executives who benefit from option backdating are more likely to engage in other forms of corporate misbehavior, such as financial reporting fraud, meeting or beating analyst forecasts, and accrual earnings management in order to meet or beat analyst forecasts, and Ali and Hirschleifer (2017) find that executives with opportunistic insider trades are related to outcomes of firm misconduct, such as earnings management, restatements, SEC enforcement actions, and shareholder litigation, suggesting that opportunistic firm behavior is driven by a certain corporate culture that tolerates or even encourages such behavior[9].

Other studies use "off-the-job" traits of executives and link those personal traits to corporate behavior. For example, Liu (2016) finds that the corruption index of executives' country of ancestry is related to firms' engagement in earnings management, accounting fraud, option backdating, and opportunistic insider trading, claiming that executives' corruption attitudes proxy corporate culture and a firm's general attitude towards opportunistic behavior. Davidson et al. (2015) find that criminal behavior of the CEO and CFO is positively related to the propensity to misreport (executives named in SEC AAERs), and further find that insiders (other than the CEO) in firms with low frugality[10] CEOs are more likely to be named in AAERs. They explain the latter results with a culture explanation, where CEOs influence the corporate culture. Cline et al. (2018) find that executives with personal indiscretions disseminated by news media (allegations of dishonesty, substance abuse, sexual misadventure, accused of violence) are more likely to manipulate earnings, amongst other opportunistic corporate outcomes. Indeed, corporate culture and opportunistic firm behavior are influenced by managers and their beliefs.

To the extent that the presence of a criminal record is an observable outcome measure for certain values and beliefs, and that firm managers influence corporate culture based on those values and beliefs, I predict that firms with criminal executives are relatively more prone to use earnings management. Albeit not the main hypothesis of this paper, for completeness and to link my results to related research, I formally state the following hypothesis:

H1: *Firms with criminal executives are relatively more prone to manage earnings*

[9] Biggerstaff et al. attribute their findings to "unethical culture". Ali and Hirschleifer suggest that their results are driven either by corporate culture or having "a set of managers who are inherently prone to cheating" (p. 491).

[10] Frugality is a psychological trait that reflects discipline in buying and using consumer goods and services to achieve long-term goals. Davidson et al. measure frugality using executives' ownership of luxury goods, such as expensive cars, boats, or expensive houses. See Davidson et al. for further discussion of frugality.

2.3 Corporate culture and employees

Consistent with the view of Van den Steen (2010), O'Reilly (1989) view corporate culture as shared beliefs and expectations by an organization's members. O'Reilly argues that individuals are influenced by the common expectations by other individuals within the group, because individuals seek to be accepted and live up to peer individuals' expectations and therefore ought to conform to other individuals' beliefs and expectations. Hence, corporate culture functions as a "social control" system. This view is broadly supported in the literature, for example by Hackman (1992) and social norm theory (Elster 1989).

Whereas Van den Steen (2010) models corporate culture as an outcome of the manager's decision to employ employees with similar beliefs (the sorting channel), O'Reilly (1989) recognizes that employee beliefs do not necessarily conform to top management beliefs, and note that the management's beliefs capture how things are ought to be, whereas employee beliefs define "how things actually are" (p. 13). Further, Van Den Steen (2010) extend his theory and note that corporate culture can persist even when the original managers who contributed to defining the corporate culture have left the firm. From a theoretical standpoint it seems that employees have a say in corporate culture.

There are several channels through which employees can influence firm financial reporting. Accounting data originate far from the C-suite, and many employees participate in the generation of financial reporting data, because the firm's final report is compiled of several sub-reports within the firm. Through thus channel, employees can choose to submit (or not submit) opportunistic sub-reports. This phenomenon is a well-recognized issue in the management accounting literature, where budget targets provide subordinates incentives to manage earnings (Libby and Lindsay 2010; Courty et al. 2004; Jensen 2003). Employees can manage their earnings estimates they submit to superiors to personally gain reputation and/or obtain bonus payments. Also through this channel, employees can choose to comply (or not comply) with opportunistic managers' request to help managing earnings, which is what happened in for example the HealthSouth case. In this case, employees might succumb to a manager's pressure and help manage earnings in order to keep his/her job.

Beyond their participating role in the accounting information generation, employees play an important governance role and may (or may not) take corrective action or report intentional financial misreporting. For example, in the case of HealthSouth an employee was one of the first to inform the firm's auditors about severe accounting problems in the Accounting Department.

Dyck et al. (2010) find that employees detect fraud more often than both the SEC and firm auditors and Call et al. (2016) find that firms involved in financial reporting violations take actions to motivate employees not to report financial misconduct emphasizing the importance of employees as a governance mechanism.

In the finance and accounting literature empirical research on employees, corporate culture and financial reporting is limited, likely because employee beliefs are difficult to quantify. Therefore, researchers have resorted to proxy corporate culture using executive traits (as discussed in the previous section) or used proxies such as the level of religiosity (McGuire et al. 2012; Dyreng et al. 2012) or education (Call et al. 2017) at the geographic proximity of a firm's headquarter[11]. A notable exception is the research by Guiso et al. (2015), who use employee survey responses administered by the Great Place To Work Institute, and find that firms in which employees score their executives high on integrity experience higher profitability.

By exploiting a hack of the infidelity website Ashley Madison, Griffin et al. (2019) find that financial advisors active on the webpage are significantly more likely to engage in misconduct[12], and that individuals active on the webpage are significantly more likely to be defendants of SEC litigation alleging fraud and white-collar crime, suggesting that employees' actions in their professional lives are shaped by their personal traits and beliefs.

Because of employees' influence on corporate culture and their ability to affect financial reporting, I predict that firms with relatively criminal employees are relatively more prone to use earnings management, and I expect this association to be incremental to the association between criminal executives and earnings management. I point out that criminal employees may influence financial reporting themselves, or through their influence on corporate culture and thus non-criminal employees' behavior, because individuals seek to conform to group norms.

> ***H2:*** *Incremental to the effect of executives, firms with a criminal workforce are relatively more prone to manage earnings.*

Lastly, because I expect criminal executives and criminal employees to capture two distinct but correlated aspects of corporate culture, I predict that firms with *both* criminal executives and criminal employees are relatively more likely to engage in earnings management. The hypothesis is motivated by anecdotal evidence (for example the case of HealthSouth) where it is

[11] I point out that McGuire et al. and Dyreng et al. argue that managers (end not employees) even self-select or conform to local norms, whereas Call et al. use a geographic proxy to capture traits of a firm's workforce.
[12] The forms of misconduct include customer disputes, employment separation, regulatory, and criminal violations.

evident that firm executives need the cooperation of a nexus of employees to push through their opportunistic accounting gimmicks. Therefore, firms with criminal executives who employ criminal employees are expected to engage the most in earnings management.

H3: *Firms with both criminal executives and a criminal workforce are relatively more prone to manage earnings*

3. SAMPLE CONSTRUCTION AND KEY MEASURES

3.1 Data sources and data description

I gather data from several sources. Throughout the process I use unique personal identifiers (CPR numbers[13]) and unique firm identifiers (CVR numbers[14]) to link employees and managers to the firms in which they work.

3.1.1 Firm financials

From the ORBIS database, I obtain annual report data of all firms incorporated in Denmark for the period 1998-2016. From EXPERIAN, I obtain enriched line item accounting data on current assets and current liabilities enabling me to compute accruals. Non-current line items required for the estimation are available in the ORBIS dataset.

3.1.2 Executive, ownership, employee, and criminal record data

Firm executives and ownership data are obtained through filings with the Danish Business Authority. I define an executive as an individual filed as "executive" with the Danish Business Authority[15]. I access the data through Statistic Denmark's "Researcher Service" which enables me to link the data with other proprietary datasets held by Statistics Denmark[16]. I identify

[13] All persons born or residing in Denmark are assigned a unique individual national identification number. CPR numbers are private information. In Denmark, CPR-numbers are used by banks, employers when paying salary, governmental bodies, etc., enabling me to merge information on individuals from a wide variety of sources.
[14] All legal business entities in Denmark are assigned a unique CVR-number. CVR numbers are publicly disclosed.
[15] The Danish Business Authority requires all companies to file firm executives. Failing to do so may result in rejection of the firm establishment in case of a start-up or compulsory dissolution in the case of established firms. https://erhvervsstyrelsen.dk/sites/default/files/vejl_om_ledelses_revisor_vedtaegtsaendring.pdf.pdf.
Further, I have been in contact with the Danish Business Authority about the enforcement and accuracy of the executive data. From these interviews I have learned that firms benefit from filing firm executives in the way that executive status is a requirement for the individual to make significant decisions on behalf of the firm (for example apply for debt).
[16] When accessing the executive and ownership data through Statistics Denmark data are delivered with proprietary CPR numbers, which are anonymization by a proprietary key held by Statistics Denmark. Because CPR numbers

employees through the Integrated Database for Labor Market Research (IDAN database) developed and maintained by Statistics Denmark. The database contains annual information on employer-employee links, employment starting and termination dates, and individual level data on salary received from the company. It is not costly for employers to report employee data to Statistics Denmark, because firms have salary software that automatically report each individual's income to the Danish Tax Authorities, which is then collected by Statistics Denmark. I define a person as an employee of a firm if he/she (1) receives salary from the firm, (2) is registered as an employee at year-end, and (3) is not identified as an executive.

I acquire access to comprehensive criminal registers through Statistics Denmark's Researcher Service. The registers cover all crimes convicted by a Danish court dating back to 1980 of all Danish citizens and foreigners registered with a Danish address, along with a classification code of the crime committed[17] and the year of the conviction.

3.1.3 Sample selection

I merge these datasets and impose several screens. I exclude (1) financial reports not covering 12 months, (2) hobby firms with total assets below DKK 1m (~EUR 134t), (3) companies that do not meet the European Commission's SME thresholds[18], (4) extreme observations, potentially due to mergers or acquisitions that I cannot observe, (5) certain industries (financial, utilities, and state-owned) consistent with prior research, (6) subsidiaries, to avoid double counting of firms, (7) listed firms, (8) firm-year observations with less than 15 full-time equivalent employees to allow variation in employee traits, and (9) observations with missing explanatory variables. The screening procedure is displayed in Table C.1. The final dataset covers the years 2001-2014[19], 9,002 unique firms, 50,398 firm-years, 968,483 individual persons, 3,205,113 person-year observations, and 3,287,002 person-firm-year observations[20].

---

are anonymized and coded by Statistics Denmark with a similar key across all datasets, I am able to link data on individuals across several datasets (including their criminal background and financial information) and to the firms in which they work, and unable to observe a person's CPR number and name.

[17] Description of criminal classification codes are available at https://www.dst.dk/da/Statistik/dokumentation/Times/kriminalstatistik/afg-ger7 (in Danish)

[18] The SME definition is based on total assets, revenue, and the number of employees. To extend the availability of revenue data (because the majority of firms are subject to exemption rules allowing them to not report revenue) needed to compute the SME category I obtain access to proprietary data on revenue from tax filings through Statistics Denmark. If revenue data are still unavailable I use only total assets and the number of employees to define SMEs.

[19] I note that accounting information for the years preceding and following this period is included in the financial ratio generation. Also, the preceding and following years are included to compute leaded and lagged cash flows

Table C.1: Sample selection procedure

Note	Screen applied	Observations dropped	Sample size	Decrease in sample size, %
	Firm-years with employer-employee link		1,013,945	
	Keep financial reports with 12 months	308,515	705,430	30%
1	Keep firm-years with ta>1m	161,429	544,001	23%
2	Keep SMEs	46,761	497,240	9%
3	Remove extreme variables	51,926	445,314	10%
4	Remove certain industries	51,469	393,845	12%
5	Remove subsidiaries	5,323	388,522	1%
	Remove listed firms	545	387,977	0%
6	Remove firm-years with less than 15 employees	291,617	96,360	75%
	Keep observations with variables available for estimation	45,962	50,398	48%

This table shows the sample selection procedure. Notes: (1): I exclude observations with less than DKK 1m in total assets to remove small hobby companies. (2): I follow the SME definition of the European Commission available at https://ec.europa.eu/growth/smes/business-friendly-environment/sme-definition_da. To extend the availability of revenue data (because the majority of firms are subject to exemption rules allowing them to not report revenue) needed to compute SME category I obtain access to proprietary data on revenue from tax filings through Statistics Denmark. If revenue data are still unavailable I use only total assets and the number of employees to define SMEs (3): In addition to winsorizing procedures, I apply several screens to avoid regressions being influenced by extreme outliers. I remove the following: ROA>1, ROA<1, firms with negative equity, growth in GP scaled by assets >1, growth in GP scaled by assets <1. (4): Consistent with prior accounting and finance research I exclude certain regulated industries (financials and utilities), and further exclude state-owned companies. (5) To avoid double counting I exclude subsidiaries. (6): For any given firm-year, I require at least 15 employees (measured as full-time equivalents) to allow variation in employee traits.

3.2 Key variables

3.2.1 Criminal executives and criminal workforces

On the person level, I define an indicator *CRIME* that takes the value one if a person has a prior criminal record, excluding crimes related to traffic offences such as parking tickets, speeding tickets, etc. (similar to Kallunki et al. 2018), and zero otherwise[21]. Then, I aggregate the *CRIME* information to the firm-year level, and construct the following variables:

%CrimEXEC denotes the percentage of executives with a criminal record (percentage of executives where *CRIME*=1) within a firm-year, and *%CrimEMPL* denotes the percentage of employees with a criminal record (percentage of employees where *CRIME*=1) within a firm-year. *%CrimEXEC* is used to test H1 and *%CrimEMPL* is used to test H2.

used for accrual estimation (for example, observations for the year 2014 include cash-flow information for the years 2012-2016).

[20] The number of person-firm-year observations is slightly higher than the number of person-year observations, because one person can be employed at more than one firm at the same time.

[21] In untabulated tests I repeat all analyses using only traffic related offences and find insignificant results, indicating that more serious crimes (i.e. non-traffic related crimes) are driving the results.

Then, to test H3, I divide the observations into four groups based on both the proportion of executives with a criminal record and the proportion of employees with a criminal record. First, I define when the executive team is classified as criminal and when the workforce is classified as criminal. The variable *CrimEXEC* takes the value one if the majority of the executive team members has a criminal record *(%CrimEXEC*>0.5), and zero otherwise. The variable *CrimEMPL* takes the value one if the proportion of employees with a criminal background is above the within-year median *(%CrimEMPL*>within-year median of *%CrimEMPL*), and zero otherwise. I use the within-year median of *%CrimEMPL* to define *CrimEMPL* to overcome fluctuations of criminal employee distributions over time, and to measure the "criminality" of the workforce relative to other firms. I use a cutoff of 0.5 (i.e. the "majority") of executives to define *CrimEXEC*, because only one executive is identified for 82% of the sample observations, and thus using the within-year median is not feasible. From these definitions, I categorize the observations into four groups, as depicted in Table C.2:

Table C.2: Four groups based on CrimEXEC and CrimEMPL

Groups based on *CrimEXEC* and *CrimEMPL*	*CrimEXEC*=1	*CrimEXEC*=0
CrimEMPL=1	1/1	0/1
CrimEMPL=0	1/0	0/0

Where the *1/1* group (both executives and the workforce are relatively criminal) is the group relevant for testing H3.

3.2.2 Discretionary accruals

I estimate discretionary accruals (*DACC*) as the residuals of the following estimation:

$$\begin{aligned} OPACC_{i,t} = \quad & \alpha_0 + \beta_1 EMPLGR_{i,t} + \beta_2 EMPLGR_{i,t+1} + \beta_3 EMPLGR_{i,t} * NOA_{i,t-1} + \\ & \beta_4 OPCF_{i,t-2} + \beta_5 OPCF_{i,t-1} + \beta_6 OPCF_{i,t} + \beta_7 OPCF_{i,t+1} + \beta_8 OPCF_{i,t+2} + \\ & \beta_9 DumOPCF_{i,t} + \beta_{10} DumOPCF_{i,t} * OPCF_{i,t} + \beta_{11} ROA_{i,t-1} + \\ & \sum INDUSTRY + \sum YEAR + \varepsilon_{i,t} \end{aligned} \quad (1)$$

where *i* indexes firms and *t* indexes time (year). *OPACC* is comprehensive operating accruals, including both working capital accruals and non-current operating accruals. Following Larson et al. (2018) I control for current comprehensive operating cash flows (*OPCF*), two leads and lags of *OPCF*, growth in employees (*EMPLGR*[22]), and an interaction of *EMPLGR* and lagged net operating assets scaled by assets ($EMPLGR_t$*NOA_{t-1}).

[22] Revenue data, as used in conventional research when estimating discretionary accruals, is not available for the vast majority of the sample firms due to exemption rules allowing firms below certain thresholds to not disclose

Additionally, I control for negative cash flows (*dumOPCF*) and an interaction between negative cash flow and cash flow (*DumOPCF*OPCF*) to allow a piecewise linear relation between current *OPCF* and *OPACC* (Ball and Shivakumar 2006)[23]. Further, I complement Larson et al.'s (2018) model and include lagged return on assets (ROA_{t-1}) to control for performance (Kothari et al. 2005). I control for lagged *ROA* and not current *ROA* because current *ROA* and current *OPCF* would perfectly explain *OPACC*. I also control for future employee growth ($EMPLGR_{t+1}$) because firms invest based on expectations to future growth (Collins et al. 2017)[24]. All continuous variables are winsorized at the 1% and 99% level to accommodate for outliers, and all variables are defined in appendix. I point out that in all but descriptive analyses I estimate discretionary accruals in a one-step procedure (Chen et al. 2018).

3.2.3 New finance

In my identification of an opportunistic setting in which the firm has incentive to manage earnings, I use events where the firm raises new financing (either debt or equity financing). In my identification I follow Godsell et al. (2017), who likewise base their analysis on ORBIS data, and use a similar method to identify an opportunistic setting when using accruals as proxy for earnings management[25].

First, I calculate the difference between long-term bank debt in year *t+1* and long-term bank debt in year *t-1*, and scale the difference by assets in year *t-1*. I define *DEBT_ISSUE* as an indicator variable taking the value one if the change in debt scaled by assets is larger than 0.05, and zero otherwise. Second, I calculate the difference between shareholders' equity in year *t+1* and shareholders' equity in year *t-1*, and further deduct the sum of net income in year *t* and net income in year *t+1*, and scale this number by assets in year *t-1*. I define *EQUITY_ISSUE* as an indicator variable taking the value one if the change in equity (controlling for concurrent income) scaled by lagged assets is larger than 0.05, and zero otherwise. Finally, I define the

---

revenue. Instead, I use employee growth – a growth measure not subject to manipulation (as for example revenue) – similar to Allen et al. (2013) and Larson et al. (2018).

[23] I point out that Larson et al. (2018) use a piecewise version of MTB (market-to-book ratio) to model conditionally conservative accruals, but use negative cash flows (*DumCF* and *DumCF*CF*) in robustness tests. Market values are naturally not available for private firms.

[24] I note that Collins et al. (2017) use MTB to proxy for growth opportunities, which is not available for my sample. Therefore, I use realized employee growth for year *t+1* instead.

[25] Godsell et al. provide a detailed description of their procedure on page 445

variable *NEW_FIN* as an indicator variable taking the value one if either *DEBT_ISSUE* or *EQUITY_ISSUE* equals one, and zero otherwise.

The variable captures firms raising new finance in year *t* or *t+1*. Due to the lack of cash flow statements I am not able to directly observe cash flows originating from financing activities; hence I proxy those using ORBIS' standardized balance sheet items.

4. EMPIRICAL DESIGN AND RESULTS

4.1 Empirical design

I estimate the effect of criminal executives and criminal employees on accruals with the following equation:

$$OPACC_{it} = \alpha_0 + \beta_1 VOI_{it} + \beta_2 NEW\_FINANCE_{it} + \beta_3 VOI_{it} * NEW\_FINANCE_{it} + FIRM\_CONTROLS_{it} + DACC\_CONTROLS_{it} + \sum INDUSTRY + \sum YEAR + \varepsilon_{i,t} \quad (2)$$

where *i* indexes firms and *t* indexes time (year). *OPACC* is comprehensive operating accruals, including both working capital and non-current operating accruals (inspired by Larson et al. 2018). *VOI* is the variable of interest, and refers to *%CrimEXEC*, *%CrimEMPL*, or the four groups based on *CrimEXEC* and *CrimEMPL* (*1/1*, *1/0*, *0/1*, *0/0*, respectively), dependent on the hypothesis being tested. The indicator *NEW_FIN* captures a setting in which the firm has an incentive to manage earnings, which is important when investigating discretionary accruals (Godsell et al. 2017). The slope on β_3 captures the incremental effect of *VOI* on accruals, given that the firm issues new finance, and is used to test the hypotheses H1 through H3. The research design of using interactions to capture the incremental effect of a construct in a certain setting is commonly used in related research (Ayers et al. 2006 Table 1, Panel D; Balsam et al. 2002 Table 3; Call et al. 2014 Table 5; Frankel et al. 2016 Table 5; Gul et al. 2003 Table 4; Doukakis et al. 2019 equation 1).

FIRM_CONTROLS are firm specific variables used in prior research examining earnings management (Chen et al. 2018), and include the logarithm of total assets (*Log(TA)*, a measure of size), total liabilities to total assets (*TLTA*), the standard deviation of return on assets (*STD_ROA*), and property, plant and equipment (*PPE*). *DACC_CONTROLS* are firm-specific variables used to estimate innate and discretionary accruals, as defined earlier. *INDUSTRY* and *YEAR* indicators control for industry and year fixed effects.

Following Chen et al. (2018) I estimate discretionary accruals with a one-step procedure, rather than the conventional two-step procedure[26], which has proved to provide biased estimates. The slope on *VOI* (and β_3) thus captures the effect of *VOI* on accruals *controlling* for the effects of known determinants of accruals and earnings management.

In the main analysis, by using interactions I impose a structure between *OPACC* and *FIRM_CONTROLS* and *DACC_CONTROLS*, respectively, that does not differ when the firm issues new finance (*NEW_FIN*=1) and when it does not (*NEW_FIN*=0). In robustness tests I relax this restriction and repeat the analysis where I limit the sample to firms issuing new finance (and hence β_2 and β_3 disappear from Eq. (2)). These estimations come at the cost of reduced statistical power as the number of observations decreases significantly.

4.2 Channels through which corporate culture influences criminal behavior

The theoretical literature predicts two channels through which corporate culture influences individuals' behavior and thereby firm behavior: (1) Firms with a criminal executive team attract criminal individuals through sorting mechanisms (Van Den Steen 2010), and (2) individuals are likely to act in accordance with the firm culture because individuals seek to conform to group norms (O'Reilly 1989; Hackman 1992; Elster 1989). In the following I empirically examine each of the two channels.

In Table C.3 I provide descriptive information on the correlation between criminal executives and criminal employees. For the full sample, I find that firms with a criminal executive team are more likely to have a higher proportion of employees with a criminal background employed. The pearson (biserial) correlation between *%CrimEXEC* (*CrimEXEC*) and *%CrimEMPL* is .187 (.381). Additionally, a firm in which the majority of executives have a criminal record on average has 36% (.209/.154) more criminals employed, than a firm with a similar number of employees and a *minority* of executives with a criminal background. These simple statistics provide empirical evidence for an underlying assumption of Liu (2016) and Biggerstaff et al. (2015); that executives tend to hire employees with similar beliefs. However, as evident from standard deviations and the interquartile range I empirically show that significant variation exists in the relation between criminal executives and criminal employees.

[26] Conventionally, researchers in the first stage estimate discretionary accruals as the residual of an OLS regression. In the second stage the residuals from the first stage are typically used as dependent variable. However, such procedure ignores correlations between control variables from the first stage and control variables from the second stage and thus biases coefficient estimates.

Table C.3: Criminal executives and criminal employees

Correlations

σ(%CrimEXEC, %CrimEMPL), pearson	0.187
σ(CrimEXEC, %CrimEMPL), biserial	0.381
σ(CrimEXEC, CrimEMPL), tetrachoric	0.208

Descriptive statistics

CrimEXEC=1

	N	Mean	Std	p25	p50	p75
%CrimEMPL	7,827	0.209	0.139	0.103	0.179	0.286
CrimEMPL	7,827	0.625	0.484			

CrimEXEC=0

	N	Mean	Std	p25	median	p75
%CrimEMPL	42,555	0.154	0.104	0.08	0.134	0.207
CrimEMPL	42,555	0.474	0.499			

This table shows correlations between criminal executives and criminal employees, as well as distributions of criminal employees conditioning on criminal executives. *%CrimEXEC* denotes the percentage of executives with a prior criminal record. *%CrimEMPL* denotes the percentage of employees with a prior criminal record. *CrimEXEC* indicates that the majority of executives have a criminal record. *CrimEMPL* indicates that the workforce is relatively criminal, and takes the value one when the percentage of employees with a criminal record is above the within-year median. All continuous variables are winsorized at the 1 and 99 percent level.

Then, in Table C.4 I estimate on the individual level the propensity to commit a new crime as a function of firm characteristics and controls for personal characteristics. Column 1 and 2 show the estimation with individuals with and without a prior record and column 3 and 4 limit the sample to individuals without any prior record. I estimate the propensity with a hazard model (Shumway 2001), and therefore observations for the time-period following the first "*NEW_CRIME*" observation are not included in the estimation[27]. The estimations show that the propensity to commit crime is positively affected by both the percentage of executives and the percentage of employees with a criminal background, in the firm in which the individual is employed, suggesting that corporate culture influences behavior on the individual level. One standard deviation in *%CrimEMPL* is associated with an increase in the probability of committing a crime in any given year of about 0.11 percentage points ([0.0100 or 0.0095]*0.112)[28], or about 8% of the sample average probability (0.11/0.0136).

[27] In untabulated analyses I estimate comparable models with logistic regression and obtain qualitatively similar results. In these regressions the slope on *%CrimEMPL* is even higher than reported in this paper.
[28] Standard deviation is extracted from Table C.5.

Table C.4: Criminal firms and propensity of individuals to commit new crime

Sample:	Individuals with and without prior record		Individuals without prior record	
	(1) NEW_CRIME_t Coefficient	(2) NEW_CRIME_t Marginal effect	(3) NEW_CRIME_t Coefficient	(4) NEW_CRIME_t Marginal effect
Firm variables				
$\%CrimEMPL_{t-1}$	**2.6672***** **(16.35)**	**0.0100*****	**2.9230***** **(14.83)**	**0.0095*****
$\%CrimEXEC_{t-1}$	**0.1999***** **(4.00)**	**0.0008*****	**0.1919***** **(3.33)**	**0.0006*****
Person variables				
Log(age)	-1.1039*** (-18.64)	-0.0042***	-1.1890*** (-17.75)	-0.0038***
Female	-1.5338*** (-22.02)	-0.0058***	-1.5470*** (-20.63)	-0.0050***
Married	-0.5267*** (-10.46)	-0.0020***	-0.5384*** (-8.99)	-0.0017***
HighEduc	-0.6454*** (-4.80)	-0.0024***	-0.6142*** (-4.23)	-0.0020***
CORRUPT	0.4774*** (6.68)	0.0018***	0.5186*** (6.59)	0.0017***
PersEquity	-0.1845*** (-4.49)	-0.0007***	-0.1754*** (-3.67)	-0.0006***
$\#CRIMES_{t-1}$	0.1539*** (13.92)	0.0006***		
Intercept	-1.7287*** (-8.94)		-1.5610*** (-7.22)	
N	2,367,116	2,367,116	2,124,838	2,124,838
Pseudo R. sq.	0.0676		0.0688	
AUROC	0.7577		0.7601	
NEW_CRIME (estimation sample)	0.0038		0.0033	
NEW_CRIME (all individuals)	0.0136			

This table shows the influence of firms on individuals' propensity to commit new crime. Estimated with a hazard function (Shumway 2001). *NEW_CRIME* indicates that an individual commits crime in the year. *#CRIMES* denotes the number of crimes an individual has committed. *HighEduc* indicates that an individual holds a university degree. *CORRUPT* indicates that an individual has emigrated (first or second generation) from a country with a corruption index below 80 (Transparancy International's ranking, a high index denotes low corruption). *PersEquity* is an individual's personal equity measured in DKK million. *%CrimEXEC* denotes the percentage of executives with a prior criminal record. *%CrimEMPL* denotes the percentage of employees with a prior criminal record. Hazard adjusted *z* statistics in parentheses. ***, **, * Represent significance levels at 0.01, 0.05, and 0.10, respectively (two-tailed test). All continuous variables are winsorized at the 1 and 99 percent level.

4.3 Descriptive statistics

4.3.1 General descriptive statistics

Table C.5 provides descriptive statistics for firm specific and person specific variables. The average sample firm has approximately 42 full time equivalent employees and is relatively small with total assets of EUR 6.4m. Further, I note that 23% of the firm-year observations are classified as *NEW_FIN*=1 observations. 82% of the firm-year observations have only one

executive filed with the Danish Business Authority. 17% of executives have a criminal record, and on average 16% of a firm's workforce have a criminal record[29].

Table C.5: Descriptive statistics

	count	mean	sd	min	p25	p50	p75	max
Firm variables								
TA (DKKm)	50,398	47.9	122.0	1.0	10.8	21.7	48.4	6,861.8
TA (EURm)	50,398	6.4	16.3	0.1	1.4	2.9	6.5	914.9
TLTA	50,398	0.639	0.196	0.133	0.509	0.664	0.790	0.976
STD_ROA	50,398	0.078	0.078	0.006	0.031	0.055	0.095	0.516
PPE	50,398	0.259	0.228	0.000	0.067	0.190	0.407	0.880
NEW_FIN	50,398	0.231	0.421	0.000	0.000	0.000	0.000	1.000
Variables related to discretionary accruals estimation								
EMPLGR	50,398	0.036	0.178	-0.871	-0.053	0.006	0.098	1.500
NOA	50,398	0.476	0.304	-0.389	0.284	0.498	0.683	1.275
ROA	50,398	0.075	0.115	-0.229	0.010	0.055	0.126	0.481
OPACC	50,398	0.032	0.185	-0.466	-0.066	0.017	0.117	0.688
OPCF	50,398	0.043	0.211	-0.656	-0.062	0.041	0.153	0.643
DumOCPF	50,398	0.389	0.488	0.000	0.000	0.000	1.000	1.000
DACC	50,396	0.000	0.073	-0.218	-0.039	-0.001	0.039	0.227
Person variables								
EMPLOYEES	50,398	42.1	37.3	15.0	19.0	28.0	48.0	250.0
EXECUTIVES	50,398	1.2	0.5	1.0	1.0	1.0	1.0	15.0
%CrimEXEC	50,398	0.173	0.366	0.000	0.000	0.000	0.000	1.000
%CrimEMPL	50,398	0.162	0.112	0.000	0.083	0.140	0.217	1.000
Governance variables								
OM	50,398	0.566	0.496	0.000	0.000	1.000	1.000	1.000
Board_present	50,398	0.863	0.344	0.000	1.000	1.000	1.000	1.000
CEO_onboard	50,398	0.645	0.478	0.000	0.000	1.000	1.000	1.000

This table shows descriptive statistics of firm specific variables, variables used for discretionary accrual estimation, person specific variables, and governance variables. All firm-specific ratios and ratios used to estimate discretionary accruals are winsorized at the 1% and 99% level. Firm specific variables and variables used to estimate discretionary accruals are defined in appendix (along with all other variables). Person specific variables are aggregated to firm-year level. *%CrimEXEC* denotes the percentage of executives with a prior criminal record. *%CrimEMPL* denotes the percentage of employees with a prior criminal record. *OM* denotes owner-managed firms. *Board_present* denotes that the firm has a board. *CEO_onboard* denotes that the CEO is on the board. All continuous variables are winsorized at the 1 and 99 percent level.

In Table C.6 I show the distribution of offences. Column 1 shows the percentage of all sample persons with a criminal record, per type of crime. Column 2 and 3 split the sample by executives and employees respectively. In column 4-6 the sample is limited to person-years with a criminal record, and shows the distribution of crimes across all sample persons, executives and

[29] These percentages are slightly lower than reported in Kallunki et al. (2018), potentially because Kallunki et al. include individuals who have been under investigation for serious crimes, however not convicted, in their definition of criminal individuals. In this study, I include only convicted criminals, because most Western countries operate under the concept of "presumption of innocence" or "innocent until proven guilty".

employees, respectively. I observe that approximately 46% of executive crimes are related to "offences of other specialty laws". This category covers a wide range of laws, and includes restraining orders, offences of the bookkeeping act, offences of marketing practices, and many more[30]. 28% of executive crimes are related to "offences against property" including document forgery and fraud, burglary, theft, embezzlement and general fraud. These two offence categories represent the two largest executive crime categories. 9.2% of the executives' offences relate to violent offences, and 1.5% relate to sexual offences. From column 5, I find that 45% of employees' offences relate to "offences against property", and 16% relate to "offences of other specialty laws" as described above. As with the executives, these two offense categories represent the two largest crime categories of employees.

Table C.6: Distribution of offences

		Sample: all observations			Sample: *CRIME*=1		
Crime code	Offence	(1) Individ.	(2) Exec.	(3) Empl.	(4) Individ.	(5) Exec.	(6) Empl.
11	Sexual offences	0.42%	0.29%	0.42%	1.90%	1.48%	1.91%
12	Violent offences	3.35%	1.81%	3.38%	15.20%	9.21%	15.30%
13	Offences against property	9.86%	5.49%	9.94%	44.71%	28.00%	44.99%
14	Other offences	1.41%	1.13%	1.41%	6.39%	5.76%	6.40%
32	Drug related offences	1.98%	0.24%	2.01%	8.99%	1.22%	9.12%
34	Weapon related offences	1.13%	0.97%	1.13%	5.12%	4.95%	5.12%
36	Tax and fiscal offences	0.19%	0.72%	0.18%	0.87%	3.66%	0.82%
38	Offences of other specialty laws	3.71%	8.96%	3.61%	16.83%	45.70%	16.34%
Total		22.05%	19.61%	22.09%	100.00%	100.00%	100.00%
Observations (person-years)		3,205,113	60,002	3,145,111	706,657	11,766	694,891

This table shows the distribution of offences per executives and employees. "Crime code" refers to the 2-digit offence codes used in the criminal registers available at https://www.dst.dk/da/Statistik/dokumentation/Times/kriminalstatistik/afg-ger7 (in Danish). I point out that the total percentage differs from the percentage of criminals reported in Table C.5, because one person can be convicted for more than one offence. Code 14 offences (Other offences) include offences against public authority, false statement in court, crimes related to money and evidence, smuggling, illegal business, and more. Code 38 offences (Offences of other specialty laws) include offences of the immigration act, offences of the consolidation act of order, offences of the administration of justice act, restraining orders, offences of the act of bookkeeping, offences of the marketing practices act, and more.

4.3.2 Discretionary accruals, criminal executives, and criminal employees

In the following I provide univariate statistics of discretionary accruals (*DACC*) for firm-year observations related to the issuance of new finance (*NEW_FIN*=1), across *CrimEXEC*, *CrimEMPL*, and the four groups mixed by *CrimEXEC* and *CrimEMPL*, respectively. I provide these univariate statistics in Table C.7.

[30] Full overview of laws covered by this category is available at https://www.dst.dk/da/Statistik/dokumentation/Times/kriminalstatistik/afg-ger7 (in Danish)

Table C.7: Discretionary accruals across criminal executives and criminal employees traits, conditional on *NEW_FIN*=1

Panel A: Criminal executives and DACC

	Non-criminal executives CrimEXEC=0	*Criminal executives* CrimEXEC=1	Difference
DACC	0.003***	0.008***	0.005**
	(3.37)	(4.22)	(2.37)
N	9,778	1,834	11,612

Panel B: Criminal employees and DACC

	Non-criminal employees CrimEMPL=0	*Criminal employees* CrimEMPL=1	Difference
DACC	0.001	0.006***	0.004***
	(1.06)	(5.62)	(2.93)
N	5,413	6,199	11,612

Panel C: Criminal executives, criminal employees, and DACC

	Non-criminal executives and CrimEXEC=0			*Criminal executives and* CrimEXEC=1		
	Non-criminal workforce CrimEMPL=0	*Criminal workforce* CrimEMPL=1	Difference	*Non-criminal workforce* CrimEMPL=0	*Criminal workforce* CrimEMPL=1	Difference
DACC	0.001	0.005***	0.004**	0.003	0.010***	0.007*
	(0.79)	(4.04)	(2.19)	(0.93)	(4.62)	(1.69)
N	4,820	4,958	9,778	593	1,241	1,834

This table shows the average discretionary accruals (*DACC*) when the firm issues new finance, by (1) criminal executives (majority of executives have a criminal record) and (2) criminal workforce (the proportion of employees with a criminal record above within-year median). *CrimEXEC* indicates that the majority of executives have a criminal record. *CrimEMPL* indicates that the workforce is relatively criminal, and takes the value one when the percentage of employees with a criminal record is above the within-year median. *t* statistics in parentheses. ***, **, * Represent significance levels at 0.01, 0.05, and 0.10, respectively (two-tailed test). All continuous variables are winsorized at the 1 and 99 percent level.

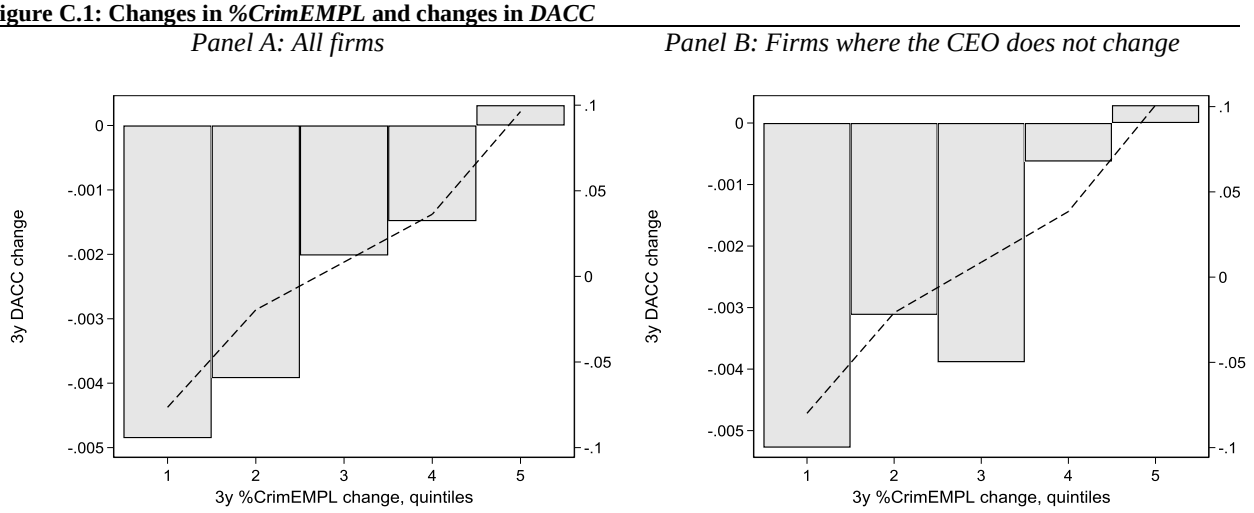
Criminal executives: In Panel A, I find that *DACC* of firms run by criminal executives (*CrimEXEC*=1, i.e. the majority of executives are criminal) are positive (0.008) and significantly larger than DACC of firms run by non-criminal executives (*CrimEXEC*=0) (two-tailed t-test of means, p-value=0.018). These results provide initial evidence that firms run by criminal executives are associated with income-increasing accrual earnings management when issuing new finance, consistent with H1.

Criminal employees: In Panel B, I find that *DACC* of firms with relatively criminal employees (*CrimEMPL*=1, i.e. the percentage of employees with a criminal record is above the within-year median) are positive (0.006) and significantly larger than *DACC* of firms with relatively non-criminal employees (*CrimEMPL*=0) (two-tailed t-test of means, p-value<0.01). These tests

provide initial evidence that firms with a relatively criminal workforce are associated with income-increasing accrual earnings management when issuing new finance, consistent with H2.

To further explore the relation between employees and discretionary accruals, I classify observations into quantiles based on the 3-year changes in *%CrimEMPL* (i.e. the changes in the percentage of employees with a criminal record). In Figure C.1, Panel A, I display the changes in *DACC* per changes in *%CrimEMPL* quintile, and observe a remarkably linear trend. I point out that in these plots, I do not condition on *NEW_FIN*=1, because very few firms issue new finance in one year, change the composition of the workforce, and then issue new finance three years later. In Panel B, I show a comparable plot, but include only those firms without any CEO changes, i.e. I hold the CEO fixed. These plots provide further evidence for H2.

Figure C.1: Changes in *%CrimEMPL* and changes in *DACC*



This figure shows the 3-year changes in *DACC* per 3-year changes in *%CrimEMPL* quintile. The x-axis denotes the 3-year change in *%CrimEMPL* quintile. The left hand side y-axis shows the 3-year *DACC* change (bars). The right hand side y-axis shows the 3-year *%CrimEMPL* change (line).

Criminal executives and criminal employees: In Panel C, I show the collective influence of executives and employees on discretionary accrual choices. Conditioning on the executive team being criminal (*CrimEXEC*=1) I find that firms with criminal employees (*CrimEMPL*=1), relative to firms with non-criminal employees (*CrimEMPL*=0) use discretion to increase earnings more when the firm issues new finance. The difference in DACC is 0.7 percentage points and is (marginally) statistically significant (two-tailed t-test of means, p-value=0.091). Conditioning on the executive team not being criminal (*CrimEXEC*=0) firms with criminal employees (*CrimEMPL*=1) use discretionary accruals to increase earnings by 0.04 percentage

points more than firms with non-criminal employees (*CrimEMPL*=0) (two-tailed t-test of means, p-value=0.029). These results provide additional empirical evidence on the influence of employees on financial reporting and support H2.

The average *DACC* of firms with criminal executives and criminal employees (0.010) is significantly larger than the average *DACC* of firms with non-criminal executives and criminal employees (0.005) (two-tailed t-test of means, p-value=0.036, untabulated), suggesting that the effect of criminal individuals on financial reporting is mostly pronounced when both executives and employees have criminal backgrounds, consistent with H3.

In Figure C.2 I graph time-series properties of *DACC* across the four *CrimEXEC*/*CrimEMPL* groups as described above. Time (x-axis) refers to year relative to the *NEW_FIN*=1 year(s). The graphs shows an upward kink in year t=0, i.e. when the firm issues new finance, for the 1/1 group, i.e. where *CrimEXEC*=1 and *CrimEMPL*=1. The preceding and following years do not show any sign of income-increasing earnings management. The graph resembles that reported by Cohen and Zarowin (2010 Table 2) investigating discretionary accruals around seasoned equity offerings, and gives confidence that discretionary accruals capture earnings management in this setting. For the other three groups such a relationship is not very pronounced, if present at all. The results corroborate the findings above, and depict the importance of investigating accruals in a setting where incentives provide a priori expectation on the sign of *DACC*.

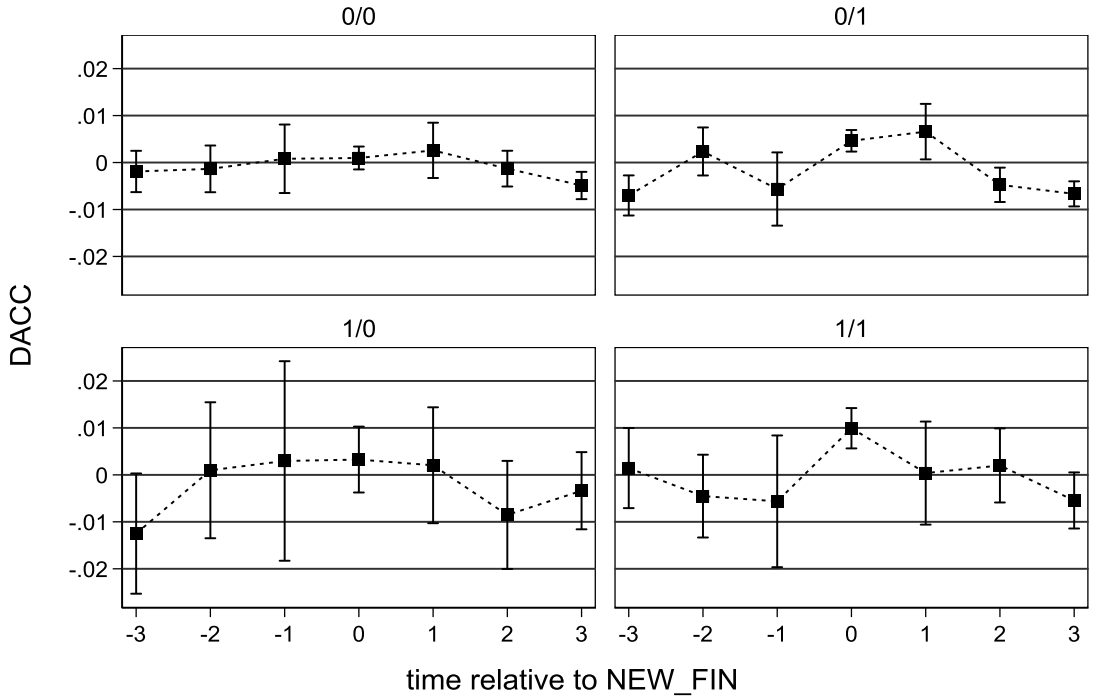
4.4 Regression results

In the following, I extend the univariate insights above with multiple regressions. I estimate Eq. (2) using pooled OLS, cluster standard errors by firm and year (Gow et al. 2010), and present the results in Table C.8. In column 1 I show the estimation with only firm related variables. Accruals are insignificantly related to *Log(TA)* and negatively related to *TLTA*, consistent with single-step regressions in Chen et al. (2018). Both current and future employee growth is positively related to accruals. Lagged and leaded cash flows are negatively related to accruals, and current cash flows are positively related to accruals, consistent with Larson et al. (2018). Accruals are positively related to lagged *ROA*, consistent with Kothari et al. (2005).

In column 2 I show the effect of criminal executives, and find that firms run by criminal executives are more prone to use earnings management (captured by the coefficient of the interaction between *%CrimEXEC* and *NEW_FIN*). These results are consistent with Davidson et al. (2015). Then, in column 3 I include the effect of employees. In this regression, the effect of

executives is muted and becomes insignificant, potentially due to high correlation between *%CrimEXEC* and *%CrimEMPL*. However, the effect of criminal employees is highly statistically and economically significant: one standard deviation of *%CrimEMPL* is associated with an increase in *ROA* of 0.4 percentage points (0.112*(0.0262+0.0099)).

Figure C.2: time-series properties of DACC per executive/workforce group



This figure shows the time-series properties of *DACC* by time preceding and following *NEW_FIN*=1. Ranges denote 95% confidence intervals. All continuous variables are winsorized at the 1 and 99 percent level. *CrimEXEC* indicates that the majority of executives have a criminal record. *CrimEMPL* indicates that the workforce is relatively criminal, and takes the value one when the percentage of employees with a criminal record is above the within-year median. *1/1* is an indicator taking the value one if *CrimEXEC*=1 and *CrimEMPL*=1. *1/0* is an indicator taking the value one if *CrimEXEC*=1 and *CrimEMPL*=0. *0/1* is an indicator taking the value one if *CrimEXEC*=0 and *CrimEMPL*=1. *0/0* is an indicator taking the value one if *CrimEXEC*=0 and *CrimEMPL*=0.

In column 4 through 6 I show the results of the four groups based on *CrimEXEC* and *CrimEMPL*, respectively. Relative to each of the other three groups, I consistently find that firms with both criminal executives (*CrimEXEC=1*) and criminal employees (*CrimEMPL=1*) are associated with income-increasing *DACC* when the firm issues new finance (captured by the slope on *1/1*NEW_FIN*). The effects are statistically significant (two-tailed tests, p-values in the range <0.001;0.022) and are economically significant, as *DACC* is used to increase *ROA* by 0.82-1.25 percentage points, or about 11.4-17.4% of the sample mean *ROA* (0.0082/0.075 ; 0.0125/0.075).

The results provide empirical evidence for H3 and corroborate the results of the univariate analyses above: earnings management is positively associated with firms in which both executives and employees are relatively criminal. A notable finding is that within firms with criminal executives, the positive association with earnings management is driven by firms who also employ criminal employees.

Table C.8: Discretionary accruals, criminal executives and criminal employees

	(1) $OPACC_{i,t}$	(2) $OPACC_{i,t}$	(3) $OPACC_{i,t}$	(4) $OPACC_{i,t}$	(5) $OPACC_{i,t}$	(6) $OPACC_{i,t}$
Proportion of criminal executives and criminal employees						
$\%CrimEXEC_{i,t}$		0.0006	0.0004			
		(0.62)	(0.40)			
$\%CrimEXEC_{i,t}$*$NEW\_FIN_{i,t}$		**0.0064****	**0.0047**			
		(1.98)	**(1.51)**			
$\%CrimEMPL_{i,t}$			0.0099*			
			(1.78)			
$\%CrimEMPL_{i,t}$*$NEW\_FIN_{i,t}$			**0.0262*****			
			(2.90)			
CrimEXEC / CrimEMPL						
$1/1_{i,t}$				0.0022*	0.0002	0.0014
				(1.90)	(0.13)	(0.56)
$1/1_{i,t}$* $NEW\_FIN_{i,t}$				**0.0125*****	**0.0082*****	**0.0108****
				(4.29)	**(2.64)**	**(2.30)**
$1/0_{i,t}$				0.0008	-0.0012	Base level
				(0.45)	(-0.58)	
$1/0_{i,t}$* $NEW\_FIN_{i,t}$				0.0016	-0.0026	Base level
				(0.31)	(-0.57)	
$0/1_{,t}$				0.0020**	Base level	0.0012
				(2.26)		(0.58)
$0/1_{i,t}$*$NEW\_FIN_{i,t}$				0.0042*	Base level	0.0026
				(1.79)		(0.57)
$0/0_{i,t}$				Base level	-0.0020**	-0.0008
					(-2.24)	(-0.46)
$0/0_{i,t}$*$NEW\_FIN_{i,t}$				Base level	-0.0042*	-0.0016
					(-1.79)	(-0.31)
$NEW\_FIN_{i,t}$	0.0063**	0.0052**	0.0010	0.0031	0.0073**	0.0047
	(2.47)	(2.12)	(0.46)	(1.49)	(2.30)	(0.81)
Firm controls						
$\log(TA)_{i,t}$	0.0002	0.0002	0.0003	0.0003	0.0003	0.0003
	(0.47)	(0.52)	(0.73)	(0.62)	(0.62)	(0.61)
$TLTA_{i,t}$	-0.0682***	-0.0683***	-0.0686***	-0.0686***	-0.0686***	-0.0686***
	(-10.45)	(-10.46)	(-10.50)	(-10.54)	(-10.54)	(-10.54)
$STD\_ROA_{i,t}$	-0.0175	-0.0175	-0.0180*	-0.0175	-0.0175	-0.0175
	(-1.59)	(-1.60)	(-1.66)	(-1.59)	(-1.59)	(-1.59)
$PPE_{i,t}$	-0.0088***	-0.0090***	-0.0099***	-0.0095***	-0.0095***	-0.0095***
	(-2.87)	(-2.96)	(-3.28)	(-3.20)	(-3.20)	(-3.20)
Discretionary accruals controls						
$EMPLGR_{i,t}$	0.0612***	0.0613***	0.0611***	0.0612***	0.0612***	0.0612***
	(10.96)	(10.98)	(10.83)	(10.84)	(10.84)	(10.84)

$EMPLGR_{i,t+1}$	0.0862***	0.0862***	0.0862***	0.0861***	0.0861***	0.0861***
	(25.39)	(25.24)	(25.80)	(25.70)	(25.69)	(25.69)
$EMPLGR_{i,t}$*$NOA_{i,t-1}$	0.0084	0.0082	0.0077	0.0078	0.0078	0.0078
	(0.65)	(0.64)	(0.60)	(0.61)	(0.61)	(0.61)
$OPCF_{i,t-2}$	0.0353***	0.0353***	0.0354***	0.0354***	0.0354***	0.0354***
	(12.38)	(12.39)	(12.35)	(12.38)	(12.38)	(12.38)
$OPCF_{i,t-1}$	0.0750***	0.0750***	0.0750***	0.0750***	0.0750***	0.0750***
	(15.71)	(15.72)	(15.79)	(15.74)	(15.74)	(15.74)
$OPCF_{i,t}$	-0.7088***	-0.7088***	-0.7089***	-0.7088***	-0.7088***	-0.7088***
	(-96.77)	(-96.48)	(-96.22)	(-96.36)	(-96.35)	(-96.33)
$DumOPCF_{i,t}$	0.0039***	0.0039***	0.0038**	0.0038***	0.0038***	0.0038***
	(2.59)	(2.61)	(2.57)	(2.61)	(2.61)	(2.61)
$DumOPCF_{i,t}$*$OPCF_{i,t}$	-0.1648***	-0.1648***	-0.1652***	-0.1650***	-0.1650***	-0.1650***
	(-14.13)	(-14.13)	(-14.13)	(-14.15)	(-14.15)	(-14.15)
$OPCF_{i,t+1}$	0.0915***	0.0915***	0.0915***	0.0915***	0.0915***	0.0915***
	(20.62)	(20.65)	(20.56)	(20.60)	(20.60)	(20.60)
$OPCF_{i,t+2}$	0.0485***	0.0485***	0.0486***	0.0486***	0.0486***	0.0486***
	(16.64)	(16.61)	(16.58)	(16.59)	(16.60)	(16.52)
$ROA_{i,t-1}$	0.2777***	0.2774***	0.2769***	0.2768***	0.2768***	0.2768***
	(18.04)	(18.01)	(18.11)	(18.18)	(18.18)	(18.18)
Intercept	0.0743***	0.0741***	0.0732***	0.0737***	0.0757***	0.0745***
	(12.15)	(12.20)	(11.70)	(12.04)	(12.56)	(11.35)
Industry FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
N	50,396	50,396	50,396	50,396	50,396	50,396
Adjust R. sq.	0.8185	0.8186	0.8187	0.8187	0.8187	0.8187

This table shows the results of estimating Eq. (2), i.e. how criminal executives and criminal employees are related to accruals. *%CrimEXEC* is the proportion of the workforce with a criminal record. *%CrimEMPL* is the proportion of the executives with a criminal record. *CrimEXEC* indicates that the majority of executives have a criminal record. *CrimEMPL* indicates that the workforce is relatively criminal, and takes the value one when the percentage of employees with a criminal record is above the within-year median. *1/1* is an indicator taking the value one if *CrimEXEC*=1 and *CrimEMPL*=1. *1/0* is an indicator taking the value one if *CrimEXEC*=1 and *CrimEMPL*=0. *0/1* is an indicator taking the value one if *CrimEXEC*=0 and *CrimEMPL*=1. *0/0* is an indicator taking the value one if *CrimEXEC*=0 and *CrimEMPL*=0. Firm controls and discretionary accruals controls are defined in appendix. Standard errors are clustered by firm and year (Gow et al. 2010). *t* statistics in parentheses. ***, **, * Represent significance levels at 0.01, 0.05, and 0.10, respectively (two-tailed test). All continuous variables are winsorized at the 1 and 99 percent level.

4.5 Robustness tests

4.5.1 Firm fixed effects

In the following I repeat the analyses with the four *CrimEXEC*/*CrimEMPL* groups and control for firm fixed effects. First, in Table C.9, I provide descriptive statistics on firms that change groups throughout their sample lifetime, i.e. firms in which either the executives or employees change from criminal to non-criminal, or vice versa. The total sample covers 9,002 unique firms and 50,398 firm-year observations. Approximate two thirds of the firms never change groups. Of those that change group 640 firms have at some point in their sample lifetime been in group *CrimEXEC*/*CrimEMPL*=1/1. Of those firms, 147, 340, and 384 have at some point been in group *CrimEXEC*/*CrimEMPL*=0/0, 0/1, and 1/0, respectively, and of those firms only 58, 172, and 171, respectively, issue new finance when they are in group

CrimEXEC/*CrimEMPL*=1/1. In the table, I further provide statistics on the provide information on the (relatively low) number of observations being investigated in the regressions with firm fixed effects, because firm fixed effects eliminate observations which are firm-invariant.

Table C.9: Information of CrimEXEC/CrimEMPL group changes

	Unique firms	Firm-year observations
Total firms	9,002	50,398
Of which change *CrimEXEC/CrimEMPL* group	3,015	23,921
Of which at some point were/are in group *1/1*	640	5,093
Of which at some point were/are in group:		
0/0	147	1,387
0/1	340	2,991
1/0	384	2,958
Of which issue new finance when in group *1/1*		
0/0	58	526
0/1	172	1,564
1/0	171	1,400

This table shows descriptive statistics on firms that change *CrimEXEC/CrimEMPL* groups over their lifetime. *CrimEXEC* indicates that the majority of executives have a criminal record. *CrimEMPL* indicates that the workforce is relatively criminal, and takes the value one when the percentage of employees with a criminal record is above the within-year median. *1/1* is an indicator taking the value one if *CrimEXEC*=1 and *CrimEMPL*=1. *1/0* is an indicator taking the value one if *CrimEXEC*=1 and *CrimEMPL*=0. *0/1* is an indicator taking the value one if *CrimEXEC*=0 and *CrimEMPL*=1. *0/0* is an indicator taking the value one if *CrimEXEC*=0 and *CrimEMPL*=0.

Table C.10: Discretionary accruals, criminal executives and criminal employees, controlling for firm fixed effects

	(1) $OPACC_{i,t}$	(2) $OPACC_{i,t}$	(3) $OPACC_{i,t}$	(4) $OPACC_{i,t}$
CrimEXEC / CrimEMPL				
$1/1_{i,t}$		0.0022	-0.0003	0.0025
		(0.66)	(-0.10)	(0.79)
$1/1_{i,t}$*NEW_FIN$_{i,t}$		**0.0084****	**0.0077****	**0.0087***
		(2.51)	**(2.34)**	**(1.66)**
$1/0_{i,t}$		-0.0003	-0.0028	Base level
		(-0.08)	(-0.82)	
$1/0_{i,t}$*NEW_FIN$_{i,t}$		-0.0002	-0.0010	Base level
		(-0.05)	(-0.20)	
$0/1_{,t}$		0.0025*	Base level	0.0028
		(1.79)		(0.82)
$0/1_{i,t}$*NEW_FIN$_{i,t}$		0.0007	Base level	0.0010
		(0.32)		(0.20)
$0/0_{i,t}$		Base level	-0.0025*	0.0003
			(-1.79)	(0.08)
$0/0_{i,t}$*NEW_FIN$_{i,t}$		Base level	-0.0007	0.0002
			(-0.32)	(0.05)
NEW_FIN$_{i,t}$	0.0058***	0.0045***	0.0053***	0.0043
	(5.32)	(2.62)	(3.30)	(0.96)
Firm controls				
log(TA)$_{i,t}$	0.0490***	0.0489***	0.0489***	0.0489***
	(20.70)	(20.70)	(20.70)	(20.70)

$TLTA_{i,t}$	-0.2213***	-0.2213***	-0.2213***	-0.2213***
	(-34.30)	(-34.28)	(-34.28)	(-34.28)
$STD\_ROA_{i,t}$	0.0574***	0.0571***	0.0571***	0.0571***
	(3.88)	(3.86)	(3.86)	(3.86)
$PPE_{i,t}$	-0.0499***	-0.0497***	-0.0497***	-0.0497***
	(-8.15)	(-8.13)	(-8.13)	(-8.13)
Discretionary accruals controls				
$EMPLGR_{i,t}$	0.0684***	0.0684***	0.0684***	0.0684***
	(11.87)	(11.86)	(11.86)	(11.86)
$EMPLGR_{i,t+1}$	0.0723***	0.0723***	0.0723***	0.0723***
	(21.91)	(21.91)	(21.91)	(21.91)
$EMPLGR_{i,t}*NOA_{i,t-1}$	0.0004	0.0001	0.0001	0.0001
	(0.04)	(0.01)	(0.01)	(0.01)
$OPCF_{i,t-2}$	0.0296***	0.0296***	0.0296***	0.0296***
	(13.05)	(13.05)	(13.05)	(13.05)
$OPCF_{i,t-1}$	0.0779***	0.0779***	0.0779***	0.0779***
	(26.71)	(26.72)	(26.72)	(26.72)
$OPCF_{i,t}$	-0.7528***	-0.7528***	-0.7528***	-0.7528***
	(-145.47)	(-145.49)	(-145.49)	(-145.49)
$DumOPCF_{i,t}$	0.0053***	0.0053***	0.0053***	0.0053***
	(4.81)	(4.84)	(4.84)	(4.84)
$DumOPCF_{i,t}*OPCFi_{,t}$	-0.1278***	-0.1278***	-0.1278***	-0.1278***
	(-16.92)	(-16.92)	(-16.92)	(-16.92)
$OPCF_{i,t+1}$	0.0625***	0.0624***	0.0624***	0.0624***
	(20.85)	(20.82)	(20.82)	(20.82)
$OPCF_{i,t+2}$	0.0229***	0.0229***	0.0229***	0.0229***
	(8.72)	(8.71)	(8.71)	(8.71)
$ROA_{i,t-1}$	0.0402***	0.0398***	0.0398***	0.0398***
	(5.53)	(5.48)	(5.48)	(5.48)
Intercept	-0.2602***	-0.2612***	-0.2587***	-0.2615***
	(-10.65)	(-10.70)	(-10.58)	(-10.54)
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES
N	50,396	50,396	50,396	50,396
Adjust R. sq.	0.8523	0.8523	0.8523	0.8523

This table shows the regression tables from estimating Eq. (2) with firm fixed effects, i.e. how criminal executives and criminal employees are related to accruals. *CrimEXEC* indicates that the majority of executives have a criminal record. *CrimEMPL* indicates that the workforce is relatively criminal, and takes the value one when the percentage of employees with a criminal record is above the within-year median. *1/1* is an indicator taking the value one if *CrimEXEC*=1 and *CrimEMPL*=1. *1/0* is an indicator taking the value one if *CrimEXEC*=1 and *CrimEMPL*=0. *0/1* is an indicator taking the value one if *CrimEXEC*=0 and *CrimEMPL*=1. *0/0* is an indicator taking the value one if *CrimEXEC*=0 and *CrimEMPL*=0. Firm controls and discretionary accruals controls are defined in appendix. Standard errors are clustered by firm. *t* statistics in parentheses. ***, **, * Represent significance levels at 0.01, 0.05, and 0.10, respectively (two-tailed test). All continuous variables are winsorized at the 1 and 99 percent level.

I show the results of estimating Eq. (2) with firm fixed effects in Table C.10. Generally, prior conclusions remain unchanged. The coefficients on the interaction *1/1*NEW_FIN* slightly decrease in these estimations to 0.77-0.87 percentage points. When comparing the 1/1 group to the two groups with non-criminal executives (0/0 in column 2 and 0/1 in column 3, respectively) the results are statistically significant at conventional levels (two-tailed tests, p-values in the range 0.012;0.019). When comparing the 1/1 group to the 1/0 group in column 4, the results are

marginally significant (two-tailed tests, p-value=0.096). Using firm fixed effects generally lowers the statistical significance, because only firms that change groups (hence fewer observations as discussed above) are included the analysis.

4.5.2 Controlling for other governance mechanisms

In the following I re-estimate Eq. (2) and further add controls for other governance mechanisms. Specifically, I control for *BOARD_PRESENT* (an indicator taking the value one if the firm has a board, and zero otherwise), *CEO_ONBOARD* (an indicator taking the value one if the CEO is on the board, and zero otherwise), and *OM* (an indicator taking the value one if the CEO is an owner-manager, and zero otherwise)[31]. The results are presented in Table C.11. For brevity, *FIRM_CONTORLS* and *DACC_CONTROLS* are estimated but not reported. I find that boards are marginally associated with an attenuating effect on earnings management (captured by the slope on the interaction *BOARD_PRESENT*NEW_FIN*), and that this attenuating effect practically disappears when the CEO is on the board (captured by the sum of the slopes of *CEO_ONBOARD*NEW_FIN* and *BOARD_PRESENT*NEW_FIN*). Owner-managed firms are positively associated with earnings management; the effect is significant at the 1% level (captured by the slope of *OM*NEW_FIN*).

Controlling for conventional governance characteristics, the results of the *CrimEXEC*/*CrimEMPL*=1/1 group decrease in magnitude: the *1/1* group is associated with increased *ROA* through accrual earnings management in the range 0.52-0.94 percentage points (relative to 0.82-1.25 percentage points in the main analysis without governance controls). When comparing the *1/1* group to the *0/0* group in column 3 and *1/0* group in column 5, respectively, the incremental effect is statistically significant at conventional levels (two-tailed tests, p-values in the range 0.003;0.045). Interestingly, when comparing the *1/1* group to the *0/1* group, i.e. the group with non-criminal executives but criminal employees, the effect is only marginally significant (two-tailed test, p-value=0.092), emphasizing the ability of employees to capture unobserved corporate culture.

[31] The variable *OM* takes the value one if the CEO owns more than 95% of the firm. For the observations where ownership data are missing, the variable *OM* takes the value one if the current CEO was the founder of the firm (was a CEO on the date the firm was founded), and zero otherwise.

Table C.11: Discretionary accruals, criminal executives and criminal employees, controlling for other governance mechanisms

	(1) $OPACC_{i,t}$	(2) $OPACC_{i,t}$	(3) $OPACC_{i,t}$	(4) $OPACC_{i,t}$	(5) $OPACC_{i,t}$
CrimEXEC / CrimEMPL					
$1/1_{i,t}$			0.0020*	0.0000	0.0015
			(1.69)	(0.01)	(0.63)
$1/1_{i,t}$*NEW_FIN$_{i,t}$			**0.0083*** **	**0.0052***	**0.0094****
			(2.97)	**(1.69)**	**(2.01)**
$1/0_{i,t}$			0.0005	-0.0015	Base level
			(0.30)	(-0.75)	
$1/0_{i,t}$*NEW_FIN$_{i,t}$			-0.0011	-0.0042	Base level
			(-0.20)	(-0.94)	
$0/1_{,t}$			0.0020**	Base level	0.0015
			(2.24)		(0.75)
$0/1_{i,t}$*NEW_FIN$_{i,t}$			0.0031	Base level	0.0042
			(1.34)		(0.94)
$0/0_{i,t}$			Base level	-0.0020**	-0.0005
				(-2.24)	(-0.30)
$0/0_{i,t}$*NEW_FIN$_{i,t}$			Base level	-0.0031	0.0011
				(-1.34)	(0.20)
Governance controls					
BOARD_PRESENT$_{i,t}$		-0.0070***	-0.0071***	-0.0071***	-0.0071***
		(-4.48)	(-4.53)	(-4.52)	(-4.52)
BOARD_PRESENT$_{i,t}$*NEW_FIN$_{i,t}$		-0.0074*	-0.0068*	-0.0068*	-0.0068*
		(-1.85)	(-1.71)	(-1.71)	(-1.71)
CEO_ONBOARD$_{i,t}$		0.0047***	0.0046***	0.0046***	0.0046***
		(4.19)	(4.09)	(4.09)	(4.09)
CEO_ONBOARD$_{i,t}$*NEW_FIN$_{i,t}$		0.0069***	0.0064**	0.0064**	0.0064**
		(2.74)	(2.47)	(2.47)	(2.47)
$OM_{i,t}$		-0.0002	-0.0002	-0.0002	-0.0002
		(-0.30)	(-0.29)	(-0.29)	(-0.29)
$OM_{i,t}$*NEW_FIN$_{i,t}$		0.0122***	0.0116***	0.0116***	0.0116***
		(5.06)	(4.96)	(4.96)	(4.96)
NEW_FIN$_{i,t}$	0.0063**	0.0022	0.0001	0.0033	-0.0009
	(2.47)	(0.45)	(0.03)	(0.60)	(-0.12)
FIRM_CONTROLS	YES	YES	YES	YES	YES
DACC_CONTROLS	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES
N	50,396	50,396	50,396	50,396	50,396
Adjust R. sq.	0.8185	0.8191	0.8192	0.8192	0.8192

This table shows the results of estimating Eq. (2) with governance controls added to the right hand-side. Eq. (2) estimates how criminal employees and criminal executives are related to accruals. *FIRM_CONTROLS* and *DACC_CONTROLS* are estimated but not reported. *CrimEXEC* indicates that the majority of executives have a criminal record. *CrimEMPL* indicates that the workforce is relatively criminal, and takes the value one when the percentage of employees with a criminal record is above the within-year median. *1/1* is an indicator taking the value one if *CrimEXEC*=1 and *CrimEMPL*=1. *1/0* is an indicator taking the value one if *CrimEXEC*=1 and *CrimEMPL*=0. *0/1* is an indicator taking the value one if *CrimEXEC*=0 and *CrimEMPL*=1. *0/0* is an indicator taking the value one if *CrimEXEC*=0 and *CrimEMPL*=0. Firm controls and discretionary accruals controls are defined in appendix. Standard errors are clustered by firm and year (Gow et al. 2010). *t* statistics in parentheses. ***, **, * Represent significance levels at 0.01, 0.05, and 0.10, respectively (two-tailed test). All continuous variables are winsorized at the 1 and 99 percent level.

Table C.12: Discretionary accruals, criminal executives and criminal employees, conditional on *NEW_FIN*=1

	(1) $OPACC_{i,t}$	(2) $OPACC_{i,t}$	(3) $OPACC_{i,t}$	(4) $OPACC_{i,t}$
CrimEXEC / CrimEMPL				
$1/1_{i,t}$		**0.0086*** **	**0.0061** **	**0.0074**
		(3.10)	**(2.51)**	**(1.52)**
$1/0_{i,t}$		0.0012	-0.0013	Base level
		(0.22)	(-0.25)	
$0/1_{,t}$		0.0025	Base level	0.0013
		(1.03)		(0.25)
$0/0_{i,t}$		Base level	-0.0025	-0.0012
			(-1.03)	(-0.22)
Firm controls				
$\log(TA)_{i,t}$	-0.0020*	-0.0019*	-0.0019*	-0.0019*
	(-1.85)	(-1.74)	(-1.74)	(-1.74)
$TLTA_{i,t}$	-0.0824***	-0.0831***	-0.0831***	-0.0831***
	(-8.22)	(-8.42)	(-8.41)	(-8.41)
$STD\_ROA_{i,t}$	-0.1287***	-0.1291***	-0.1291***	-0.1291***
	(-6.02)	(-6.09)	(-6.09)	(-6.09)
$PPE_{i,t}$	0.0120**	0.0110*	0.0110*	0.0110*
	(2.06)	(1.93)	(1.93)	(1.93)
Discretionary accruals controls				
$EMPLGR_{i,t}$	0.0748***	0.0748***	0.0748***	0.0748***
	(5.51)	(5.49)	(5.49)	(5.49)
$EMPLGR_{i,t+1}$	0.0850***	0.0850***	0.0850***	0.0850***
	(11.19)	(11.27)	(11.26)	(11.26)
$EMPLGR_{i,t}*NOA_{i,t-1}$	-0.0229	-0.0236	-0.0236	-0.0236
	(-1.03)	(-1.06)	(-1.06)	(-1.06)
$OPCF_{i,t-2}$	0.0394***	0.0394***	0.0394***	0.0394***
	(7.28)	(7.32)	(7.32)	(7.30)
$OPCF_{i,t-1}$	0.0765***	0.0766***	0.0766***	0.0766***
	(10.35)	(10.34)	(10.34)	(10.32)
$OPCF_{i,t}$	-0.7371***	-0.7370***	-0.7370***	-0.7370***
	(-62.04)	(-60.77)	(-60.77)	(-60.77)
$DumOPCF_{i,t}$	0.0035	0.0035	0.0035	0.0035
	(1.13)	(1.14)	(1.14)	(1.14)
$DumOPCF_{i,t}*OPCFi_{,t}$	-0.1322***	-0.1324***	-0.1324***	-0.1324***
	(-7.57)	(-7.49)	(-7.49)	(-7.49)
$OPCF_{i,t+1}$	0.0819***	0.0819***	0.0819***	0.0819***
	(13.01)	(12.97)	(12.96)	(12.97)
$OPCF_{i,t+2}$	0.0529***	0.0531***	0.0531***	0.0531***
	(7.57)	(7.61)	(7.62)	(7.61)
$ROA_{i,t-1}$	0.3422***	0.3412***	0.3412***	0.3412***
	(13.94)	(14.01)	(14.01)	(14.01)
Intercept	0.1172***	0.1152***	0.1177***	0.1164***
	(8.21)	(7.98)	(8.59)	(7.08)
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
N	11,622	11,622	11,622	11,622
Adjust R. sq.	0.8412	0.8413	0.8413	0.8413

This table shows the results of estimating Eq. (2) where the sample is limited to *NEW_FIN*=1 firm-years observations. *CrimEXEC* indicates that the majority of executives have a criminal record. *CrimEMPL* indicates that the workforce is relatively criminal, and takes the value one when the percentage of employees with a criminal record is above the within-year median. *1/1* is an indicator taking the value one if *CrimEXEC*=1 and *CrimEMPL*=1. *1/0* is an indicator taking the value one if *CrimEXEC*=1 and *CrimEMPL*=0. *0/1* is an indicator taking the value one if *CrimEXEC*=0 and *CrimEMPL*=1. *0/0* is an indicator taking the value one if *CrimEXEC*=0 and *CrimEMPL*=0. Firm controls and discretionary accruals controls are defined in appendix. Standard errors are clustered by firm and year (Gow et al. 2010). *t* statistics in parentheses. ***, **, * Represent significance levels at 0.01, 0.05, and 0.10, respectively (two-tailed test). All continuous variables are winsorized at the 1 and 99 percent level.

4.5.3 Limit sample to NEW_FIN=1 firm-year observations

In the following I re-estimate Eq. (2) but include in the estimation only *NEW_FIN*=1 firm-year observations, and hence I make the analysis independent of the assumption in the main analysis that accruals and firm-specific explanatory variables are similar across *NEW_FIN*=1 and *NEW_FIN*=0 firm-year observations. These estimations come at the cost of statistical power, because the sample size decreases by ~77%. I present the regression tables in Table C.12. *FIRM_CONTROLS* and *DACC_CONTROLS* relate to accruals with similar direction and significance as in the main analysis. In these regressions, I find that the *1/1* group, compared to the *0/0* group in column 2 and the *0/1* group in column 3, respectively, is associated with income-increasing accruals of 0.61-0.86 percentage points, statistically significant at conventional levels (two-tailed tests, p-values in the range 0.002;0.012). In column 4 I compare the *1/1* group with the *1/0* group, and observe a coefficient of 0.0074, which is slightly lower than in prior estimations. The coefficient estimate is insignificant in two-tailed tests, but is marginally significant in one-tailed tests (p-value=0.065).

4.5.4 Indications outside discretionary accruals

In the following I explore if firms with criminal executives and criminal employees are associated with other accounting outcomes related to earnings management and earnings quality: (1) the propensity to meet or beat earnings benchmarks and (2) earnings persistence.

First, I explore the propensity to meet or beat earnings benchmarks. I use the estimation model developed by Byzalov and Basu (2019) to explore the propensity of firms with criminal executives and criminal employees to meet or beat two earnings benchmarks: (1) the zero earnings benchmark, i.e. the propensity to report a zero or a small profit, and (2) last year's earnings benchmark, i.e. the propensity to report a zero change or small earnings increase. Analyst forecasts are naturally not available for private firms. The results are tabulated in Table C.13. In column 1 through 3 I find no evidence that the firms with criminal executives and criminal employees are more likely to meet or beat the zero earnings benchmark. In column 5 and 6 I find some evidence that these firms are more likely to meet or beat the last year's earnings benchmark, but this finding does not extend to column 4 where I compare to the *0/0* group.

Then, I explore another important aspect of earnings quality: earnings persistence. In Table C.14 I show the regression tables of standard persistence estimations, where I regress future *ROA* on current *ROA*. I consistently find that the earnings persistence of the *1/1* group is lower

than the three other groups of firms, indicating that earnings quality is lower in firms with both criminal executives and criminal employees. In Table C.15 I decompose current *ROA* into the cash flow component (*OPCF*) and the accrual component (*OPACC*), and find that both cash flow persistence and accrual persistence is lower in the *1/1* group.

Table C.13: Criminal executives, criminal employees, and the propensity to meet or beat earnings benchmarks

	(1)	(2)	(3)	(4)	(5)	(6)
	Propensity to meet or beat the zero earnings benchmark			Propensity to meet or beat the last year's earnings benchmark		
CrimEXEC / CrimEMPL						
1/1	**-0.0138**	**-0.0359**	**-0.0597**	**0.0452**	**0.0860****	**0.1020***
	(-0.24)	**(-0.61)**	**(-0.74)**	**(1.10)**	**(2.08)**	**(1.68)**
1/0	0.0458	0.0238	Base level	-0.0568	-0.0160	Base level
	(0.66)	(0.34)		(-1.09)	(-0.31)	
0/1	0.0221	Base level	-0.0238	-0.0407	Base level	0.0160
	(0.59)		(-0.34)	(-1.53)		(0.31)
0/0	Base level	-0.0221	-0.0458	Base level	0.0407	0.0568
		(-0.59)	(-0.66)		(1.53)	(1.09)
k	0.3859***	0.4080***	0.4317***	0.0393**	-0.0014	-0.0175
	(14.60)	(15.12)	(6.61)	(2.10)	(-0.08)	(-0.36)
N	19,751	19,751	19,751	28,115	28,115	28,115
Adjust R. sq.	0.0064	0.0064	0.0064	0.0014	0.0014	0.0014

This table shows the propensity of firms with different compositions of criminal executives and criminal employees to report a zero or small profit (column 1 through 3) and to report a zero or a small earnings increase (column 4 through 6). The model is estimated with the STATA command kindly made available by Byzalov and Basu (2019). *CrimEXEC* indicates that the majority of executives have a criminal record. *CrimEMPL* indicates that the workforce is relatively criminal, and takes the value one when the percentage of employees with a criminal record is above the within-year median. *1/1* is an indicator taking the value one if *CrimEXEC*=1 and *CrimEMPL*=1. *1/0* is an indicator taking the value one if *CrimEXEC*=1 and *CrimEMPL*=0. *0/1* is an indicator taking the value one if *CrimEXEC*=0 and *CrimEMPL*=1. *0/0* is an indicator taking the value one if *CrimEXEC*=0 and *CrimEMPL*=0. Polynomial slopes and interactions are estimated but not reported. I estimate with the following parameter model inputs: binwidth=0.0025, estimation bins=16, earnings management bins=4 (i.e. 4*0.0025=0.01), polynomial degree=3. Standard errors are clustered at the firm level. *t* statistics in parentheses. ***, **, * Represent significance levels at 0.01, 0.05, and 0.10, respectively (two-tailed test).

5. LIMITATIONS, DISCUSSION, AND CONCLUSION

5.1 Discussion

In this paper I investigate how firms with criminal executives and criminal employees are associated with financial reporting outcomes, across different research designs, different control variables (for example firm fixed effects and governance variables), and different accounting outcome variables (for example discretionary accruals when the firm issues new finance (which indeed is the main analysis), the propensity to meet or beat earnings benchmarks, and earnings persistence). Albeit the results are generally consistent across all these various estimations – firms with criminal executives and criminal employees are associated with proxies of earnings

Table C.14: Criminal executives, criminal employees, and earnings persistence

	(1) $ROA_{i,t+1}$	(2) $ROA_{i,t+1}$	(3) $ROA_{i,t+1}$	(4) $ROA_{i,t+1}$
$ROA_{i,t}$	0.6056***	0.6297***	0.5846***	0.6326***
	(37.07)	(31.93)	(36.50)	(19.34)
CrimEXEC / CrimEMPL				
$1/1_{i,t}$		0.0021	0.0015	0.0015
		(0.91)	(0.77)	(0.42)
$1/1_{i,t}$*$ROA_{,t}$		**-0.0859*** **	**-0.0408** **	**-0.0888*** **
		(-4.79)	**(-2.17)**	**(-3.02)**
$1/0_{i,t}$		0.0007	0.0000	Base level
		(0.24)	(0.00)	
$1/0_{i,t}$*$ROA_{i,t}$		0.0029	0.0480*	Base level
		(0.10)	(1.78)	
$0/1_{,t}$		0.0007	Base level	-0.0000
		(0.39)		(-0.00)
$0/1_{i,t}$*$ROA_{i,t}$		-0.0452***	Base level	-0.0480*
		(-3.04)		(-1.78)
$0/0_{i,t}$		Base level	-0.0007	-0.0007
			(-0.39)	(-0.24)
$0/0_{i,t}$*$ROA_{i,t}$		Base level	0.0452***	-0.0029
			(3.04)	(-0.10)
Intercept	0.0092**	0.0087**	0.0093***	0.0093*
	(2.47)	(2.15)	(2.89)	(1.71)
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
N	39,553	39,553	39,553	39,553
Adjust R. sq.	0.3970	0.3980	0.3980	0.3980

This table shows standard earnings persistence regressions, and how earnings persistence differs by the composition of criminal executives and criminal employees. *CrimEXEC* indicates that the majority of executives have a criminal record. *CrimEMPL* indicates that the workforce is relatively criminal, and takes the value one when the percentage of employees with a criminal record is above the within-year median. *1/1* is an indicator taking the value one if *CrimEXEC*=1 and *CrimEMPL*=1. *1/0* is an indicator taking the value one if *CrimEXEC*=1 and *CrimEMPL*=0. *0/1* is an indicator taking the value one if *CrimEXEC*=0 and *CrimEMPL*=1. *0/0* is an indicator taking the value one if *CrimEXEC*=0 and *CrimEMPL*=0. Standard errors are clustered by firm and year (Gow et al. 2010). *t* statistics in parentheses. ***, **, * Represent significance levels at 0.01, 0.05, and 0.10, respectively (two-tailed test). All continuous variables are winsorized at the 1 and 99 percent level.

management and earnings quality – I acknowledge that the statistical significance differs across estimations, and that I find no results when I explore the propensity to meet or beat the zero earnings benchmark. However, the collective evidence provided in this paper taken into consideration, on balance the results suggest that firms with criminal executives and criminal employees are associated with adverse financial reporting outcomes.

5.2 Limitations

Despite the consistency of the findings across various analyses, I caution the reader to interpret this study carefully. I recognize that studying individuals' underlying cognitive processes and traits using observable characteristics is challenging. The results are based on a

Table C.15: Criminal executives, criminal employees, and earnings persistence

	(1) $ROA_{i,t+1}$	(2) $ROA_{i,t+1}$	(3) $ROA_{i,t+1}$	(4) $ROA_{i,t+1}$
$OPCF_{i,t}$	0.5788***	0.5939***	0.5632***	0.6160***
	(34.66)	(31.66)	(32.14)	(20.00)
$OPACC_{i,t}$	0.5391***	0.5534***	0.5232***	0.5653***
	(36.03)	(32.11)	(33.68)	(21.48)
CrimEXEC / CrimEMPL				
$1/1_{i,t}$		-0.0002	0.0000	-0.0004
		(-0.08)	(0.00)	(-0.10)
$1/1_{i,t}$*$OPCF_{i,t}$		**-0.0584*** **	**-0.0277**	**-0.0805****
		(-2.98)	**(-1.45)**	**(-2.41)**
$1/1_{i,t}$*$OPACC_{i,t}$		**-0.0441****	**-0.0139**	**-0.0560***
		(-2.40)	**(-0.83)**	**(-1.80)**
$1/0_{i,t}$		0.0002	0.0004	Base level
		(0.07)	(0.13)	
$1/0_{i,t}$*$OPCF_{i,t}$		0.0221	0.0528**	Base level
		(0.79)	(2.07)	
$1/0_{i,t}$*$OPACC_{i,t}$		0.0119	0.0421*	Base level
		(0.51)	(1.70)	
$0/1_{i,t}$		-0.0002	Base level	-0.0004
		(-0.12)		(-0.13)
$0/1_{i,t}$*$OPCF_{i,t}$		-0.0307**	Base level	-0.0528**
		(-2.53)		(-2.07)
$0/1_{i,t}$*$OPACC_{i,t}$		-0.0301**	Base level	-0.0421*
		(-2.47)		(-1.70)
$0/0_{i,t}$		Base level	0.0002	-0.0002
			(0.12)	(-0.07)
$0/0_{i,t}$*$OPCF_{i,t}$		Base level	0.0307**	-0.0221
			(2.53)	(-0.79)
$0/0_{i,t}$*$OPACC_{i,t}$		Base level	0.0301**	-0.0119
			(2.47)	(-0.51)
Intercept	0.0160***	0.0160***	0.0158***	0.0162***
	(4.29)	(3.97)	(4.69)	(3.43)
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
N	39,553	39,553	39,553	39,553
Adjust R. sq.	0.3932	0.3939	0.3939	0.3939

This table shows standard earnings persistence regressions, and how earnings persistence differs by the composition of criminal executives and criminal employees. In this regression table, current earnings are separated into comprehensive operating cash flows (*OPCF*) and comprehensive operating accruals (*OPACC*), respectively. *CrimEXEC* indicates that the majority of executives have a criminal record. *CrimEMPL* indicates that the workforce is relatively criminal, and takes the value one when the percentage of employees with a criminal record is above the within-year median. *1/1* is an indicator taking the value one if *CrimEXEC*=1 and *CrimEMPL*=1. *1/0* is an indicator taking the value one if *CrimEXEC*=1 and *CrimEMPL*=0. *0/1* is an indicator taking the value one if *CrimEXEC*=0 and *CrimEMPL*=1. *0/0* is an indicator taking the value one if *CrimEXEC*=0 and *CrimEMPL*=0. Standard errors are clustered by firm and year (Gow et al. 2010). *t* statistics in parentheses. ***, **, * Represent significance levels at 0.01, 0.05, and 0.10, respectively (two-tailed test). All continuous variables are winsorized at the 1 and 99 percent level.

belief that the presence of criminal record is an observable outcome of a certain personal trait.

Additionally, the criminal registers cover only Danish citizens and foreigners with a Danish address and hence (1) persons with a criminal record from a country not Denmark and (2) foreigners not residing in Denmark, working in Danish companies are not covered by the sample. Based on employer-employee data provided by Statistics Denmark, I find that 98% of

executives are Danish citizens, and 93% of employees are Danish citizens, and hence the limitation seems of minor importance, and bias against the findings of this paper. Also, the criminal registers cover crimes dating back to 1980, and hence there is a risk that individuals are classified as non-criminal, albeit they have been convicted prior to 1980. This is particularly pertinent to the early years of the firm-year observations used in this dataset.

Further, my conclusions are subject to the standard caveat of whether discretionary accruals during events where a firm issues new finance actually capture earnings management. Several prominent researchers have raised concerns with accrual estimation models (see e.g. Ball 2013). However, I exploit recent academic advancements in accrual estimation techniques enhancing my ability to distinguish normal from discretionary accruals (Godsell et al. 2017). Further, the insights from Figure C.2 (that firms with criminal executives and criminal employees have income-increasing accruals when the firm issues new finance but not in the preceding and following years) corroborate my interpretation that the measure of discretionary accruals actually captures earnings management. Further, the findings outside discretionary accruals – that these firms are more likely to meet or beat last year's earnings benchmark, and have lower earnings persistence – conform to an overall story that these firms are more likely to manage earnings.

5.3 Conclusion

This paper explores and provides evidence that firms with criminal executives and criminal employees are positively associated with earnings management. The general objective of this paper is to proxy corporate culture and to explore how corporate culture is associated with financial reporting behavior. First, I hypothesize and find that executives with a criminal record impose a certain corporate culture which is associated with earnings management. Second, based on prior theoretical work on corporate culture, I predict that the percentage of a firm's employees with a criminal record capture an aspect of corporate culture, that is not explained by the traits of the firm's executives. I identify several channels through which employees may influence financial reporting, and empirically show that the percentage of employees with a criminal record is positively associated with earnings management. Third, I argue that both criminal executives and criminal employees proxy two non-perfectly correlated aspects of corporate culture. I thus hypothesize and find that earnings management behavior is concentrated in firms with both criminal executives and criminal workforces.

The results of this paper complement and extend recent research on corporate culture and financial reporting (Liu 2016; Biggerstaff et al. 2015) by providing evidence that employee trait proxies, incremental to executive trait proxies, capture an aspect of corporate culture which influences a firm's financial reporting. The paper has implications for researchers interested in corporate culture and firm behavior, and suggests that proxies of employee traits are powerful measures of corporate culture.

6. REFERENCES

Ali, U., and D. Hirshleifer. 2017. Opportunism as a firm and managerial trait: Predicting insider trading profits and misconduct. *Journal of Financial Economics* 126 (3): 490–515.

Allen, E. J., C. R. Larson, and R. G. Sloan. 2013. Accrual reversals, earnings and stock returns. *Journal of Accounting and Economics* 56 (1): 113–129.

Ayers, B. C., J. Jiang, and P. E. Yeung. 2006. Discretionary accruals and earning management: An analysis of pseudo earnings targets. *The Accounting Review* 81 (3): 617–652.

Ball, R. 2013. Accounting informs investors and earnings management is rife: Two questionable beliefs. *Accounting Horizons* 27 (4): 847–853.

Ball, R., and L. Shivakumar. 2006. The role of accruals in asymmetrically timely gain and loss recognition. *Journal of Accounting Research* 44 (2): 207–242.

Balsam, S., E. Bartov, and C. Marquardt. 2002. Accruals management, investor sophistication, and equity valuation: Evidence from 10-Q filings. *Journal of Accounting Research* 40 (4): 987–1012.

Barfort, S., N. A. Harmon, F. Hjorth, and A. Leth Olsen. 2019. Sustaining Honesty in Public Service: The Role of Selection. *American Economic Journal: Economic Policy* (Forthcoming).

Biggerstaff, L., D. C. Cicero, and A. Puckett. 2015. Suspect CEOs, unethical culture, and corporate misbehavior. *Journal of Financial Economics* 117 (1): 98–121.

Blickle, G., A. Schlegel, P. Fassbender, and U. Klein. 2006. Some personality correlates of business white-collar crime. *Applied Psychology* 55 (2): 220–233.

Bonin, H., T. Dohmen, A. Falk, D. Huffman, and U. Sunde. 2007. Cross-sectional earnings risk and occupational sorting: The role of risk attitudes. *Labour Economics* 14 (6): 926–937.

Byzalov, D., and S. Basu. 2019. Modeling the Determinants of Meet-or-Just-Beat Behavior in Distribution Discontinuity Tests. *SSRN* (Working paper).

Call, A. C., J. L. Campbell, D. S. Dhaliwal, and J. R. Moon. 2017. Employee quality and financial reporting outcomes. *Journal of Accounting and Economics* 64 (1).

Call, A. C., S. Chen, B. Miao, and Y. H. Tong. 2014. Short-term earnings guidance and accrual-based earnings management. *Review of Accounting Studies* 19 (2): 955–987.

Call, A. C., S. Kedia, and S. Rajgopal. 2016. Rank and file employees and the discovery of misreporting: The role of stock options. *Journal of Accounting and Economics* 62 (2–3): 277–300.

Campbell, D., M. Loumioti, and R. Wittenberg-Moerman. 2019. Making Sense of Soft Information: Interpretation Bias and Loan Quality. *Journal of Accounting and Economics*: 101240.

Chen, W., P. Hribar, and S. Melessa. 2018. Incorrect Inferences When Using Residuals as Dependent Variables. *Journal of Accounting Research* 56 (3): 751–796.

Cline, B. N., R. A. Walkling, and A. S. Yore. 2018. The consequences of managerial indiscretions: Sex, lies, and firm value. *Journal of Financial Economics* 127 (2): 389–415.

Cohen, D. A., and P. Zarowin. 2010. Accrual-based and real earnings management activities around seasoned equity offerings. *Journal of Accounting and Economics* 50 (1): 2–19.

Collins, D. W., R. S. Pungaliya, and A. M. Vijh. 2017. The effects of firm growth and model specification choices on tests of earnings management in quarterly settings. *The Accounting Review* 92 (2): 69–100.

Cornelissen, T., J. S. Heywood, and U. Jirjahn. 2011. Performance pay, risk attitudes and job satisfaction. *Labour Economics* 18 (2): 229–239.

Courty, P., G. Marschke, P. Courty, and G. Marschke. 2004. An Empirical Investigation of Gaming Responses to Explicit Performance Incentives. *Journal of Labor Economics* 22

(1): 23–56.
Davidson, R., A. Dey, and A. Smith. 2015. Executives' "off-the-job" behavior, corporate culture, and financial reporting risk. *Journal of Financial Economics* 117 (1): 5–28.
Dechter, E. K. 2015. Physical appearance and earnings, hair color matters. *Labour Economics* 32: 15–26.
Doukakis, L. C., D. C. Ghicas (Gikas), G. Siougle, and T. Sougiannis. 2019. The Informativeness of Micro and Macro Information During Economic Crisis and Non-Crisis Periods: Evidence from Europe. *European Accounting Review* (Forthcoming): 1–26.
Dyck, A., A. Morse, and L. Zingales. 2010. Who blows the whistle on corporate fraud? *The Journal of Finance* 65 (6): 2213–2253.
Dyreng, S. D., W. J. Mayew, and C. D. Williams. 2012. Religious Social Norms and Corporate Financial Reporting. *Journal of Business Finance and Accounting* 39 (7–8): 845–875.
Elster, J. 1989. Social Norms and Economic Theory. *Journal of Economic Perspectives* 3 (4): 99–117.
Frankel, R., J. Jennings, and J. Lee. 2016. Using unstructured and qualitative disclosures to explain accruals. *Journal of Accounting and Economics* 62 (2–3): 209–227.
Godsell, D., M. Welker, and N. Zhang. 2017. Earnings Management During Antidumping Investigations in Europe: Sample-Wide and Cross-Sectional Evidence. *Journal of Accounting Research* 55 (2): 407–457.
Gottfredson, M., and T. Hirschi. 1990. *A general theory of crime.* Stanford University Press.
Gow, I. D., G. Ormazabal, and D. J. Taylor. 2010. Correcting for cross-sectional and time-series dependence in accounting research. *The Accounting Review* 85 (2): 483–512.
Graham, J. R., J. Grennan, C. R. Harvey, and S. Rajgopal. 2016. Corporate Culture: Evidence from the Field. *SSRN* (Working paper).
Graham, J. R., C. R. Harvey, J. Grennan, and S. Rajgopal. 2016. Corporate Culture: The Interview Evidence. *SSRN* (Working paper).
Griffin, J. M., S. Kruger, and G. Maturana. 2019. Do Personal Ethics Influence Corporate Ethics? *SSRN* (Working paper).
Guiso, L., P. Sapienza, and L. Zingales. 2015. The value of corporate culture. *Journal of Financial Economics* 117 (1): 60–76.
Gul, F. A., C. J. P. Chen, and J. S. L. Tsui. 2003. Discretionary Accounting Accruals, Managers' Incentives, and Audit Fees. *Contemporary Accounting Research* 20 (3): 441–464.
Gutiérrez, E., B. Lourie, A. Nekrasov, and T. J. Shevlin. 2019. Are Online Job Postings Informative to Investors? *Management Science* (Forthcoming).
Hackman, J. R. 1992. Group Influences on Individuals in Organizations. In *Handbook of industrial and organizational psychology, Vol. 3, 2nd ed.*, 199–267. Palo Alto, CA, US: Consulting Psychologists Press.
Healy, P. M., and J. M. Wahlen. 1999. A Review of the Earnings Management Literature and its Implications for Standard Setting. *Accounting Horizons* 13 (4): 365–383.
Hope, O.-K., Z. Huang, and R. Moldovan. 2019. Wall Street Analysts as Investor Relations Officers. *SSRN* (Working paper).
Jensen, M. C. 2003. Paying People to Lie : the Truth about the Budgeting Process. *European Financial Management* 9 (3): 379–406.
Jinkins, D., and A. Morin. 2018. Job-to-job transitions, sorting, and wage growth. *Labour Economics* 55: 300–327.
Kallunki, J., J.-P. Kallunki, H. Nilsson, and M. Puhakka. 2018. Do an insider's wealth and income matter in the decision to engage in insider trading? *Journal of Financial Economics* 130 (1): 135–165.
Kish-Gephart, J. J., D. A. Harrison, and L. K. Treviño. 2010. Bad Apples, Bad Cases, and Bad

Barrels: Meta-Analytic Evidence About Sources of Unethical Decisions at Work. *Journal of Applied Psychology* 95 (1): 1–31.
Kothari, S. P., A. J. Leone, and C. E. Wasley. 2005. Performance matched discretionary accrual measures. *Journal of Accounting and Economics* 39 (1): 163–197.
Larson, C. R., R. Sloan, and J. Zha Giedt. 2018. Defining, measuring, and modeling accruals: a guide for researchers. *Review of Accounting Studies* 23 (3): 827–871.
Libby, T., and R. M. Lindsay. 2010. Beyond budgeting or budgeting reconsidered ? A survey of North-American budgeting practice. *Management Accounting Research* 21 (1): 56–75.
Liu, X. 2016. Corruption culture and corporate misconduct. *Journal of Financial Economics* 122 (2): 307–327.
McGuire, S. T., T. C. Omer, and N. Y. Sharp. 2012. The impact of religion on financial reporting irregularities. *The Accounting Review* 87 (2): 645–673.
Nguyen, T., C. Duong, and S. Narandran. 2019. Using the Profile of CEOs to Detect Earnings Management. *SSRN* (Working paper).
O'Reilly, C. 1989. Corporations, Culture, and Commitment: Motivation and Social Control in Organizations. *California Management Review* 31 (4): 9–25.
Pratt, T. C., and F. T. Cullen. 2006. The empirical status of Gottfredson and Hirschi's general theory of crime: A meta-analysis. *Criminology* 38 (3): 931–964.
Shumway, T. 2001. Forecasting bankruptcy more accurately: A simple hazard model. *The Journal of Business* 74 (1): 101–124.
Van Den Steen, E. 2010. On the origin of shared beliefs (and corporate culture). *RAND Journal of Economics* 41 (4): 617–648.

7. APPENDIX

Table C.16: Variable definitions

Variable	Measure of	Definition
Firm-specific		
TA	Total assets	
Log(TA)	Logarithm of total assets	
TLTA	Gearing, total liabilities to total assets	$TLTA = \frac{Total\ liabilities_t}{Total\ assets_t}$
STD_ROA	Smoothness of earnings	Standard deviation of *ROA*. Calculated using the five most recent years' data, requiring at least three years' observations.
PPE	Asset composition, tangible fixed assets to total assets	$PPE = \frac{Tangible\ fixed\ assets_t}{Total\ assets_t}$
NEW_FIN	Indicator of event where the firm obtains new finance	Following Godsell et al. (2017) p 445: *NEW_FIN* takes the value one if: $\frac{equity_{t+1}-(equity_{t-1}+net\ income_{t+1}+net\ income_t)}{Total\ assets_{t-1}} > 0.05$ or $\frac{Long\ term\ debt_{t+1}-Long\ term\ debt_{t-1}}{Total\ assets_{t-1}} > 0.05$, and zero otherwise
Variables related to discretionary accruals estimation		
EMPLGR	Growth in employees	$EMPLGR_t = \frac{EMPLOYEES_t-EMPLOYEES_{t-1}}{EMPLOYEES_{t-1}}$ Where EMPLOYEES denotes the number of full-time equivalent employees
NOA	Net operating assets (the "magnitude" of accrual-related line items)	$NOA = \frac{NOA\_BS_t - NOA\_BS_{t-1}}{Total\ assets_{t-1}}$ Where *NOA_BS* is Net Operating Assets before scaling $NOA\_BS = OA - OL$ Where *OA* = Operating Assets = total assets -cash and cash equivalents -properties held for sale

		-receivables from closely held parties *OL* = Operating Liabilities = total liabilities -long term interest bearing debt -current part of mortgage -current part of bank debt -liabilities to closely related parties -dividends if included in current liabilities
ROA	Return on assets	$ROA = \frac{Net\ income_t}{Total\ assets_{t-1}}$
OPACC	Comprehensive operating accruals	$OPACC_t = \frac{NOA\_BS_t - NOA\_BS_{t-1}}{Total\ assets_{t-1}}$
OPCF	Comprehensive operating cash flow	$OPCF = \frac{Net\ income_t - (NOA\_BS_t - NOA\_BS_{t-1})}{Total\ assets_{t-1}}$
DumOPCF	Indicator of negative *OPCF*	*DumOPCF* takes the value 1 if *OPCF*<0, and zero otherwise.
DACC	Comprehensive discretionary accruals	Residuals from the following estimation model $OPACC_{it} = \alpha_0 + \beta_1 EMPLGR_{it} + \beta_2 EMPLGR_{it+1} + \beta_3 EMPLGR_{it} * NOA_{t-1} + \beta_4 OPCF_{it-2} + \beta_5 OPCF_{it-1} + \beta_6 OPCF_{it} + \beta_7 DumOPCF_{it} + \beta_8 OPCF_{it} * DumOPCF_{it} + \beta_9 OPCF_{it+1} + \beta_{10} OPCF_{it+2} + \beta_{11} ROA_{it-1} + \sum INDUSTRY + \sum YEAR + \varepsilon_{it}$
Person specific variables		
CRIME	Indicator that an individual has a criminal record	*CRIME* is an indicator variable that takes the value one if an individual has a criminal record, and zero otherwise. Traffic-related crimes (for example speed tickets or parking tickets) are excluded from the definition.
NEW_CRIME	Indicator that an individual commits crime in the year	*NEW_CRIME* is an indicator variable that takes the value one if an individual commits crime within a year, and zero otherwise.
EMPLOYEES	The number of full-time equivalent employees	This metric is either extracted from the annual report (through the ORBIS database) or provided by Statistics Denmark.
EXECUTIVES	The number of executives registered with the Danish Business Authority	
%CrimEXEC	The proportion of executives with a criminal record	At the individual level, each executive is defined as a criminal if the person has any prior criminal record. Traffic-related crimes (for example speed tickets or parking tickets) are excluded from

		the definition. *%CrimEXEC* denotes the percentage of executives within each firm-year observations with a criminal record.
%CrimEMPL	The proportion of employees with a criminal record	At the individual level, each employee is defined as a criminal if the person has any prior criminal record. Traffic-related crimes (for example speed tickets or parking tickets) are excluded from the definition. An employee is a person that (1) receives salary from the firm, (2) is registered as an employee at year-end, and (3) is not identified as an executive. *%CrimEMPL* denotes the percentage of executives within each firm-year observations with a criminal record.
CrimEXEC	Indicator that the majority of executives have a criminal record	*CrimEXEC* takes the value one if the majority of the registered executives (i.e. *%CrimEXEC*>0.5) have a criminal record, and zero otherwise.
CrimEMPL	Indicator that the workforce is relatively criminal	*CrimEMPL* takes the value one if *%CrimEMPL* is above the within-year median and zero otherwise.
Log(age)	Logarithm of an individual's age	
Female	Gender indicator	*Female* is an indicator that takes the value one if an individual is female, and zero otherwise.
Married	Married indicator	*Married* is indicator variable that takes the value one if an individual is married, and zero otherwise.
HighEduc	High education indicator	*HighEduc* is an indicator variable that takes the value one if an individual holds either a bachelor's degree, a master's degree, or a PhD degree, and zero otherwise.
CORRUPT		*CORRUPT* is an indicator variable that takes the value one if an individual is an immigrant (first or second generation) emigrating from a country with a corruption index below 80. The corruption index is based on public available data from Transparency International, and is the average index for the period 1995-2018. A low score denotes high corruption. In the sample, Denmark has the highest score of 93.8.
PersEquity		*PersEquity*=Personal Assets-Personal Liabilities, denoted in DKK million. Where, Personal Assets include bank deposits, traded securities (shares, bonds, etc.), and cash value of property/house. Boat value, car value, and pensions are not included in the calculation. Personal Liabilities include all debt to financial institutions, including bank debt, debt to other financial institutions, study debt, and mortgage. Private debt (for example debt to parents) data are naturally not available.
Governance variables		
OM	Indicates that the firm has an owner-manager	*OM* takes the value one if the owner directly or indirectly owns more than 95% of the firm and is the CEO of the firm, and zero

		otherwise. In December 2014 new regulation was enforced which required firm owners to file ownership data with the Danish Business Authority, with a retrospective effect, meaning that managers had to disclose the starting date of their ownership. Hence, the ownership data which I acquire from the Danish Business Authority is limited in coverage back in time. Therefore, in the cases where ownership data is missing, the *OM* variable takes the value one if the current CEO was also a CEO on the date the firm was founded, and zero otherwise.
BOARD_PRESENT	Indicates that the firm has a board	*BOARD_PRESENT* is an indicator variable that takes the value one if the firm has a board, and zero otherwise.
CEO_ONBOARD	Indicates that the CEO is on the board	*CEO_ONBOARD* is an indicator variable that takes the value one if the CEO of the firm has a seat on the board, and zero otherwise.

TITLER I PH.D.SERIEN:

2004

1. Martin Grieger
Internet-based Electronic Marketplaces and Supply Chain Management

2. Thomas Basbøll
LIKENESS
A Philosophical Investigation

3. Morten Knudsen
Beslutningens vaklen
En systemteoretisk analyse of moderniseringen af et amtskommunalt sundhedsvæsen 1980-2000

4. Lars Bo Jeppesen
Organizing Consumer Innovation
A product development strategy that is based on online communities and allows some firms to benefit from a distributed process of innovation by consumers

5. Barbara Dragsted
SEGMENTATION IN TRANSLATION AND TRANSLATION MEMORY SYSTEMS
An empirical investigation of cognitive segmentation and effects of integrating a TM system into the translation process

6. Jeanet Hardis
Sociale partnerskaber
Et socialkonstruktivistisk casestudie af partnerskabsaktørers virkelighedsopfattelse mellem identitet og legitimitet

7. Henriette Hallberg Thygesen
System Dynamics in Action

8. Carsten Mejer Plath
Strategisk Økonomistyring

9. Annemette Kjærgaard
Knowledge Management as Internal Corporate Venturing
– a Field Study of the Rise and Fall of a Bottom-Up Process

10. Knut Arne Hovdal
De profesjonelle i endring
Norsk ph.d., ej til salg gennem Samfundslitteratur

11. Søren Jeppesen
Environmental Practices and Greening Strategies in Small Manufacturing Enterprises in South Africa
– A Critical Realist Approach

12. Lars Frode Frederiksen
Industriel forskningsledelse
– på sporet af mønstre og samarbejde i danske forskningsintensive virksomheder

13. Martin Jes Iversen
The Governance of GN Great Nordic
– in an age of strategic and structural transitions 1939-1988

14. Lars Pynt Andersen
The Rhetorical Strategies of Danish TV Advertising
A study of the first fifteen years with special emphasis on genre and irony

15. Jakob Rasmussen
Business Perspectives on E-learning

16. Sof Thrane
The Social and Economic Dynamics of Networks
– a Weberian Analysis of Three Formalised Horizontal Networks

17. Lene Nielsen
Engaging Personas and Narrative Scenarios – a study on how a user-centered approach influenced the perception of the design process in the e-business group at AstraZeneca

18. S.J Valstad
Organisationsidentitet
Norsk ph.d., ej til salg gennem Samfundslitteratur

19. Thomas Lyse Hansen
Six Essays on Pricing and Weather risk in Energy Markets

20. Sabine Madsen
Emerging Methods – An Interpretive Study of ISD Methods in Practice

21. Evis Sinani
The Impact of Foreign Direct Investment on Efficiency, Productivity Growth and Trade: An Empirical Investigation

22. Bent Meier Sørensen
Making Events Work Or, How to Multiply Your Crisis

23. Pernille Schnoor
Brand Ethos
Om troværdige brand- og virksomhedsidentiteter i et retorisk og diskursteoretisk perspektiv

24. Sidsel Fabech
Von welchem Österreich ist hier die Rede?
Diskursive forhandlinger og magtkampe mellem rivaliserende nationale identitetskonstruktioner i østrigske pressediskurser

25. Klavs Odgaard Christensen
Sprogpolitik og identitetsdannelse i flersprogede forbundsstater
Et komparativt studie af Schweiz og Canada

26. Dana B. Minbaeva
Human Resource Practices and Knowledge Transfer in Multinational Corporations

27. Holger Højlund
Markedets politiske fornuft
Et studie af velfærdens organisering i perioden 1990-2003

28. Christine Mølgaard Frandsen
A.s erfaring
Om mellemværendets praktik i en transformation af mennesket og subjektiviteten

29. Sine Nørholm Just
The Constitution of Meaning – A Meaningful Constitution?
Legitimacy, identity, and public opinion in the debate on the future of Europe

2005

1. Claus J. Varnes
Managing product innovation through rules – The role of formal and structured methods in product development

2. Helle Hedegaard Hein
Mellem konflikt og konsensus – Dialogudvikling på hospitalsklinikker

3. Axel Rosenø
Customer Value Driven Product Innovation – A Study of Market Learning in New Product Development

4. Søren Buhl Pedersen
Making space
An outline of place branding

5. Camilla Funck Ellehave
Differences that Matter
An analysis of practices of gender and organizing in contemporary workplaces

6. Rigmor Madeleine Lond
Styring af kommunale forvaltninger

7. Mette Aagaard Andreassen
Supply Chain versus Supply Chain Benchmarking as a Means to Managing Supply Chains

8. Caroline Aggestam-Pontoppidan
From an idea to a standard
The UN and the global governance of accountants' competence

9. Norsk ph.d.

10. Vivienne Heng Ker-ni
An Experimental Field Study on the

Effectiveness of Grocer Media Advertising
Measuring Ad Recall and Recognition, Purchase Intentions and Short-Term Sales

11. Allan Mortensen
Essays on the Pricing of Corporate Bonds and Credit Derivatives

12. Remo Stefano Chiari
Figure che fanno conoscere
Itinerario sull'idea del valore cognitivo e espressivo della metafora e di altri tropi da Aristotele e da Vico fino al cognitivismo contemporaneo

13. Anders McIlquham-Schmidt
Strategic Planning and Corporate Performance
An integrative research review and a meta-analysis of the strategic planning and corporate performance literature from 1956 to 2003

14. Jens Geersbro
The TDF – PMI Case
Making Sense of the Dynamics of Business Relationships and Networks

15 Mette Andersen
Corporate Social Responsibility in Global Supply Chains
Understanding the uniqueness of firm behaviour

16. Eva Boxenbaum
Institutional Genesis: Micro – Dynamic Foundations of Institutional Change

17. Peter Lund-Thomsen
Capacity Development, Environmental Justice NGOs, and Governance: The Case of South Africa

18. Signe Jarlov
Konstruktioner af offentlig ledelse

19. Lars Stæhr Jensen
Vocabulary Knowledge and Listening Comprehension in English as a Foreign Language
An empirical study employing data elicited from Danish EFL learners

20. Christian Nielsen
Essays on Business Reporting
Production and consumption of strategic information in the market for information

21. Marianne Thejls Fischer
Egos and Ethics of Management Consultants

22. Annie Bekke Kjær
Performance management i Proces-innovation
– belyst i et social-konstruktivistisk perspektiv

23. Suzanne Dee Pedersen
GENTAGELSENS METAMORFOSE
Om organisering af den kreative gøren i den kunstneriske arbejdspraksis

24. Benedikte Dorte Rosenbrink
Revenue Management
Økonomiske, konkurrencemæssige & organisatoriske konsekvenser

25. Thomas Riise Johansen
Written Accounts and Verbal Accounts
The Danish Case of Accounting and Accountability to Employees

26. Ann Fogelgren-Pedersen
The Mobile Internet: Pioneering Users' Adoption Decisions

27. Birgitte Rasmussen
Ledelse i fællesskab – de tillidsvalgtes fornyende rolle

28. Gitte Thit Nielsen
Remerger
– skabende ledelseskræfter i fusion og opkøb

29. Carmine Gioia
A MICROECONOMETRIC ANALYSIS OF MERGERS AND ACQUISITIONS

30. Ole Hinz
Den effektive forandringsleder: pilot, pædagog eller politiker?
Et studie i arbejdslederes meningstilskrivninger i forbindelse med vellykket gennemførelse af ledelsesinitierede forandringsprojekter

31. Kjell-Åge Gotvassli
Et praksisbasert perspektiv på dynamiske
læringsnettverk i toppidretten
Norsk ph.d., ej til salg gennem Samfundslitteratur

32. Henriette Langstrup Nielsen
Linking Healthcare
An inquiry into the changing performances of web-based technology for asthma monitoring

33. Karin Tweddell Levinsen
Virtuel Uddannelsespraksis
Master i IKT og Læring – et casestudie i hvordan proaktiv proceshåndtering kan forbedre praksis i virtuelle læringsmiljøer

34. Anika Liversage
Finding a Path
Labour Market Life Stories of Immigrant Professionals

35. Kasper Elmquist Jørgensen
Studier i samspillet mellem stat og erhvervsliv i Danmark under
1. verdenskrig

36. Finn Janning
A DIFFERENT STORY
Seduction, Conquest and Discovery

37. Patricia Ann Plackett
Strategic Management of the Radical Innovation Process
Leveraging Social Capital for Market Uncertainty Management

2006

1. Christian Vintergaard
Early Phases of Corporate Venturing

2. Niels Rom-Poulsen
Essays in Computational Finance

3. Tina Brandt Husman
Organisational Capabilities, Competitive Advantage & Project-Based Organisations
The Case of Advertising and Creative Good Production

4. Mette Rosenkrands Johansen
Practice at the top
– how top managers mobilise and use non-financial performance measures

5. Eva Parum
Corporate governance som strategisk kommunikations- og ledelsesværktøj

6. Susan Aagaard Petersen
Culture's Influence on Performance Management: The Case of a Danish Company in China

7. Thomas Nicolai Pedersen
The Discursive Constitution of Organizational Governance – Between unity and differentiation
The Case of the governance of environmental risks by World Bank environmental staff

8. Cynthia Selin
Volatile Visions: Transactons in Anticipatory Knowledge

9. Jesper Banghøj
Financial Accounting Information and Compensation in Danish Companies

10. Mikkel Lucas Overby
Strategic Alliances in Emerging High-Tech Markets: What's the Difference and does it Matter?

11. Tine Aage
External Information Acquisition of Industrial Districts and the Impact of Different Knowledge Creation Dimensions

A case study of the Fashion and Design Branch of the Industrial District of Montebelluna, NE Italy

12. Mikkel Flyverbom
Making the Global Information Society Governable
On the Governmentality of Multi-Stakeholder Networks

13. Anette Grønning
Personen bag
Tilstedevær i e-mail som interaktionsform mellem kunde og medarbejder i dansk forsikringskontekst

14. Jørn Helder
One Company – One Language?
The NN-case

15. Lars Bjerregaard Mikkelsen
Differing perceptions of customer value
Development and application of a tool for mapping perceptions of customer value at both ends of customer-supplier dyads in industrial markets

16. Lise Granerud
Exploring Learning
Technological learning within small manufacturers in South Africa

17. Esben Rahbek Pedersen
Between Hopes and Realities:
Reflections on the Promises and Practices of Corporate Social Responsibility (CSR)

18. Ramona Samson
The Cultural Integration Model and European Transformation.
The Case of Romania

2007

1. Jakob Vestergaard
Discipline in The Global Economy
Panopticism and the Post-Washington Consensus

2. Heidi Lund Hansen
Spaces for learning and working
A qualitative study of change of work, management, vehicles of power and social practices in open offices

3. Sudhanshu Rai
Exploring the internal dynamics of software development teams during user analysis
A tension enabled Institutionalization Model; "Where process becomes the objective"

4. Norsk ph.d.
Ej til salg gennem Samfundslitteratur

5. Serden Ozcan
EXPLORING HETEROGENEITY IN ORGANIZATIONAL ACTIONS AND OUTCOMES
A Behavioural Perspective

6. Kim Sundtoft Hald
Inter-organizational Performance Measurement and Management in Action
– An Ethnography on the Construction of Management, Identity and Relationships

7. Tobias Lindeberg
Evaluative Technologies
Quality and the Multiplicity of Performance

8. Merete Wedell-Wedellsborg
Den globale soldat
Identitetsdannelse og identitetsledelse i multinationale militære organisationer

9. Lars Frederiksen
Open Innovation Business Models
Innovation in firm-hosted online user communities and inter-firm project ventures in the music industry
– A collection of essays

10. Jonas Gabrielsen
Retorisk toposlære – fra statisk 'sted' til persuasiv aktivitet

11. Christian Moldt-Jørgensen
Fra meningsløs til meningsfuld evaluering.
Anvendelsen af studentertilfredshedsmålinger på de korte og mellemlange videregående uddannelser set fra et psykodynamisk systemperspektiv

12. Ping Gao
Extending the application of actor-network theory
Cases of innovation in the telecommunications industry

13. Peter Mejlby
Frihed og fængsel, en del af den samme drøm?
Et phronetisk baseret casestudie af frigørelsens og kontrollens sameksistens i værdibaseret ledelse!

14. Kristina Birch
Statistical Modelling in Marketing

15. Signe Poulsen
Sense and sensibility:
The language of emotional appeals in insurance marketing

16. Anders Bjerre Trolle
Essays on derivatives pricing and dynamic asset allocation

17. Peter Feldhütter
Empirical Studies of Bond and Credit Markets

18. Jens Henrik Eggert Christensen
Default and Recovery Risk Modeling and Estimation

19. Maria Theresa Larsen
Academic Enterprise: A New Mission for Universities or a Contradiction in Terms?
Four papers on the long-term implications of increasing industry involvement and commercialization in academia

20. Morten Wellendorf
Postimplementering af teknologi i den offentlige forvaltning
Analyser af en organisations kontinuerlige arbejde med informationsteknologi

21. Ekaterina Mhaanna
Concept Relations for Terminological Process Analysis

22. Stefan Ring Thorbjørnsen
Forsvaret i forandring
Et studie i officerers kapabiliteter under påvirkning af omverdenens forandringspres mod øget styring og læring

23. Christa Breum Amhøj
Det selvskabte medlemskab om managementstaten, dens styringsteknologier og indbyggere

24. Karoline Bromose
Between Technological Turbulence and Operational Stability
– An empirical case study of corporate venturing in TDC

25. Susanne Justesen
Navigating the Paradoxes of Diversity in Innovation Practice
– A Longitudinal study of six very different innovation processes – in practice

26. Luise Noring Henler
Conceptualising successful supply chain partnerships
– Viewing supply chain partnerships from an organisational culture perspective

27. Mark Mau
Kampen om telefonen
Det danske telefonvæsen under den tyske besættelse 1940-45

28. Jakob Halskov
The semiautomatic expansion of existing terminological ontologies using knowledge patterns discovered

on the WWW – an implementation and evaluation

29. Gergana Koleva
European Policy Instruments Beyond Networks and Structure: The Innovative Medicines Initiative

30. Christian Geisler Asmussen
Global Strategy and International Diversity: A Double-Edged Sword?

31. Christina Holm-Petersen
Stolthed og fordom
Kultur- og identitetsarbejde ved skabelsen af en ny sengeafdeling gennem fusion

32. Hans Peter Olsen
Hybrid Governance of Standardized States
Causes and Contours of the Global Regulation of Government Auditing

33. Lars Bøge Sørensen
Risk Management in the Supply Chain

34. Peter Aagaard
Det unikkes dynamikker
De institutionelle mulighedsbetingelser bag den individuelle udforskning i professionelt og frivilligt arbejde

35. Yun Mi Antorini
Brand Community Innovation
An Intrinsic Case Study of the Adult Fans of LEGO Community

36. Joachim Lynggaard Boll
Labor Related Corporate Social Performance in Denmark
Organizational and Institutional Perspectives

2008

1. Frederik Christian Vinten
Essays on Private Equity

2. Jesper Clement
Visual Influence of Packaging Design on In-Store Buying Decisions

3. Marius Brostrøm Kousgaard
Tid til kvalitetsmåling?
– Studier af indrulleringsprocesser i forbindelse med introduktionen af kliniske kvalitetsdatabaser i speciallægepraksissektoren

4. Irene Skovgaard Smith
Management Consulting in Action
Value creation and ambiguity in client-consultant relations

5. Anders Rom
Management accounting and integrated information systems
How to exploit the potential for management accounting of information technology

6. Marina Candi
Aesthetic Design as an Element of Service Innovation in New Technology-based Firms

7. Morten Schnack
Teknologi og tværfaglighed
– en analyse af diskussionen omkring indførelse af EPJ på en hospitalsafdeling

8. Helene Balslev Clausen
Juntos pero no revueltos – un estudio sobre emigrantes norteamericanos en un pueblo mexicano

9. Lise Justesen
Kunsten at skrive revisionsrapporter. En beretning om forvaltningsrevisionens beretninger

10. Michael E. Hansen
The politics of corporate responsibility: CSR and the governance of child labor and core labor rights in the 1990s

11. Anne Roepstorff
Holdning for handling – en etnologisk undersøgelse af Virksomheders Sociale Ansvar/CSR

12. Claus Bajlum
Essays on Credit Risk and Credit Derivatives

13. Anders Bojesen
The Performative Power of Competence – an Inquiry into Subjectivity and Social Technologies at Work

14. Satu Reijonen
Green and Fragile
A Study on Markets and the Natural Environment

15. Ilduara Busta
Corporate Governance in Banking
A European Study

16. Kristian Anders Hvass
A Boolean Analysis Predicting Industry Change: Innovation, Imitation & Business Models
The Winning Hybrid: A case study of isomorphism in the airline industry

17. Trine Paludan
De uvidende og de udviklingsparate
Identitet som mulighed og restriktion blandt fabriksarbejdere på det aftayloriserede fabriksgulv

18. Kristian Jakobsen
Foreign market entry in transition economies: Entry timing and mode choice

19. Jakob Elming
Syntactic reordering in statistical machine translation

20. Lars Brømsøe Termansen
Regional Computable General Equilibrium Models for Denmark
Three papers laying the foundation for regional CGE models with agglomeration characteristics

21. Mia Reinholt
The Motivational Foundations of Knowledge Sharing

22. Frederikke Krogh-Meibom
The Co-Evolution of Institutions and Technology
– A Neo-Institutional Understanding of Change Processes within the Business Press – the Case Study of Financial Times

23. Peter D. Ørberg Jensen
OFFSHORING OF ADVANCED AND HIGH-VALUE TECHNICAL SERVICES: ANTECEDENTS, PROCESS DYNAMICS AND FIRMLEVEL IMPACTS

24. Pham Thi Song Hanh
Functional Upgrading, Relational Capability and Export Performance of Vietnamese Wood Furniture Producers

25. Mads Vangkilde
Why wait?
An Exploration of first-mover advantages among Danish e-grocers through a resource perspective

26. Hubert Buch-Hansen
Rethinking the History of European Level Merger Control
A Critical Political Economy Perspective

2009

1. Vivian Lindhardsen
From Independent Ratings to Communal Ratings: A Study of CWA Raters' Decision-Making Behaviours

2. Guðrið Weihe
Public-Private Partnerships: Meaning and Practice

3. Chris Nøkkentved
Enabling Supply Networks with Collaborative Information Infrastructures
An Empirical Investigation of Business Model Innovation in Supplier Relationship Management

4. Sara Louise Muhr
Wound, Interrupted – On the Vulnerability of Diversity Management

5. Christine Sestoft
Forbrugeradfærd i et Stats- og Livsformsteoretisk perspektiv

6. Michael Pedersen
Tune in, Breakdown, and Reboot: On the production of the stress-fit self-managing employee

7. Salla Lutz
Position and Reposition in Networks – Exemplified by the Transformation of the Danish Pine Furniture Manufacturers

8. Jens Forssbæck
Essays on market discipline in commercial and central banking

9. Tine Murphy
Sense from Silence – A Basis for Organised Action
How do Sensemaking Processes with Minimal Sharing Relate to the Reproduction of Organised Action?

10. Sara Malou Strandvad
Inspirations for a new sociology of art: A sociomaterial study of development processes in the Danish film industry

11. Nicolaas Mouton
On the evolution of social scientific metaphors:
A cognitive-historical enquiry into the divergent trajectories of the idea that collective entities – states and societies, cities and corporations – are biological organisms.

12. Lars Andreas Knutsen
Mobile Data Services:
Shaping of user engagements

13. Nikolaos Theodoros Korfiatis
Information Exchange and Behavior
A Multi-method Inquiry on Online Communities

14. Jens Albæk
Forestillinger om kvalitet og tværfaglighed på sygehuse
– skabelse af forestillinger i læge- og plejegrupperne angående relevans af nye idéer om kvalitetsudvikling gennem tolkningsprocesser

15. Maja Lotz
The Business of Co-Creation – and the Co-Creation of Business

16. Gitte P. Jakobsen
Narrative Construction of Leader Identity in a Leader Development Program Context

17. Dorte Hermansen
"Living the brand" som en brandorienteret dialogisk praxis:
Om udvikling af medarbejdernes brandorienterede dømmekraft

18. Aseem Kinra
Supply Chain (logistics) Environmental Complexity

19. Michael Nørager
How to manage SMEs through the transformation from non innovative to innovative?

20. Kristin Wallevik
Corporate Governance in Family Firms
The Norwegian Maritime Sector

21. Bo Hansen Hansen
Beyond the Process
Enriching Software Process Improvement with Knowledge Management

22. Annemette Skot-Hansen
Franske adjektivisk afledte adverbier, der tager præpositionssyntagmer indledt med præpositionen à som argumenter
En valensgrammatisk undersøgelse

23. Line Gry Knudsen
Collaborative R&D Capabilities
In Search of Micro-Foundations

24. Christian Scheuer
Employers meet employees
Essays on sorting and globalization

25. Rasmus Johnsen
The Great Health of Melancholy
A Study of the Pathologies of Performativity

26. Ha Thi Van Pham
Internationalization, Competitiveness Enhancement and Export Performance of Emerging Market Firms:
Evidence from Vietnam

27. Henriette Balieu
Kontrolbegrebets betydning for kausativalternationen i spansk
En kognitiv-typologisk analyse

2010

1. Yen Tran
Organizing Innovationin Turbulent Fashion Market
Four papers on how fashion firms create and appropriate innovation value

2. Anders Raastrup Kristensen
Metaphysical Labour
Flexibility, Performance and Commitment in Work-Life Management

3. Margrét Sigrún Sigurdardottir
Dependently independent
Co-existence of institutional logics in the recorded music industry

4. Ásta Dis Óladóttir
Internationalization from a small domestic base:
An empirical analysis of Economics and Management

5. Christine Secher
E-deltagelse i praksis – politikernes og forvaltningens medkonstruktion og konsekvenserne heraf

6. Marianne Stang Våland
What we talk about when we talk about space:
End User Participation between Processes of Organizational and Architectural Design

7. Rex Degnegaard
Strategic Change Management
Change Management Challenges in the Danish Police Reform

8. Ulrik Schultz Brix
Værdi i rekruttering – den sikre beslutning
En pragmatisk analyse af perception og synliggørelse af værdi i rekrutterings- og udvælgelsesarbejdet

9. Jan Ole Similä
Kontraktsledelse
Relasjonen mellom virksomhetsledelse og kontraktshåndtering, belyst via fire norske virksomheter

10. Susanne Boch Waldorff
Emerging Organizations: In between local translation, institutional logics and discourse

11. Brian Kane
Performance Talk
Next Generation Management of Organizational Performance

12. Lars Ohnemus
Brand Thrust: Strategic Branding and Shareholder Value
An Empirical Reconciliation of two Critical Concepts

13. Jesper Schlamovitz
Håndtering af usikkerhed i film- og byggeprojekter

14. Tommy Moesby-Jensen
Det faktiske livs forbindtlighed
Førsokratisk informeret, ny-aristotelisk ἦθος-tænkning hos Martin Heidegger

15. Christian Fich
Two Nations Divided by Common Values
French National Habitus and the Rejection of American Power

16. Peter Beyer
Processer, sammenhængskraft og fleksibilitet
Et empirisk casestudie af omstillingsforløb i fire virksomheder

17. Adam Buchhorn
Markets of Good Intentions
Constructing and Organizing Biogas Markets Amid Fragility and Controversy

18. Cecilie K. Moesby-Jensen
Social læring og fælles praksis
Et mixed method studie, der belyser læringskonsekvenser af et lederkursus for et praksisfællesskab af offentlige mellemledere

19. Heidi Boye
Fødevarer og sundhed i senmodernismen
– En indsigt i hyggefænomenet og de relaterede fødevarepraksisser

20. Kristine Munkgård Pedersen
Flygtige forbindelser og midlertidige mobiliseringer
Om kulturel produktion på Roskilde Festival

21. Oliver Jacob Weber
Causes of Intercompany Harmony in Business Markets – An Empirical Investigation from a Dyad Perspective

22. Susanne Ekman
Authority and Autonomy
Paradoxes of Modern Knowledge Work

23. Anette Frey Larsen
Kvalitetsledelse på danske hospitaler
– Ledelsernes indflydelse på introduktion og vedligeholdelse af kvalitetsstrategier i det danske sundhedsvæsen

24. Toyoko Sato
Performativity and Discourse: Japanese Advertisements on the Aesthetic Education of Desire

25. Kenneth Brinch Jensen
Identifying the Last Planner System
Lean management in the construction industry

26. Javier Busquets
Orchestrating Network Behavior for Innovation

27. Luke Patey
The Power of Resistance: India's National Oil Company and International Activism in Sudan

28. Mette Vedel
Value Creation in Triadic Business Relationships. Interaction, Interconnection and Position

29. Kristian Tørning
Knowledge Management Systems in Practice – A Work Place Study

30. Qingxin Shi
An Empirical Study of Thinking Aloud Usability Testing from a Cultural Perspective

31. Tanja Juul Christiansen
Corporate blogging: Medarbejderes kommunikative handlekraft

32. Malgorzata Ciesielska
Hybrid Organisations.
A study of the Open Source – business setting

33. Jens Dick-Nielsen
Three Essays on Corporate Bond Market Liquidity

34. Sabrina Speiermann
Modstandens Politik
Kampagnestyring i Velfærdsstaten.
En diskussion af trafikkampagners styringspotentiale

35. Julie Uldam
Fickle Commitment. Fostering political engagement in 'the flighty world of online activism'

36. Annegrete Juul Nielsen
Traveling technologies and transformations in health care

37. Athur Mühlen-Schulte
Organising Development
Power and Organisational Reform in the United Nations Development Programme

38. Louise Rygaard Jonas
Branding på butiksgulvet
Et case-studie af kultur- og identitetsarbejdet i Kvickly

2011

1. Stefan Fraenkel
Key Success Factors for Sales Force Readiness during New Product Launch
A Study of Product Launches in the Swedish Pharmaceutical Industry

2. Christian Plesner Rossing
International Transfer Pricing in Theory and Practice

3. Tobias Dam Hede
Samtalekunst og ledelsesdisciplin
– en analyse af coachingsdiskursens genealogi og governmentality

4. Kim Pettersson
Essays on Audit Quality, Auditor Choice, and Equity Valuation

5. Henrik Merkelsen
The expert-lay controversy in risk research and management. Effects of institutional distances. Studies of risk definitions, perceptions, management and communication

6. Simon S. Torp
Employee Stock Ownership:
Effect on Strategic Management and Performance

7. Mie Harder
Internal Antecedents of Management Innovation

8. Ole Helby Petersen
Public-Private Partnerships: Policy and Regulation – With Comparative and Multi-level Case Studies from Denmark and Ireland

9. Morten Krogh Petersen
'Good' Outcomes. Handling Multiplicity in Government Communication

10. Kristian Tangsgaard Hvelplund
Allocation of cognitive resources in translation - an eye-tracking and key-logging study

11. Moshe Yonatany
The Internationalization Process of Digital Service Providers

12. Anne Vestergaard
Distance and Suffering
Humanitarian Discourse in the age of Mediatization

13. Thorsten Mikkelsen
Personligsheds indflydelse på forretningsrelationer

14. Jane Thostrup Jagd
Hvorfor fortsætter fusionsbølgen udover "the tipping point"?
– en empirisk analyse af information og kognitioner om fusioner

15. Gregory Gimpel
Value-driven Adoption and Consumption of Technology: Understanding Technology Decision Making

16. Thomas Stengade Sønderskov
Den nye mulighed
Social innovation i en forretningsmæssig kontekst

17. Jeppe Christoffersen
Donor supported strategic alliances in developing countries

18. Vibeke Vad Baunsgaard
Dominant Ideological Modes of Rationality: Cross functional

integration in the process of product innovation

19. Throstur Olaf Sigurjonsson
Governance Failure and Icelands's Financial Collapse

20. Allan Sall Tang Andersen
Essays on the modeling of risks in interest-rate and inflation markets

21. Heidi Tscherning
Mobile Devices in Social Contexts

22. Birgitte Gorm Hansen
Adapting in the Knowledge Economy Lateral Strategies for Scientists and Those Who Study Them

23. Kristina Vaarst Andersen
Optimal Levels of Embeddedness The Contingent Value of Networked Collaboration

24. Justine Grønbæk Pors
Noisy Management A History of Danish School Governing from 1970-2010

25. Stefan Linder
Micro-foundations of Strategic Entrepreneurship Essays on Autonomous Strategic Action

26. Xin Li
Toward an Integrative Framework of National Competitiveness An application to China

27. Rune Thorbjørn Clausen
Værdifuld arkitektur Et eksplorativt studie af bygningers rolle i virksomheders værdiskabelse

28. Monica Viken
Markedsundersøkelser som bevis i varemerke- og markedsføringsrett

29. Christian Wymann
Tattooing The Economic and Artistic Constitution of a Social Phenomenon

30. Sanne Frandsen
Productive Incoherence A Case Study of Branding and Identity Struggles in a Low-Prestige Organization

31. Mads Stenbo Nielsen
Essays on Correlation Modelling

32. Ivan Häuser
Følelse og sprog Etablering af en ekspressiv kategori, eksemplificeret på russisk

33. Sebastian Schwenen
Security of Supply in Electricity Markets

2012

1. Peter Holm Andreasen
The Dynamics of Procurement Management - A Complexity Approach

2. Martin Haulrich
Data-Driven Bitext Dependency Parsing and Alignment

3. Line Kirkegaard
Konsulenten i den anden nat En undersøgelse af det intense arbejdsliv

4. Tonny Stenheim
Decision usefulness of goodwill under IFRS

5. Morten Lind Larsen
Produktivitet, vækst og velfærd Industrirådet og efterkrigstidens Danmark 1945 - 1958

6. Petter Berg
Cartel Damages and Cost Asymmetries

7. Lynn Kahle
Experiential Discourse in Marketing A methodical inquiry into practice and theory

8. Anne Roelsgaard Obling
Management of Emotions in Accelerated Medical Relationships

9. Thomas Frandsen
Managing Modularity of Service Processes Architecture

10. Carina Christine Skovmøller
CSR som noget særligt
Et casestudie om styring og meningsskabelse i relation til CSR ud fra en intern optik

11. Michael Tell
Fradragsbeskæring af selskabers finansieringsudgifter
En skatteretlig analyse af SEL §§ 11, 11B og 11C

12. Morten Holm
Customer Profitability Measurement Models
Their Merits and Sophistication across Contexts

13. Katja Joo Dyppel
Beskatning af derivater
En analyse af dansk skatteret

14. Esben Anton Schultz
Essays in Labor Economics
Evidence from Danish Micro Data

15. Carina Risvig Hansen
"Contracts not covered, or not fully covered, by the Public Sector Directive"

16. Anja Svejgaard Pors
Iværksættelse af kommunikation
- patientfigurer i hospitalets strategiske kommunikation

17. Frans Bévort
Making sense of management with logics
An ethnographic study of accountants who become managers

18. René Kallestrup
The Dynamics of Bank and Sovereign Credit Risk

19. Brett Crawford
Revisiting the Phenomenon of Interests in Organizational Institutionalism
The Case of U.S. Chambers of Commerce

20. Mario Daniele Amore
Essays on Empirical Corporate Finance

21. Arne Stjernholm Madsen
The evolution of innovation strategy
Studied in the context of medical device activities at the pharmaceutical company Novo Nordisk A/S in the period 1980-2008

22. Jacob Holm Hansen
Is Social Integration Necessary for Corporate Branding?
A study of corporate branding strategies at Novo Nordisk

23. Stuart Webber
Corporate Profit Shifting and the Multinational Enterprise

24. Helene Ratner
Promises of Reflexivity
Managing and Researching Inclusive Schools

25. Therese Strand
The Owners and the Power: Insights from Annual General Meetings

26. Robert Gavin Strand
In Praise of Corporate Social Responsibility Bureaucracy

27. Nina Sormunen
Auditor's going-concern reporting
Reporting decision and content of the report

28. John Bang Mathiasen
Learning within a product development working practice:
- an understanding anchored in pragmatism

29. Philip Holst Riis
Understanding Role-Oriented Enterprise Systems: From Vendors to Customers

30. Marie Lisa Dacanay
Social Enterprises and the Poor
Enhancing Social Entrepreneurship and Stakeholder Theory

31. Fumiko Kano Glückstad
Bridging Remote Cultures: Cross-lingual concept mapping based on the information receiver's prior-knowledge

32. Henrik Barslund Fosse
Empirical Essays in International Trade

33. Peter Alexander Albrecht
Foundational hybridity and its reproduction
Security sector reform in Sierra Leone

34. Maja Rosenstock
CSR - hvor svært kan det være? Kulturanalytisk casestudie om udfordringer og dilemmaer med at forankre Coops CSR-strategi

35. Jeanette Rasmussen
Tweens, medier og forbrug
Et studie af 10-12 årige danske børns brug af internettet, opfattelse og forståelse af markedsføring og forbrug

36. Ib Tunby Gulbrandsen
'This page is not intended for a US Audience'
A five-act spectacle on online communication, collaboration & organization.

37. Kasper Aalling Teilmann
Interactive Approaches to Rural Development

38. Mette Mogensen
The Organization(s) of Well-being and Productivity
(Re)assembling work in the Danish Post

39. Søren Friis Møller
From Disinterestedness to Engagement
Towards Relational Leadership In the Cultural Sector

40. Nico Peter Berhausen
Management Control, Innovation and Strategic Objectives – Interactions and Convergence in Product Development Networks

41. Balder Onarheim
Creativity under Constraints
Creativity as Balancing 'Constrainedness'

42. Haoyong Zhou
Essays on Family Firms

43. Elisabeth Naima Mikkelsen
Making sense of organisational conflict
An empirical study of enacted sensemaking in everyday conflict at work

2013

1. Jacob Lyngsie
Entrepreneurship in an Organizational Context

2. Signe Groth-Brodersen
Fra ledelse til selvet
En socialpsykologisk analyse af forholdet imellem selvledelse, ledelse og stress i det moderne arbejdsliv

3. Nis Høyrup Christensen
Shaping Markets: A Neoinstitutional Analysis of the Emerging Organizational Field of Renewable Energy in China

4. Christian Edelvold Berg
As a matter of size
THE IMPORTANCE OF CRITICAL MASS AND THE CONSEQUENCES OF SCARCITY FOR TELEVISION MARKETS

5. Christine D. Isakson
Coworker Influence and Labor Mobility
Essays on Turnover, Entrepreneurship and Location Choice in the Danish Maritime Industry

6. Niels Joseph Jerne Lennon
Accounting Qualities in Practice
Rhizomatic stories of representational faithfulness, decision making and control

7. Shannon O'Donnell
Making Ensemble Possible
How special groups organize for collaborative creativity in conditions of spatial variability and distance

8. Robert W. D. Veitch
Access Decisions in a Partly-Digital World
Comparing Digital Piracy and Legal Modes for Film and Music

9. Marie Mathiesen
Making Strategy Work
An Organizational Ethnography

10. Arisa Shollo
The role of business intelligence in organizational decision-making

11. Mia Kaspersen
The construction of social and environmental reporting

12. Marcus Møller Larsen
The organizational design of offshoring

13. Mette Ohm Rørdam
EU Law on Food Naming
The prohibition against misleading names in an internal market context

14. Hans Peter Rasmussen
GIV EN GED!
Kan giver-idealtyper forklare støtte til velgørenhed og understøtte relationsopbygning?

15. Ruben Schachtenhaufen
Fonetisk reduktion i dansk

16. Peter Koerver Schmidt
Dansk CFC-beskatning
I et internationalt og komparativt perspektiv

17. Morten Froholdt
Strategi i den offentlige sektor
En kortlægning af styringsmæssig kontekst, strategisk tilgang, samt anvendte redskaber og teknologier for udvalgte danske statslige styrelser

18. Annette Camilla Sjørup
Cognitive effort in metaphor translation
An eye-tracking and key-logging study

19. Tamara Stucchi
The Internationalization of Emerging Market Firms:
A Context-Specific Study

20. Thomas Lopdrup-Hjorth
"Let's Go Outside":
The Value of Co-Creation

21. Ana Alačovska
Genre and Autonomy in Cultural Production
The case of travel guidebook production

22. Marius Gudmand-Høyer
Stemningssindssygdommenes historie i det 19. århundrede
Omtydningen af melankolien og manien som bipolære stemningslidelser i dansk sammenhæng under hensyn til dannelsen af det moderne følelseslivs relative autonomi.
En problematiserings- og erfarings-analytisk undersøgelse

23. Lichen Alex Yu
Fabricating an S&OP Process
Circulating References and Matters of Concern

24. Esben Alfort
The Expression of a Need
Understanding search

25. Trine Pallesen
Assembling Markets for Wind Power
An Inquiry into the Making of Market Devices

26. Anders Koed Madsen
Web-Visions
Repurposing digital traces to organize social attention

27. Lærke Højgaard Christiansen
BREWING ORGANIZATIONAL RESPONSES TO INSTITUTIONAL LOGICS

28. Tommy Kjær Lassen
EGENTLIG SELVLEDELSE
En ledelsesfilosofisk afhandling om selvledelsens paradoksale dynamik og eksistentielle engagement

29. Morten Rossing
Local Adaption and Meaning Creation in Performance Appraisal

30. Søren Obed Madsen
Lederen som oversætter
Et oversættelsesteoretisk perspektiv på strategisk arbejde

31. Thomas Høgenhaven
Open Government Communities
Does Design Affect Participation?

32. Kirstine Zinck Pedersen
Failsafe Organizing?
A Pragmatic Stance on Patient Safety

33. Anne Petersen
Hverdagslogikker i psykiatrisk arbejde
En institutionsetnografisk undersøgelse af hverdagen i psykiatriske organisationer

34. Didde Maria Humle
Fortællinger om arbejde

35. Mark Holst-Mikkelsen
Strategieksekvering i praksis
– barrierer og muligheder!

36. Malek Maalouf
Sustaining lean
Strategies for dealing with organizational paradoxes

37. Nicolaj Tofte Brenneche
Systemic Innovation In The Making
The Social Productivity of Cartographic Crisis and Transitions in the Case of SEEIT

38. Morten Gylling
The Structure of Discourse
A Corpus-Based Cross-Linguistic Study

39. Binzhang YANG
Urban Green Spaces for Quality Life
- Case Study: the landscape architecture for people in Copenhagen

40. Michael Friis Pedersen
Finance and Organization:
The Implications for Whole Farm Risk Management

41. Even Fallan
Issues on supply and demand for environmental accounting information

42. Ather Nawaz
Website user experience
A cross-cultural study of the relation between users´ cognitive style, context of use, and information architecture of local websites

43. Karin Beukel
The Determinants for Creating Valuable Inventions

44. Arjan Markus
External Knowledge Sourcing and Firm Innovation
Essays on the Micro-Foundations of Firms' Search for Innovation

2014

1. Solon Moreira
Four Essays on Technology Licensing and Firm Innovation

2. Karin Strzeletz Ivertsen
Partnership Drift in Innovation Processes
A study of the Think City electric car development

3. Kathrine Hoffmann Pii
Responsibility Flows in Patient-centred Prevention

4. Jane Bjørn Vedel
Managing Strategic Research
An empirical analysis of science-industry collaboration in a pharmaceutical company

5. Martin Gylling
Processuel strategi i organisationer
Monografi om dobbeltheden i tænkning af strategi, dels som vidensfelt i organisationsteori, dels som kunstnerisk tilgang til at skabe i erhvervsmæssig innovation

6. Linne Marie Lauesen
Corporate Social Responsibility in the Water Sector: How Material Practices and their Symbolic and Physical Meanings Form a Colonising Logic

7. Maggie Qiuzhu Mei
LEARNING TO INNOVATE: The role of ambidexterity, standard, and decision process

8. Inger Høedt-Rasmussen
Developing Identity for Lawyers Towards Sustainable Lawyering

9. Sebastian Fux
Essays on Return Predictability and Term Structure Modelling

10. Thorbjørn N. M. Lund-Poulsen
Essays on Value Based Management

11. Oana Brindusa Albu
Transparency in Organizing: A Performative Approach

12. Lena Olaison
Entrepreneurship at the limits

13. Hanne Sørum
DRESSED FOR WEB SUCCESS? An Empirical Study of Website Quality in the Public Sector

14. Lasse Folke Henriksen
Knowing networks How experts shape transnational governance

15. Maria Halbinger
Entrepreneurial Individuals Empirical Investigations into Entrepreneurial Activities of Hackers and Makers

16. Robert Spliid
Kapitalfondenes metoder og kompetencer

17. Christiane Stelling
Public-private partnerships & the need, development and management of trusting A processual and embedded exploration

18. Marta Gasparin
Management of design as a translation process

19. Kåre Moberg
Assessing the Impact of Entrepreneurship Education From ABC to PhD

20. Alexander Cole
Distant neighbors Collective learning beyond the cluster

21. Martin Møller Boje Rasmussen
Is Competitiveness a Question of Being Alike? How the United Kingdom, Germany and Denmark Came to Compete through their Knowledge Regimes from 1993 to 2007

22. Anders Ravn Sørensen
Studies in central bank legitimacy, currency and national identity Four cases from Danish monetary history

23. Nina Bellak
Can Language be Managed in International Business? Insights into Language Choice from a Case Study of Danish and Austrian Multinational Corporations (MNCs)

24. Rikke Kristine Nielsen
Global Mindset as Managerial Meta-competence and Organizational Capability: Boundary-crossing Leadership Cooperation in the MNC The Case of 'Group Mindset' in Solar A/S.

25. Rasmus Koss Hartmann
User Innovation inside government Towards a critically performative foundation for inquiry

26. Kristian Gylling Olesen
Flertydig og emergerende ledelse i folkeskolen
Et aktør-netværksteoretisk ledelses-studie af politiske evalueringsreformers betydning for ledelse i den danske folkeskole

27. Troels Riis Larsen
Kampen om Danmarks omdømme 1945-2010
Omdømmearbejde og omdømmepolitik

28. Klaus Majgaard
Jagten på autenticitet i offentlig styring

29. Ming Hua Li
Institutional Transition and Organizational Diversity:
Differentiated internationalization strategies of emerging market state-owned enterprises

30. Sofie Blinkenberg Federspiel
IT, organisation og digitalisering:
Institutionelt arbejde i den kommunale digitaliseringsproces

31. Elvi Weinreich
Hvilke offentlige ledere er der brug for når velfærdstænkningen flytter sig – er Diplomuddannelsens lederprofil svaret?

32. Ellen Mølgaard Korsager
Self-conception and image of context in the growth of the firm – A Penrosian History of Fiberline Composites

33. Else Skjold
The Daily Selection

34. Marie Louise Conradsen
The Cancer Centre That Never Was
The Organisation of Danish Cancer Research 1949-1992

35. Virgilio Failla
Three Essays on the Dynamics of Entrepreneurs in the Labor Market

36. Nicky Nedergaard
Brand-Based Innovation
Relational Perspectives on Brand Logics and Design Innovation Strategies and Implementation

37. Mads Gjedsted Nielsen
Essays in Real Estate Finance

38. Kristin Martina Brandl
Process Perspectives on Service Offshoring

39. Mia Rosa Koss Hartmann
In the gray zone
With police in making space for creativity

40. Karen Ingerslev
Healthcare Innovation under The Microscope
Framing Boundaries of Wicked Problems

41. Tim Neerup Themsen
Risk Management in large Danish public capital investment programmes

2015

1. Jakob Ion Wille
Film som design
Design af levende billeder i film og tv-serier

2. Christiane Mossin
Interzones of Law and Metaphysics
Hierarchies, Logics and Foundations of Social Order seen through the Prism of EU Social Rights

3. Thomas Tøth
TRUSTWORTHINESS: ENABLING GLOBAL COLLABORATION
An Ethnographic Study of Trust, Distance, Control, Culture and Boundary Spanning within Offshore Outsourcing of IT Services

4. Steven Højlund
Evaluation Use in Evaluation Systems – The Case of the European Commission

5. Julia Kirch Kirkegaard
AMBIGUOUS WINDS OF CHANGE – OR FIGHTING AGAINST WINDMILLS IN CHINESE WIND POWER
A CONSTRUCTIVIST INQUIRY INTO CHINA'S PRAGMATICS OF GREEN MARKETISATION MAPPING CONTROVERSIES OVER A POTENTIAL TURN TO QUALITY IN CHINESE WIND POWER

6. Michelle Carol Antero
A Multi-case Analysis of the Development of Enterprise Resource Planning Systems (ERP) Business Practices

Morten Friis-Olivarius
The Associative Nature of Creativity

7. Mathew Abraham
New Cooperativism:
A study of emerging producer organisations in India

8. Stine Hedegaard
Sustainability-Focused Identity: Identity work performed to manage, negotiate and resolve barriers and tensions that arise in the process of constructing or ganizational identity in a sustainability context

9. Cecilie Glerup
Organizing Science in Society – the conduct and justification of resposible research

10. Allan Salling Pedersen
Implementering af ITIL® IT-governance - når best practice konflikter med kulturen Løsning af implementerings-problemer gennem anvendelse af kendte CSF i et aktionsforskningsforløb.

11. Nihat Misir
A Real Options Approach to Determining Power Prices

12. Mamdouh Medhat
MEASURING AND PRICING THE RISK OF CORPORATE FAILURES

13. Rina Hansen
Toward a Digital Strategy for Omnichannel Retailing

14. Eva Pallesen
In the rhythm of welfare creation
A relational processual investigation moving beyond the conceptual horizon of welfare management

15. Gouya Harirchi
In Search of Opportunities: Three Essays on Global Linkages for Innovation

16. Lotte Holck
Embedded Diversity: A critical ethnographic study of the structural tensions of organizing diversity

17. Jose Daniel Balarezo
Learning through Scenario Planning

18. Louise Pram Nielsen
Knowledge dissemination based on terminological ontologies. Using eye tracking to further user interface design.

19. Sofie Dam
PUBLIC-PRIVATE PARTNERSHIPS FOR INNOVATION AND SUSTAINABILITY TRANSFORMATION
An embedded, comparative case study of municipal waste management in England and Denmark

20. Ulrik Hartmyer Christiansen
Follwoing the Content of Reported Risk Across the Organization

21. Guro Refsum Sanden
Language strategies in multinational corporations. A cross-sector study of financial service companies and manufacturing companies.

22. Linn Gevoll
Designing performance management for operational level
- A closer look on the role of design choices in framing coordination and motivation

23. Frederik Larsen
Objects and Social Actions – on Second-hand Valuation Practices

24. Thorhildur Hansdottir Jetzek
The Sustainable Value of Open Government Data
Uncovering the Generative Mechanisms of Open Data through a Mixed Methods Approach

25. Gustav Toppenberg
Innovation-based M&A – Technological-Integration Challenges – The Case of Digital-Technology Companies

26. Mie Plotnikof
Challenges of Collaborative Governance
An Organizational Discourse Study of Public Managers' Struggles with Collaboration across the Daycare Area

27. Christian Garmann Johnsen
Who Are the Post-Bureaucrats? A Philosophical Examination of the Creative Manager, the Authentic Leader and the Entrepreneur

28. Jacob Brogaard-Kay
Constituting Performance Management A field study of a pharmaceutical company

29. Rasmus Ploug Jenle
Engineering Markets for Control: Integrating Wind Power into the Danish Electricity System

30. Morten Lindholst
Complex Business Negotiation: Understanding Preparation and Planning

31. Morten Grynings
TRUST AND TRANSPARENCY FROM AN ALIGNMENT PERSPECTIVE

32. Peter Andreas Norn
Byregimer og styringsevne: Politisk lederskab af store byudviklingsprojekter

33. Milan Miric
Essays on Competition, Innovation and Firm Strategy in Digital Markets

34. Sanne K. Hjordrup
The Value of Talent Management Rethinking practice, problems and possibilities

35. Johanna Sax
Strategic Risk Management – Analyzing Antecedents and Contingencies for Value Creation

36. Pernille Rydén
Strategic Cognition of Social Media

37. Mimmi Sjöklint
The Measurable Me - The Influence of Self-tracking on the User Experience

38. Juan Ignacio Staricco
Towards a Fair Global Economic Regime? A critical assessment of Fair Trade through the examination of the Argentinean wine industry

39. Marie Henriette Madsen
Emerging and temporary connections in Quality work

40. Yangfeng CAO
Toward a Process Framework of Business Model Innovation in the Global Context
Entrepreneurship-Enabled Dynamic Capability of Medium-Sized Multinational Enterprises

41. Carsten Scheibye
Enactment of the Organizational Cost Structure in Value Chain Configuration A Contribution to Strategic Cost Management

2016

1. Signe Sofie Dyrby
Enterprise Social Media at Work

2. Dorte Boesby Dahl
The making of the public parking attendant
Dirt, aesthetics and inclusion in public service work

3. Verena Girschik
Realizing Corporate Responsibility Positioning and Framing in Nascent Institutional Change

4. Anders Ørding Olsen
IN SEARCH OF SOLUTIONS
Inertia, Knowledge Sources and Diversity in Collaborative Problem-solving

5. Pernille Steen Pedersen
Udkast til et nyt copingbegreb
En kvalifikation af ledelsesmuligheder for at forebygge sygefravær ved psykiske problemer.

6. Kerli Kant Hvass
Weaving a Path from Waste to Value: Exploring fashion industry business models and the circular economy

7. Kasper Lindskow
Exploring Digital News Publishing Business Models – a production network approach

8. Mikkel Mouritz Marfelt
The chameleon workforce: Assembling and negotiating the content of a workforce

9. Marianne Bertelsen
Aesthetic encounters
Rethinking autonomy, space & time in today's world of art

10. Louise Hauberg Wilhelmsen
EU PERSPECTIVES ON INTERNATIONAL COMMERCIAL ARBITRATION

11. Abid Hussain
On the Design, Development and Use of the Social Data Analytics Tool (SODATO): Design Propositions, Patterns, and Principles for Big Social Data Analytics

12. Mark Bruun
Essays on Earnings Predictability

13. Tor Bøe-Lillegraven
BUSINESS PARADOXES, BLACK BOXES, AND BIG DATA: BEYOND ORGANIZATIONAL AMBIDEXTERITY

14. Hadis Khonsary-Atighi
ECONOMIC DETERMINANTS OF DOMESTIC INVESTMENT IN AN OIL-BASED ECONOMY: THE CASE OF IRAN (1965-2010)

15. Maj Lervad Grasten
Rule of Law or Rule by Lawyers?
On the Politics of Translation in Global Governance

16. Lene Granzau Juel-Jacobsen
SUPERMARKEDETS MODUS OPERANDI – en hverdagssociologisk undersøgelse af forholdet mellem rum og handlen og understøtte relationsopbygning?

17. Christine Thalsgård Henriques
In search of entrepreneurial learning – Towards a relational perspective on incubating practices?

18. Patrick Bennett
Essays in Education, Crime, and Job Displacement

19. Søren Korsgaard
Payments and Central Bank Policy

20. Marie Kruse Skibsted
Empirical Essays in Economics of Education and Labor

21. Elizabeth Benedict Christensen
The Constantly Contingent Sense of Belonging of the 1.5 Generation Undocumented Youth
An Everyday Perspective

22. Lasse J. Jessen
Essays on Discounting Behavior and Gambling Behavior

23. Kalle Johannes Rose
Når stifterviljen dør…
Et retsøkonomisk bidrag til 200 års juridisk konflikt om ejendomsretten

24. Andreas Søeborg Kirkedal
Danish Stød and Automatic Speech Recognition

25. Ida Lunde Jørgensen
Institutions and Legitimations in Finance for the Arts

26. Olga Rykov Ibsen
An empirical cross-linguistic study of directives: A semiotic approach to the sentence forms chosen by British, Danish and Russian speakers in native and ELF contexts

27. Desi Volker
Understanding Interest Rate Volatility

28. Angeli Elizabeth Weller
Practice at the Boundaries of Business Ethics & Corporate Social Responsibility

29. Ida Danneskiold-Samsøe
Levende læring i kunstneriske organisationer
En undersøgelse af læringsprocesser mellem projekt og organisation på Aarhus Teater

30. Leif Christensen
Quality of information – The role of internal controls and materiality

31. Olga Zarzecka
Tie Content in Professional Networks

32. Henrik Mahncke
De store gaver
- Filantropiens gensidighedsrelationer i teori og praksis

33. Carsten Lund Pedersen
Using the Collective Wisdom of Frontline Employees in Strategic Issue Management

34. Yun Liu
Essays on Market Design

35. Denitsa Hazarbassanova Blagoeva
The Internationalisation of Service Firms

36. Manya Jaura Lind
Capability development in an off-shoring context: How, why and by whom

37. Luis R. Boscán F.
Essays on the Design of Contracts and Markets for Power System Flexibility

38. Andreas Philipp Distel
Capabilities for Strategic Adaptation: Micro-Foundations, Organizational Conditions, and Performance Implications

39. Lavinia Bleoca
The Usefulness of Innovation and Intellectual Capital in Business Performance: The Financial Effects of Knowledge Management vs. Disclosure

40. Henrik Jensen
Economic Organization and Imperfect Managerial Knowledge: A Study of the Role of Managerial Meta-Knowledge in the Management of Distributed Knowledge

41. Stine Mosekjær
The Understanding of English Emotion Words by Chinese and Japanese Speakers of English as a Lingua Franca An Empirical Study

42. Hallur Tor Sigurdarson
The Ministry of Desire - Anxiety and entrepreneurship in a bureaucracy

43. Kätlin Pulk
Making Time While Being in Time
A study of the temporality of organizational processes

44. Valeria Giacomin
Contextualizing the cluster Palm oil in Southeast Asia in global perspective (1880s–1970s)

45. Jeanette Willert
Managers' use of multiple Management Control Systems: The role and interplay of management control systems and company performance

46. Mads Vestergaard Jensen
Financial Frictions: Implications for Early Option Exercise and Realized Volatility

47. Mikael Reimer Jensen
Interbank Markets and Frictions

48. Benjamin Faigen
Essays on Employee Ownership

49. Adela Michea
Enacting Business Models
An Ethnographic Study of an Emerging Business Model Innovation within the Frame of a Manufacturing Company.

50. Iben Sandal Stjerne
Transcending organization in temporary systems
Aesthetics' organizing work and employment in Creative Industries

51. Simon Krogh
Anticipating Organizational Change

52. Sarah Netter
Exploring the Sharing Economy

53. Lene Tolstrup Christensen
State-owned enterprises as institutional market actors in the marketization of public service provision:
A comparative case study of Danish and Swedish passenger rail 1990–2015

54. Kyoung(Kay) Sun Park
Three Essays on Financial Economics

2017

1. Mari Bjerck
Apparel at work. Work uniforms and women in male-dominated manual occupations.

2. Christoph H. Flöthmann
Who Manages Our Supply Chains? Backgrounds, Competencies and Contributions of Human Resources in Supply Chain Management

3. Aleksandra Anna Rzeźnik
Essays in Empirical Asset Pricing

4. Claes Bäckman
Essays on Housing Markets

5. Kirsti Reitan Andersen
Stabilizing Sustainability in the Textile and Fashion Industry

6. Kira Hoffmann
Cost Behavior: An Empirical Analysis of Determinants and Consequences of Asymmetries

7. Tobin Hanspal
Essays in Household Finance

8. Nina Lange
Correlation in Energy Markets

9. Anjum Fayyaz
Donor Interventions and SME Networking in Industrial Clusters in Punjab Province, Pakistan

10. Magnus Paulsen Hansen
Trying the unemployed. Justification and critique, emancipation and coercion towards the 'active society'. A study of contemporary reforms in France and Denmark

11. Sameer Azizi
Corporate Social Responsibility in Afghanistan
– a critical case study of the mobile telecommunications industry

12. Malene Myhre
The internationalization of small and medium-sized enterprises: A qualitative study

13. Thomas Presskorn-Thygesen
The Significance of Normativity – Studies in Post-Kantian Philosophy and Social Theory

14. Federico Clementi
Essays on multinational production and international trade

15. Lara Anne Hale
Experimental Standards in Sustainability Transitions: Insights from the Building Sector

16. Richard Pucci
Accounting for Financial Instruments in an Uncertain World Controversies in IFRS in the Aftermath of the 2008 Financial Crisis

17. Sarah Maria Denta
Kommunale offentlige private partnerskaber Regulering I skyggen af Farumsagen

18. Christian Östlund
Design for e-training

19. Amalie Martinus Hauge
Organizing Valuations – a pragmatic inquiry

20. Tim Holst Celik
Tension-filled Governance? Exploring the Emergence, Consolidation and Reconfiguration of Legitimatory and Fiscal State-crafting

21. Christian Bason
Leading Public Design: How managers engage with design to transform public governance

22. Davide Tomio
Essays on Arbitrage and Market Liquidity

23. Simone Stæhr
Financial Analysts' Forecasts Behavioral Aspects and the Impact of Personal Characteristics

24. Mikkel Godt Gregersen
Management Control, Intrinsic Motivation and Creativity – How Can They Coexist

25. Kristjan Johannes Suse Jespersen
Advancing the Payments for Ecosystem Service Discourse Through Institutional Theory

26. Kristian Bondo Hansen
Crowds and Speculation: A study of crowd phenomena in the U.S. financial markets 1890 to 1940

27. Lars Balslev
Actors and practices – An institutional study on management accounting change in Air Greenland

28. Sven Klingler
Essays on Asset Pricing with Financial Frictions

29. Klement Ahrensbach Rasmussen
Business Model Innovation The Role of Organizational Design

30. Giulio Zichella
Entrepreneurial Cognition. Three essays on entrepreneurial behavior and cognition under risk and uncertainty

31. Richard Ledborg Hansen
En forkærlighed til det eksisterende – mellemlederens oplevelse af forandringsmodstand i organisatoriske forandringer

32. Vilhelm Stefan Holsting
Militært chefvirke: Kritik og retfærdiggørelse mellem politik og profession

33. Thomas Jensen
Shipping Information Pipeline: An information infrastructure to improve international containerized shipping

34. Dzmitry Bartalevich
Do economic theories inform policy? Analysis of the influence of the Chicago School on European Union competition policy

35. Kristian Roed Nielsen
Crowdfunding for Sustainability: A study on the potential of reward-based crowdfunding in supporting sustainable entrepreneurship

36. Emil Husted
There is always an alternative: A study of control and commitment in political organization

37. Anders Ludvig Sevelsted
Interpreting Bonds and Boundaries of Obligation. A genealogy of the emergence and development of Protestant voluntary social work in Denmark as shown through the cases of the Copenhagen Home Mission and the Blue Cross (1850 – 1950)

38. Niklas Kohl
Essays on Stock Issuance

39. Maya Christiane Flensborg Jensen
BOUNDARIES OF PROFESSIONALIZATION AT WORK An ethnography-inspired study of care workers' dilemmas at the margin

40. Andreas Kamstrup
Crowdsourcing and the Architectural Competition as Organisational Technologies

41. Louise Lyngfeldt Gorm Hansen
Triggering Earthquakes in Science, Politics and Chinese Hydropower - A Controversy Study

2018

1. Vishv Priya Kohli
Combatting Falsifi cation and Counterfeiting of Medicinal Products in the E uropean Union – A Legal Analysis

2. Helle Haurum
Customer Engagement Behavior in the context of Continuous Service Relationships

3. Nis Grünberg
The Party -state order: Essays on China's political organization and political economic institutions

4. Jesper Christensen
A Behavioral Theory of Human Capital Integration

5. Poula Marie Helth
Learning in practice

6. Rasmus Vendler Toft-Kehler
Entrepreneurship as a career? An investigation of the relationship between entrepreneurial experience and entrepreneurial outcome

7. Szymon Furtak
Sensing the Future: Designing sensor-based predictive information systems for forecasting spare part demand for diesel engines

8. Mette Brehm Johansen
Organizing patient involvement. An ethnographic study

9. Iwona Sulinska
Complexities of Social Capital in Boards of Directors

10. Cecilie Fanøe Petersen
Award of public contracts as a means to conferring State aid: A legal analysis of the interface between public procurement law and State aid law

11. Ahmad Ahmad Barirani
Three Experimental Studies on Entrepreneurship

12. Carsten Allerslev Olsen
Financial Reporting Enforcement: Impact and Consequences

13. Irene Christensen
New product fumbles – Organizing for the Ramp-up process

14. Jacob Taarup-Esbensen
Managing communities – Mining MNEs' community risk management practices

15. Lester Allan Lasrado
Set-Theoretic approach to maturity models

16. Mia B. Münster
Intention vs. Perception of Designed Atmospheres in Fashion Stores

17. Anne Sluhan
Non-Financial Dimensions of Family Firm Ownership: How Socioemotional Wealth and Familiness Influence Internationalization

18. Henrik Yde Andersen
Essays on Debt and Pensions

19. Fabian Heinrich Müller
Valuation Reversed – When Valuators are Valuated. An Analysis of the Perception of and Reaction to Reviewers in Fine-Dining

20. Martin Jarmatz
Organizing for Pricing

21. Niels Joachim Christfort Gormsen
Essays on Empirical Asset Pricing

22. Diego Zunino
Socio-Cognitive Perspectives in Business Venturing

23. Benjamin Asmussen
Networks and Faces between Copenhagen and Canton, 1730-1840

24. Dalia Bagdziunaite
Brains at Brand Touchpoints A Consumer Neuroscience Study of Information Processing of Brand Advertisements and the Store Environment in Compulsive Buying

25. Erol Kazan
Towards a Disruptive Digital Platform Model

26. Andreas Bang Nielsen
Essays on Foreign Exchange and Credit Risk

27. Anne Krebs
Accountable, Operable Knowledge Toward Value Representations of Individual Knowledge in Accounting

28. Matilde Fogh Kirkegaard
A firm- and demand-side perspective on behavioral strategy for value creation: Insights from the hearing aid industry

29. Agnieszka Nowinska
SHIPS AND RELATION-SHIPS Tie formation in the sector of shipping intermediaries in shipping

30. Stine Evald Bentsen
The Comprehension of English Texts by Native Speakers of English and Japanese, Chinese and Russian Speakers of English as a Lingua Franca. An Empirical Study.

31. Stine Louise Daetz
Essays on Financial Frictions in Lending Markets

32. *Christian Skov Jensen*
Essays on Asset Pricing

33. Anders Kryger
Aligning future employee action and corporate strategy in a resource-scarce environment

34. Maitane Elorriaga-Rubio
The behavioral foundations of strategic decision-making: A contextual perspective

35. Roddy Walker
Leadership Development as Organisational Rehabilitation: Shaping Middle-Managers as Double Agents

36. Jinsun Bae
Producing Garments for Global Markets Corporate social responsibility (CSR) in Myanmar's export garment industry 2011–2015

37. Queralt Prat-i-Pubill
Axiological knowledge in a knowledge driven world. Considerations for organizations.

38. Pia Mølgaard
Essays on Corporate Loans and Credit Risk

39. Marzia Aricò
Service Design as a Transformative Force: Introduction and Adoption in an Organizational Context

40. Christian Dyrlund Wåhlin-Jacobsen
Constructing change initiatives in workplace voice activities Studies from a social interaction perspective

41. Peter Kalum Schou
Institutional Logics in Entrepreneurial Ventures: How Competing Logics arise and shape organizational processes and outcomes during scale-up

42. Per Henriksen
Enterprise Risk Management Rationaler og paradokser i en moderne ledelsesteknologi

43. Maximilian Schellmann
The Politics of Organizing Refugee Camps

44. Jacob Halvas Bjerre
Excluding the Jews: The Aryanization of Danish-German Trade and German Anti-Jewish Policy in Denmark 1937-1943

45. Ida Schrøder
Hybridising accounting and caring: A symmetrical study of how costs and needs are connected in Danish child protection work

46. Katrine Kunst
Electronic Word of Behavior: Transforming digital traces of consumer behaviors into communicative content in product design

47. Viktor Avlonitis
Essays on the role of modularity in management: Towards a unified perspective of modular and integral design

48. Anne Sofie Fischer
Negotiating Spaces of Everyday Politics: -An ethnographic study of organizing for social transformation for women in urban poverty, Delhi, India

2019

1. Shihan Du
   ESSAYS IN EMPIRICAL STUDIES BASED ON ADMINISTRATIVE LABOUR MARKET DATA

2. Mart Laatsit
   Policy learning in innovation policy: A comparative analysis of European Union member states

3. Peter J. Wynne
   Proactively Building Capabilities for the Post-Acquisition Integration of Information Systems

4. Kalina S. Staykova
   Generative Mechanisms for Digital Platform Ecosystem Evolution

5. Ieva Linkeviciute
   Essays on the Demand-Side Management in Electricity Markets

6. Jonatan Echebarria Fernández
   Jurisdiction and Arbitration Agreements in Contracts for the Carriage of Goods by Sea – Limitations on Party Autonomy

7. Louise Thorn Bøttkjær
   Votes for sale. Essays on clientelism in new democracies.

8. Ditte Vilstrup Holm
   The Poetics of Participation: the organizing of participation in contemporary art

9. Philip Rosenbaum
   Essays in Labor Markets – Gender, Fertility and Education

10. Mia Olsen
    Mobile Betalinger - Succesfaktorer og Adfærdsmæssige Konsekvenser

11. Adrián Luis Mérida Gutiérrez
    Entrepreneurial Careers: Determinants, Trajectories, and Outcomes

12. Frederik Regli
    Essays on Crude Oil Tanker Markets

13. Cancan Wang
    Becoming Adaptive through Social Media: Transforming Governance and Organizational Form in Collaborative E-government

14. Lena Lindbjerg Sperling
    Economic and Cultural Development: Empirical Studies of Micro-level Data

15. Xia Zhang
    Obligation, face and facework: An empirical study of the communicative act of cancellation of an obligation by Chinese, Danish and British business professionals in both L1 and ELF contexts

16. Stefan Kirkegaard Sløk-Madsen
    Entrepreneurial Judgment and Commercialization

17. Erin Leitheiser
    The Comparative Dynamics of Private Governance
    The case of the Bangladesh Ready-Made Garment Industry

18. Lone Christensen
    STRATEGIIMPLEMENTERING: STYRINGSBESTRÆBELSER, IDENTITET OG AFFEKT

19. Thomas Kjær Poulsen
    Essays on Asset Pricing with Financial Frictions

20. Maria Lundberg
    Trust and self-trust in leadership identity constructions: A qualitative exploration of narrative ecology in the discursive aftermath of heroic discourse

21. Tina Joanes
Sufficiency for sustainability Determinants and strategies for reducing clothing consumption

22. Benjamin Johannes Flesch
Social Set Visualizer (SoSeVi): Design, Development and Evaluation of a Visual Analytics Tool for Computational Set Analysis of Big Social Data

23. Henriette Sophia Groskopff
Tvede Schleimann
Creating innovation through collaboration – Partnering in the maritime sector

24. Kristian Steensen Nielsen
The Role of Self-Regulation in Environmental Behavior Change

25. Lydia L. Jørgensen
Moving Organizational Atmospheres

26. Theodor Lucian Vladasel
Embracing Heterogeneity: Essays in Entrepreneurship and Human Capital

27. Seidi Suurmets
Contextual Effects in Consumer Research: An Investigation of Consumer Information Processing and Behavior via the Applicati on of Eye-tracking Methodology

28. Marie Sundby Palle Nickelsen
Reformer mellem integritet og innovation: Reform af reformens form i den danske centraladministration fra 1920 til 2019

29. Vibeke Kristine Scheller
The temporal organizing of same-day discharge: A tempography of a Cardiac Day Unit

30. Qian Sun
Adopting Artificial Intelligence in Healthcare in the Digital Age: Perceived Challenges, Frame Incongruence, and Social Power

31. Dorthe Thorning Mejlhede
Artful change agency and organizing for innovation – the case of a Nordic fintech cooperative

32. Benjamin Christoffersen
Corporate Default Models: Empirical Evidence and Methodical Contributions

33. Filipe Antonio Bonito Vieira
Essays on Pensions and Fiscal Sustainability

34. Morten Nicklas Bigler Jensen
Earnings Management in Private Firms: An Empirical Analysis of Determinants and Consequences of Earnings Management in Private Firms

TITLER I ATV PH.D.-SERIEN

1992

1. Niels Kornum
Servicesamkørsel – organisation, økonomi og planlægningsmetode

1995

2. Verner Worm
Nordiske virksomheder i Kina
Kulturspecifikke interaktionsrelationer ved nordiske virksomhedsetableringer i Kina

1999

3. Mogens Bjerre
Key Account Management of Complex Strategic Relationships
An Empirical Study of the Fast Moving Consumer Goods Industry

2000

4. Lotte Darsø
Innovation in the Making
Interaction Research with heterogeneous Groups of Knowledge Workers creating new Knowledge and new Leads

2001

5. Peter Hobolt Jensen
Managing Strategic Design Identities
The case of the Lego Developer Network

2002

6. Peter Lohmann
The Deleuzian Other of Organizational Change – Moving Perspectives of the Human

7. Anne Marie Jess Hansen
To lead from a distance: The dynamic interplay between strategy and strategizing – A case study of the strategic management process

2003

8. Lotte Henriksen
Videndeling
– om organisatoriske og ledelsesmæssige udfordringer ved videndeling i praksis

9. Niels Christian Nickelsen
Arrangements of Knowing: Coordinating Procedures Tools and Bodies in Industrial Production – a case study of the collective making of new products

2005

10. Carsten Ørts Hansen
Konstruktion af ledelsesteknologier og effektivitet

TITLER I DBA PH.D.-SERIEN

2007

1. Peter Kastrup-Misir
Endeavoring to Understand Market Orientation – and the concomitant co-mutation of the researched, the re searcher, the research itself and the truth

2009

1. Torkild Leo Thellefsen
Fundamental Signs and Significance effects
A Semeiotic outline of Fundamental Signs, Significance-effects, Knowledge Profiling and their use in Knowledge Organization and Branding

2. Daniel Ronzani
When Bits Learn to Walk Don't Make Them Trip. Technological Innovation and the Role of Regulation by Law in Information Systems Research: the Case of Radio Frequency Identification (RFID)

2010

1. Alexander Carnera
Magten over livet og livet som magt
Studier i den biopolitiske ambivalens