Finanzwirtschaftliche Entscheidungen vor dem Hintergrund strategischer Interdependenzen zwischen Unternehmensführung, Abschlussprüfer und Investoren

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vorgelegt von

Michael Babbel, M.Sc.
aus Halle Westfalen

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Erstgutachter:	Prof. Dr. Paul Pronobis Freie Universität Berlin Fachbereich Wirtschaftswissenschaft Juniorprofessur für Allgemeine Betriebswirtschaftslehre, insbesondere Unternehmensrechnung Boltzmannstr. 20, 14195 Berlin
Zweitgutachter:	Prof. Dr. Jochen Bigus Freie Universität Berlin Fachbereich Wirtschaftswissenschaft Professur für Interne Unternehmensrechnung/Controlling Garystr. 21, 14195 Berlin
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Teil 1:

Einleitung

Die vorliegende Dissertationsschrift thematisiert die strategischen Interdependenzen zwischen Unternehmensführung, Abschlussprüfer und (potentiellen) Investoren. Dabei untergliedern die im Rahmen dieser Dissertation verfassten Einzelbeiträge den Gesamtzusammenhang in einzelne Teilaspekte und betrachten jeweils spezifische Fragestellungen, um so insgesamt zu einem besseren Verständnis der Interdependenzen zwischen den vorgennannten Parteien und den daraus entstehenden Externalitäten beizutragen. Tabelle 1 enthält eine Übersicht zu den drei Beiträgen sowie Angaben über mitwirkende Ko-Autoren und Informationen zur Veröffentlichung.

Die ersten beiden Beiträge widmen sich den strategischen Interdependenzen zwischen Unternehmensführung und Abschlussprüfer im Kontext ihrer vertraglichen Beziehung. Im Mittelpunkt der jeweils empirisch angelegten Beiträge steht der Umgang des Abschlussprüfers mit mandatsspezifischen Risiken. Hierbei werden für den Abschlussprüfer Entscheidungskonzepte im Sinne der Prospect Theory nach Kahneman und Tversky (1979) postuliert.[1] Der erste Beitrag (“*Premature Earnings Announcements and the Auditor’s Response to Client-Specific Business Risk”*) untersucht den Zusammenhang zwischen vorzeitigen Ergebnisbekanntmachungen (Publikation eines Jahresergebnisses durch die Unternehmensführung vor Finalisierung der Abschlussprüfung) und dem Abschlussprüferhonorar sowie der Wahrscheinlichkeit eines Prüferwechsels im Folgejahr. Der zweite Beitrag (“*Does Crisis-Induced Fee Pressure Prevent Auditors from Pricing Risk?”*) untersucht die Entwicklung von Abschlussprüfungshonoraren in Zeiten von globalen Wirtschafts- und Finanzkrisen

[1] Vgl. Kahnemann D./ Tversky A., Prospect theory – An analysis of decision under risk, Econometrica 1979 S. 263 (291).

Tabelle 1

Übersicht zu den Einzelbeiträgen

Titel	Ko-Autoren	Eigenanteil	Publikationsstatus
Premature Earnings Announcements and the Auditor's Response to Client-Specific Business Risk	-	100%	Manuskript in Vorbereiung für *European Accounting Review*
Does Crisis-Induced Fee Pressure prevent Auditors from Pricing Risk?	-	100%	Manuskript in Begutachtung bei *Auditing: A Journal of Practice & Theory*
Investor Tax Incentive Heterogeneity, Ownership Power, and Capital Structure Decisions	Pronobis, Paul; Hundsdoerfer, Jochen	33%	Manuskript in Vorbereitung für *Journal of Financial and Quantitative Analysis*

unter Berücksichtigung von durch das makroökonomische Umfeld induzierter systemischer Risiken für wesentliche Fehler in der Finanzberichterstattung.

Der dritte Beitrag (*"Investor Tax Incentive Heterogeneity, Ownership Power, and Capital Structure Decisions"*) rückt die Beziehung zwischen Unternehmensführung und Investoren in den Fokus. Im Mittelpunkt steht die Frage, ob und wie sich die steuerlichen Interessen der Anteilseigner eines Unternehmens auf die Finanzierungsentscheidungen der Unternehmensführung auswirken. Die empirische Studie untersucht den Zusammenhang zwischen Kapitalstruktur und den für die Anteilseigner eines Unternehmens geltenden Steueranreizen und berücksichtigt dabei sowohl die unternehmensspezifische Eigentümerstruktur als auch die Heterogenität der Steueranreize unter den Anteilseignern.

Die nachfolgenden Teile zwei bis vier der Dissertationsschrift setzen sich aus den vorgenannten drei Einzelbeiträgen zusammen. Die Dissertation schließt mit einer zweisprachigen Zusammenfassung der Forschungsergebnisse in Teil fünf.

Teil 2:

Premature Earnings Announcements and the Auditor's Response to Client-Specific Business Risk

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Abstract

Due to the capital market's demand for timely disclosure a large portion of managers is not willing to wait to announce earnings until the audit is complete. This study extends the audit research literature by examining the consequences of premature earnings announcements for auditor-client contracting. I find that audit clients pay higher fees and are more likely to experience an auditor turnover during the following year when earnings are released before audit completion. This is consistent with premature earnings announcements imposing additional business risk to the auditor. Also consistent with premature earnings announcements increasing auditor business risk, I find that premature earnings announcements are positively associated with the frequency with which audit clients are able to use discretionary accruals to meet or beat analysts' earnings forecasts. Furthermore, I find that strong investor protection regimes mitigate the association between premature earnings announcements and audit fees. Taken together, my results are consistent with auditors viewing premature earnings announcements as an important determinant of auditor business risk that, in turn, affects auditor-client contracting decisions. My findings should be of particular interest to auditors who actively manage client risk. In addition, regulators and standard-setters may benefit by better understanding the effects of releasing earnings before audit completion on the subsequent audit process and auditor-client contracting.

Teil 3:

Does Crisis-Induced Fee Pressure Prevent Auditors from Pricing Risk?

Abstract

Prior research reports a positive association between the risk of material misstatements in a firm's financial reporting (RoMM) and audit fees, indicating that auditors are able to price increases in RoMM. The recent economic and financial crisis has, however, changed the audit market environment, leading to well recognized audit fee downward pressure. This study investigates the impact of the recent crisis on audit fees and, specifically, whether crisis-induced fee pressure prevents auditors from pricing RoMM. I capture crisis-related increases in RoMM through an industry-level measure of external-finance dependence. During the crisis, I find audit fees in Europe declined by over 5 percent on average (everything else equal). Fee reductions are negatively correlated with crisis-related increases in RoMM, This relation, however is restricted to firms with low bargaining power. My findings suggest that auditors generally are able to price increases in RoMM despite facing crisis-induced downward fee pressure. When the balance of power tilts toward the audit client, however, auditors seem unable to withstand downward fee pressure, even if an increase in RoMM demands higher audit effort. My results, hence, demonstrate that economic downturns significantly influence the pricing of audit engagements and highlight the importance of and tension between the auditor's risk considerations and client bargaining power in audit fee negotiations.

1 INTRODUCTION

The economic and financial collapse of 2008 has been a major economic setback for European and worldwide economies (Altman 2008; Magnan and Markarian 2011; Shambaug 2012). Difficult economic circumstances after the onset of the crisis put many firms under increasing cost pressure. This led to a contracting economy with the expectation that auditors would share in the economic pain by granting audit fee concessions (FRC 2009; FRC 2010; Goelzer 2010; PCAOB 2010; Christensen et al. 2014; Ettredge et al. 2014).

Standard-setters and regulators, thus, express concern that crisis-related audit fee reductions might threaten audit quality. Both the PCAOB and the IAASB issued Staff Audit Practice Alerts in order to raise auditors' awareness of matters that increased RoMM during the recent economic and financial crisis. Both state that increased RoMM likely requires audit procedures be extended or modified (PCAOB 2008; IAASB 2009). Economic downturns may add to the RoMM of audit clients in several ways. That is management faces decreasing performance indicators leading to, e.g., higher incentives for earnings management (DeFond and Jiambalvo 1994; Dechow et al. 1996) or a higher likelihood of bankruptcy (Seetharaman et al. 2002). Moreover, PCAOB inspectors report that auditors sometimes fail to comply with PCAOB auditing standards, particularly as they relate to RoMM components posed by the effects of the recent economic and financial crisis. In this regard, the PCAOB, the German Chamber of accountants (WPK) as well as the UK Financial Reporting Council (FRC) note that the extent of audit procedures might be negatively affected by excessive fee reductions (FRC 2009; PCAOB

2010; Goelzer 2010; WPK 2012a; WPK 2012b).[1] This would be particularly problematic for audit engagements where RoMM significantly increased during the crisis. If downward fee pressure prevents auditors from increasing audit effort to the extent needed (to ensure satisfactorily low audit risk), audit quality may decrease. Generally, higher risk requires greater auditor effort. It is less likely, however, that auditors would have the resources required to increase audit effort, if audit engagement budgets were negatively affected by downward fee pressure (Bedard and Johnstone 2004; Caramanis and Lennox 2008; Blankley et al. 2012; Ettredge et al. 2014; Krishnan and Zhang 2014). Hence, understanding the impact of the recent crisis on audit pricing and, especially whether downward fee pressure prevents auditors from pricing increases in RoMM, is of major interest.

This study addresses the concerns above by investigating two main questions. First, I test whether the recent economic and financial crisis is associated with a decrease in audit fees. Due to the conflicting incentives of managers and auditors, large sample empirical evidence on whether and to what extent auditors granted fee concessions during the crisis is an important topic to consider. Second, I investigate whether auditors are able to price increases in RoMM while facing crisis-induced downward fee pressure. If so, then one should observe relatively lower crisis-related fee concessions for audit engagements with a relatively higher increase in RoMM during the crisis. Here, auditors

[1] This implies the assumption that a decrease in audit fees is associated to a decrease in audit effort threatening audit quality. Prior research supports this assumption, documenting a positive association between audit fees and audit effort (Davis et al. 1993; Bedard and Johnstone 2004; Ghosh and Pawlewicz 2009; Charles et al. 2010; Doogar et al. 2010, 2015)

should have a greater incentive to increase audit effort and to, therefore, withstand downward fee pressure.

My empirical analyses are based on a European sample of 7,024 firm-year observations from 2006-2010.[2] To identify audit engagements where the increase in RoMM (posed by the effects of the recent economic and financial crisis) is relatively high, I employ an industry-level measure of external-finance dependence. The fact that the recent economic crisis coincided with a financial crisis enables me to pursue this identification strategy. As the financial crisis led to a decreased supply of external financing (Brunnermeier 2009; Gorton 2010; Ivashina and Scharfstein 2010; Kahle and Stulz 2013; Iyer et al. 2014), increases in RoMM should be particular strong for firms relying relatively more on external financing. I posit that, all else being equal, difficulties in raising capital lead to an increase in RoMM due to, e.g., a higher likelihood of bankruptcy (Seetharaman et al. 2002) or an increased incentive for earnings management (DeFond and Jiambalvo 1994; Dechow et al. 1996). Thus, borrowing from investment and financing literature (Rajan and Zingales 1998), the additional shift in RoMM posed by the effects of the financial crisis is proxied by a measure of external-finance dependence. I posit that firms relying relatively more on external-financing experience a relatively greater increase in RoMM during the crisis.

To test my expectations, I use a standard audit fee model that includes control variables for known factors of audit fees identified by prior literature. I also incorporate an indicator variable for firm-years after 2007 in order to compare the audit fees before and after the onset of the crisis. I then include the measure for external-finance

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[2] Extending the analysis to a larger geographical area like Europe neutralizes country-specific influences and, consequently, provides stronger evidence than single-country studies would.

dependence as well an interaction term with the crisis indicator. Hence, using a difference-in-differences approach, I compare the audit fees of firms before and after the onset of the crisis as a function of their dependence on external financing.

During the crisis (2008-2010), I find audit fees declined by about 5 percent on average. I find that audit fee reductions are smaller when external-finance dependence is high. This relation, however, does not hold when client bargaining power is high. For firms with high bargaining power, I cannot show a statistically significant relation between external-finance dependence and crisis-related fee reductions. Together, the results indicate that audit clients in Europe successfully exerted audit fee downward pressure during the recent economic and financial crisis. My findings further suggest that auditors are generally able to price increases in RoMM despite facing crisis-induced downward fee pressure. When the balance of power tilts toward the audit client, however, auditors seem unable to withstand downward fee pressure, even if an increase in RoMM demands higher audit effort.

This study makes several contributions to the audit literature. First, while a growing number of papers study the effects of the recent crisis on the corporate sector, only a small set of papers explore the consequences of the recent crisis on the audit market. Prior evidence on the relation between the recent crisis and audit fees is scarce and contradictory. While studies from Sweden (Alexeyeva and Svanström 2015), Australia (Xu et al. 2013), and China (Zhang and Huang 2013) document increased audit fees during the crisis, results from the US (Christensen et al. 2014; Ettredge et al. 2014; Beck and Mauldin 2014) indicate a negative association between the recent crisis and audit fees. Furthermore, Christensen et al. (2014) report a declining association between audit fees and a proxy for risk of fraudulent or misleading financial reporting during the

2006-2010 period, whereas Zhang and Huang (2013) and Alexeyeva and Svanström (2015) find a stronger relation between audit fees and various risk measures (i.e., leverage, occurrence of losses) during the recent crisis compared to a pre-crisis period.[3] To my knowledge, no research examines the impact of the recent crisis on audit pricing for the European audit market in a cross-country setting. Furthermore, this study adds to the literature by explicitly examining the ability of auditors to price increases in RoMM while facing crisis-induced downward fee pressure. This study, thus, contributes to a better understanding of the implications of a global economic and financial crisis on the audit market and brings new evidence to the discussion on the pricing of RoMM.

Furthermore, my findings offer a possible explanation for the mixed results on the relation between crisis-related audit fee reductions and audit quality (Ettredge et al. 2014; Krishnan and Zhang 2014). While Ettredge et al. (2014) find that clients that successfully exert fee pressure are more likely to have subsequent accounting restatements and exhibit higher levels of discretionary accruals, Krishnan and Zhang (2014), on the contrary, demonstrate using a sample of US banks that crisis-related audit fee reductions are even positively associated with several measures of banks' financial reporting quality. Documenting significant differences between firms that obtain audit fee concessions after the onset of the crisis and those that do not, my results indicate that the above studies might suffer from a treatment selection bias. For instance, crisis-induced fee concessions seem to be endogenous to firm size, which, in turn, is associated with audit quality measures, such as discretionary accruals or the propensity of restatements (Ecker et al.

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[3] There are also studies investigating the relation between the recent crisis and audit outcomes. Xu et al. (2013) and Geiger et al. (2014), for instance, find an increase in the propensity of auditors to issue going concern modifications after the onset of the crisis.

2011; Dechow et al. 2012; Ettredge et al. 2014). In future studies, such differences should be adjusted for, e.g., through performing a matched-sample analysis in order to reduce treatment selection bias (Rosenbaum and Rubin 1983; Thoemmes and Kim 2011).

Finally, I also contribute to the literature on the audit fee negotiation process and client bargaining power. Although prior research shows that audit fee premiums and discounts vary with client bargaining power (Casterella et al. 2004; Bandyopadhyay and Kao 2004; Huang et al. 2007; Asthana and Boone 2012; Fung et al. 2012; Beck and Mauldin 2014), there is little research on how the auditor's ability to price increases in RoMM is affected by the balance of power between auditors and their clients. Highlighting tension between auditor's risk considerations and client bargaining power, my findings suggest that the ability of auditors to withstand downward fee pressure and to price increases in RoMM highly depends on client bargaining power.

The remainder of this paper is organized as follows. Section 2 provides background on the effects of the recent crisis on audit fees. It also presents the hypotheses. Section 3 describes the data and sets up the empirical strategy. Section 4 shows my empirical results. Section 5 presents additional robustness tests. Section 6 concludes.

2 BACKGROUND AND HYPOTHESES

The recent economic and financial crisis has been a major economic setback for European and worldwide economies (Altman 2008; Magnan and Markarian 2011; Shambaug 2012). After four decades of uninterrupted growth, the worldwide economy faced a decline in global GDP. During the peak of the crisis in 2009, the European GDP declined by 4.3 percent compared to a global GDP decline of 2.1 percent, indicating that Europe was severely affected by the crisis (Filip and Raffournier 2014). Due to these difficult

economic circumstances after the onset of the crisis, many firms were under increasing cost pressure (Jacobides 2009; Duchin et al. 2010; Campello et al. 2012). Campello et al. (2012) suggest that managers used all available tools to cut costs and that all expenses were scrutinized in response to the crisis. Cutting audit fees directly reduces costs. Consistently, it has been widely recognized that the contracting economy expected auditors to share in the economic pain by granting audit fee concessions (FRC 2009; FRC 2010; Goelzer 2010; PCAOB 2010; Christensen et al. 2014; Ettredge et al. 2014).

However, faced with reputation and litigation risks (Palmrose 1989; Mande and Son 2012), auditors do not necessarily agree to audit fee reductions demanded by their clients. Despite the fee pressure, auditors arguably are encouraged to charge higher fees when confronted with an increase in RoMM (Beck and Mauldin 2014). Professional standards require the auditor to obtain reasonable assurance as to whether the financial statements are free from material misstatements. Reasonable assurance is obtained when the auditor reduces audit risk to an acceptably low level (ISA 200.5; PCAOB AS 8.3).[4] The level of audit risk, in turn, is a function of RoMM and detection risk (ISA 200.13c; PCAOB AS 8.4). Auditors can only affect detection risk: the risk that auditing procedures will not detect an existing material misstatement. RoMM is considered as given and derived from the auditor's risk assessment (Simunic 1980; Bedard and Johnstone 2004; Hogan and Wilkins 2008; Charles et al. 2010; Carcello et al. 2011). Hence, when RoMM increases, auditors have to reduce detection risk by increasing audit effort, e.g., through an extension of substantive testing (Hogan and Wilkins 2008; Beck and Mauldin 2014;

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[4] Professional standards define audit risk as the risk of the auditor expressing an inappropriate audit opinion when the financial statements are materially misstated (ISA 200.13c; PCAOB AS 8.4)

Messier et al. 2014; ISA 200.A42-A43; PCAOB AS 8.11).[5] In short, the greater RoMM is, the less the detection risk that can be accepted and, accordingly, the higher the audit effort required to achieve an acceptable low level of audit risk. Furthermore, when audit effort is increased, audit engagement fees, as depending on audit costs, should increase accordingly (Simunic 1980; Baiman et al. 1991). Prior research consistently finds that RoMM is positively correlated with audit effort (Simunic 1980; Simunic and Stein 1996; Choi and Paek 1998; Bell et al. 2001, 2008; Seetharaman et al. 2002; Francis and Wang 2008) and, moreover, that additional audit effort is reflected in audit fees (Davis et al. 1993; Bedard and Johnstone 2004; Ghosh and Pawlewicz 2009; Charles et al. 2010; Doogar et al. 2010, 2015).

Furthermore, following the audit-pricing model of Simunic (1980), audit fees are determined by a second component besides effort: the auditor's client-specific business risk. The auditor's business risk denotes the probability that an auditor will suffer financial loss due to association with the client. Such loss may arise from, e.g., litigation exposure, sanctions by regulatory authorities, or impaired reputation. Therefore, the auditor's business risk increases in the probability of an inappropriate audit opinion, the audit risk, which, in turn, is a function of RoMM and detection risk (Simunic 1980; Bell et al. 2001; Niemi 2002). Engaging in strategies to mitigate their business risk is one of the most crucial tasks for auditors because, in line with Prospect Theory (Kahneman and Tversky 1979; DellaVigna 2009), auditors are loss-averse and tend to overrate the small

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[5] Substantive testing can be extended by, e.g., increasing the amount of audit evidence obtained, widening the scope of audit procedures, obtaining more expert advice, or involving a greater number of experienced staff and audit partners (Xu et al. 2013).

probabilities of, e.g., audit failures or damage compensation claims (Hoffmann and Patton 1997; Nelson and Kinney 1997).

Basically, auditors may respond to client-specific business risk in two ways.[6] First, due to the interaction with audit risk, auditors may be able to reduce their client-specific business risk by reducing audit risk, e.g., through increasing audit effort above and beyond the level required by professional standards. Second, auditors may try to shift the remaining business risk (e.g., expected litigation cost) to the client by charging risk-adjusted billing rates, so-called risk premiums (Simunic 1980; Niemi 2002; Hay et al. 2006; DeFond and Zhang 2014). Hence, even when audit effort is held constant, auditors might respond to increases in RoMM with higher fees (risk premiums) in order to compensate for the increased client-specific business risk.

In summary, the audit risk model and prior literature strongly support the notion that the greater the RoMM increase, the greater the incentive for auditors to increase audit fees and, therefore, to withstand downward fee pressure. Crisis-related fee reductions, thus, should be lower for audit engagements with a relatively greater increase in RoMM during the crisis.

In light of the above, firms in relatively greater need of raising external capital played a critical role during the crisis. The recent economic crisis accompanied a financial crisis that dramatically affected the global financial sector. Huge losses and several bank failures forced financial institutions in Europe and worldwide to revise their risk management. As a result, they lowered both their capacity and their willingness to take

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[6] Brumfield et al. (1983) propose a third course of action that an auditor might take to respond to business risk. Auditors may seek insurance cover for their business risk. However, the auditor would have to pay an insurance premium, and it remains questionable how the auditor allocates this cost of business risk across his clientele (Niemi 2002).

on risk. Tighter lending standards and withdrawn lines of credit have been widely reported (Brunnermeier 2009; Gorton 2010; Ivashina and Scharfstein 2010; Kahle and Stulz 2013; Iyer et al. 2014). Financing the share of investments unable to be financed by current cash flows became, at best, more costly. In the worst case, essential investments to realize subsequent revenues could not be realized due to lacking liquidity (Duchin et al. 2010; Campello et al. 2012).[7] Hence, to the extent a firm relies on external financing, the financial crisis added to difficulties in corporate financing. Financing difficulties, in turn, may lead to an increase in RoMM through a greater likelihood of bankruptcy (Seetharaman et al. 2002) and an increased incentive to manage earnings so as to obtain lower financing costs or to fulfill tightened lending standards (DeFond and Jiambalvo 1994; Dechow et al. 1996).[8] I, thus, posit that, all else being equal, higher external-finance dependence led to a relatively greater increase in RoMM during the recent crisis. The primary interest of this study is to examine the extent to which auditors are able to price such increases in RoMM while facing crisis-induced fee pressure. If crisis-related fee reductions are negatively associated with external-finance dependence, it suggests that

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7 Duchin et al. (2010) and Campello et al. (2012) show most firms during the recent financial crisis were likely to experience underinvestment. Moreover, Duchin et al. (2010) show the greatest decline in corporate investment during the recent crisis for firms operating in industries with a relatively greater reliance on external finance.

8 Positive accounting theory suggests that debt restrictions motivate manipulation. For instance, the closer a firm is to compromising its debt covenants, the greater the incentive to shift earnings from future periods to the current one, aiming to decrease the probability of technical default (DeFond and Jiambalvo 1994).

auditors are able to price increases in RoMM caused by the financial crisis despite facing downward fee pressure.[9]

Based on the above arguments, I formulate the following three hypotheses (stated in alternate form). First, controlling for several audit engagement-specific factors, on average, I expect a decrease in audit fees after the onset of the economic and financial crisis in the European audit market (H1).

H1: The recent economic and financial crisis is negatively associated with audit fees.

Second, consistent with the audit risk model and prior literature on audit pricing suggesting a positive association between RoMM and audit fees, I expect a negative association between external-finance dependence and crisis-related audit fee reductions (H2). The greater the increase in a firm's RoMM during the crisis, the greater should be

[9] To ensure the validity of EFD as a predictor of relatively higher increases in RoMM during the crisis I compared several measures for firm performance and the change in leverage during the crisis period between high and low EFD firms. I find that EFD (computed over the pre-crisis period 2002-2006) is negatively associated with subsequent firm performance. Furthermore, I find that firms relying relatively more on external financing experienced a higher increase in leverage during the crisis. Results are presented in Table 2. Prior literature provides evidence for a negative (positive) association between firm performance (leverage) and RoMM. The audit fee literature frequently uses measures for firm performance and leverage to proxy for an auditees' operating and financial risk (Simunic 1980; Francis and Simon 1987; Raghunandan and Rama 2006; Hay et al. 2006; Hogan and Wilkins 2008; Doogar et al. 2015). The results, thus, indicate that EFD is a valid predictor for increases in RoMM during the crisis.

the incentive of auditors to increase audit fees and to, therefore, withstand downward fee pressure.[10]

H2: External-finance dependence attenuates the negative association between crisis and audit fees.

3 SAMPLE SELECTION AND EMPIRICAL STRATEGY

Data and Sample

I begin with a sample of 11,876 firm-year observations representing public companies with the necessary audit variables from the EUR-Business Research Database for 2006-2010.[11] I then merge this sample with the Thomson Reuters Worldscope Database over the same period to obtain the financial variables in the audit fee regression model. I eliminate 2,203 firm-years for financial institutions and 2,015 firm-years with missing data. Also firms located in countries or operating in industries with less than 50 firm-year observations are excluded. To assure the comparability between the pre-crisis and crisis subsamples I eliminate firms without at least one observation in both time periods (i.e., before crisis and during crisis). The final sample consists of 7,024 firm-year observations.

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[10] However, an alternative explanation for lower crisis-related fee reductions for firms with a relatively greater reliance on external financing may also be greater signaling incentives and the corresponding reduced resistance to higher fees. The higher the external-finance dependence, the greater the incentive for management to signal a high-quality audit to the debt market (via high audit fees) in order to benefit from lower interest rates, assuming that banks perceive firms with high-quality audits as less risky borrowers (Dharan 1992; Blackwell et al. 1998). As signaling incentives do not conflict with auditors' interests, the positive association between signaling incentives and audit fees is expected not to vary with client bargaining power. Hence, observing lower fee reductions for relatively more external-finance dependent firms – irrespective of whether they have high or low bargaining power – would be consistent with signaling incentives. And if the association between external-finance dependence and crisis-related fee reductions varies with client bargaining power, then this would be consistent with auditors pricing RoMM.

[11] The EUR-Business Research Database is an independent provider of audit-related information for European firms. The EUR Business Research Database is available online at: http://www.eur-businessresearch.com.

The sample selection process is summarized in Table 1, Panel A. Table 1, Panels B and C present the distribution of the sample observations across countries and years. Table 1, Panel D shows the distribution of the sample firms across industries compared to the population of Worldscope firms. Apart from the omitted financial firms, the sample reasonably represents the population.

The recent economic and financial crisis formally started at the end of 2007 in the U.S. and spread to Europe and other countries during 2008 (Martin 2009; Lang and Jagtiani 2010). In order to mitigate the influence of confounding events, the sample period is restricted to five years centered at the onset of the crisis at the end of 2007. In this study, I consider all years after 2007 (2008-2010) as crisis years. These are the first three years during which management was able to affect fees after the crisis erupted. Even though most European countries emerged from recession in 2009, economic activity had not returned to normal by the end of 2010 (Magnan and Markarian 2011; Shambaugh 2012). It is thus reasonable to assume that 2010 audit fees, typically negotiated in the first quarter of the fiscal year to be audited (Hackenbrack et al. 2014), were yet affected by the crisis. I use 2006 and 2007 as non-crisis comparison years.[12]

[Table 1]

Model

I estimate a standard audit fee model that includes control variables for known factors of audit fees identified in the prior literature, including client size, complexity, operating risk, and financial risk (Simunic 1980; Francis and Simon 1987; Raghunandan and Rama

[12] The results remain qualitatively unchanged when restricting the crisis period to 2008-2009.

2006; Hay et al. 2006; Hogan and Wilkins 2008; Doogar et al. 2015). In addition, I include fixed effects to control for differences between industries and countries and any potential cross-sectional dependence of residuals.[13] The audit fee model also includes an indicator variable, labeled *CRISIS*, for firm-years between 2008 and 2010. Furthermore, the model includes first-order effects for client bargaining power (*POWER*) and external-finance dependence (*EFD*) as well as interactions between them and *CRISIS* as follows:

$$\begin{aligned} LNFEE_t = {} & \beta_0 + \beta_1 CRISIS_t + \beta_2 POWER_t + \beta_3 CRISIS_t * POWER_t + \\ & \beta_4 EFD + \beta_5 CRISIS_t * EFD + \beta_6 LNTA_t + \beta_7 LNSEG_t + \\ & \beta_8 LNINVREC_t + \beta_9 LAGLOSS_t + \beta_{10} LEV_t + \beta_{11} GROWTH_t + \\ & \beta_{12} ROE_t + \beta_{13} BTM_t + \beta_{14} ISSUE_t + \beta_{15} BIG4_t + \beta_{16} INITIAL_t + \\ & \beta_{17} NAS_t + \beta_{18} BUSY_t + \text{Fixed Effects} + \epsilon_t. \end{aligned} \quad (1)$$

To control for residual serial correlation, the model is estimated using standard errors that are clustered by firm. The dependent variable, *LNFEE*, is the natural logarithm of audit fees. Appendix I details each variable's definition.

The coefficient on *CRISIS* (β_1) illustrates the audit fee change after the onset of the crisis. H1 is supported if the *CRISIS* coefficient is significantly negative (i.e., $\beta_1 < 0$). Coefficient β_5 captures the moderating effect of external-finance dependence with regard to the association between crisis and audit fees. If coefficient β_5 is positive (i.e., $\beta_5 > 0$), this will be consistent with H2, expecting that crisis-related fee reductions are smaller for firms operating in relatively more external-finance dependent industries.

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[13] As *EFD* is a time-invariant industry-level measure industry fixed effects may, at least in part, absorb some of the *EFD* effect. Therefore, I also estimated all regressions excluding industry fixed effects and obtained qualitatively similar results.

A major factor influencing the ability of auditors to charge higher audit fees is the relative bargaining power of auditors and their clients (Casterella et al. 2004). Prior studies show that audit fee discounts and premiums are affected by client bargaining power (Casterella et al. 2004; Bandyopadhyay and Kao 2004; Huang et al. 2007; Asthana and Boone 2012; Fung et al. 2012; Beck and Mauldin 2014). It can, thus, be expected that audit clients with greater bargaining power are better able to introduce fee pressure on audit fee negotiations than clients with little bargaining power. Conversely, auditors may be less able to price RoMM when client bargaining power is high. To control for this effect I also include the first order effect for client bargaining power (*POWER*) as well as its interaction with the *CRISIS* indicator. Coefficient β_3 captures the moderating effect of client bargaining power with regard to the association between crisis and audit fees.

Given that client size is probably the most decisive factor in determining audit fees (Hay et al. 2006), the control variable *LNTA* is the natural logarithm of total assets. Variables *LEV*, *LAGLOSS*, *ROE*, *GROWTH*, and *BTM* are incorporated to control for client-specific risk. *LEV* is total liabilities scaled by total assets. *LAGLOSS* is an indicator variable equal to 1 if the company reported a loss for the prior year and 0 otherwise. *ROE* equals income before extraordinary items divided by total equity. *GROWTH* is the revenue change in percentage from the prior to the current fiscal year. *BTM* equals to the ratio of book value of equity to market value of equity. To control for client complexity, I add *LNINVREC*, *LNSEG*, and *ISSUE* to the audit fee model. *LNINVREC* is the natural logarithm of the percentage of total assets in inventories and receivables. *LNSEG* is the natural log of the number of business reporting segments. *ISSUE* is an indicator variable equal to 1 if equity titles are issued in the current fiscal year and 0 otherwise. To control for the auditor-specific risk, I add *INITIAL*, *BUSY*, *BIG4*, and *NAS* to the model. *INITIAL*

equals 1 for initial audit engagements and 0 otherwise. *BUSY* equals 1 if the company's fiscal year ends in December and 0 otherwise. *BIG4* equals 1 if the signing auditor is a Big 4 firm. The control variable, *NAS*, is the ratio of non-audit fees to total audit fees paid to the current year auditor.

Measuring External-Finance Dependence

As discussed in the previous section, I employ a measure of external-finance dependence to identify firms that experienced a relatively greater increase in RoMM during the crisis. However, a standard criticism of using a firm's financing structure as an identification device is that it is, to some extent, endogenous to choices made by the firm. In particular, it may be endogenous to unobserved variation in business performance or investment opportunities. I, therefore, rely on an industry-level measure of external-finance dependence. Industry properties are commonly argued to be more plausibly exogenous to an individual firm (Duchin et al. 2010). To capture the external-finance dependence (*EFD*) at the industry-level, I use a measure developed by Rajan and Zingales (1998). This measure is based on the assumption that some industries depend more on external financing than others (Rajan and Zingales 1998). It captures the share of capital expenditures unable to be financed by operating cash flows. The measure is computed from 2002-2006 using annual data from Worldscope. To smooth temporal fluctuations, I sum the firm's funds from operations and capital expenditures over this five-year period and then take the ratio of these sums. To prevent information from outlier firms from suppressing that of typical firms in the industry, the industry-level measure is constructed

using the industry median rather than the average.[14] Industry assignments are implemented using 2-digit SIC Codes in accordance with the classification of Frankel et al. (2002).

By measuring *EFD* only over the pre-crisis period of 2002-2006, I purge my analyses of crisis-induced changes in *EFD*. Inferences might otherwise be confounded by a relation between changes in *EFD* as the crisis unfolds and unobserved changes in, e.g., business performance or investment opportunities.

To ensure the validity of *EFD* as a proxy for relatively higher increases in RoMM during the crisis I compared several measures for firm performance and the change in leverage during the crisis period between high and low EFD firms. I find that *EFD* (computed over the pre-crisis period 2002-2006) is negatively associated with subsequent firm performance. Furthermore, I find that firms relying relatively more on external financing experienced a higher increase in leverage during the crisis. Results are presented in Table 2. Prior literature provides evidence for a negative (positive) association between firm performance (leverage) and RoMM. The audit fee literature frequently uses measures for firm performance and leverage to proxy for an auditees' operating and financial risk (Simunic 1980; Francis and Simon 1987; Raghunandan and Rama 2006; Hay et al. 2006; Hogan and Wilkins 2008; Doogar et al. 2015). Table 2, thus, indicates that *EFD* is a valid predictor for increases in RoMM during the crisis.

[Table 2]

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[14] Duchin et al. (2010) employ a similar approach to construct the Rajan and Zingales (1998) EFD measure.

Measuring Client Bargaining Power

Because audit fees increase with client size (Simunic 1980; Francis and Simon 1987; Hay et al. 2006), prior research uses client size measures as proxies for client bargaining power. The underlying idea is that bargaining power is determined by the relative economic importance of each party to the other (Casterella et al. 2004). Accordingly, large clients are arguably more economically important to the auditor simply because their audit fees are higher. Taking into account the auditor's size and that industry expertise is valuable, Casterella et al. (2004) argue that the economic importance of the client is largely influenced by the size of the client relative to the auditor's other industry clients. Consistent with Casterella et al. (2004), client bargaining power (*POWER*) is calculated as the natural logarithm of a client's sales scaled by the natural logarithm of the total sales for all industry firms audited by the company's auditor. Thus, *POWER* measures how large a single client is relative to the auditor's total clientele in the industry.[15]

4 EMPIRICAL RESULTS

Descriptive Statistics

Table 3A reports descriptive statistics for each of the variables included in the regression model. The means, medians, and standard deviations are presented for the full sample and

[15] Note here that the auditor's total clientele used for calculating the *POWER* measure is restricted to companies included in the sample. Especially non-listed companies, which constitute a major part of the European market for audit services, are not included in the computation. To ensure that this measurement bias does not alter the study's conclusions, I re-estimate all primary analyses using different measures for client bargaining power which are not based on market shares. Details are presented in the section on Robustness Tests.

for the pre-crisis (2006-2007) and crisis (2008-2010) periods, respectively. To control for outliers, all continuous variables are winsorized at the 1st and 99th percentiles. Mean (median) value for *EFD* is -0.39 (-0.40), indicating that operating cash flows, on average, exceed capital expenditures for the median industry firms. Median audit fees for the entire sample period are just over 170 k€. The remaining variables included in the regression analyses are qualitatively similar to previous studies on audit fees (Hogan and Wilkins 2008; Ettredge et al. 2014; Beck and Mauldin 2014). Consistent with my expectations, audit fees are significantly lower during the crisis compared to the pre-crisis period ($p < 0.01$). Furthermore, univariate comparisons indicate that some additional means between the pre-crisis and crisis subsamples differ significantly. Specifically, during the crisis, sample firms have a greater percentage of assets in inventories and receivables, have a lower sales growth rate, and change their auditor more often than during the pre-crisis period. Furthermore, firms have lower levels of client bargaining power and issue new shares less often than prior to the crisis.

[Table 3A]

Figure 1 illustrates the median audit fee for all sample firms for the period from 2006 to 2010. Consistent with H1 it shows a striking decline in annual audit fees by the beginning of the crisis at the end of 2007. The median audit fee declines from 185 k€ in 2007 to 165 k€ in 2008.

[Figure 1]

Table 3B presents Pearson correlation coefficients for variables included in the primary analyses. *LNFEE* is negatively correlated with *CRISIS*, indicating that the recent economic and financial crisis is associated with a decrease in audit fees. I note that none of the other explaining variables included simultaneously in the regression models are

highly correlated. I also calculated the variance inflation factors (VIF) to assure that multicollinearity is not an issue.[16]

[Table 3B]

Crisis-Related Audit Fee Changes and External-Finance Dependence

Table 4 reports OLS regression results for the audit fee model. As expected in H1, *CRISIS* is negative and significant ($p < 0.01$). The coefficient of -0.0489 suggests that audit fees during the crisis are, on average, 5.0 percent lower ($e^{0.0489} - 1 = 0.05$) than before the crisis.[17] Supporting the prediction that a higher *EFD* leads to relatively lower audit fee concessions during the crisis (H2), the coefficient on the interaction term *CRISIS*EFD* is positive at 0.0697, yet is not statistically significant.

The coefficient on the interaction term *CRISIS*POWER* is negative (-0.1538) and significant at $p < 0.01$. Relatively more powerful audit clients attain higher audit fee concessions. This effect is economically significant, as the coefficient on the interaction term indicates that a one-standard deviation increase in *POWER* (0.283) exacerbates crisis-related fee reductions by 4.4 percentage points ($-0.1538 * 0.2816 = -0.044$; $e^{0.044} - 1 = 0.044$), or nearly doubles the decline for an average-sized firm ($\beta_1 = -0.0489$). Documenting a moderating effect of client bargaining power, the results support the argumentation that crisis-related fee reductions stem from audit fee pressure

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[16] I check the variance inflation factors (VIF) for the independent variables in each model. I find they are all less than 6, suggesting that multicollinearity is unlikely to influence my results (Kutner et al. 2004; Lennox et al. 2012).

[17] When regression equations contain interaction terms, the first-order effects of variables are conditional on the values of zero on the other predictors with which they interact (Cohen et al. 2003). Because the continuous variables *EFD* and *POWER* are mean-centered, in columns (2) to (4) *CRISIS* represents the average crisis effect across the range of *EFD* and *POWER*, respectively. Leaving out interactions, column (1) of Table 4 presents the unconditional crisis effect, which is quite similar to that presented in columns (2) to (4).

introduced by audit clients instead of changes in the auditors' risk assessments. Had crisis-related fee reductions been caused by changes in auditors' risk assessments (auditors perceiving lower audit risk), then these fee reductions should not have been affected by client bargaining power.

All control variables are significantly associated with the dependent variable *LNFEE*. Moreover, the coefficient signs are in accordance with prior research (Hay et al. 2006). The results thus show that, for the European audit market, *LNFEE* is significantly positively associated with *LNTA*, *LNSEG*, *LNINVREC*, *LAGLOSS*, *LEV*, *ISSUE*, *BIG4*, and *BUSY*, while a significantly negative correlation is observable for *GROWTH*, *ROE*, *BTM*, *INITIAL*, and *NAS*.

One possible reason for observing no significant relation between the interaction term *CRISIS*EFD* and *LNFEE* could be that the ability of auditors to price RoMM is attenuated by client bargaining power. Auditors might be able to price RoMM only when the balance of power does not tilt toward the audit client. To illustrate the relationship between external-finance dependence and client bargaining power, the next section presents a further analysis, which partitions the sample based on *POWER*.

[Table 4]

The Auditor's Ability to price Increases in RoMM and Client Bargaining Power

Next, I further illustrate whether the fee-increasing effect of *EFD* varies with client bargaining power. For this purpose, I subdivide my sample into two subsamples based on median *POWER* and re-estimate my regression separately for the two groups. Results for the subsample analysis are presented in Table 5. First, consistent with Table 4 results, the *CRISIS* coefficient indicates that audit fee reductions during the crisis are insignificant for firms with low bargaining power, while firms with high bargaining power experienced

significant decreases in audit fees during the crisis ($p < 0.01$). Moreover, the interaction term between *CRISIS* and *EFD* is positive and significant ($p < 0.01$) when client bargaining power is low but not significant when client bargaining power is high. The results are consistent with the expectation that the association between increases in RoMM, proxied by *EFD*, and crisis-related fee reductions depends on client bargaining power.[18]

[Table 5]

In sum, Tables 4 and 5 report results generally consistent with H1 and H2. On average, audit fees during the crisis are lower than before the crisis, whereas more powerful audit clients attain higher audit fee concessions. My findings further suggest that, during the crisis, the positive relation between external-finance dependence and audit fees is restricted to low-power audit clients. Or conversely, although the null hypothesis cannot be proven true, auditors seem unable to withstand crisis-induced downward fee pressure when client bargaining power is high, even if increases in RoMM demand higher audit effort.

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[18] Moreover, these results indicate that the fee-increasing effect of EFD is likely due to auditors pricing RoMM and not caused by client's signaling incentives. One possible explanation for lower crisis-related fee reductions for firms with a relatively greater reliance on external financing may be greater signaling incentives and the corresponding reduced resistance to higher fees. The higher the external-finance dependence, the greater the incentive for management to signal a high-quality audit to the debt market (via high audit fees) in order to benefit from lower interest rates, assuming that banks perceive firms with high-quality audits as less risky borrowers (Dharan 1992; Blackwell et al. 1998). However, were EFD to affect fee concessions through managers trying to signal high audit quality (via high audit fees) to the debt market, then bargaining power should not impact the effect of CRISIS*EFD. Managers do not have to persuade auditors to charge higher audit fees. Signaling, thus, creates no tension between clients and auditors and should not be attenuated by client's bargaining power.

Subsample Analysis by EFD

To illustrate how the relevance of client bargaining power depends on *EFD*, I partition my sample based on median *EFD* and compare *POWER* across the high and low halves of *EFD*. Table 6 presents the results. *CRISIS*POWER* is negative and significant when *EFD* is high but is not significant when *EFD* is low. In essence, the relevance of bargaining power increases in tension between the negotiating parties. The results of Table 6, hence, are consistent with *EFD* exacerbating tension between auditors and their clients by increasing the auditor's incentive to increase audit effort and to, therefore, withstand downward fee pressure. The greater the auditor's incentive to withstand downward fee pressure is, the more relevant client bargaining power becomes in audit fee negotiations. Moreover, Table 6 results are consistent with H2, expecting crisis-related fee reductions to be negatively associated with *EFD*. While the *CRISIS* coefficient is insignificant for firms with high *EFD*, firms with low *EFD* experience significant decreases in audit fees ($p < 0.01$).

[Table 6]

5 ROBUSTNESS TESTS

Alternative Measures of External-Finance Dependence

For all reported results above, I use the industry median of external-finance dependence which is calculated basing on the sum of a firm's funds from operations and capital expenditures over the five-year period from 2002-2006. I find qualitatively similar results (untabulated) to Tables 4 and 5 when I sum the firm's funds from operations and capital expenditures over the three-year period of 2004-2006 or the seven-year period of 2000-2006. In addition, the results are robust when constructing *EFD* solely on 2006 data.

My results are also robust when using other industry classification methods for calculating industry medians of *EFD*. In additional analyses, I replace industry assignments according to Frankel et al. (2002) with the 48-industry classification scheme of Fama and French (1997) and with industry groups in accordance with Manry et al. (2003). As presented in Tables 7 and 8, I find qualitatively similar results to those reported in Tables 4 and 5 using each separate industry classification.[19]

Moreover, the results remain qualitatively unchanged when using *EFD* on firm level instead of the industry median. Combined, these robustness tests indicate my findings are not sensitive to the construction of *EFD*.

[Table 7]

[Table 8]

Alternative Measures of Client Bargaining Power

For the main analyses, client bargaining power (*POWER*) is calculated as the natural logarithm of a client's sales scaled by the natural logarithm of the total sales for all industry firms audited by the company's auditor. Thus, POWER measures how large a single client is relative to the auditor's total clientele in the industry. The auditor's total clientele used for calculating the *POWER* measure, however, is restricted to companies included in the sample. Especially non-listed companies, which constitute a major part of the European market for audit services, are not included in the computation. To ensure that this measurement bias does not alter the study's conclusions, I re-estimate all primary analyses using different measures for client bargaining power which are not based on

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[19] Appendix II presents the distribution of the sample firms across industry for all of the industry classification schemes used.

market shares. In additional analyses, client bargaining power is proxied by the absolute size of the audit client in terms of total assets and total sales. When using these alternative measures of client bargaining power, the results (untabulated) remain consistent with those presented in Tables 4 and 5.

Crisis Period

A further additional analysis considers the sensitivity of the results to the definition of the crisis period. In order to rule out the possibility that my findings depend on the chosen definition of the crisis period (2008-2010), I reran the regressions excluding observations for 2010. I replicate my results reported in Tables 4 and 5 and find that they are qualitatively similar when excluding these observations. The results, presented in Table 9, continue to show a significant decrease in audit fees from the pre-crisis comparison years of 2006-2007 to 2008-2009. More powerful audit clients obtain higher fee concessions. External-finance dependence attenuates the association between crisis and audit fees only when client bargaining power is low. Overall, the additional analysis shows that my results are not driven by the definition of the crisis period.

[Table 9]

Auditor Changes

Since audit effort and, therefore, audit fees depend on the auditor's risk assessment (Simunic 1980; Bedard and Johnstone 2004; Hogan and Wilkins 2008; Charles et al. 2010; Carcello et al. 2011), auditor changes could impact the results. In an additional analysis, I delete all firms with auditor changes during 2007-2010 compared to 2006.

Results are presented in Table 10 and are qualitatively similar to those reported in Tables 4 and 5.

[Table 10]

6 CONCLUSION

Prior research reports a positive association between RoMM and audit fees, indicating that auditors are able to price increases in RoMM (Davis et al. 1993; Bell et al. 2001, 2008; Seetharaman et al. 2002; Charles et al. 2010; Doogar et al. 2010, 2015). However, leading to a well-recognized audit fee downward pressure, the recent economic and financial crisis has changed the audit market conditions (FRC 2009; FRC 2010; Goelzer 2010; PCAOB 2010; WPK 2012a; Christensen et al. 2014; Ettredge et al. 2014). If audit engagement budgets were negatively affected by downward fee pressure, auditors would be less likely to have the resources required to increase audit effort to the extent needed to ensure satisfactorily low audit risk (Bedard and Johnstone 2004; Ettredge et al. 2014; Krishnan and Zhang 2014). That is why regulators and standard-setters express concern that crisis-related audit fee reductions might threaten audit quality. This study investigates the impact of the recent economic and financial crisis on audit fees and, more specifically, whether the crisis-induced fee pressure prevents auditors from pricing RoMM.

Examining a sample of 7,024 firm-years from 2006-2010, I find evidence that audit clients successfully exerted fee pressure during the recent economic and financial crisis. Audit fees declined by over 5 percent on average. These crisis-related fee reductions increase with client bargaining power. Perhaps most importantly, capturing crisis-related increases in RoMM through an industry-level measure of external-finance dependence, I find evidence that crisis-related increases in RoMM attenuate the negative

association between crisis and audit fees. This relation, however only holds when client bargaining power is low. For firms with high bargaining power, I find no statistically significant relationship between crisis-related increases in RoMM and crisis-related fee reductions. My findings suggest that auditors are able to price increases in RoMM even when facing crisis-induced downward fee pressure. When the balance of power tilts toward the audit client, however, although the null hypothesis cannot be proven true, auditors seem unable to withstand downward fee pressure, even if an increase in RoMM demands higher audit effort.

These results are potentially important to regulators, investors, and the auditing profession, since the response to financial reporting risk has received much attention during the recent economic and financial crisis. The chamber of public accountants in Germany (WPK), for instance, has long been calling for the regulation of audit fees with a binding act (WPK 2012b). My findings support these calls as auditors seem unable to withstand downward fee pressure under certain conditions. Like the FRC and the PCAOB the WPK warns that the extent of audit procedures might be negatively affected by excessive fee reductions (FRC 2009; PCAOB 2010; WPK 2012a). An audit fee regulation would result in minimum fees for statutory audits which should enable auditors to provide the level of audit effort required to achieve satisfactory low audit risk. Fee determinations could be based on, e.g., client's sales, total assets or other factors provided by the audit fee literature.

This study also contributes to the audit literature in several ways. First, the results contribute to better understanding the implications of a global economic and financial crisis on the audit market. I find evidence that audit fees declined during the recent crisis, indicating that economic downturns significantly influence the pricing of audit

engagements. To my knowledge, my results are the first to provide insight on the impact of the recent crisis on audit pricing for the European audit market in a cross-country setting. Second, I offer new evidence to the discussion on the pricing of RoMM.

Due to a lack of data on audit effort, however, I am unable to investigate whether the inability of auditors to price RoMM actually leads to insufficient audit effort. One alternative explanation is that auditors (to some extent) absorb the impact of higher audit effort on audit fees by reducing engagement profitability and/or increasing audit efficiency. Investigating the association between crisis-related audit fee reductions and audit quality like Ettredge et al. (2014) or Krishnan and Zhang (2014) might offer some insight on this question. These studies are based on the assumption that audit effort is positively correlated with audit quality (DeFond and Zhang 2014; Caramanis and Lennox 2008). Hence, crisis-related fee reductions being negatively correlated with audit quality would indicate that crisis-related fee reductions lead to a harmful decrease (in relation to RoMM) in audit effort. Previous studies on the relation between crisis-related audit fee reductions and audit quality provide mixed results, including positive (Krishnan and Zhang 2014) as well as negative associations (Ettredge et al. 2014)[20].

My results can nevertheless be helpful for future research on the consequences of crisis-related audit fee reductions. Showing that there are significant differences between firms that obtain audit fee concessions and those that do not, my findings suggest that the

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[20] One explanation for a positive association between audit fee reductions and audit quality might be that the observed fee reductions stem from auditors charging lower-risk premiums. Following the audit-pricing model of Simunic (1980) risk premiums – reflecting the auditor's client-specific business risk – decrease with audit quality (Niemi 2002). Audit fee reductions - in terms of lower risk premiums -, thus, would be positively correlated with audit quality. In order to investigate whether the inability of auditors to price RoMM actually leads to insufficient audit effort, audit effort would ideally be disentangled from other components of audit fees, like risk premium. DeFond and Zhang (2014), therefore, propose audit effort be measured through actual audit hours and billing rates be used as a proxy for risk premium.

mixed results on the relation between crisis-related audit fee reductions and audit quality measures (Ettredge et al. 2014; Krishnan and Zhang 2014) might suffer from a treatment selection bias. Crisis-induced fee concessions, for instance, seem to be endogenous to firm size (*POWER*), which is, in turn, associated with audit quality measures like discretionary accruals or the propensity for restatements (Ecker et al. 2011; Dechow et al. 2012; Ettredge et al. 2014). Future studies should consider these results by conducting a matching approach in order to reduce treatment selection bias (Rosenbaum and Rubin 1983; Thoemmes and Kim 2011). That is why it is of high importance to first understand which factors determine crisis-related audit fee reductions.

Like most analyses, however, my research approach is subject to caveats. Because only the most recent crisis is under investigation, inferences from my study are limited to this time period. In addition, Financial firms, despite playing a critical role during the recent crisis, are excluded from my sample. Future research could investigate additional business sectors and time periods. Furthermore, a potentially interesting avenue for future research would be to investigate the development of audit fees in the aftermath of the crisis: whether fees and the ability of auditors to price risk rebound.

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Appendices for the manuscript

Appendix I

Variable Definitions

Variable	Description
BIG4	Indicator, equal to 1 if the statutory auditor is one of the big 4 audit firms
BTM	Book-to-market ratio
BUSY	Indicator, equal to 1 if fiscal year ends in December
CRISIS	Indicator, equal to 1 if year between 2008 and 2010
EFD	Industry median of External-finance Dependence (EFD): $EFD_i = \left(\sum_{t=2002}^{2006} capex_{i,t} - \sum_{t=2002}^{2006} ocf_{i,t}\right) \Big/ \sum_{t=2002}^{2006} capex_{i,t}$ with $capex_{i,t}$= capital expenditures and $ocf_{i,t}$= opearating cash flow of firm i in year t.
FEECHG	Audit Fee change in percentage from the prior to the current fiscal year
GROWTH	Revenue change in percentage from the prior to the current fiscal year
INITIAL	First audit engagement year
ISSUE	Indicator, equal to 1 if equity titles are issued in the current fiscal year
LAGLOSS	Indicator, equal to 1 if the prior years net income is negative
LEV	Liabilities total devided by assets total
LNFEE	Natural log of audit fees
LNINVREC	Natural log of the percentage of total assets in receivables and inventories
LNSEG	Natural log of disclosed business segments
LNTA	Natural log of assets total
NAS	Ratio of non-audit fees to total auditor fees
POWER	Natural log of sales, devided by the sum of logged sales for all industry
ROE	Return on Equity (net income devided by book value of equity)

Appendix II

Structure of industry classification schemes used for computing EFD

Industry classification according to Fama French (1997)		Industry classification according to Frankel et al. (2002)		Industry classification according to Manry et al. (2003)	
Industry	**n**	**Industry**	**n**	**Industry**	**n**
1. *Aircraft*	37	1. *Chemicals*	229	1. *Chemicals*	555
2. *Agriculture*	10	2. *Computers*	1,046	2. *Construction*	243
3. *Automobiles and Trucks*	121	3. *Durable*	1,774	3. *Electric, Gas, And Sanitary*	225
4. *Beer & Liquor*	93	4. *Extractive*	294	4. *Food*	304
5. *Construction Materials*	246	5. *Food*	304	5. *Mining*	399
6. *Printing and Publishing*	151	6. *Mining Construction*	391	6. *Other Services*	1,637
7. *Shipping Containers*	18	7. *Pharmaceuticals*	283	7. *Paper And Printing*	263
8. *Business Services*	661	8. *Printing Publishing*	469	8. *Plastic, Glass And Cement*	283
9. *Chemicals*	184	9. *Retail*	606	9. *Retail*	349
10. *Electronic Equipment*	365	10. *Services*	868	10. *Steel And Machinery*	1,768
11. *Apparel*	65	11. *Transportation*	535	11. *Textile*	142
12. *Construction*	243	12. *Utilities*	225	12. *Transportation*	535
13. *Coal*	9			13. *Wholesale*	257
14. *Pharmaceutical Products*	283			14. *Wood*	64
15. *Electrical Equipment*	103				
16. *Fabricated Products*	30				
17. *Food Products*	172				

(The table is continued on the next page.)

Appendix II (Continued)

Structure of industry classification schemes used for computing EFD

Industry classification according to Fama French (1997)		Industry classification according to Frankel et al. (2002)		Industry classification according to Manry et al. (2003)	
Industry	**n**	**Industry**	**n**	**Industry**	**n**
18. *Entertainment*	191				
19. *Precious Metals*	49				
20. *Defense*	5				
21. *Computers*	55				
22. *Healthcare*	60				
23. *Consumer Goods*	204				
24. *Measuring and Control Equipment*	98				
25. *Machinery*	399				
26. *Restaurants, Hotels, Motels*	88				
27. *Medical Equipment*	167				
28. *Non-Metallic and Industrial Metal*	90				
29. *Petroleum and Natural Gas*	294				
30. *Almost Nothing*	64				
31. *Business Supplies*	97				
32. *Personal Services*	51				
33. *Retail*	283				
34. *Rubber and Plastic Products*	95				

(The table is continued on the next page.)

Appendix II (Continued)

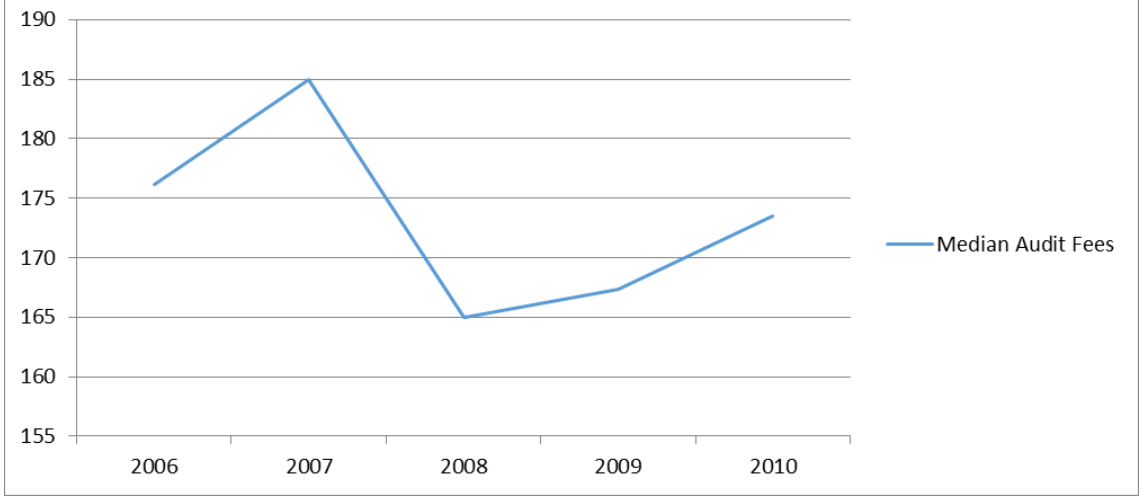
Structure of industry classification schemes used for computing EFD

Industry classification according to Fama French (1997)		Industry classification according to Frankel et al. (2002)		Industry classification according to Manry et al. (2003)	
Industry	**n**	**Industry**	**n**	**Industry**	**n**
35. *Shipbuilding, Railroad Equipment*	22				
36. *Tobacco Products*	10				
37. *Candy & Soda*	18				
38. *Computer Software*	701				
39. *Steel Works Etc*	103				
40. *Communication*	192				
41. *Recreation*	63				
42. *Transportation*	326				
43. *Textiles*	90				
44. *Utilities*	161				
45. *Wholesale*	257				
Total	7,024	Total	7,024	Total	7,024

Figures and tables for the manuscript

Figure 1

Audit Fees from 2006 to 2010



Notes: Figure 1 illustrates the development of audit fees from 2006 to 2010. The chart shows median audit fees in k€ from 2006 to 2010 for the sample presented in Table 1.

Table 1

Sample Selection and Sample Characteristics

Panel A: Sample Construction

Initial Sample - firm-year observations with the necessary audit variables from EUR-Business Research Database 2006-2010	11,876
Less: Financial Firms	(2,203)
Less: Firms missing Worldscope variables	(2,015)
Less: Firms without at least one observation in both periods (i.e., before crisis and during crisis)	(533)
Less: Firms located in countries with less than 50 firm-year observatic	(81)
Less: Firms from industries with less than 50 firm-year observations	(20)
Final Sample	7,024

(Table continued on next page)

Table 1 (continoued)

Sample Selection and Sample Characteristics

Panel B: Firm-Year Observations by Year

Year	Firm-Years	%
2006	971	13.8%
2007	1269	18.1%
2008	1474	21.0%
2009	1634	23.3%
2010	1676	23.9%

Panel C: Firm-Year Observations by Country

Country	Firm-Years	%
Austria	149	2.1%
Belgium	244	3.5%
Germany	2028	28.9%
Denmark	301	4.3%
Spain	293	4.2%
United Kingdom	2593	36.9%
Ireland	95	1.4%
Italy	523	7.4%
Netherlands	304	4.3%
Norway	494	7.0%

(Table continued on next page)

Table 1 (continoued)

Sample Selection and Sample Characteristics

Panel D: Firm-Year Observations by Industry

Industry	Firm-Years	% in Sample	% in Worldscope
1. Agriculture, Forestry, Fishing	0	0.0%	0.9%
2. Chemicals	555	7.9%	4.8%
3. Construction	243	3.5%	3.6%
4. Electric, Gas, And Sanitary Servi	225	3.2%	3.6%
5. Finance, Insurance, Real Estate	0	0.0%	22.1%
6. Food	304	4.3%	4.5%
7. Mining	399	5.7%	4.8%
8. Other Services	1637	23.3%	16.1%
9. Paper and Printing	263	3.7%	2.7%
10. Plastic, Glass and Cement	283	4.0%	3.0%
11. Public Administration	0	0.0%	0.2%
12. Retail	349	5.0%	3.8%
13. Steel and Machinery	1768	25.2%	17.3%
14. Textile	142	2.0%	2.1%
15. Transportation	535	7.6%	5.6%
16. Wholesale	257	3.7%	4.0%
17. Wood	64	0.9%	1.1%

Notes: Industry classifications are based on 2-digit-SIC Codes and in accordance with those presented in Manry et al. (2003). Financial Institutions have been deleted in my sample.

Table 2

Firm Performance during the Crisis Period depending on EFD

	High EFD			Low EFD			Test of Difference in Subsample Means
Variable	**Mean**	**Median**	**Std. Dev.**	**Mean**	**Median**	**Std. Dev.**	
ROA_810	-0.005	0.059	0.307	0.045	0.070	0.237	***
LOSS_810	0.534	1.000	0.499	0.490	0.000	0.500	**
DEVLP_LEV	0.088	0.004	0.445	0.048	0.000	0.319	**
DEVLP_MKVALT	-0.123	-0.258	0.594	-0.154	-0.209	0.513	

Notes: The sample consists of 1,936 firms and is partioned based on median *EFD*. *LOSS_810* is an indicator variable that takes the value of one when a firm's earnings before extraordinary items are negative in at least one of the crisis years 2008-2010, and zero othwerwise. *DEVLP_LEV* denotes the change of leverage in percentage during the crisis between 2007 and 2010. *DEVLP_MKVALT* denotes the change of a firm's market value of equity in percentage during the crisis between 2007 and 2010. *ROA_810* is the compound return on assets during the crisis from 2008 to 2010. The means, medians, and standard deviations are presented for the low *EFD* and high *EFD* firms, respectively. *, **, *** indicate statistical significance of differences in means from two-tailed t-tests at the 10%, 5%, and 1% levels, respectively.

Table 3A

Descriptive Statistics

Panel A: Continuous Variables

	Full Sample (7,024)			Before Crisis (n = 2240)			During Crisis (n = 4784)			Test of Difference in Subsample Means
Variable	**Mean**	**Median**	**Std. Dev.**	**Mean**	**Median**	**Std. Dev.**	**Mean**	**Median**	**Std. Dev.**	
LNFEE	5.3297	5.1506	1.3499	5.414	5.2257	1.3763	5.2902	5.1172	1.3357	***
AUDIT_FEES	630.1	171.5	1,497.7	705.9	185.0	1,643.4	594.6	165.9	1,423.2	***
EFD	-0.3905	-0.4007	0.2712	-0.3953	-0.4007	0.2713	-0.3882	-0.4007	0.2712	
POWER	0.2692	0.1201	0.283	0.2857	0.1435	0.2875	0.2615	0.1102	0.2806	***
LNTA	12.2925	12.1076	2.1763	12.3476	12.1152	2.1908	12.2668	12.105	2.1692	
LNSEG	1.1983	1.0986	0.4421	1.1871	1.0986	0.4527	1.2036	1.0986	0.4371	
LNINVREC	-1.4293	-1.2013	0.8909	-1.3692	-1.1382	0.851	-1.4575	-1.2184	0.9076	***
LEV	0.5196	0.5416	0.2082	0.522	0.5471	0.2055	0.5184	0.5386	0.2095	
GROWTH	0.1426	0.0566	0.5578	0.2294	0.1009	0.607	0.102	0.029	0.5285	***
ROE	-0.037	0.081	0.5306	0.0214	0.1178	0.4931	-0.0644	0.0644	0.5452	***
BTM	0.9427	0.6725	0.9153	0.631	0.4767	0.6022	1.0887	0.7975	0.9967	***
NAS	0.2126	0.175	0.1931	0.2126	0.175	0.1931	0.2126	0.175	0.1931	

(The table is continued on the next page.)

Table 3A (Continoued)

Descriptive Statistics

Panel B: Indicator Variables

	Full Sample (n = 7,024)			Before Crisis (n = 2240)			During Crisis (n = 4784)			Test of Difference in Subsample Means
Variable	**Mean**	**1**	**0**	**Mean**	**1**	**0**	**Mean**	**1**	**0**	
ISSUE	0.4069	2,858	4,166	0.460	3,233	3,791	0.382	2,682	4,342	***
BUSY	0.7319	5,141	1,883	0.741	5,205	1,819	0.728	5,111	1,913	
BIG4	0.6891	4,840	2,184	0.683	4,795	2,229	0.692	4,861	2,163	
INITIAL	0.1380	969	6,055	0.094	659	6,365	0.159	1,115	5,909	***
LAGLOSS	0.2711	1,904	5,120	0.219	1,537	5,487	0.296	2,076	4,948	***

Notes: This table exhibits descriptive statistics for each of the variables included in the regression model. The means, medians, and standard deviations are presented for the full sample and for the pre-crisis (2006 2007) and crisis (2008-2010) periods, respectively. Audit fee data was obtained from the EUR-Business Research Database. The data for all other variables were taken from the Thomson Reuters Worldscope database. All variables are defined in Appendix I. *, **, *** indicate statistical significance of differences in means from two-tailed t-tests at the 10%, 5%, and 1% levels, respectively.

Table 3B

Pearson Correlation Coefficients

	1.	**2.**	**3.**	**4.**	**5.**	**6.**	**7.**	**8.**	**9.**	**10.**	**11.**	**12.**	**13.**	**14.**	**15.**	**16.**
1. *LNFEE*																
2. *CRISIS*	-0.043															
3. *EFD*	-0.031	***0.012***														
4. *POWER*	0.063	-0.040	-0.084													
5. *LNTA*	0.872	***-0.017***	***0.004***	0.110												
6. *LNSEG*	0.397	***0.017***	-0.103	0.050	0.390											
7. *LNINVREC*	0.048	-0.046	-0.375	0.103	-0.053	0.122										
8. *LAGLOSS*	-0.229	0.081	0.128	-0.061	-0.299	-0.151	-0.178									
9. *LEV*	0.405	***-0.008***	-0.129	0.082	0.399	0.242	0.192	-0.060								
10. *GROWTH*	-0.096	-0.106	0.140	***-0.007***	-0.073	-0.091	-0.135	0.123	-0.107							
11. *ROE*	0.188	-0.075	-0.086	0.043	0.273	0.115	0.093	-0.400	-0.104	***0.016***						
12. *BTM*	-0.040	0.233	-0.096	0.033	***0.000***	***0.014***	***-0.008***	0.074	-0.057	-0.069	-0.021					
13. *ISSUE*	0.038	-0.074	0.141	-0.081	***0.005***	-0.092	-0.130	0.080	-0.074	0.136	-0.075	-0.119				
14. *BIG4*	0.472	***0.010***	0.027	-0.384	0.490	0.206	-0.032	-0.102	0.194	-0.063	0.118	-0.053	***0.015***			
15. *INITIAL*	-0.076	0.088	***-0.007***	***-0.009***	-0.067	***-0.007***	***0.014***	0.036	-0.021	***-0.010***	-0.037	0.042	-0.036	-0.053		
16. *NAS*	***-0.003***	-0.036	0.043	-0.081	0.028	-0.051	-0.092	-0.033	-0.020	0.035	***0.017***	***-0.001***	0.120	0.063	-0.067	
17. *BUSY*	0.124	***-0.014***	0.080	0.105	0.143	0.164	0.032	***0.000***	0.066	***0.002***	-0.025	***-0.006***	-0.139	0.101	***-0.004***	-0.113

Notes: This table presents Pearson correlation coefficients for variables included in the primary analyses. All correlations in bold and italic are not significant at and below the 10% level. All variables are defined in Appendix I.

Table 4

Impact of the Recent Economic and Financial Crisis on Audit Fees and the Influence of Client Bargaining Power and External-Finance Dependence

Dependent Variable		*LNFEE*		*LNFEE*		*LNFEE*		*LNFEE*	
Variables	expected sign	**Coeff**	**t-Stat**	**Coeff**	**t-Stat**	**Coeff**	**t-Stat**	**Coeff**	**t-Stat**
CRISIS	-	-0.0506 ***	-3.43	-0.0486 ***	-3.29	-0.0508 ***	-3.44	-0.0489 ***	-3.32
POWER	+			0.1278 **	1.97			0.1212 *	1.86
*CRISIS * POWER*	-			-0.1599 ***	-3.16			-0.1538 ***	-3.02
EFD	+/-					-0.1351	-1.35	-0.1237	-1.23
*CRISIS * EFD*	+					0.0836	1.48	0.0697	1.22
LNTA	+	0.5566 ***	57.45	0.5557 ***	56.45	0.5567 ***	57.49	0.5559 ***	56.51
LNSEG	+	0.1452 ***	4.70	0.1447 ***	4.68	0.1433 ***	4.63	0.1428 ***	4.62
LNINVREC	+	0.1560 ***	9.06	0.1549 ***	8.97	0.1540 ***	8.87	0.1530 ***	8.80
LAGLOSS	+	0.1365 ***	6.47	0.1355 ***	6.42	0.1381 ***	6.52	0.1370 ***	6.47
LEV	+	0.2288 ***	3.05	0.2314 ***	3.08	0.2251 ***	2.99	0.2278 ***	3.03
GROWTH	+/-	-0.0529 ***	-3.71	-0.0525 ***	-3.69	-0.0522 ***	-3.68	-0.0519 ***	-3.66
ROE	-	-0.1164 ***	-5.61	-0.1163 ***	-5.57	-0.1171 ***	-5.63	-0.1169 ***	-5.59
BTM	+/-	-0.0428 ***	-3.53	-0.0428 ***	-3.53	-0.0429 ***	-3.53	-0.0429 ***	-3.54
ISSUE	+	0.0627 ***	3.02	0.0629 ***	3.02	0.0641 ***	3.10	0.0643 ***	3.10

(The table is continued on the next page.)

Table 4 (Continued)

Impact of the Recent Economic and Financial Crisis on Audit Fees and the Influence of Client Bargaining Power and External-Finance Dependence

Dependent Variable		*LNFEE*		*LNFEE*		*LNFEE*		*LNFEE*	
Variables	expected sign	**Coeff**	**t-Stat**	**Coeff**	**t-Stat**	**Coeff**	**t-Stat**	**Coeff**	**t-Stat**
BIG4	+	0.1521 ***	5.07	0.1604 ***	4.38	0.1530 ***	5.09	0.1603 ***	4.38
INITIAL	-	-0.0923 ***	-4.79	-0.0941 ***	-4.88	-0.0922 ***	-4.78	-0.0939 ***	-4.87
NAS	+/-	-0.3134 ***	-5.44	-0.3143 ***	-5.46	-0.3118 ***	-5.41	-0.3128 ***	-5.43
BUSY	+	0.0648 **	2.01	0.0646 **	2.00	0.0666 **	2.06	0.0664 **	2.05
Country Effects		yes		yes		yes		yes	
Industry Effects		yes		yes		yes		yes	
Firm Years		7,024		7,024		7,024		7,024	
Adj. R^2		0.8070		0.8072		0.8071		0.8073	

(The table is continued on the next page.)

Table 4 (Continued)

Impact of the recent economic and financial crisis on audit fees and the influence of client bargaining power and external-finance dependence

Notes: This table presents the analysis of the impact of the recent economic and financial crisis on audit fees and how this relation is shaped by client bargaining power and external-finance dependence. See Appendix I for variable definitions. Coefficients and t-statistics are based on ordinary least square regressions that include fixed effects for country and industry (using two-digit SIC industry sector classifications). In regressions containing interactions the variables EFD and POWER are mean-centered, so that the first-order effect of CRISIS represents the average crisis effect across the range of EFD and POWER, respectively. Column (1) of Table 4 presents the unconditional crisis effect. The regressions are estimated with an intercept included (not tabulated). I report t-statistics based on robust standard errors clustered by firm. *, **, and *** indicate significance at the 10, 5, and 1 % levels, respectively. The sample comprises 7,024 firm-year observations from 1,936 unique firms.

Table 5

Impact of the Recent Economic and Financial Crisis on Audit Fees and the Influence of External-Finance Dependence by Client Bargaining Power

Sample	*High Power*				*Low Power*			
Dependent Variable	*LNFEE*		*LNFEE*		*LNFEE*		*LNFEE*	
Variables	**Coeff**	**t-Stat**	**Coeff**	**t-Stat**	**Coeff**	**t-Stat**	**Coeff**	**t-Stat**
CRISIS	-0.0890 ***	-3.85	-0.0901 ***	-3.87	-0.0140	-0.75	-0.0171	-0.93
EFD			-0.1046	-0.70			-0.1088	-1.01
*CRISIS * EFD*			-0.0388	-0.45			0.1824 ***	2.70
LNTA	0.5794 ***	41.86	0.5793 ***	41.92	0.5122 ***	36.87	0.5123 ***	36.78
LNSEG	0.1492 ***	3.42	0.1467 ***	3.36	0.1166 ***	2.91	0.1172 ***	2.93
LNINVREC	0.1397 ***	5.13	0.1359 ***	4.97	0.1618 ***	8.19	0.1626 ***	8.22
LAGLOSS	0.1428 ***	4.48	0.1420 ***	4.44	0.1182 ***	4.32	0.1190 ***	4.34
LEV	0.1911 *	1.75	0.1874 *	1.72	0.3211 ***	3.42	0.3213 ***	3.40
GROWTH	-0.0677 **	-2.55	-0.0675 **	-2.55	-0.0387 ***	-2.76	-0.0372 ***	-2.66
ROE	-0.1181 ***	-3.60	-0.1194 ***	-3.63	-0.0965 ***	-4.52	-0.0947 ***	-4.42
BTM	-0.0548 ***	-3.04	-0.0559 ***	-3.08	-0.0225	-1.52	-0.0220	-1.49
ISSUE	0.0465	1.47	0.0476	1.51	0.0887 ***	3.73	0.0887 ***	3.77

(The table is continued on the next page.)

Table 5 (Continued)

Impact of the Recent Economic and Financial Crisis on Audit Fees and the Influence of External-Finance Dependence by Client Bargaining Power

Dependent Variable	*LNFEE*		*LNFEE*		*LNFEE*		*LNFEE*	
Variables	**Coeff**	**t-Stat**	**Coeff**	**t-Stat**	**Coeff**	**t-Stat**	**Coeff**	**t-Stat**
GROWTH	-0.0677 **	-2.55	-0.0675 **	-2.55	-0.0387 ***	-2.76	-0.0372 ***	-2.66
ROE	-0.1181 ***	-3.60	-0.1194 ***	-3.63	-0.0965 ***	-4.52	-0.0947 ***	-4.42
BTM	-0.0548 ***	-3.04	-0.0559 ***	-3.08	-0.0225	-1.52	-0.0220	-1.49
ISSUE	0.0465	1.47	0.0476	1.51	0.0887 ***	3.73	0.0887 ***	3.77
BIG4	0.1102 *	1.86	0.1096 *	1.86	0.1704 ***	3.84	0.1695 ***	3.82
INITIAL	-0.1102 ***	-3.67	-0.1097 ***	-3.65	-0.0690 ***	-2.87	-0.0684 ***	-2.84
NAS	-0.2411 ***	-2.61	-0.2386 ***	-2.58	-0.3575 ***	-5.34	-0.3560 ***	-5.34
BUSY	0.1010 *	1.91	0.1036 *	1.95	0.0282	0.77	0.0275	0.75
Country Effects	yes		yes		yes		yes	
Industry Effects	yes		yes		yes		yes	
Firm Years	3,513		3,513		3,511		3,511	
Adj. R^2	0.8287		0.8287		0.7588		0.7591	

(The table is continued on the next page.)

Table 5 (Continued)

Impact of the Recent Economic and Financial Crisis on Audit Fees and the Influence of External-Finance Dependence by Client Bargaining Power

Notes: This table presents the analysis of the impact of the recent economic and financial crisis on audit fees and how this relation is shaped by external-finance dependence using subsample analysis in order to differentiate between firms with high bargaining power and firms with low bargaining power relative to their auditor. The sample is partioned based on median POWER. See Appendix I for variable definitions. Coefficients and t-statistics are based on ordinary least square regressions that include fixed effects for country and industry (using two-digit SIC industry sector classifications). The variable EFD is mean-centered, so that the first-order effect of CRISIS represents the average crisis effect across the range of EFD. The regressions are estimated with an intercept included (not tabulated). I report t-statistics based on robust standard errors clustered by firm. *, **, and *** indicate significance at the 10, 5, and 1 % levels, respectively.

Table 6

Impact of the Recent Economic and Financial Crisis on Audit Fees and the Influence of Client Bargaining Power by EFD

Sample	*Low EFD*		*High EFD*	
Dependent Variable	*LNFEE*		*LNFEE*	
Variables	**Coeff**	**t-Stat**	**Coeff**	**t-Stat**
CRISIS	-0.0862 ***	-4.11	-0.0170	-0.82
POWER	0.1030	1.10	0.1378	1.61
*CRISIS * POWER*	-0.1074	-1.52	-0.1702 **	-2.34
LNTA	0.5612 ***	42.05	0.5416 ***	38.69
LNSEG	0.1611 ***	3.62	0.1261 ***	3.01
LNINVREC	0.1058 ***	3.10	0.1704 ***	8.59
LAGLOSS	0.1281 ***	4.42	0.1437 ***	4.75
LEV	0.1837	1.62	0.2890 ***	2.90
GROWTH	-0.1122 ***	-2.88	-0.0301 **	-2.44
ROE	-0.1509 ***	-3.87	-0.0798 ***	-3.86
BTM	-0.0446 ***	-2.63	-0.0338 **	-2.02
ISSUE	0.1011 ***	3.23	0.0375	1.33
BIG4	0.1736 ***	3.17	0.1549 ***	3.15
INITIAL	-0.1002 ***	-3.57	-0.0934 ***	-3.56
NAS	-0.1591 *	-1.77	-0.4297 ***	-5.93
BUSY	0.0357	0.75	0.0955 **	2.20
Country Effects	yes		yes	
Industry Effects	yes		yes	
Firm Years	3,375		3,649	
Adj. R^2	0.8039		0.8148	

(The table is continued on the next page.)

Table 6 (Continued)

Impact of the Recent Economic and Financial Crisis on Audit Fees and the Influence of Client Bargaining Power by EFD

Notes: This table presents the analysis of the impact of the recent economic and financial crisis on audit fees and how this relation is shaped by client bargaining power using subsample analysis in order to differentiate between firms operating in high vs. low EFD industries. The sample is partioned based on median EFD. See Appendix I for variable definitions. Coefficients and t-statistics are based on ordinary least square regressions that include fixed effects for country and industry (using two-digit SIC industry sector classifications). The variable POWER is mean-centered, so that the first-order effect of CRISIS represents the average crisis effect across the range of POWER. The regressions are estimated with an intercept included (not tabulated). I report t-statistics based on robust standard errors clustered by firm. *, **, and *** indicate significance at the 10, 5, and 1 % levels, respectively.

Table 7

Sensitivity Analysis on Table 4 Results using Alternative Industry Classification Schemes

Classification for computing EFD on Industry-Level	*4-digit SIC Codes according to Fama French*		*2-digit SIC Codes according to Manry et al. (2003)*	
Dependent Variable	*LNFEE*		*LNFEE*	
Variables	**Coeff**	**t-Stat**	**Coeff**	**t-Stat**
CRISIS	-0.0511 ***	-3.20	-0.0468 ***	-3.16
POWER	0.0852	1.21	0.1173 *	1.78
*CRISIS * POWER*	-0.1609 ***	-2.84	-0.1465 ***	-2.86
EFD	-0.1268 **	-2.06	-0.0954	-0.61
*CRISIS * EFD*	0.0392	1.01	0.0246	0.44
LNTA	0.5495 ***	51.26	0.5556 ***	56.10
LNSEG	0.1558 ***	4.52	0.1465 ***	4.70
LNINVREC	0.1594 ***	8.78	0.1545 ***	8.95
LAGLOSS	0.1315 ***	5.61	0.1351 ***	6.37
LEV	0.2491 ***	3.07	0.2403 ***	3.18
GROWTH	-0.0561 ***	-3.53	-0.0524 ***	-3.65
ROE	-0.1126 ***	-5.47	-0.1152 ***	-5.58
BTM	-0.0478 ***	-3.52	-0.0415 ***	-3.39
ISSUE	0.0564 **	2.55	0.0598 ***	2.87
BIG4	0.1525 ***	3.74	0.1635 ***	4.42
INITIAL	-0.0966 ***	-4.64	-0.0934 ***	-4.82
NAS	-0.3470 ***	-5.68	-0.3135 ***	-5.41
BUSY	0.0642 *	1.82	0.0591 *	1.83

(The table is continued on the next page

Table 7 (Continued)

Sensitivity Analysis on Table 4 Results using Alternative Industry Classification Schemes

Country Effects	yes	yes
Industry Effects	yes	yes
Firm Years	5,899	6,953
Adj. R^2	0.8086	0.8086

Notes: This table presents replications of Table 4 results using alternative industry classification schemes. See Appendix I for variable definitions. Coefficients and t-statistics are based on ordinary least square regressions that include fixed effects for country and industry (using two-digit SIC industry sector classifications). The variables EFD and POWER are mean-centered, so that the first-order effect of CRISIS represents the average crisis effect across the range of EFD and POWER, respectively. The regressions are estimated with an intercept included (not tabulated). I report t-statistics based on robust standard errors clustered by firm. *, **, and *** indicate significance at the 10, 5, and 1 % levels, respectively.

Table 8

Sensitivity Analysis on Table 5 Results using Alternative Industry Classification Schemes

Industry Classification for computing EFD on Industry-Level	*4-digit SIC Codes according to Fama French*				*2-digit SIC Codes according to Manry et al. (2003)*			
Sample	*High Power*		*Low Power*		*High Power*		*Low Power*	
Dependent Variable	*LNFEE*		*LNFEE*		*LNFEE*		*LNFEE*	
Variables	**Coeff**	**t-Stat**	**Coeff**	**t-Stat**	**Coeff**	**t-Stat**	**Coeff**	**t-Stat**
CRISIS	-0.0926 ***	-3.75	-0.0228	-1.11	-0.0916 ***	-3.92	-0.0132	-0.71
EFD	-0.2324 **	-2.56	-0.0559	-0.76	0.3674 **	2.09	-0.4857 ***	-2.66
*CRISIS * EFD*	-0.0376	-0.63	0.1071 **	2.10	-0.1328	-1.57	0.1744 **	2.18
LNTA	0.5760 ***	38.35	0.5033 ***	33.36	0.5786 ***	41.36	0.5110 ***	36.38
LNSEG	0.1561 ***	3.19	0.1149 ***	2.59	0.1480 ***	3.33	0.1180 ***	2.94
LNINVREC	0.1492 ***	5.28	0.1669 ***	7.99	0.1404 ***	5.20	0.1606 ***	8.12
LAGLOSS	0.1426 ***	4.07	0.1087 ***	3.57	0.1370 ***	4.26	0.1198 ***	4.38
LEV	0.2335 **	1.98	0.3203 ***	3.19	0.2156 *	1.96	0.3207 ***	3.41
GROWTH	-0.0721 **	-2.50	-0.0425 ***	-2.60	-0.0694 **	-2.57	-0.0349 **	-2.53
ROE	-0.1007 ***	-2.88	-0.1021 ***	-4.60	-0.1146 ***	-3.46	-0.0951 ***	-4.47
BTM	-0.0592 ***	-2.90	-0.0245	-1.57	-0.0504 ***	-2.76	-0.0232	-1.57

(The table is continued on the next page.)

Table 8 (Continued)

Sensitivity Analysis on Table 5 Results using Alternative Industry Classification Schemes

Industry Classification for computing EFD on Industry-Level	*4-digit SIC Codes according to Fama French*				*2-digit SIC Codes according to Manry et al. (2003)*			
Sample	*High Power*		*Low Power*		*High Power*		*Low Power*	
Dependent Variable	*LNFEE*		*LNFEE*		*LNFEE*		*LNFEE*	
Variables	**Coeff**	**t-Stat**	**Coeff**	**t-Stat**	**Coeff**	**t-Stat**	**Coeff**	**t-Stat**
ISSUE	0.0328	0.98	0.0951 ***	3.74	0.0431	1.36	0.0889 ***	3.71
BIG4	0.0973	1.50	0.1541 ***	3.09	0.1206 **	1.99	0.1722 ***	3.85
INITIAL	-0.0951 ***	-2.90	-0.0835 ***	-3.26	-0.1034 ***	-3.46	-0.0744 ***	-3.08
NAS	-0.2535 ***	-2.62	-0.3769 ***	-5.29	-0.2451 ***	-2.61	-0.3486 ***	-5.19
BUSY	0.1275 **	2.18	0.0118	0.30	0.0869	1.64	0.0264	0.72
Country Effects	yes		yes		yes		yes	
Industry Effects	yes		yes		yes		yes	
Firm Years	2,951		2,948		3,478		3,475	
Adj. R^2	0.8329		0.7553		0.8311		0.7569	

(The table is continued on the next page.)

Table 8 (Continued)

Sensitivity Analysis on Table 5 Results using Alternative Industry Classification Schemes

Notes: This table presents replications of Table 5 results using alternative industry classification schemes. The sample is partioned based on median POWER. See Appendix I for variable definitions. Coefficients and t-statistics are based on ordinary least square regressions that include fixed effects for country and industry (using two-digit SIC industry sector classifications). The variable EFD is mean-centered, so that the first-order effect of CRISIS represents the average crisis effect across the range of EFD. The regressions are estimated with an intercept included (not tabulated). I report t-statistics based on robust standard errors clustered by firm. *, **, and *** indicate significance at the 10, 5, and 1 % levels, respectively.

Table 9

Sensitivity Analysis on the Results presented in Tables 4 and 5 restricting the Crisis Period to 2008-2009

Sample	*Full Sample*		*High Power*		*Low Power*	
Dependent Variable	*LNFEE*		*LNFEE*		*LNFEE*	
Variables	**Coeff**	**t-Stat**	**Coeff**	**t-Stat**	**Coeff**	**t-Stat**
CRISIS	-0.0314 **	-2.05	-0.0706 ***	-2.95	-0.0077	-0.39
POWER	0.1386 **	2.08				
*CRISIS * POWER*	-0.1496 ***	-2.97				
EFD	-0.1286	-1.23	-0.1233	-0.81	-0.1029	-0.91
*CRISIS * EFD*	0.0473	0.83	-0.0510	-0.60	0.1550 **	2.30
LNTA	0.5586 ***	53.77	0.5842 ***	39.35	0.5133 ***	34.97
LNSEG	0.1588 ***	4.80	0.1619 ***	3.46	0.1339 ***	3.10
LNINVREC	0.1572 ***	8.45	0.1387 ***	4.55	0.1682 ***	7.93
LAGLOSS	0.1745 ***	6.56	0.1794 ***	4.51	0.1456 ***	4.25
LEV	0.2110 ***	2.68	0.1667	1.44	0.3033 ***	3.05
GROWTH	-0.0326 **	-2.31	-0.0618 **	-2.13	-0.0166	-1.27
ROE	-0.0990 ***	-5.08	-0.1029 ***	-3.06	-0.0895 ***	-3.94

(The table is continued on the next page.)

Table 9 (Continued)

Sensitivity Analysis on the Results presented in Tables 4 and 5 restricting the Crisis Period to 2008-2009

Sample	*Full Sample*		*High Power*		*Low Power*	
Dependent Variable	*LNFEE*		*LNFEE*		*LNFEE*	
Variables	**Coeff**	**t-Stat**	**Coeff**	**t-Stat**	**Coeff**	**t-Stat**
BTM	-0.0360 ***	-2.87	-0.0483 **	-2.58	-0.0167	-1.10
ISSUE	0.0541 **	2.41	0.0393	1.13	0.0792 ***	3.11
BIG4	0.1763 ***	4.51	0.1182 *	1.86	0.1730 ***	3.61
INITIAL	-0.0782 ***	-3.50	-0.1053 ***	-2.94	-0.0375	-1.39
NAS	-0.3157 ***	-5.02	-0.2704 ***	-2.70	-0.3346 ***	-4.62
BUSY	0.0653 *	1.91	0.1149 **	2.04	0.0180	0.47
Country Effects	yes		yes		yes	
Industry Effects	yes		yes		yes	
Firm Years	5,348		2,675		2,673	
Adj. R^2	0.8084		0.8304		0.7593	

(The table is continued on the next page.)

Table 9 (Continued)

Sensitivity Analysis on the Results presented in Tables 4 and 5 restricting the Crisis Period to 2008-2009

Notes: This table presents replications of the results presented in Tables 4 and 5 restricting the crisis period to 2008-2009. The sample is again partioned based on median POWER. See Appendix I for variable definitions. Coefficients and t-statistics are based on ordinary least square regressions that include fixed effects for country and industry (using two-digit SIC industry sector classifications). The variables EFD and POWER are mean-centered, so that the first-order effect of CRISIS represents the average crisis effect across the range of EFD and POWER, respectively. The regressions are estimated with an intercept included (not tabulated). I report t-statistics based on robust standard errors clustered by firm. *, **, and *** indicate significance at the 10, 5, and 1 % levels, respectively.

Table 10

Sensitivity Analysis on the Results presented in Tables 4 and 5 eliminating all Firms with Auditor Changes during 2007–2010

Sample	*Full Sample*		*High Power*		*Low Power*	
Dependent Variable	*LNFEE*		*LNFEE*		*LNFEE*	
Variables	**Coeff**	**t-Stat**	**Coeff**	**t-Stat**	**Coeff**	**t-Stat**
CRISIS	-0.0442 **	-2.47	-0.0834 ***	-2.98	-0.0130	-0.60
POWER	0.1497 *	1.82				
*CRISIS * POWER*	-0.1571 **	-2.52				
EFD	-0.0788	-0.70	-0.0286	-0.18	-0.1071	-0.86
*CRISIS * EFD*	0.1261 *	1.93	-0.0182	-0.18	0.2499 ***	3.46
LNTA	0.5737 ***	50.64	0.5988 ***	37.37	0.5321 ***	32.28
LNSEG	0.1333 ***	3.69	0.1198 **	2.34	0.1138 **	2.42
LNINVREC	0.1731 ***	8.43	0.1616 ***	4.85	0.1803 ***	7.83
LAGLOSS	0.1605 ***	6.33	0.1472 ***	3.75	0.1499 ***	4.54
LEV	0.1455	1.56	0.1557	1.13	0.1722	1.43
GROWTH	-0.0451 ***	-2.82	-0.0294	-0.90	-0.0479 ***	-3.06
ROE	-0.1239 ***	-5.35	-0.1399 ***	-3.48	-0.1023 ***	-4.17

(The table is continued on the next page.)

Table 10 (Continued)

Sensitivity Analysis on the Results presented in Tables 4 and 5 eliminating all Firms with Auditor Changes during 2007–2010

Sample	*Full Sample*		*High Power*		*Low Power*	
Dependent Variable	*LNFEE*		*LNFEE*		*LNFEE*	
Variables	**Coeff**	**t-Stat**	**Coeff**	**t-Stat**	**Coeff**	**t-Stat**
BTM	-0.0418 ***	-2.96	-0.0618 ***	-2.87	-0.0146	-0.84
ISSUE	0.0749 ***	3.10	0.0533	1.44	0.1079 ***	3.95
BIG4	0.1655 ***	3.56	0.1077	1.51	0.1648 ***	2.91
INITIAL	-0.0826 ***	-2.97	-0.1220 **	-2.48	-0.0518	-1.57
NAS	-0.2903 ***	-4.22	-0.2174 *	-1.89	-0.3249 ***	-4.22
BUSY	0.0406	1.07	0.0683	1.06	0.0121	0.28
Country Effects	yes		yes		yes	
Industry Effects	yes		yes		yes	
Firm Years	5,205		2,544		2,661	
Adj. R^2	0.8146		0.8320		0.7669	

(The table is continued on the next page.)

Table 10 (Continued)

Sensitivity Analysis on the Results presented in Tables 4 and 5 eliminating all Firms with Auditor Changes during 2007–2010

Notes: This table presents replications of the results presented in Tables 4 and 5 eliminating all firms with auditor changes during 2007–2010 compared to 2006. The sample is again partioned based on median POWER. See Appendix I for variable definitions. Coefficients and t-statistics are based on ordinary least square regressions that include fixed effects for country and industry (using two-digit SIC industry sector classifications). The variables EFD and POWER are mean-centered, so that the first-order effect of CRISIS represents the average crisis effect across the range of EFD and POWER, respectively. The regressions are estimated with an intercept included (not tabulated). I report t-statistics based on robust standard errors clustered by firm. *, **, and *** indicate significance at the 10, 5, and 1 % levels, respectively.

Teil 4:

Investor Tax Incentive Heterogeneity, Ownership Power, and Capital Structure Decisions

Abstract

This paper investigates whether and how tax incentives of individual investors affect capital structure decisions. Using a large sample of publicly traded European firms from 2002 to 2012 and detailed data on cross-country taxation (including tax treaties), we examine the influence of the largest versus the second-largest investors' tax incentives on the firm's capital structure. We find that the largest investor's tax incentive for debt (relative to equity) positively influences the firm's leverage. We also find that the second-largest investor's tax incentives are incrementally relevant for capital structure decisions. In addition, we show that the tax incentive heterogeneity between the largest and second-largest investor reduces the positive influence of the largest investor's tax incentive on the firm's capital structure. Furthermore, we document that the relevance of the largest investor's tax incentive over and above the second largest investor's tax incentive is increasing in the level of ownership power. We contribute to prior literature by demonstrating that tax incentive effects on corporate leverage are differentially relevant under different ownership-specific circumstances.

1 INTRODUCTION

The question whether taxes affect capital structure decisions has been extensively investigated in previous academic research (see Graham 2003 for an overview). More recently, empirical evidence has not only been able to document the relevance of tax incentives on capital structure decisions in the *cross-section* (e.g., Desai et al. 2004, Fan et al. 2012) but also in *times-series analysis* (e.g., Faccio and Xu 2015).

Despite the documented relevance of tax incentives on a firm's capital structure, the literature has mainly assumed that the marginal investor in firms is a domestic individual in a high tax bracket. As such, the literature has provided little insight into whether and how individual investors are able and willing to exert influence on capital structure. Agency issues as well as information costs and transaction costs could hinder investors to implement their personally optimal capital structure (LaPorta et al. 2000; Brailsford et al. 2002). As a consequence, the effect of investor-level tax incentives on capital structure decisions remains largely unexplored. That is, prior literature has not provided any insight into whether large blockholders are able use their voting rights power to influence corporate leverage.[3] Also, prior literature has not investigated whether the tax incentives of smaller investors are *incrementally relevant* for capital structure decisions. Furthermore, we do not know how investors who differ with respect to their tax incentive preferences resolve conflicts. Thus, there exists a research gap regarding the economic relationship among capital structure decisions, investor-level tax incentives, and a firm's ownership structure. More precisely, it remains questionable whether tax

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[3] While Krämer (2015) and Haring, Niemann, and Rünger (2016) have recently addressed how ownership affects the relationship between taxes and capital structure, their studies only use ownership data for the last available observation of a firm. As such, ownership is measured with error and the consequences of ownership changes over time are not investigated.

incentive influences on corporate leverage are differentially relevant under different ownership-specific circumstances.

In this paper, we are the first to investigate whether and how the largest investor's (net) tax incentives (i.e., the potential tax benefit of debt relative to equity) affect capital structure decisions of firms. Thereby, we explicitly distinguish between private and corporate investors from the same vs. a different country than the firm, and we incorporate withholding taxes and double tax treaties for a large sample of public European firms for the period from 2002 through 2012. Although findings in international datasets are not bound to specific national characteristics in tax regimes and/or capital market conditions, so far, there exists only scarce cross-country evidence with respect to the influence of corporate and personal tax incentives on corporate leverage (e.g., Gordon and MacKie-Mason 1990; Graham 1999; Overesch and Voeller 2010; Fan et al. 2012; Faccio and Xu 2015)[4].

We are also the first to investigate whether the tax incentives of a smaller, namely, the second-largest investor influence capital structure decisions of firms. In addition, we are interested to explore how conflicting tax incentives among investors (i.e., *tax incentive heterogeneity*) are resolved with respect to capital structure decisions. More specifically, we investigate whether the presence of a contrary tax incentive of the second-largest investor reduces the influence of the largest investor's tax incentive on the firm's capital structure. Finally, our study provides initial evidence on how ownership power (i.e., the difference between the percentage of shares held by the largest investor and the

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[4] Overesch and Voeller (2010) as well as Faccio and Xu (2015) find a significant association between tax incentives and capital structure decisions. Booth et al. (2001) do not find a significant association between tax policy and capital structure decisions in a sample of mostly developing countries. Fan et al. (2012) only find significant tax effects in the later time period of their sample (1999-2006) and only in the subsample of developed countries.

percentage of shares held by the second-largest investor) moderates the relationship between investor-level tax incentives, tax heterogeneity, and capital structure decisions.

We find that the largest investor's tax incentive positively influences the firm's capital structure. On average, a 10-percentage point increase in the largest investor's tax incentive benefit increases book leverage by 2.73 percentage points in the pooled OLS specification (1.38 percentage points in the fixed-effects panel specification). We also find that the second-largest investor's tax incentive is incrementally relevant for capital structure decisions. Here, if the second-largest investor's tax incentive increases by 10-percentage points, book leverage increases by an average of 1.56 percentage points in the pooled OLS specification (1.18 percentage points in the fixed-effects panel specification). In addition, we show that tax incentive heterogeneity between the largest and second-largest investor reduces the positive influence of the largest investor's tax incentive on the firm's capital structure. In the presence of contrary tax incentives between the largest and second-largest investors, on average, the effect of a 10-percentage point increase in the largest investor's tax incentive benefit on book leverage is about 0.5 percentage points lower in absolute terms (or about 25 percent lower in relative terms). Furthermore, we document that the relevance of the largest investor's tax incentive over and above the second-largest investor's tax incentive is increasing in the level of ownership power. For example, as we move from the lowest to the highest quartile of ownership power, the effect of a 10-percentage point increase in the largest investor's tax incentive benefit on book leverage rises from 0.19 percentage points to 0.42 percentage points. Conversely, we also find that ownership power negatively moderates the negative effect of tax incentive heterogeneity on the relationship between the largest investor's tax incentives and capital structure decisions. On average, as we move from the lowest to the highest quartile of ownership power the negative effect of tax incentive heterogeneity on the

relationship between the largest investor's tax incentive and book leverage decreases from -10.3 percentage points to -2.8 percentage points for a 10-percentage point increase in the largest investor's tax incentive benefit.

We contribute to the corporate finance literature on tax incentive effects in several ways. First, while earlier papers suffer from measurement error by assuming every investor to be a domestic top-tax-rate private individual taxpayer, we are the first to measure tax incentives on the investor-level considering individual tax-characteristics such as the location and legal form of the investor, as well as withholding taxes and double tax treaties. This unique feature of our dataset and the resulting variation in tax incentives helps us to better understand how investor-level tax incentives affect capital structure decisions. Second, this study is the first to provide evidence that the second-largest investor is incrementally able to influence a firm's capital structure beyond the large investor's tax incentives. This finding is important as it establishes investor-level tax incentives as an additional explanatory factor for capital structure decisions. Third, we are the first to document that tax incentive effects on corporate leverage are differentially relevant under different ownership-specific circumstances in an international setting. This finding establishes ownership as relevant tax parameter for future research and shows that conflicts of interest between investors regarding tax incentives are solved following the distribution of ownership power among investors.[5] Finally, this study also contributes to the literature on corporate governance and blockholdings by documenting that individual investors are indeed able to exert measurable influence on capital structure decisions of the firm.

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[5] While Jacob and Michaely (2017) have also investigated this relation, their sample of closely-held Swedish firms with not more than five owners is very restrictive.

The remainder of the paper is organized as follows. In section 2, we review prior literature and develop our hypotheses. Section 3 discusses our data sources, descriptive statistics and the research design. In section 4, we present our main findings. Section 5 provides a discussion of robustness tests while section 6 concludes.

2 PRIOR LITERATURE AND HYPOTHESES DEVELOPMENT

Personal Taxation and Capital Structure Decisions

The empirical literature on the influence of corporate taxation on the capital structure decisions is vast (Graham 2003; Graham and Leary 2011). As the deductibility of interest expenses creates a tax shield that favors debt over equity (Modigliani and Miller 1963), corporate taxes affect capital structure decisions of firms. That is, the cross-sectional empirical patterns are broadly consistent with the balancing of benefits with direct and indirect costs of debt financing (see the literature reviews in Harris and Raviv 1991 and Frank and Goyal 2008).

At the investor level, however, investment income (dividends, capital gains, and interest received) are taxed differently in most countries. Thus, tax advantages arising at the corporate level can be amplified, reduced or even offset by tax disadvantages at the personal level (Miller 1977).

While prior research documents a negative relation between personal taxes and corporate leverage (Mackie-Mason 1990; Graham 1999; Campello 2001), more recently, Overesch and Voeller (2010), Reinhard and Li (2011), and Faccio and Xu (2015) conduct more direct tests of the personal tax effects on debt financing by exploiting greater variations of personal taxes in international datasets. Using a panel of firm-level data of about 814,000 public and private European companies during the period from 2000 to 2005, Overesch and Voeller (2010) show that taxes on the personal level affect corporate

leverage. In contrast to these findings, Reinhard and Li (2011) do not find that companies change their financing decisions as a consequence of Tax Reform Act of 2001 which increased the relative advantage of debt over equity financing. Faccio and Xu (2015) examine the effects of changes to the top marginal tax rates for over 32,000 companies in 29 OECD countries from 1981 to 2009. They find that personal taxes are an economically important determinant of capital structure decisions. Feld et al. (2013) include a dummy Personal Taxes into their meta-study of how corporate taxes affect capital structure choices. This dummy for studies that incorporate personal taxes (about one out of five estimates) is not significant in their analysis.

While the long list of studies mentioned above helped to advance the theory of the firm (Jensen and Meckling 1976) with regard to capital structure decisions, most of these studies have to be criticized to *not* model the investor's individual tax incentives. In particular, none of these studies incorporate information about the location and legal form of the investors. Instead, crude measures such as the yearly top statutory tax rate are often used in order to investigate the influence of taxes on the capital structure of a firm (e.g., Frank and Goyal 2009). However, a vast body of literature documents that investor composition varies greatly among firms (e.g., La Porta et al. 1999), and thus, firm-level tax incentives can be different, too. That is, as the investor composition shifts from private individuals to corporations (e.g. institutions), firm-level tax incentives might change without any changes in the corporate or personal tax rates. Consequently, failing to control for personal tax considerations of the respective investors (i.e., corporation or private individual holding stock of a domestic or foreign firm) can result in both an omitted variable bias as well as a measurement error with respect to any firm-level tax incentive measure (Graham 2003).

As such, there exists a research gap regarding the economic relationship among corporate and personal taxation, capital structure decisions, and ownership. While gathering the exact investor composition for a firm is almost impossible, information about the largest investor of a firm is available for several firms. On average, this investor group holds more than 30 percent of public firms around the world (Troung and Heaney 2007; for Western Europe see Faccio and Lang 2002). Accordingly, the largest investor is able to exert pressure on a firm to adopt certain policies, to pursue or to stop certain investments, and/or to choose a certain source of financing. As such, the largest investor is also likely to have a significant influence over capital structure decisions as she may explicitly or implicitly use her voting rights power in order to maximize her potential tax benefits (Graham 2003). Following these line of arguments, it is important to analyze the relationship that exists between the largest investor and capital structure decisions if we are to better understand capital structure decisions. Thus, we formulate our first hypothesis as follows:

> ***H1****: The largest investor's tax incentive positively influences the firm's capital structure.*

Tax Incentive Heterogeneity and Ownership Concentration in Capital Structure Decisions

In addition to failing to control for personal tax considerations on the investor level, prior research has not investigated the effect of conflicting interests among investors on the relationship between tax incentives and capital structure decisions (i.e., tax incentive heterogeneity). As such, we are the first to investigate the incremental role of a smaller, namely, the second largest investor on capital structure decisions when the largest investor is present. For example, in the presence of the second-largest investor with

contrary tax incentives, it is unclear whether the largest investor's tax incentives remain relevant for a firm's capital structure decision (Bell and Jenkinson 2002). Legal investor protection (e.g., La Porta et al. 1998) should prevent the largest investor from fully implementing a tax strategy that is optimal for her on the expense of the other investors. We hypothesize that the second largest investor is incrementally able to moderate the influence of the largest investor's tax incentive on the firm's capital structure. Specifically, we formulate our second hypothesis as follows:

> ***H2a:*** *The second largest investor's tax incentive incrementally affects the firm's capital structure*
>
> ***H2b:*** *Tax incentive heterogeneity between the largest and second-largest investor reduces the influence of the largest investor's tax incentive on the firm's capital structure.*

Finally, concurrent research has started to address the influence of ownership on the interplay of investor level taxes and capital structure decisions. Pindado and de la Torre (2011) show that ownership concentration encourages debt financing. However, they do not include tax incentives into their analysis. Krämer (2015) finds that the effect of corporate taxes and interest income taxes on capital structure decisions is stronger for firms with concentrated ownership. Lastly, Jacob and Michaely (2017) find that dividend taxes have a first order impact on payout policy, but disperse ownership mutes this impact substantially. However, as the authors exploit an exogenous shock to dividend taxation and proprietary data on private firms from Sweden, it is unclear whether this effect holds for capital structure decisions of public firms and across different countries.

We analyze whether investor-level ownership power moderates capital structure decisions driven by tax incentives in order to investigate whether tax effects are

differentially relevant under different ownership-specific circumstances. We posit that high ownership power of the largest investor increases her influence on the firm's capital structure decisions. We also posit that a high ownership power of the largest investor constrains the ability of the second largest investor to influence the capital structure of a firm according to her tax preferences. Instead, the investor upon which the voting rights power is concentrated is likely to increasingly dominate capital structure decisions following the maximization function of their potential tax rate benefits. As a result, we state hypothesis 3 as follows:

> ***H3a****: The higher ownership power is, the higher is the influence of the largest investor's tax incentive on the firm's capital structure.*
>
> ***H3b****: The higher ownership power is, the lower is the reducing effect of tax incentive heterogeneity (between the largest and second-largest investor) on the relationship between the largest investor's tax incentive and the firm's capital structure.*

3 RESEARCH DESIGN AND SAMPLE

The Baseline Model

When a company distributes income to its investors through dividends, the income is taxed at the corporate tax rate τ_C, while at the individual level the remaining amount will subsequently be taxed at the investor-specific dividend tax rate τ_D. Hence, one unit of income generated through the company's operating activities and distributed as dividends will result in $(1 - \tau_C)(1 - \tau_D)$ of income for the investor. If a company distributes its income through interest payments, this will result in $(1 - \tau_I)$ of income for the lending investor where τ_I is the investor's tax rate on interests.

If $(1 - \tau_C)(1 - \tau_D) = (1 - \tau_I) \Leftrightarrow \tau_C + (1 - \tau_C)\,\tau_D = \tau_I$, equity (dividends) and debt (interest) are taxed equally. From this approach and according to Graham (1999) and Auerbach (2002), we deduce our tax incentive measure as the relative tax incentive for debt:[6]

$$LShTaxInc = (\tau_C + (1 - \tau_C)\tau_D) - \tau_I \quad (1)$$

The higher the measure is, the higher the relative tax benefit of debt. In order to define a set of control variables, we take guidance from the literature. Frank and Goyal (2009) examined other potential determinants of corporate structure. The empirical patterns in their sample of publicly traded US firms from 1950 to 2003 highlight a set of six core factors that account for a major part of the variation in leverage while adding other factors only marginally improves the prediction model. The six core factors include the relative amount of tangible assets (tangibility), profitability, firm size, market-to-book ratio, industry median leverage, and expected inflation. The propositions with regard to these variables are that firms with more tangible assets (Titman 1984), less profits (Kayhan and Titman 2007), low size (as measured by book assets), low market-to-book ratio (Shyam-Sunder and Myers 1999), or which operate in industries in which the median firm has high leverage (Lemmon et al. 2008) tend to have high leverage. Also, when inflation is expected to be high, firms tend to have high leverage (Taggart 1985). Following these findings, we consider the following baseline regression model to test our hypotheses:

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[6] This measure is in the spirit of Miller (1977). However, it is linear in tax rates whereas the measure of Miller (1977), $m = [1-(1-t_c)(1-t_d)]/(1-t_i)$, is convex in the personal interest tax rate. Consequently, a 10 percentage point increase of the personal interest rate has a stronger effect on m the higher the personal interest tax rate before the increase is. For this reason, we prefer to use our measure in our empirical approach.

$$BookLev_{i,t} = \beta_0 + \boldsymbol{\beta_1 TaxInc_{i,t}} + \beta_2 IndBookLev_{i,t} + \beta_3 Tang_{i,t} + \beta_4 Profit_{i,t} + \beta_5 Size_{i,t} + \beta_6 MtB_{i,t} + \beta_7 Infl_{i,t} + \beta_8 \vec{Z}_{i,t} \quad (2)$$

where $BookLev_{i,t}$ is defined as total debt over total debt plus the book value of equity and $TaxInc_{i,t}$ is our proxy for the investor's (net) tax incentive benefit of debt relative to equity (e.g., $LShTaxInc_{i,t}$). We rely on book leverage as the market value of debt is notoriously hard to measure. $IndBookLev_{i,t}$ is the median industry leverage, $Tang_{i,t}$ is the ratio of net property, plant and equipment to total assets, $Profit_{i,t}$ is the return on assets (ROA), $Size_{i,t}$ is the natural log of total assets, $MtB_{i,t}$ is the market-to-book ratio, and $Infl_{i,t}$ is the expected inflation measured as the realized inflation in fiscal year *t + 1*. $\vec{Z}_{i,t}$ denotes a vector of fixed year effects and other fixed effects (country and industry fixed in one specification, firm fixed effects in another specification). All the variables are also further described in Appendix A.

Sample Composition

To construct our sample, we use the Thomson Worldscope database to identify 91,789 publicly traded firms for the period between 2002 and 2012. From this initial sample, we exclude firms for which no, only insufficient or obviously wrong data is available. In accordance with previous studies, we eliminate utilities, banks, insurance companies and other financial service firms from the sample (SIC codes between 6000 and 6999, and between 4000 and 4949) due to the fact that the capital structures of these firms are fundamentally different from other firms. As some firms have situated their headquarters

in so called "tax havens"[7], we eliminate all firms whose ISIN or that of the largest investor starts with the country code of BM, FK, GG, IM, JE, KY, or VG[8]. Furthermore, observations of firms are excluded whose stock is not traded in form of common shares. Over and above, we eliminate all observations with inconsistent data (i.e., sales lower than zero, total common equity lower than zero, dividends greater than sales).

To get detailed information about a firm's largest and second largest investors and their country of origin, we merge these data with ownership data from the Amadeus Database (Bureau van Dijk Electronic Publishing). Amadeus contains information about the firm's ownership structure, including the names of investors, their respective ownership share, their country of origin, and the investors' legal form. We delete all observations where the largest investor holds less than 15 percent of the shares.

To calculate the tax incentive measure, we use combined tax rates based on statutory corporate taxes and personal income tax rates at the investor level. When computing the combined tax rates, we carefully consider the characteristics of the individual investor, such as her host country or whether the investor is a corporation or a private individual. By identifying both the country in which the target firm is located and the investor's country of domicile we are able to take into account specific features of tax systems like withholding taxes on cross-border interest or dividend payments, imputation credits or limited interest deductibility, and we can incorporate tax treaties as well as EU regulations (EU parent company directive, EU interest and royalties directive). This detailed procedure enables us to individually calculate the tax incentives of a firm's investors in a cross-country setting. The corresponding tax rate variables were hand-

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7 According to Desai et al. (2006), tax havens are defined as low-tax jurisdictions that provide shareholders with opportunities to avoid taxes.

8 BM – Bermuda; FK – Falkland Islands; GG – Guernsey; IM – Isle of Man; JE – Jersey; KY – Cayman Islands; VG – Virgin Islands (British).

collected from yearly tax guides published by Ernst & Young, KPMG, and PwC, and the 2012 edition of the report of the Project for the European Commission "Effective Tax Levels using the Devereux Griffith Methodology" (*Spengel* et al. 2012) and previous editions of this report. Furthermore, we collect tax data by evaluating the cross-border dividend taxation report by Freshfields Bruckhaus Deringer.

As summarized in Table 1, this results in a final sample covering 8,652 observations from 2,645 firms, which are located in 31 European countries. Table 2 provides the location distribution of firms and investors by countries (Panel A) as well as aggregate information about the characteristics of the largest investor (Panel B). We note that in 17 percent of the observations the largest investor is a foreign investor and that in 19 percent of the observations the largest share investment is held by private individuals.

[Table 1]

[Table 2]

Descriptive Statistics

The summary statistics of the variables used in the current study are presented in Table 3, Panel A.

[Table 3]

In order to reduce the effect of outliers, we winsorize all continuous variables (except the tax variables) at the 1st and 99th percentiles level. As can be seen in Table 3, the average market leverage is 29.2 percent while the median industry market leverage amounts to 22.8 percent, on average. The mean market value of equity is 2.06 times the mean book value of equity for our sample. During our sample period, mean ROA is 0.6 percent and the mean expected inflation for period $t + 1$ is 2.4 percent. For the average firm, total assets are 130,744 k€ (Ln(Size)=11.78). Finally, our main variable of interest,

$LShTaxInc_{i,t}$, indicates that, on average, debt financing is preferable over equity financing from a tax minimization point of view.

The Pearson correlation matrix for the variables of interests is shown in Table 3, Panel B. The correlation matrix reveals that the proxy for the largest investors' tax incentives is positively correlated with *BookLev* (p-value < 0.01). This provides a first indication that tax incentives at the investor level affect capital structure decisions of firms. Also, all of Frank and Goyal's (2009) core factors are significantly correlated with corporate leverage. None of the other variables included simultaneously in the regression models are highly correlated. Thus, the Pearson correlations imply that the models to be estimated are unlikely to suffer from multicollinearity problems. We also calculated the variance inflation factors (VIF) to assure that multicollinearity is not an issue.[9]

Table 3, Panel C shows the Pearson correlation matrix for the largest investor's tax incentive, the firm's corporate tax rate, the largest investor's dividend tax rate and the largest investor's interest tax rate. Note that the correlation between the largest investor's tax incentive and the corporate tax rate is near zero and even negative. The simplified approach to use the corporate tax rate as a proxy for the investor's tax incentive that has been extensively used in the earlier literature is clearly not justified, at least not for our dataset. The main reason for the low correlation between the largest investor's tax incentive and the corporate tax rate is that many large investors are corporations residing in the same country. If interest is fully taxable for these corporations, which usually is the case, then $\tau_I = \tau_C$ and *LShTaxInc* is reduced to $(1 - \tau_C)\,\tau_D$.

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[9] We check the variance inflation factors (VIF) for the independent variables. We find they are all less than 6, suggesting that multicollinearity is unlikely to influence our results (Kutner et al. 2004; Lennox et al. 2012).

4 RESULTS

The multivariate empirical analysis is organized into three subsections. First, we analyze whether the largest investor is able to influence a firm's capital structure in order to maximize her potential tax benefits. Second, we shed light on whether the association between the largest investors' tax incentives and leverage is affected by the tax incentives of the second-largest investor. More specifically, we investigate the consequences of tax incentive heterogeneity between the largest and second-largest investor. Finally, we investigate whether and how ownership power moderates this relationship.

The regressions are estimated in two methodological specifications: (1) a standard approach pooled-OLS regression with fixed industry, country and year effects, and (2) a panel regression model with firm-fixed and year-fixed effects. These regression specifications follow Graham and Leary (2011) as well as Lemmon et al. (2008) who find that capital structure varies more cross-sectionally than within firms and that this variation has not been constant over time. Also and according to MacKay and Phillips (2005), within-industry capital structure variation is more important than between-industry capital structure variation. Faccio and Xu (2015) stress the importance of using panel models with firm fixed effects to reliably measure tax incentive effects on capital structure. Finally, all t-statistics (z-statistics) reported are calculated based on standard errors clustered by firms (Petersen 2009). All t-statistics in the pooled OLS specifications are corrected for heteroscedasticity according to White (1980).

The Influence of the Largest Investor's tax Incentives on Capital Structure Decisions

The results presented in Table 4 confirm our expectations with respect to the ability of the largest investor to explicitly or implicitly use her voting rights power in order to maximize her potential tax incentive benefits.

[Table 4]

Our proxy for the large investor's tax incentive to use debt over equity (conditional on the level of corporate versus personal taxation) is significantly positively associated with corporate leverage for both methodological specifications. In a pooled OLS specification with country and industry fixed effects tax and control variables, the coefficient for $LShTaxInc_{i,t}$ is highly significant. On average, a 10 percentage point increase in the largest investor's tax incentive benefit increases book leverage by 2.73 percentage points.

We now turn to the firm fixed effects specification. Here, we did not add industry and country fixed effects as they are nested in the firm fixed effects. The coefficient for the largest investor's tax incentive, $LShTaxInc_{i,t}$, is highly significant. A 10 percentage point increase in the largest investor's tax incentive ($LShTaxInc_{i,t}$) is on average associated with a book leverage increase by 1.38 percentage points. In turn, this indicates the large investor's potential and opportunity set to distribute residual claims on a firm's profit through different channels (i.e., dividends, corporate income, and/or interest income), thereby exploiting differential tax burdens imposed.

In addition, we are able to confirm Frank and Goyal's (2009) results. We find a positive association between book leverage and a firm's tangibility, size, and market to book ratio as well as the median industry book leverage. The relationship between book leverage and profitability (return on assets) is negative. The results are consistent with our expectations as well as prior empirical evidence, showing that our sample is not special in this regard.

Analysis of Tax Incentive Heterogeneity between the Largest and Second-Largest Investor

Table 5 reports our results for the influence of the second largest investor's tax incentive on capital structure and the consequences of contrary tax incentives among a firm's largest investors (H2a and H2b).

[Table 5]

For that purpose, we include an indicator variable, labeled *HeteroD*, that takes the value of "1" when the largest investor has a tax incentive for debt, whereas the tax incentive measure for the second-largest investor indicates a tax benefit of equity, or vice versa, and zero otherwise. As can be seen, the presence of tax incentive heterogeneity between the first and second largest investor reduces the influence of the largest investor's tax incentive on the firm's capital structure. On average, the effect of a 10 percentage point increase in the largest investor's tax incentive benefit on book leverage is about 0.5 percentage points lower (or about 25 percent lower in relative terms) for both of our regression specifications. Accordingly, the second-largest investor is incrementally able to influence the capital structure decisions of a firm beyond the large investor's tax incentives.

As a supplemental test, we regress book leverage on the largest investor's tax incentive ($LShTaxInc_{i,t}$) and the incremental tax incentive of the second largest investor ($\Delta 2ndTaxInc_{i,t}$) in a firm fixed effects specification. We measure the incremental tax incentive as the difference between the second largest investor's tax incentive ($2ndTaxInc_{i,t}$) and the largest investor's tax incentive ($LShTaxInc_{i,t}$) as follows:

$$\Delta 2ndTaxInc_{i,t} = 2ndTaxInc_{i,t} - LShTaxInc_{i,t} \quad (3)$$

If the incremental second largest investor's tax incentive also affects the firm's capital structure, thereby mitigating the influence of the largest investor's tax incentive on the firm's capital structure, we should see a positive and significant coefficient for $\Delta 2ndTaxInc_{i,t}$. Table 5, actually, reports that the coefficient on $\Delta 2ndTaxInc_{i,t}$ is positive and significant ($p < 0.05$). We interpret this result as additional evidence for H2 as the second largest investor also exerts influence on the capital structure.

Analysis of the Role of Ownership Power

In a final step, we investigate whether ownership power moderates the relationship between the largest investor's tax incentives and capital structure decisions. We also investigate whether ownership power moderates the negative effect of tax incentive heterogeneity on the relationship between the largest investor's tax incentives and capital structure decisions. We define ownership power ($OwnPower_{i,t}$) as the difference between the percentage of shares held by the largest investor and the percentage of shares held by the second-largest investor. Next, we partition our sample into quartiles based upon the ownership power measure where the first quartile (*Q1*) includes firm-year observations with the lowest difference between the percentage of share held by the largest vs. second-largest investors and the fourth quartile (*Q4*) includes firm-year observations with the highest difference between the percentage of shares held by the largest vs. second-largest investors, respectively. Thus, we discriminate between low and high states of ownership power of the largest investor. The results are presented in Tables 6 and 7.

[Table 6]

[Table 7]

Our results in Table 6 indicate that ownership power positively moderates the relationship between the largest investor's tax incentives and capital structure decisions. That is, as

we move from the lowest to the highest quartile of ownership power, the effect of a 10 percentage point increase in the largest investor's tax incentive benefit on book leverage rises from 0.19 percentage points to 0.42 percentage points. We use seemingly unrelated estimation (SUEST) to compare the *LShTaxInc* coefficients across the lowest vs. highest quartile to determine whether the ownership effect is statistically significant.[10] The coefficient on *LShTaxInc* is significantly more positive in the high ownership power subsample in comparison to the low ownership power subsample.

In Table 7, we also find that ownership power mitigates the negative effect of tax incentive heterogeneity on the relationship between the largest investor's tax incentives and capital structure decisions. As we move from the lowest to the highest quartile of ownership power the negative effect of tax incentive heterogeneity on the relationship between the largest investor's tax incentive and book leverage decreases from -10.3 percentage point to -2.8 percentage points for a 10 percentage point increase in the largest investor's tax incentive benefit. According to our SUEST analysis, the difference in coefficients is statistically significant.

To sum up, our empirical results provide evidence that high ownership power increases the ability of the largest investor to influence a firm's capital structure according to her tax preferences. We leave the discrimination among the different explanations of this economic phenomenon as future research avenue.

5 ROBUSTNESS TESTS

We test the robustness of our findings by conducting several sensitivity tests. First, we ensure that the results are robust to alternative specifications of our tax incentive measure.

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[10] Seemingly unrelated estimation (SUEST) is an econometric technique for testing cross-model hypotheses (Zellner 1962).

We re-estimate our analyses by using Miller's (1977) tax incentive index defined as: $TaxInc\_LSh = (1 - \frac{(1-\tau_C)(1-\tau_D)}{1-\tau_I})_{LSh}$. Our untabulated results remain qualitative unchanged. Consistent with the findings in our primary analyses, we continue to find positive and significant coefficients on our tax incentive measure for both the OLS and the firm fixed specification.

The corporate tax rate is embedded in the largest investor's tax incentive. To ensure that our results for the effect of the largest investor's tax incentive on capital structure are not driven by corporate tax rate changes, we re-estimate our primary results controlling for the firm's corporate tax rate. The results, presented in Table 8, remain virtually unchanged. The corporate tax rate is not significantly correlated with book leverage. This finding is mainly in line with Overesch and Voeller (2010), p. 281, who also report that the corporate tax rate is not significantly correlated with the capital structure in most of their specifications.

The displayed correlation between tax incentives and capital structure could result from investor clienteles choosing firms that already have the desired capital structure rather than to invest in firms and urge them to adjust their capital structure according to the investor's tax incentives. This reversed causality has also been analyzed for payout policy (Korkeamaki et al. 2010). To establish that taxes are causal for capital structure decisions, we re-run our regressions with a subsample of firms that did not display a major ownership change during tax rate adjustments (in the time window t-2 until t+1 with t as the year of the tax rate change). Consistent with investor tax incentives affecting capital structure decisions rather that investors choosing firms with the desired capital structure, the coefficient on $TaxInc\_LSh$ is significantly positive.

Finally, we weigh the largest investor's tax incentive and the second largest investor's tax incentive with the respective shares and regress the book leverage on the

two resulting measures in a year and firm fixed effects specification with the usual controls (untabulated). As expected, both coefficients are positively correlated with book leverage. The weighted largest investor's tax incentive is highly significant, whereas the weighted second largest investor's tax incentive is significant on the 10 percent level. We interpret this result as additional evidence for H1 and H2.

Overall, the additional tests demonstrate that our major findings are robust to various econometric as well as empirical specifications.

6 CONCLUSION

We analyze whether heterogeneous tax incentives among investors affect firms' capital structure decisions. Whereas the literature mainly assumes that the investor is a domestic individual, our identification strategy focuses on personal tax rate information on the investor level across countries for a large panel of publicly traded European firms for the period from 2002 through 2012. We explicitly distinguish between private and corporate investors as well as between domestic and foreign investors, and we incorporate hand-collected data on withholding taxes, double tax treaties, and EU regulations concerning cross-country dividend and interest taxation together with corporate taxes to construct our tax incentive measures. We gather this information not only for the largest investor, but also for the second largest investor.

The precise tax incentive measurement allows us to examine the influence of the largest versus the second-largest investors' tax incentives on the firm's capital structure. Confirming the latest literature (Faccio and Xu 2015), the largest investor's tax incentive positively influences the firm's capital structure. On average, a 10-percentage point increase in the largest investor's tax incentive benefit increases book leverage by 2.73

percentage points in the pooled OLS specification (1.37 percentage points in the fixed-effects panel specification).

We find that the second largest investor's tax incentives are incrementally relevant for capital structure decisions. We thereby contribute to the literature on corporate governance and blockholdings by documenting that the second-largest investors are indeed able to exert measurable influence on capital structure decisions of the firm. In line with this result, we show that tax incentive heterogeneity between the largest and second largest investor reduces the positive influence of the largest investor's tax incentive on the firm's capital structure. In the presence of tax incentive heterogeneity, on average, the effect of a 10-percentage point increase in the largest investor's tax incentive benefit on book leverage is about 0.5 percentage points lower in absolute terms (or about 25 percent lower in relative terms).

The relevance of the largest investor's tax incentive over and above the second largest investor's tax incentive is increasing in the level of ownership power (i.e., the difference between the percentage of shares held by the largest investor and the percentage of shares held by the second-largest investor). As we move from the lowest to the highest quartile of ownership power, the effect of a 10 percentage point increase in the largest investor's tax incentive benefit on book leverage rises from 0.19 percentage points to 0.42 percentage points. In line with this result, ownership power moderates the negative effect of tax incentive heterogeneity on the relationship between the largest investor's tax incentives and capital structure decisions.

The result that cross-country investor taxation matters for capital structure decisions may be incorporated by future capital structure research. However, we see our main contribution in demonstrating that tax incentive effects on corporate leverage are differentially relevant under different ownership-specific circumstances. This finding

establishes ownership as a relevant tax parameter for future research and shows that conflicts of interest between investors regarding tax incentives are solved according to the allocation of ownership power among investors.

One limitation of our study is that our sample is restricted to European corporations. It is unclear whether our results are generalizable to other regions with different corporate governance regimes. We share a second limitation with the empirical literature on capital structure decisions and taxes: We can only observe investors and not debtors of the firms in our sample. However, this remaining measurement error supposably biases against our results.

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Appendix A

Variable Definitions

Variable	**Description**
$LShTaxInc_{i,t}$	Tax benefit of debt financing relative to equity (i.e., tax incentive) according to Graham (1999) and Auerbach (2002), and calculated as the corporate profit tax percentage plus the additional tax burden on after-tax distributed dividends (at the shareholder level) minus the shareholder-specific interest income tax percentage.
$BookLev_{i,t}$	Total debt over total debt plus the book value of equity (book leverage).
$IndBookLev_{i,t}$	Median of $BookLev_{i,t}$ for the set of firms operating in the same industry.
$Tang_{i,t}$	Ratio of net property, plant and equipment (PP&E) to total assets.
$Profit_{i,t}$	Return on assets (ROA).
$Size_{i,t}$	Natural log of total assets.
$MtB_{i,t}$	Market value of equity over book value of equity (market-to-book assets ratio).
$Infl_{i,t}$	Realized inflation in fiscal year $t+1$.
$HeteroD_{i,t}$	Indicator variable that takes the value of 1 if the largest shareholder's tax incentive is contrary to the tax incentive of the 2nd largest shareholder (in terms of relative tax benefit of debt over equity).
$OwnPower_{i,t}$	Difference between the percentage of outstanding shares held by the largest shareholder and the percentage of shares held by the 2nd largest shareholder (common shares held over total shares outstanding).

Table 1

Sample Composition

Firm-year observations in the Thomson Worldscope database between 2002 and 2012 with sufficient data to caclculate independent and dependent variables	91,181
Less: Exclusions of firm-year observations characterized by:	
- No shareholder information in the BvD Amadeus database	72,641
- Financial industry classification (SIC codes 6000-6999)	4,568
- Missing tax rates	2,710
- Largest shareholder holds lesst than 15% of the shares outstanding	2,220
- Firm or largest shareholder located in "tax haven"-country (i.e., BM, FK, GG, IM, JE, KY, or VG)	224
- Country-specific observations for country or largest shareholders below 10	128
- Dividends greater than sales	38
Firm-year observations used in main analyses	8,652
Unique firms used in main analyses	2,645

Table 2

Firm/ Shareholder Characteristics

Panel A: Observations by firm country and shareholder location

Home country	(1) Firm		(2) Largest SH		(3) 2nd largest SH	
Austria	114	1.3%	156	1.8%	149	1.7%
Belgium	235	2.7%	210	2.4%	216	2.5%
Bulgaria	318	3.7%	294	3.4%	295	3.4%
Croatia	18	0.2%	8	0.1%	8	0.1%
Cyprus	135	1.6%	199	2.3%	197	2.3%
Czech Republic	4	0.0%	6	0.1%	5	0.1%
Denmark	294	3.4%	300	3.5%	289	3.3%
Estonia	16	0.2%	13	0.2%	12	0.1%
Finland	267	3.1%	238	2.8%	254	2.9%
France	1,050	12.1%	1,080	12.5%	918	10.6%
Germany	1,179	13.6%	1,134	13.1%	1,069	12.4%
Greece	150	1.7%	107	1.2%	102	1.2%
Hungary	30	0.3%	15	0.2%	12	0.1%
Ireland	12	0.1%	0	0.0%	0	0.0%
Italy	736	8.5%	735	8.5%	589	6.8%
Latvia	31	0.4%	26	0.3%	24	0.3%
Lithuania	71	0.8%	52	0.6%	52	0.6%
Luxembourg	31	0.4%	192	2.2%	161	1.9%
Malta	0	0.0%	4	0.0%	2	0.0%
Netherlands	211	2.4%	402	4.6%	357	4.1%
Norway	339	3.9%	289	3.3%	286	3.3%
Poland	977	11.3%	735	8.5%	845	9.8%
Portugal	159	1.8%	133	1.5%	149	1.7%
Romania	149	1.7%	85	1.0%	115	1.3%
Russia	20	0.2%	20	0.2%	20	0.2%
Slovakia	18	0.2%	0	0.0%	0	0.0%
Slovenia	89	1.0%	89	1.0%	89	1.0%
Spain	299	3.5%	287	3.3%	293	3.4%
Sweden	411	4.8%	418	4.8%	429	5.0%
Switzerland	166	1.9%	203	2.3%	178	2.1%
Turkey	104	1.2%	84	1.0%	97	1.1%
United Kingdom	1,019	11.8%	964	11.1%	1,127	13.0%
United States	0	0.0%	174	2.0%	313	3.6%
Total	8,652		8,652		8,652	

(The table is continued on the next page.)

Table 2 (Continued)

Firm/ Shareholder Characteristics

Panel B: Location, type, and tax incentives of largest shareholder

	Largest SH		2nd largest SH	
Shareholder location	**Firm-Years**	**%**	**Firm-Years**	**%**
Domestic	7,145	82.6%	7,294	84.3%
Foreign	1,507	17.4%	1,358	15.7%

	Largest SH		2nd largest SH	
Shareholder type	**Firm-Years**	**%**	**Firm-Years**	**%**
Corporation	6,990	80.8%	7,286	84.2%
Individual	1,662	19.2%	1,366	15.8%

Tax incentive alignment of the two largest shareholders	**Firm-Years**	**%**
Homogenous tax incentives	5,048	58.3%
Heterogenous tax incentives	775	9.0%
No tax preference for largest or 2nd largest shareholder	2,829	32.7%

Notes: Table 2, Panel A provides the location distribution of firms and the two largest shareholders by countries. Table 2, Panel B summarizes the cross-sectional variation in shareholder characteristics for the final target firm sample. Panel B reports the fraction of shareholdings held by foreign investors, the distribution of the target firm sample by type of the two largest shareholders and the fraction of firms with tax preference heterogeneity among the two largest shareholders

Table 3

Descriptive Statistics and Correlation Matrix

Panel A: Descriptive statistics

Variables	N	Mean	Median	Std. Dev.	1st Quartile	3rd Quartile	Min.	Max.
$LShTaxInc_{i,t}$	8,652	0.02470	0	0.08519	0	0.01444	-0.22881	0.51224
$BookLev_{i,t}$	8,652	0.36011	0.36249	0.25980	0.1202146	0.56174	0	0.95814
$IndBookLev_{i,t}$	8,652	0.27663	0.27883	0.07975	0.1953216	0.34698	0.05957	0.60060
$Tang_{i,t}$	8,652	0.26921	0.22988	0.21903	0.0820084	0.40075	0.0002552	0.89389
$Profit_{i,t}$	8,652	0.00602	0.02689	0.13196	-0.00791	0.06348	-0.71398	0.24939
$Size_{i,t}$	8,652	11.7814	11.6713	2.05477	10.44016	13.09835	7.01302	17.07233
$MtB_{i,t}$	8,652	2.06807	1.30503	2.62413	0.75362	2.34671	0.09762	18.75817
$Infl_{i.t}$	8,652	2.38539	2.18926	1.57920	1.48807	3.04136	-0.66694	8.89157
$HeteroD_{i.t}$	8,652	0.08957	0.00000	0.28559	0.00000	0.00000	0.00000	1.00000
$OwnPower_{i.t}$	8,652	0.30502	0.23700	0.26564	0.07530	0.49995	0.00000	1.00000

(The table is continued on the next page.)

Table 3 (Continued)

Descriptive Statistics and Correlation Matrix

Panel B: Correlation matrix

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. *LShTaxInc* $_{i,t}$	1.0000									
2. *BookLev* $_{i,t}$	**0.1063**	1.0000								
3. *IndBookLev* $_{i,t}$	**0.0487**	**0.1868**	1.0000							
4. *Tang* $_{i,t}$	**-0.0518**	**0.1653**	**0.0977**	1.0000						
5. *Profit* $_{i,t}$	**0.0212**	**-0.0504**	**0.0976**	**0.0654**	1.0000					
6. *Size* $_{i,t}$	**-0.1024**	**0.3617**	**0.1711**	**0.1038**	**0.2648**	1.0000				
7. *MtB* $_{i,t}$	-0.0149	**0.0514**	**-0.1075**	**-0.1485**	**-0.0835**	**-0.1386**	1.0000			
8. *Infl* $_{i,t}$	0.0091	**-0.1055**	**-0.0410**	**0.1170**	**0.0340**	**-0.1488**	**0.0236**	1.0000		
9. *HeteroD* $_{i,t}$	**-0.0304**	0.0173	-0.0056	-0.0170	0.0018	0.0164	0.0077	**-0.0368**	1.0000	
10. *OwnPower* $_{i,t}$	**-0.1026**	**0.0595**	**0.0576**	**0.0634**	**0.0678**	**0.0477**	0.0083	0.0000	**0.1055**	1.0000

(The table is continued on the next page.)

Table 3 (Continued)

Descriptive Statistics and Correlation Matrix

Panel C: Correlation matrix of tax incentives and tax rates

	1.	2.	3.	4.
1. $LShTaxInc_{i,t}$	1.0000			
2. $\tau_{C\,i,t}$	**-0.0261**	1.0000		
3. $\tau_{D\,i,t}$	**0.6678**	**-0.0246**	1.0000	
4. $\tau_{I\,i,t}$	**-0.4168**	**0.7512**	**0.1051**	1.0000

Notes: This table reports descriptive statistics and correlations for the variables used in our analyses. See Appendix A for variable definitions. The tax variables were hand-collected from yearly tax guides published by Ernst & Young, KPMG, and PwC, and the 2012 edition of the report of the project for the European Commission "Effective Tax Levels using the Devereux Griffith Methodology" and previous editions of this report. Furthermore we collect tax data by evaluating the cross-border dividend taxation report by Freshfields Bruckhaus Deringer. The ownership data was taken from BvD Amadeus. The data for all other variables was taken from Thomson Reuters Worldscope. Panel B reports Pearson correlations for all variables used in the primary analyses. Panel C reports Pearson correlations for the largest shareholder's tax incentive, the firm's corporate tax rate τ_C, the largest investor's dividend tax rate τ_D, and the largest investor's interest tax rate τ_I. All correlations in bold are not significant at and below the 10% level. In order to reduce the effect of outliers, we winsorize all continuous variables at the 1 percent and 99 percent level.

Table 4

Analysis of the Tax Incentives of the Largest Investor and Capital Structure Decisions

Method	**Pooled OLS**		**Fixed Effects Panel**	
Dependent Variable	***BookLev*** $_{i,t}$		***BookLev*** $_{i,t}$	
Independent Variables	Coefficient	t-statistics	Coefficient	t-statistics
LShTaxInc $_{i,t}$	**0.2726 *** **	**5.36**	**0.1381 *** **	**2.70**
IndBookLev $_{i,t}$	0.3869 **	3.21	0.1610 *	1.90
Tang $_{i,t}$	0.2336 ***	10.65	0.2371 ***	5.40
Profit $_{i,t}$	-0.3209 ***	-11.27	-0.2973 ***	-9.85
Size $_{i,t}$	0.0428 ***	14.43	0.0933 ***	9.93
MtB $_{i,t}$	0.0139 ***	7.44	0.0189 ***	10.62
Infl $_{i,t}$	0.0008	0.33	0.0020	1.00
Industry fixed effects	YES			
Year fixed effects	YES		YES	
Country fixed effects	YES			
Firm fixed effects			YES	
Firm-year observations	8,652		8,652	
Firms	2,645		2,645	
Adjusted R^2	0.313		0.193	

Notes: This table presents the relation between the largest investor's (net) tax incentives and book leverage. Regression results are reported for two methodological specifications: (1) a pooled-OLS regression with fixed industry-, country- and year-effects, and (2) a panel regression model with firm-fixed-effects. All regressions are estimated with an intercept included (not tabulated). We report t-statistics based on standard errors clustered by firms (Petersen 2009). All t-statistics in the pooled OLS specifications are corrected for heteroscedasticity according to White (1980). *, **, and *** indicate significance at the 10, 5, and 1 % levels, respectively. All continuous variables are winsorized at the first and 99th percentiles. See Appendix A for variable definitions.

Table 5

Tax Incentive Heterogeneity and Capital Structure Decisions

Method	**Pooled OLS**		**Fixed Effects Panel**		**Pooled OLS**		**Fixed Effects Panel**	
Dependent Variable	***BookLev*** $_{i,t}$		***BookLev*** $_{i,t}$		***BookLev*** $_{i,t}$		***BookLev*** $_{i,t}$	
Independent Variables	Coefficient	t-statistics	Coefficient	t-statistics	Coefficient	t-statistics	Coefficient	t-statistics
LShTaxInc $_{i,t}$	0.3334 ***	5.36	0.2366 ***	4.44	0.3653 ***	4.58	0.2308 ***	3.38
HeteroD $_{i,t}$	0.0016	1.52	0.0017 **	1.98				
LShTaxInc $_{i,t}$ ***x HeteroD*** $_{i,t}$	**-0.0521 *** **	**-3.66**	**-0.0557 ** **	**-4.96**				
Δ 2ndTaxInc $_{i,t}$					**0.1555 ** **	**2.41**	**0.1181 ** **	**2.53**
IndBookLev $_{i,t}$	0.3763 ***	3.07	0.2660 **	2.19	0.3831 ***	3.06	0.1621 *	1.91
Tang $_{i,t}$	0.2336 ***	10.76	0.2320 ***	5.36	0.2325 ***	10.58	0.2360 ***	5.45
Profit $_{i,t}$	-0.3210 ***	-11.29	-0.2976 ***	-9.92	-0.3228 ***	-11.39	-0.2982 ***	-9.95
Size $_{i,t}$	0.0432 ***	14.70	0.0937 ***	10.10	0.0434 ***	14.66	0.0938 ***	10.06
MtB $_{i,t}$	0.0139 ***	7.48	0.0188 ***	10.74	0.0138 ***	7.53	0.0188 ***	10.65
Infl $_{i,t}$	0.0006	0.24	0.0014	0.68	0.0008	0.31	0.0019	0.95

(The table is continued on the next page.)

Table 5 (Continued)

Tax Incentive Heterogeneity and Capital Structure Decisions

Method	**Pooled OLS**	**Fixed Effects Panel**	**Pooled OLS**	**Fixed Effects Panel**
Dependent Variable	$BookLev_{i,t}$	$BookLev_{i,t}$	$BookLev_{i,t}$	$BookLev_{i,t}$
Industry fixed effects	YES		YES	
Year fixed effects	YES	YES	YES	YES
Country fixed effects	YES		YES	
Firm fixed effects		YES		YES
Firm-year observations	8,652	8,652	8,652	8,652
Firms	2,645	2,645	2,645	2,645
Adjusted R^2	0.315	0.190	0.319	0.171

Notes: This table presents the incremental effect of the second largest investor's (net) tax incentive and how tax incentive heterogeneity (i.e., the presence of a second-largest investor with contrary tax incentives) affects the relation between the largest investor's (net) tax incentives and book leverage. We add an indicator variable for tax incentive heterogeneity (HeteroD) as well as an interaction term with our measure for the largest investor's (net) tax incentives (*LSHTaxInc)* to our baseline regression model. We also add the difference between the second largest shareholder's tax incentive and the largest shareholder's tax incentive $\Delta 2ndTaxInc_{i,t} = 2ndTaxInc_{i,t} - LShTaxInc_{i,t}$. Regression results are reported for two methodological specifications: (1) a pooled-OLS regression with fixed industry-, country- and year-effects, and (2) a panel regression model with firm-fixed-effects. All regressions are estimated with an intercept included (not tabulated). We report t-statistics based on standard errors clustered by firms (Petersen 2009). All t-statistics in the pooled OLS specifications are corrected for heteroscedasticity according to White (1980). *, **, and *** indicate significance at the 10, 5, and 1 % levels, respectively. All continuous variables are winsorized at the first and 99th percentiles. See Appendix A for variable definitions.

Table 6

Ownership Concentration and the Relationship between the Tax Incentive of the Largest Shareholder and Capital Structure Decisions

Method	**Pooled OLS**		**Pooled OLS**		**Pooled OLS**		**Pooled OLS**		**SUEST**	
OwnPower - Quartile	*Q1*		*Q2*		*Q3*		*Q4*		*Δ(|Q4- Q1|)*	
Dependent Variable	***BookLev*** $_{i,t}$		***BookLev*** $_{i,t}$		***BookLev*** $_{i,t}$		***BookLev*** $_{i,t}$		***BookLev*** $_{i,t}$	
Independent Variables	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.	*Coeff.*	χ^2 *-stat.*
LShTaxInc $_{i,t}$	**0.1907 ****	**2.08**	**0.2159 ****	**2.46**	**0.2929 *****	**3.69**	**0.4278 *****	**5.19**	***0.2370 ****	***3.21***
IndBookLev $_{i,t}$	0.2862	1.03	0.1903	0.64	0.6665 **	2.41	0.6020 **	2.09		
Tang $_{i,t}$	0.2611 ***	7.42	0.2736 ***	9.09	0.2414 ***	6.41	0.1594 ***	3.14		
Profit $_{i,t}$	-0.2003 ***	-4.83	-0.2663 ***	-4.81	-0.4069 ***	-5.76	-0.4985 ***	-7.42		
Size $_{i,t}$	0.0421 ***	9.43	0.0391 ***	8.86	0.0400 ***	8.83	0.0451 ***	8.22		
MtB $_{i,t}$	0.0151 ***	6.41	0.0144 ***	3.98	0.0099 **	2.21	0.0162 ***	5.05		
Infl $_{i,t}$	0.0059	0.76	-0.0018	-0.52	0.0065	1.07	-0.0037	-0.83		
Industry fixed effects	YES		YES		YES		YES		*YES*	
Year fixed effects	YES		YES		YES		YES		*YES*	
Country fixed effects	YES		YES		YES		YES		*YES*	
Firm-year observations	2,163		2,163		2,163		2,163		*4,326*	
Firms	991		1,040		906		876		*1,771*	
Adjusted R^2	0.302		0.339		0.322		0.366		*n/a*	

(The table is continued on the next page.)

Table 6 (Continued)

Ownership Concentration and the Relationship between the Tax Incentive of the Largest Shareholder and Capital Structure Decisions

Notes: This table presents how ownership power moderates the relation between the largest investor's (net) tax incentives and book leverage. We partition our sample into quartiles (*Q1-Q4*) based upon the difference between the percentage of share held by the largest vs. second-largest investors. Results for our baseline regression model are presented for each quartile, respectively. All regressions are estimated with an intercept included (not tabulated). We report t-statistics (z-statistics) based on standard errors clustered by firms (Petersen 2009) and corrected for heteroscedasticity according to White (1980). *, **, and *** indicate significance at the 10, 5, and 1 % levels, respectively. All continuous variables are winsorized at the first and 99th percentiles. See Appendix A for variable definitions.

Table 7

Ownership Concentration, Tax Incentive Heterogeneity, and Capital Structure Decisions

Method	**Pooled OLS**		**Pooled OLS**		**Pooled OLS**		**Pooled OLS**		**SUEST**	
OwnPower - Quartile	*Q1*		*Q2*		*Q3*		*Q4*		*Δ(|Q4- Q1|)*	
Dependent Variable	***BookLev*** $_{i,t}$		***BookLev*** $_{i,t}$		***BookLev*** $_{i,t}$		***BookLev*** $_{i,t}$		***BookLev*** $_{i,t}$	
Independent Variables	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.	*Coeff.*	χ^2 *-stat.*
LShTaxInc $_{i,t}$	0.2684 ***	2.61	0.3014 ***	3.02	0.3876 ***	4.52	0.4707 ***	4.96	*0.2023*	*2.06*
HeteroD $_{i,t}$	0.0055 **	2.16	0.0006	0.29	-0.0011	-0.45	0.0011	0.61	*0.0044*	*1.53*
LShTaxInc $_{i,t}$ ***x HeteroD*** $_{i,t}$	**-0.1029 *** **	**-4.59**	**-0.0739 *** **	**-2.92**	**-0.0650 ** **	**-2.45**	**-0.0276**	**-1.58**	***0.0753 ** **	***6.38***
LShTaxInc $_{i,t}$ *+ LShTaxInc* $_{i,t}$ *x HeteroD* $_{i,t}$									*0.2775 ** **	*4.41*
IndBookLev $_{i,t}$	0.2587	0.88	0.1773	0.57	0.6452 **	2.44	0.6020 **	2.09		
Tang $_{i,t}$	0.2575 ***	7.25	0.2736 ***	9.05	0.2396 ***	6.44	0.1594 ***	3.14		
Profit $_{i,t}$	-0.1954 ***	-4.67	-0.2716 ***	-4.82	-0.4055 ***	-5.73	-0.4985 ***	-7.42		
Size $_{i,t}$	0.0425 ***	9.41	0.0402 ***	9.33	0.0404 ***	9.04	0.0451 ***	8.22		
MtB $_{i,t}$	0.0147 ***	6.31	0.0147 ***	4.06	0.0102 **	2.29	0.0162 ***	5.05		
Infl $_{i,t}$	0.0057	0.71	-0.0017	-0.46	0.0070	1.17	-0.0037	-0.83		

(The table is continued on the next page.)

Table 7 (Continued)

Ownership Concentration, Tax Incentive Heterogeneity, and Capital Structure Decisions

Method	**Pooled OLS**	**Pooled OLS**	**Pooled OLS**	**Pooled OLS**	**SUEST**
OwnPower - Quartile	*Q1*	*Q2*	*Q3*	*Q4*	*Δ(|Q4- Q1|)*
Dependent Variable	***BookLev*** $_{i,t}$	***BookLev*** $_{i,t}$	***BookLev*** $_{i,t}$	***BookLev*** $_{i,t}$	***BookLev*** $_{i,t}$
Industry fixed effects	YES	YES	YES	YES	*YES*
Year fixed effects	YES	YES	YES	YES	*YES*
Country fixed effects	YES	YES	YES	YES	*YES*
Firm-year observations	2,163	2,163	2,163	2,163	*4,326*
Firms	991	1,040	906	876	*1,771*
Adjusted R^2	0.310	0.344	0.326	0.367	*n/a*

Notes: This table presents how tax incentive heterogeneity (i.e., the presence of a second-largest investor with contrary tax incentives) affects the relation between the largest investor's (net) tax incentives and book leverage depending on ownership power. We partition our sample into quartiles (*Q1-Q4*) based upon the difference between the percentage of share held by the largest vs. second-largest investors. Results for our regression model including our indicator variable for tax incentive heterogeneity (HeteroD) are presented for each quartile, respectively. All regressions are estimated with an intercept included (not tabulated). We report t-statistics (z-statistics) based on standard errors clustered by firms (Petersen 2009) and corrected for heteroscedasticity according to White (1980). *, **, and *** indicate significance at the 10, 5, and 1 % levels, respectively. All continuous variables are winsorized at the first and 99th percentiles. See Appendix A for variable definitions.

Table 8

Analysis of the Tax Incentives of the Largest Investor and Capital Structure Decisions and the Role of Corporate Tax Rates

Method	**Fixed Effects Panel**	
Dependent Variable	***BookLev*** $_{i,t}$	
Independent Variables	Coefficient	t-statistics
LShTaxInc $_{i,t}$	**0.1385 *****	**2.71**
$\tau_{C\,i,t}$	**0.0163**	**0.13**
IndBookLev $_{i,t}$	0.1609 *	1.90
Tang $_{i,t}$	0.2373 ***	5.45
Profit $_{i,t}$	-0.2972 ***	-9.84
Size $_{i,t}$	0.0933 ***	9.94
MtB $_{i,t}$	0.0189 ***	10.62
Infl $_{i,t}$	0.0020	1.00
Year fixed effects	YES	
Firm fixed effects	YES	
Firm-year observations	8,652	
Firms	2,645	
Adjusted R^2	0.169	

Notes: This table presents replications of the results presented in Table 4 including the incremental effect of corporate tax rates. Regression results are reported for a panel regression model with firm-fixed-effects. All regressions are estimated with an intercept included (not tabulated). We report t-statistics based on standard errors clustered by firms (Petersen 2009). *, **, and *** indicate significance at the 10, 5, and 1 % levels, respectively. All continuous variables are winsorized at the first and 99th percentiles. See Appendix A for variable definitions.

Teil 5:

Zusammenfassung der Forschungsergebnisse

Englisch

This cumulative dissertation, containing three independent manuscripts, addresses the strategic interdependencies between company directors, auditors and (potential) investors. Each study examines a separate question, which, taken as a whole, provides a more thorough understanding of the aforementioned interdependencies and its externalities.

The first study (*"Premature Earnings Announcements and the Auditor's Response to Client-Specific Business Risk"*) examines the consequences of premature earnings announcements on the subsequent audit process and auditor-client contracting. The results of the study suggest that audit clients pay higher fees and are more likely to experience an auditor turnover during the following year when earnings are released before audit completion. This is consistent with premature earnings announcements imposing additional business risk to the auditor. Also consistent with premature earnings announcements increasing auditor business risk, I find that premature earnings announcements are positively associated with the frequency with which audit clients are able to use discretionary accruals to meet or beat analysts' earnings forecasts. Furthermore, I find that strong investor protection regimes mitigate the association between premature earnings announcements and audit fees. Taken together, my results are consistent with auditors viewing premature earnings announcements as an important determinant of auditor business risk that, in turn, affects auditor-client contracting decisions.

The second study (“*Does Crisis-Induced Fee Pressure Prevent Auditors from Pricing Risk?”*) investigates the impact of the recent crisis on audit fees and, specifically, whether crisis-induced fee pressure prevents auditors from pricing the risk of material misstatements in a firm’s financial reporting (RoMM). During the crisis, I find audit fees in Europe declined by over 5 percent on average (everything else equal). Fee reductions are negatively correlated with crisis-related increases in RoMM, My findings, thus, suggest that auditors generally are able to price increases in RoMM despite facing crisis-induced downward fee pressure. This relation, however, is restricted to firms with low bargaining power. When the balance of power tilts toward the audit client auditors seem unable to withstand downward fee pressure, even if an increase in RoMM demands higher audit effort. My results, hence, demonstrate that economic downturns significantly influence the pricing of audit engagements and highlight the importance of and tension between the auditor’s risk considerations and client bargaining power in audit fee negotiations.

The third study (“*Investor Tax Incentive Heterogeneity, Ownership Power, and Capital Structure Decisions“*) investigates whether and how heterogeneous tax incentives among investors affect capital structure decisions. Confirming the latest literature, our results suggest that the largest investor’s (net) tax incentive influences the firm’s capital structure. Furthermore, we find that the second largest investor’s tax incentives are incrementally relevant for capital structure decisions. We thereby contribute to the literature on corporate governance and blockholdings by documenting that the second-largest investors are indeed able to exert measurable influence on capital structure decisions of the firm. In line with this result, we show that tax incentive heterogeneity between the largest and second largest investor reduces the positive influence of the largest investor’s tax incentive on the firm’s capital structure.

Deutsch

Die vorliegende Dissertationsschrift, bestehend aus drei Einzelbeiträgen, thematisiert die strategischen Interdependenzen zwischen Unternehmensführung, Abschlussprüfer und (potentiellen) Investoren. Dabei untergliedern die Einzelbeiträge den Gesamtzusammenhang in einzelne Teilaspekte und untersuchen jeweils spezifische Fragestellungen, um so insgesamt zu einem besseren Verständnis der Interdependenzen zwischen den vorgennannten Parteien und den daraus entstehenden Externalitäten beizutragen.

Der erste Beitrag (“*Premature Earnings Announcements and the Auditor’s Response to Client-Specific Business Risk”*) untersucht die Konsequenzen voreiliger Ergebnisbekanntmachungen auf den Prozess der Abschlussprüfung und das Vertragsverhältnis zwischen Unternehmen und Abschlussprüfer. Die Ergebnisse deuten darauf hin, dass Unternehmen, welche Unternehmensergebnisse vor Beendigung der Abschlussprüfung veröffentlichen, höhere Prüfungshonorare zahlen und mit höherer Wahrscheinlichkeit einen Prüferwechsel im Folgejahr erfahren. Dieses Ergebnis steht im Einklang mit der Annahme, dass die voreilige Veröffentlichung von Unternehmensergebnissen zu einem höheren Geschäftsrisiko des Abschlussprüfers führt. Ebenso konsistent mit dieser Annahme zeigen die Ergebnisse der Studie, dass Unternehmen, welche ihre Ergebnisse vor Beendigung der Abschlussprüfung veröffentlichen, häufiger in der Lage sind, Analystenerwartungen mit Hilfe von diskretionären Periodenabgrenzungen zu erfüllen oder zu übertreffen. Des Weiteren zeigen die Analysen, dass der Zusammenhang zwischen voreiligen Ergebnisveröffentlichungen und Prüfungshonoraren durch ein starkes Anlegerschutz Umfeld abgeschwächt wird. Insgesamt unterstützen meine Ergebnisse die Annahme, dass Abschlussprüfer die voreilige Veröffentlichung von Unternehmensergebnissen als

einen wichtigen Faktor für ihr Geschäftsrisiko betrachten, welches sich wiederum signifikant auf das Vertragsverhältnis zwischen Abschlussprüfer und Unternehmen niederschlägt.

Der zweite Beitrag (*"Does Crisis-Induced Fee Pressure Prevent Auditors from Pricing Risk?"*) untersucht den Einfluss der jüngsten Wirtschaftskrise auf die Abschlussprüfungshonorare börsennotierter Unternehmen in Europa. Im Speziellen wird der Frage nachgegangen, ob kriseninduzierter Preisdruck Abschlussprüfer daran hindert, das Risiko wesentlicher Fehler in der Finanzberichtertstattung des Mandanten in den Abschlussprüfungshonoraren (RoMM) einzupreisen. Die Analysen zeigen, dass die Abschlussprüfungshonorare in Europa während der Krise durchschnittlich um etwa fünf Prozent zurückgehen (ceteris paribus). Der Rückgang der Honorare ist dabei negativ korreliert mit krisenbedingten Anstiegen des Fehlerrisikos. Die Ergebnisse deuten also darauf hin, dass Abschlussprüfer auch in Zeiten der Wirtschaftskrise, trotz erhöhten Preisdrucks, generell in der Lage sind, Fehlerrisiken einzupreisen. Dieser Zusammenhang beschränkt sich allerdings auf Unternehmen mit geringer Verhandlungsmacht gegenüber dem Abschlussprüfer. Wenn die Verhandlungsmacht zu Gunsten des Prüfungsmandanten ausschlägt, scheinen Abschlussprüfer nicht mehr in der Lage, sich dem Preisdruck zu widersetzen, auch wenn eine Erhöhung des Fehlerrisikos einen gesteigerten Prüfungsaufwand verlangt. Meine Ergebnisse demonstrieren also, dass makroökonomische Rahmendbedingungen einen signifikanten Einfluss auf die Preisgestaltung von Abschlussprüfungen ausüben und unterstreichen das Spannungsverhältnis zwischen der Risikoeinschätzung des Abschlussprüfers und der Verhandlungsmacht des Prüfungsmandanten in Honorarverhandlungen.

Der dritte Beitrag (*"Investor Tax Incentive Heterogeneity, Ownership Power, and Capital Structure Decisions"*) untersucht ob und in welchem Ausmaß heterogene

Steueranreize (relative steuerliche Bevorteilung von Erträgen aus bereitgestelltem Fremdkapital gegenüber bereitgestelltem Eigenkapital) großer Anteilseigner die Kapitalstruktur von Unternehmen beeinflusst. Die jüngste Literatur bestätigend, zeigen unsere Resultate, dass sich die Steueranreize des größten Anteilseigners signifikant auf die Kapitalstruktur (Fremdkapitalquote) des Unternehmens auswirken. Des Weiteren zeigen wir, dass sich die Steueranreize des zweitgrößten Anteilseigners darüber hinaus ebenso auf die Kapitalstruktur auswirken. Im Einklang damit, zeigen unsere Analysen, dass sich der Einfluss der Steueranreize des größten Anteilseigners auf die Kapitalstruktur signifikant verringert, sofern sich die Steueranreize des zweitgrößten Anteilseigners konträr zu denen des größten Anteilseigners darstellen.