Students, Standards, and Survivors

Empirical Evidence on
Accounting Students‘ Career Choices,
the Costs and Benefits of Accounting Services, and
the Peer Review Process in Academic Accounting

Dissertation

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Zusammenfassung

Das externe Rechnungswesen ist ein komplexes System aus Standards, Regeln und Institutionen, die mit dessen Ausgestaltung und Durchsetzung befasst sind. In der vorliegenden Arbeit wird dieses komplexe Konstrukt aus drei Sichtweisen betrachtet.

Der erste Teil *(Students)* rückt die Personen, die künftig in diesem und verwandten Bereichen arbeiten werden in den Mittelpunkt. Im Rahmen einer Befragung von Studierenden wurde der Zusammenhang von Studien- und Karrierepläne sowie Persönlichkeitszügen untersucht. Studierende des externen Rechnungswesens, insbesondere der Steuerlehre, zeigen Charakteristika, die dem „Erbsenzähler"-Stereotypen entsprechen. Ihre KommilitonInnen in Controlling und Unternehmensfinanzierung zeigen hingegen kaum Unterschiede zu Studierenden anderer Fachbereiche. Hinsichtlich des Berufseinstiegs ist das externe Rechnungswesen deutlich beliebter als die entsprechende Studienvertiefung. Allerdings übersetzt sich dies nicht in die Absicht ein Berufsexamen zu absolvieren. Die diesbezüglichen Ergebnisse entsprechen denen der Studienwahl.

Im zweiten Teil *(Standards)* wird eine regulierungsorientierte Perspektive eingenommen. Während Unternehmen bestimmte rechnungslegungsbezogene Leistungen in Anspruch nehmen müssen (z.B. Abschlussprüfung), können sie durch die Nachfrage zusätzlicher Leistungen (z.B. Steuerberatung) ihren Nutzen aus der Rechnungslegung maximieren. Vorliegend wird dieser Zusammenhang für 18 Europäische Länder empirisch untersucht. Es zeigt sich, dass die Kosten der Unternehmen zwischen den einzelnen Ländern stark variieren. Unternehmen scheinen durchaus opportunistisch zu handeln. Allerdings finden sich auch Anzeichen dafür, dass die unternehmensseitigen Kosten im Wesentlich durch die Umsetzung regulatorischer Vorgaben verursacht werden. Opportunistisches Verhalten könnte dann primär steuerlich induziert sein. Ein starker nationaler Rechts- und Regulierungsrahmen hat einen mäßigenden Einfluss auf diesen Zusammenhang.

Der abschließende dritte Teil *(Survivors)* fokussiert auf den Begutachtungsprozess in der Rechnungslegungsforschung. Untersucht wird die Zeitdauer, die notwendig ist, um diesen Prozess erfolgreich zu überstehen. Es zeigen sich Unterschiede zwischen drei führenden Zeitschriften und einigen Charakteristika der Artikel. Eine detaillierte Analyse für *The Accounting Review* deutet darauf hin, dass der Prozess zwar insgesamt effizient ist, Bedenken bezüglich dessen Fairness aber möglicherweise begründet sind.

Abstract

Financial Accounting is a complex system framed and enforced by numerous standards, rules and institutions. In this dissertation, I analyze this complex construct through three distinct "lenses".

In the first part *(Students),* the persons who will most likely work in financial accounting or related areas are the center of attention. Based on a survey of German business students, the relation between personality traits as well as academic and occupational choices is analyzed. Students majoring in financial and, particularly, tax accounting show characteristics similar to the "bean counter" stereotype. In contrast, managerial accounting and corporate finance students are closer to other business economics students. Since financial accounting is much more popular as a choice for the first job than as a major field of study, distinct personality traits diminish. However, this finding does not translate into the intention to pursue professional examinations. In this case, results are comparable to those for the choice of the major field of study.

In the second part *(Standards),* the analysis shifts to a regulatory perspective. It is based on the notion that companies have different incentive to spend on accounting-related services. Some of those costs are necessary to comply with rules and regulations (e.g., statutory audit) but other spending is discretionary and rooted in an intent to maximize companies' benefits (e.g., tax advisory). For a sample of 18 European countries, we show that the costs of accounting-related services vary strongly between countries. Even though we find some evidence on opportunistic spending, most of the costs seem to be related to the compliance with rules and regulations. Hence, companies' observed opportunistic behavior could result from tax incentives. This effect is mitigated by stronger country-level governance mechanisms.

The third and final part *(Survivors)* focuses on the peer review process in academic accounting. A comparative analysis of three leading North-American accounting journals shows differences in the duration of the peer review process, which are partly attributable to the underlying characteristics of the articles. A detailed analysis for *The Accounting Review* further indicates a certain efficiency of the process. However, reasonable concerns regarding the fairness of the peer review process remain.

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INTRODUCTORY SUMMARY

Nobel Prize laureates Akerlof and Shiller (2009) refer to accountants as "heroes of capitalism" who "are the cool minded sheriffs of its Wild West" (p. 29). In their high praise for the accounting profession, they break down the complex system of standards, rules, and institutions into individual persons working behind the curtain. Even though the advent of Big Data and artificial intelligence is changing the landscape of the accounting and auditing professions (Financial Times 2016), it is still a "people's business," relying heavily on human knowledge and expertise. In the auditing profession, this becomes obvious when looking at the professional standards. ISA 200.7 requires "that the auditor exercise[s] professional judgment and maintain[s] professional skepticism." By referring to mindset (skepticism), training, and knowledge (judgement), the individual, not an organization, becomes the focal point.

Akerlof's and Shiller's charming trick to focus on "accountants" neglects many other parties involved in the accounting process. Accountants themselves work in "accounting practice," preparing financial reports for several types of internal (e.g., management) or external users (e.g., shareholders, tax authorities). The latter, in particular, demands a neutral and unbiased insight towards the financial position of a company. To ensure comparability and a level playing field between companies, financial reporting is regulated by numerous accounting standards and policies.[1] Political factors and economic conditions may affect this standard setting or legislative process (Wolk et al. 2013). During the process, a multitude of interested parties exerts influence on the outcome. Research on the political economy of standard setting (e.g., Gipper et al. 2014; Fülbier and Klein 2015) identified other standard setters, professional organizations, auditors, users, and preparers of financial statements, as well as academics as notable contributors. Some of the participants have dual roles. Companies are preparers and users (e.g., to check on customers) of financial statements. Auditors exercise a control function over companies but also provide accounting-related advisory and consulting services. However, the costs of implementing and adopting new policies are usually concentrated at companies; benefits are widespread between the users. The design of socially optimal standards, taking the total amount and distribution of profits into consideration, would require profound knowledge of the preferences and means of all affected parties (Sunder 1988). Nevertheless, socially optimal does not imply individually optimal. Companies, for example, could still engage

[1] These can be designed at the national (e.g., United States Generally Accepted Accounting Principles, US-GAAP; German Commercial Code, HGB), supranational (e.g., Accounting Directives of the European Union), and international (e.g., International Financial Reporting Standards, IFRS) level.

in impression management (Brennan and Merkl-Davies 2013), accrual-based earnings management (Dechow et al. 2010), or real activities manipulation (Roychowdhury 2006; Cohen et al. 2008) to maximize their benefits from given policies.

Academic research is one possible avenue to mitigate these concerns. Oler et al. (2010) define accounting research as "research into the effect of economic events on the process of summarizing, analyzing, verifying, and reporting standardized financial information, and on the effects of reported information on economic events" (p. 639). Their definition comprises ex ante research on the potential effects (Schipper 1994) and ex post research to examine the actually desired and unintended consequences of policies (Brüggemann et al. 2013). However, when a problem occurs or a new policy project comes up, standard setters need research results in a timely manner (Fülbier et al. 2009). Hence, the long-term character of the academic research and publication could impede evidence-based standard setting as called for by researchers (e.g., Gassen and Günther 2014) and practitioners (e.g., IASB Research Forum). Nonetheless, academic research in accounting is not limited to projects with direct implications for accounting standard-setters, as this thesis may further prove.

In this thesis, I have a further look at accounting through the three "lenses" elaborated above: educational, policy, and academic. Each "lens" constitutes one part of the thesis. Part A covers the educational "lens" by analyzing the personality traits of future accountants; Part B focuses on companies' benefits gained from increased costs incurred for accounting-related services, offering a more policy-related research question; and Part C is grounded in the academic sphere, providing empirical evidence on the peer review and publication process in academic accounting. All parts share a common quantitative, econometrical or "main stream" (Chua 1986) methodology. Since the choice of research method depends on the research question (Smith 2015), each part offers distinct features in the research design and data. The first analysis is grounded in survey research (van der Stede et al. 2005), the second is based on archival data (the predominant method in accounting research, cf. Merchant 2010; Oler et al. 2010), and the third on a hand-collected data and quantitative content analysis (Krippendorf 2012). The thesis is structured as follows.

Part A *(Students)* takes an educational perspective. In this joint project with Jan Krüger, Thomas R. Loy, and Christian Scharf, we follow Akerlof's and Shiller's implicit focus on accountants as individual persons and analogously ask: "What does it take to be a

sheriff?" We analyze, precisely, how the career aspirations of students in financial, managerial, and tax accounting, as well as corporate finance (FACT), relate to distinct personality traits. To our knowledge, we are the first to provide Continental European evidence for accounting-related students. Personality traits are measured using the *Big Five Inventory* commonly used in human resources and psychology. Prior research suggests that individual characteristics are potential predictors for academic and vocational choices. We build upon *Social Identification Theory* and the stereotype literature to explain the relation between personality traits and academic and/or career aspirations in the FACT-related subfields. Based on this view of the profession, students would either conform to the dull and boring but trustworthy "bean counter" stereotype or the more talkative and risk-affine "business professional" stereotype.

Our results indicate that FACT students can be separated into two distinct groups. Students majoring in managerial accounting and corporate finance show personality traits closer to business, management, and economics students with other (non-FACT) majors. Financial and tax accounting students form the second group and show characteristics related to ethical and responsible behavior as well as conservative values and judging in conventional terms. Results are more pronounced for students major in tax accounting who, additionally, have lower levels of extraversion. Taken together, the results indicate that tax accounting students are closest to the "bean counter" stereotype, followed by students in financial accounting. Repeating the analysis for students' first job preferences, we report consistent results. Interestingly, the share of students with occupational aspirations in financial accounting is much higher than the share of students majoring in this sub-field. However, the relative share of students interested in a professional examination is lower for tax accounting than auditing. Focusing on personality traits, we find personality traits similar and partly more pronounced than for the choice of the major field of study. Our results should be interpreted cautiously. The low explanatory power of our multivariate analysis and diminishing results in the sample with the lowest share of FACT students suggests that personality traits alone are a weak predictor of occupational outcomes. Additionally, the reported differences are statistically significant, but the magnitude of the differences is rather small. Nonetheless, in line with prior research, inferences drawn from personality traits are helpful in understanding the underlying factors of academic and vocational outcomes.

Part B *(Standards)* relates to the regulatory perspective of accounting by examining the costs and benefits of accounting-related services for European companies. This part is a joint project with Thomas R. Loy. It builds upon the notion that firms incur certain unavoidable costs of accounting and tax regulation (e.g., statutory audits) but can voluntarily increase their spending (costs) to maximize their benefits in terms of accounting (earnings quality) and taxation (tax expenses) outcomes. The European Union provides an interesting setting to test this relation since accounting and tax laws are harmonized to a different extent. Furthermore, since our analysis does not rely on country- and not firm-level data, it extends prior literature by including small- and medium-sized companies. We hypothesize that the degree to which companies benefit from accounting-related services varies with the country-level spending on those services. Furthermore, drawing from the financial economics literature, we expect that these benefits are mitigated by country-level governance mechanisms as well as the quality of accounting and tax regulation. To capture the broad array of potential incentives and implementation forms with regard to accounting-related services, we employ three different measures for the potential benefits: (1) accrual-based earnings management measured by discretionary accruals, (2) real activities management estimated by abnormal cash flows, and (3) taxation operationalized by the difference between companies' effective and statutory tax rates.

Costs of accounting-related services vary between US $5.39 in Estonia and US $12.76 per 1m US-$ of GDP in the Netherlands. Our results show a significantly negative relation between spending on accounting-related services and earnings quality. However, lower earnings quality does not translate into lower tax rates. Taken together, the primary results indicate that firms use accrual-based earnings as well as real activities management to create a less bumpy, smoother earnings path. This result is in line with prior literature highlighting the different financial reporting and tax incentives of private companies as opposed to listed firms. Furthermore, we find modest evidence on the mitigating effect of country-level governance mechanisms on the relation between spending on accounting-related services and earnings quality. Contrariwise, higher quality financial reporting and taxation systems have virtually no effect. Our results are robust to alternative specifications of the dependent variables as well as tests for endogeneity.

Part C *(Survivors)* covers the third "lens" on accounting emphasized previously, namely research. Accounting research stands at the crossroads of the two areas addressed in parts A and B. Dealing with the determinants, process, and (economic) effects of accounting

regulation, publications prepared, reviewed, and edited by researchers – single researchers or academic accountants – are the ample result of this "lens." Articles published in (top tier) journals are the most prominent forms of publication. Research results are not only of interest to the research community, standard setters, and accounting practitioners — the publication itself is of mere importance to the researchers (Survivors). Tenure decisions, research grants, and other outcomes are linked to publications. However, the publication process in academic accounting is oftentimes considered exhaustive and lengthy. In an explorative analysis, this part deals with a certain element of the publication process: peer review, which is the distinguishing feature of academic journals. It covers the peer review process' duration for three leading journals: *The Accounting Review* (TAR), *Journal of Accounting and Economics* (JAE), and *Journal of Accounting Research* (JAR). For TAR, it further investigates determinants and fairness (editorial favoritism) of the peer review process.

The results show a median duration of the peer review process of 487 days. TAR and JAR show similar durations: 457.5 and 450.0 days, respectively. For JAE, the median duration is 590.5 days. Top accounting journals did indeed increase the available journal space to meet increasing publication demand from scholars. The observed increase in the duration of the peer review process may, hence, be a strategic reaction to address remaining excess demand in publication space by the scholarly community. Besides these overall trends, certain other- and article-specific factors seem to relate to the duration of the peer review process. Particularly, conference-based papers benefit from an accelerated process. Dissertation-based papers usually take longer (at least for JAE and JAR). Co-authorships are beneficial in TAR but show diminishing returns for JAE and JAR. Detailed analysis for TAR suggests that the peer review process is certainly efficient, i.e., not fundamentally influenced by characteristics of article or authors. Noticeably, high-quality articles which received more citations following publication pass the process faster. Additionally, the effect of fairness indicators is also investigated. If institutional bonds between the accepting editor and one of the authors exist, the time spent in peer review apparently decreases. This result, however, should be interpreted with caution, as it could simply reflect a self-selection of high-quality faculty into high-quality journals. Furthermore, mentioning members of the editorial staff (e.g., associate editors) in the acknowledgements is associ-

ated with a significant decrease in peer review duration. Although this could induce strategic behavior by the authors, quality feedback from a member of the editorial team is also a possible criterion for improving the paper in a timely fashion

PART A:
STUDENTS

German Business Students' Career Aspirations
in Accounting, Taxation & Finance
– The Relation to Personality Traits

Abstract

We analyze the interrelation between personality traits and German business students' propensity to select financial accounting, managerial accounting, tax accounting, or corporate finance as their major field of study, to seek a first job in one of these areas as well as their intention to pursue a professional examination in audit or tax. The study is based on a survey of 428 students from a German university. Personality traits are measured using the Big Five Inventory, commonly used in psychology and human resources. In contrast to prior studies, we differentiate between students in managerial, financial, and tax accounting, as well as finance. Our results indicate different personality traits for students interested in managerial accounting and corporate finance compared to those interested in financial and tax accounting. The latter, in particular, conform to the precise and trustworthy but dull and boring "bean counter" stereotype. We find weaker effects for financial accounting students, which are closer to tax accounting regarding the choice of the major field of study and more diverse with regard to the intention of a first job. Students interested in professional examinations display "bean counter"-like personality traits as well.

This part of the thesis is a joint project with Jan Krüger, Thomas R. Loy, and Christina Scharf.

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1 Introduction

Accounting scholars have long been concerned with the question of *why* students choose to major or pursue a career in accounting. The perception of accounting, the experience in the first accounting course, as well as the impact of job-related attributes like monetary compensation and prestige have been identified as potential reasons (e.g., Paolillo and Estes 1982; Tan and Laswad 2009). A second stream of research examines personality types of accounting compared to non-accounting students. Results from psychology and research in human resources indicate the interrelation of personality types/traits and academic or vocational outcomes (Rottinghaus et al. 2002; Nieken and Störmer 2010). Prior studies in accounting often rely on the *Myers-Briggs Type Indicator* (MBTI; e.g., Wheeler 2001). Undergraduate students are more introverted, rely less on intuition and feeling, and are more apt to make decisions based on judging than perception. A longitudinal study by Swain and Olsen (2012) provides additional evidence. The respective personality is more likely to join and remain in the accounting profession. Put differently, prior research documents attributes typically connected to the "bean counter" stereotype. For US students, these attributes have become more pronounced in recent years (Kovar et al. 2003).

The stereotype literature distinguishes between two basic images of accountants in the public sphere (Carnegie and Napier 2010). The traditional type, or "bean counter," is characterized as trustworthy and reliable but dull and boring. In the early 2000s, a second stereotype evolved: the "business professional." More sharply dressed, consulting-like, and focused on the clients' business, she contrasts the traditional view of accounting as a profession. However, subsequent to the Enron scandal, the image has shifted towards a "villain" associated with earnings manipulation and window dressing. Social identification theory (Tajfel and Turner 1986) explains that stereotypes cannot be reduced to how a group of people, in our case accountants, is perceived by others. Rather, individuals prefer to enter groups with a stereotype they can relate to. Through such a social filtering process, stereotypes, expressed as group members' personal characteristics, may reinforce themselves.

We build upon the notion that personal characteristics matter for job selection (Barrick et al. 2001). Our study focuses on the interrelation of personality traits and students' decisions to major or work in accounting. In particular, we are not primarily interested in the

reasons to study accounting (i.e., the *why?*-question) but in the persons who do (i.e., the *who?*-question). Following Dalton et al. (2014), we do not expect accounting students to be a homogenous group. We distinguish between managerial, financial, as well as tax accounting and add students interested in (corporate) finance as a fourth group with a potential interest in accounting. Due to distinctive historical traditions for each discipline, Germany is an ideal setting to study such differences. We refer to all four groups as FACT (Finance, Accounting, Controlling [German term for managerial accounting, Messner et al. (2008)], Taxation). Students' decisions investigated comprise the decision to major in one of the four sub-disciplines, the intent to choose the first job there, and the desire to pursue a professional examination in auditing and/or taxation.

To examine these questions, we conducted a paper-based survey during the 2015 and 2016 summer term. Overall, we received 1,103 analyzable questionnaires from students of one German university. The final sample consists of 428 respondents (38.8%). To address potential biases (e.g., socially desirable responses from non-FACT students in FACT lectures), we construct two propensity score-matched samples based on the demographic, academic, and family background of the respondents. The two additional samples encompass students majoring in at least one FACT-related sub-field (matched majors sample, n = 384) and students surveyed in non-FACT lectures (matched lectures sample, n = 112).

We measure personality traits using the *Big Five Inventory* (BFI). These personality traits are useful to predict vocational choices and hierarchical outcomes (e.g., De Fruyt and Mervielde 1997, 1999). In our study, we apply a modified 37-item version of the German translation by Rammstedt and John (2005). The five personality traits are extraversion (e.g., sociable, talkative), neuroticism (e.g., anxious, depressed), agreeableness (e.g., trusting, cooperative), consciousness (e.g., responsible, hardworking), and openness to experience (e.g., curious, broad-minded). As our study is explorative in nature, we have no expectations regarding characteristics of the students interested in the different fields of accounting (i.e., sub-disciplines).

With regard to the sub-disciplines, the German setting allows us to exploit some particularities. First, there is not *one* accounting profession in Germany (Vieten 1995; Hellmann et al. 2010). Separate professional examinations exist for auditing ("Wirtschaftsprüfer") and taxation ("Steuerberater"). If differences in personality traits matter for the decision to choose accounting as an occupation, showing interest in the professional examinations

already during the course of studies should be a good measure to identify highly involved students. Second, managerial, financial, and tax accounting are separate but closely related sub-fields in the German business economics tradition (Busse von Colbe 1996). In the second half of the 20th century, differences became even more pronounced. A further link with regard to some topics (e.g., valuation; fair value measurement; risk management) exists to (corporate) finance. Students usually specialize in more than one subdiscipline. Hence, the overlap in groups may work against any findings.

Our results indicate that FACT students can be separated into two distinct groups. Students majoring in managerial accounting and corporate finance show personality traits closer to business, management, and economics students with other (non-FACT) majors. Managerial accounting students show significantly lower values of extraversion (more introvert personalities), and corporate finance students score lower in neuroticism (calm, clear-cut, and objective personalities). Financial and tax accounting students form the second group. They show distinct characteristics: higher scores in consciousness (ethical and responsible behavior) as well as lower scores in openness to experience (conservative values and judging in conventional terms), and neuroticism. Results are more pronounced for students major in tax accounting who, additionally, have lower levels of extraversion. Taken together, the results indicate that tax accounting students are closest to the "bean counter" stereotype, followed by students in financial accounting. Repeating the analysis for students' first job preferences, we report consistent results. Students interested in a first job in tax accounting still show the strongest differences compared to all other students. Interestingly, the share of students with occupational aspirations in financial accounting is much higher than the share of students majoring in this sub-field. Financial accounting, in general, and auditing, in particular, seem to be interesting areas to gain first professional experience, develop technical skills, and become acquainted with various industries. Distinct personality traits for students seeking a first job in financial accounting are, hence, less pronounced than in the prior analysis. Accordingly, the relative share of students interested in a professional examination is lower than for tax accounting. Audit firms enjoy the benefit of having a broader and more diverse field of students to choose from than tax advisors. Students tend to delay the decision to seek a long-term career in auditing until they are "on the job," whereas future tax accountants commit during their studies. Hence, social identification is more important for tax accounting than

any other of the FACT-related sub-fields. Focusing on the intention to pursue a professional examination in auditing or tax accounting, we find personality traits similar and partly more pronounced than for the choice of the major field of study.

The observed differences diminish in the matched lectures sample, which features the highest share of non-FACT students. In conformity with the low explanatory power of our multivariate analysis, this suggests that personality traits alone are a weak predictor of occupational outcomes. Students with similar traits obviously choose different jobs. Even though the reported differences are statistically significant, the magnitude of the differences is rather small (around one-fourth to one-fifth of a standard deviation). Thus, cautious interpretation is advised. Nonetheless, inferences drawn from personality traits are helpful in understanding the underlying factors of academic and vocational outcomes.

Our study makes three major contributions. First, prior studies find that perceptions of accounting jobs differ between students interested in taxation or auditing (Dalton et al. 2014). In turn, the decision to remain in or leave the accounting profession can partly be explained through differences in personality traits (Swain and Olsen 2012). Combing both results, we are the first to examine whether personality traits interrelate with academic and vocational interests in the different facets of accounting. We further add managerial accounting and (corporate) finance to the analyzed set of sub-disciplines. Second, to the best of our best knowledge, we are the first to provide evidence on the nature and intentions of European accounting students in general, and German students in particular. Prior studies mainly focused on the US (e.g., Cohen and Hanno 1993; Kovar et al. 2003; Swain and Olsen 2012; Dalton et al. 2014) as well as Hong Kong (Law and Yuen 2012), Malaysia (Said et al. 2004; Germanou et al. 2009), or New Zealand (Tan and Laswad 2009). Third, from a methodological perspective, we consider a previously unused instrument. The BFI is commonly used in human resource research for comparable studies (e.g., Borges and Savickas 2002; Rottinghaus et al. 2002), but so far has not been applied in an accounting context.

The paper is structured as follows. Section 2 contains a brief introduction into particularities and institutional features of the German accounting profession as well as higher education. In Section 3, we provide a short overview of the relevant literature and methodologies at the intersection of accounting and psychology. Our data gathering and sample selection procedures are described in Section 4. Section 5 contains the results which are further discussed in Section 6. Section 7 closes with some concluding remarks.

2 German Accounting Profession

Our study focuses on Germany, Europe's largest and most populous economy, which provides a distinct setting to follow Dalton et al. (2014) and deepen our understanding of differences associated with accounting's various sub-disciplines. In contrast to Anglo-saxon countries, no single, unified accounting profession exists. Likewise, the term "accountant" refers to a "financial statement preparer, tax accountant, bookkeeper, auditor, or cost accountant" (Hellmann et al. 2010:111), depending on his or her actual work. The profession comprises four major groups: managerial accountants, financial accountants, tax accountants, and auditors. Two types of professional examinations are available for the latter two groups (Vieten 1995). Tax accountants have the option to become qualified tax advisors ("Steuerberater"). After the certification, tax advisors are permitted to prepare tax returns and financial statements for tax and commercial purposes (Coenenberg et al. 1999). The certification consists of three written and one oral exam, covering topics like procedural law, value added and inheritance taxes, valuation law, income taxes, accounting, and transaction tax. Two years of professional experience prior to the examination is required.

Auditors ("Wirtschaftsprüfer") are a distinct group within the German financial reporting landscape. They own the exclusive right to audit and certify financial statements. In contrast, preparers of financial statements for commercial purposes do not have to be members of any professional organizations or hold any specific qualification. In order to become an auditor, three (for candidates with a Master's or Diploma degree) or four years (for candidates with a Bachelor's degree) of professional experience prior to the examination is mandatory. The professional examination consists of seven written exams (two in auditing, two in applied business and economics, one in commercial law, and two in tax law), and an oral exam covering all aspects. Examinees, who previously passed the qualified tax advisor examination, are exempt from the tax law exams.

Both professional groups, tax advisors and auditors, are regulated by law and are obliged to be members of their respective public organizations (chambers, "Kammern"). Professional organizations for "high-status professions" usually have limited self-control regarding supervision, training, and professional practice (Neal and Morgan 2000). Unlike Anglo-saxon countries (Watts and Zimmerman 1983), the regulation of tax advisors and auditors is a combination of self- and state-regulation (Vieten 1995). Both groups enjoy

full responsibility for the professional examinations. As outlined above, the prerequisites for admission to both professions are higher, more extensive, and more time-consuming compared to other European countries (Baker et al. 2001; Evans and Honold 2007). To streamline the process without simultaneously lowering the requirements, parts of the audit examination can be moved up to the course of studies (§§ 8a, 13b WPO). Selected universities and polytechnics offer appropriate courses in applied business and economics as well as commercial law. All courses are subject to accreditation by the auditors' professional body. There is no comparable facilitation for the qualified tax examination.

Besides these cases, most business economics courses in Germany are not specifically designed to meet the need of the auditing or any of the accounting professions (Coenenberg et al. 1999). Financial, tax, and managerial accounting were closely related but separate disciplines since the early beginning of business economics in Germany. One reason may have been the lack of a common theoretical underpinning. Financial accounting is considered to be the root of business economics (Busse von Colbe 1996). Attributable to the authoritative principle ("Maßgeblichkeitsprinzip"), which links financial statements for tax and commercial purposes, tax and financial accounting are closely related (Haller, 1992; Pfaff and Schröer 1996). These two sub-disciplines were "influenced and shaped by a technical-legal perspective" (Becker and Messner 2005:419). Managerial accounting evolved as a separate discipline in academia, education, and practice since the 1950s – and nowadays even has its own name: "Controlling" (Becker and Messner 2005). The ongoing emancipation of "Controlling" was based on the divergent purposes of and the traditional tax link of financial accounting that distorts decision-relevant management accounting. Regarding questions of capital budgeting and funding, it partly overlaps with (corporate) finance. In contrast, questions of appraisal and valuation are traditionally within the scope of auditors and largely swayed by tax matters. Apparently, the sub-disciplines of managerial, financial, and tax accounting, as well as finance, are interrelated, albeit taking different evolutionary paths in recent decades. Taking the two types of professional examinations into account, the particularities of the German business economics tradition offers a unique setting to investigate differences within the interested students.

3 Prior Literature

Students' intentions to major or work in accounting have been broadly discussed in the accounting literature. Early studies focused especially on the timing of the decision to work in accounting and the influential job-related factors like compensation and prestige (Paolillo and Estes 1982). More recently, studies have built upon the *theory of reasoned action* and the *theory of planned behavior* (Cohen and Hanno 1993; Tan and Laswad 2009; Law and Yuen 2012; Dalton et al. 2014). Both theories hypothesize that each behavior is the result of individuals' evaluations of their outcomes (i.e., attitudes toward the behavior) and the social pressure from peers (i.e., social norms). The theory of planned behavior adds a third component: perceived behavioral control, which is usually operationalized through individuals' assessment of the difficulty of the behavior. Both theories are well suited to answer the question of *why* students want to pursue a study program or career in accounting. The *theory of reasoned action* and its successors broadened the scope of factors considered to influence study- and vocation-related decisions.

The psychology literature already went one step further and examined the underlying characteristics of a person (i.e., the *who?*-question). These personality types or traits translate into interests and vocational choices of individuals (Holland 1973). Personality traits are measured through various instruments, most notably the *NEO-PI-R* (McCrae and Costa 1987), the *Big Five Inventory* (BFI), and the *Myers-Briggs Type Indicator* (MBTI). Personality traits, as measured by the BFI, affect academic, occupational, and professional decisions. As such, Rottinghaus et al. (2002) document a comparably higher explanatory power of personality traits compared to self-efficiency and vocational interests for the propensity to achieve higher academic degrees. Similarly, Nieken and Störmer (2010) provide evidence on differences in Big Five personality traits for different occupational groups in Germany. For example, managers show significantly higher scores on extraversion and lower scores on conscientiousness than manual workers. Clerks, on the other hand, exhibit a significantly lower score in conscientiousness. As mentioned before, personality traits transform into vocational decisions. Prior studies show a considerable empirical overlap of the BFI-measures and vocational types (De Fruyt and Mervielde 1997, 1999; Hogan and Blake 1999; Larson et al. 2002; Larson and Borgen 2002). Taken together, literature indicates a certain relation between the BFI-personality traits (or the *who*-question) and academic as well as vocational choices.

Contrarily, the MBTI is quite popular in accounting. Wheeler (2001) provides an overview of 16 studies on the personality of accounting students and accountants as well as the potential influence on their performance. All studies rely on students or professionals from the United States.[2] He distinguishes two similarity groups. Undergraduates are closer to professional accountants regarding their personality types, whereas graduate students are comparable to accounting faculty. Undergraduates score lower in extraversion, intuition, feeling, and perceiving. Like the professional accountants, they show traits closer to the "bean counter" stereotype. Kovar et al. (2003) confirm these results. In their eight-year longitudinal study, the personality types of students attracted in accounting programs are stable, with a tendency to less diversity and more "bean counter"-like preferences. These results also translate into job selection and progress (Swain & Olsen 2012). Future accountants are more introvert-type personalities who gather information based on concrete experience rather than intuition and make structured decisions rather than delaying them.

Another stream of research investigates the perceptions of accounting jobs from the students' and practitioners' perspectives. Students commonly overestimate the importance of technical capabilities compared to soft skills and "real world" experience (Usoff and Feldmann 1998). Kavanagh and Drennan (2008) exhibit comparable results for Australia. Nevertheless, students have a more positive view of the accounting profession than accounting practitioners. The perception of both groups differs regarding advancement, training, supervision, ethical standards, and support in the professional exams (Carcello et al. 1991). Dalton et al. (2014) further divide the accounting puzzle into two jigsaw pieces: tax and audit. Their results indicate that career expectations in accounting are not homogenous. Students who pursue a career in auditing have other expectations regarding the nature and benefit of their jobs than students who want to work in taxes. We expect these differences in perception to be interrelated with differences in personality traits.

[2] The only exemption are Vaassen et al. (1993) who administered their study in the Netherlands.

Table 1:
Characterization of Accounting Stereotypes

Positive	*Negative*	*Positive*	*Negative*
Bookkeeper-Scorekeeper		Accountant-Guardian	
Vigilant, honest, entrusted, accepts obligation to society, disciplined, articulate, law-abiding, independent, objective, dedicated, immersed	conservative and prudent, uncreative, obsessive, concerned with small details, dull and boring	managerial and analytical skills and critical judgement, precision and numerical accuracy, professional skepticism, personal sophistication, sensitive, caring, sincere and honest, generous, funny	☺
Bookkeeper-Beancounter		Accountant-Entrepreneur	
☹	Dull, boring, unimaginative, shallow, weak, passive, lifeless, aloof, obedient, introvert, spineless, frowning, tight-fisted, unattractive, low social interest and esthetic sensitivity	☹	Corrupt, suspicious, involved in or associated with fraud, 'liar' and 'bullshitter'

Source: Richardson et al. (2015)

According to the *Social Identification Theory* (Tajfel and Turner 1986), individuals will choose to join social groups with a positive image and high social status. Stereotypes resemble a heuristic of sorts to assess society's attitude toward certain groups. The simplified views and beliefs about people and events related to groups define the stereotypes. For accounting, two opposing stereotypical views prevail (Carnegie and Napier 2010). The traditional or "bean counter" stereotype has mixed connotations, being dull and boring but precise and trustworthy. In recent years, the image shifted towards the contemporary accountant, or "business professional," who is more open-minded and shows a more business-focused and customer-centric attitude. Nevertheless, this stereotype also relates to the accounting scandals at the beginning of the 21st century. Acceptance or even participation in earnings management, money laundering, and fraud constitute a "villain" in the public opinion. Richardson et al. (2015) systematically analyzed 31 peer reviewed journal articles on accounting stereotypes. As a result, they further decompose each of

the two prior stereotypes into a positive and negative interpretation (Table 1). The "score-keeper" is the positive interpretation of the traditional accountant. He is characterized as methodical, conservative, and trustworthy. Highly ethical conduct but a low-service orientation distinguishes him from the "bean counter." The latter is the anti-accountant, completely lacking competence and warmth. Contrariwise, the contemporary "guardian" characterizes the perfect accountant through highly ethical, professional, and versatile conduct. His antagonist, the "entrepreneur," shares the same skills as well as social and service attitudes, but lacks ethical values. Overall, third-party perception of accountants and their actions shape the stereotypes.[3]

Most of the studies previously mentioned focus on the US (Paolillo and Estes 1982; Carcello et al. 1991; Cohen and Hanno 1993; Usoff and Feldmann 1998; Wheeler 2001; Kovar et al. 2003; Swain and Olsen 2012; Dalton et al. 2014). Their results are, however, subject to some limitations and not easily transferrable to other countries. Personality traits vary across the world (Schmitt et al. 2007). While this may be partially explained through translation problems, cultural and socio-demographic differences alike have some effect. For instance, regarding vocational decisions in accounting, students from Hong Kong or Mainland China were mainly influenced by parental advice (Law and Yuen 2012). One potential explanation is the strong influence of Confucian norms on the Chinese society (Hofstede and Bond 1988; Hofstede 2001). For US students, other reference groups such as friends and professors are equally important (Cohen and Hanno 1993). Auyeung and Sands (1997) observe similar differences between Australian and Hong Kong/Taiwanese students at Australian universities. Deviant perceptions of accounting as a profession could provide a possible explanation. For a mixed sample of English and Malaysian students, Germanou et al. (2009) report significant differences for the perception of social and economic benefits, job security, chance of achievement, and the nature of an accounting job itself. As a result, cultural differences seem to affect the career choices. To our knowledge, no study provides evidence on intentions and motivations of (Continental) Europeans, especially German students. Our study is a first attempt at closing this gap.

[3] Graves et al. (1992) and Nelson et al. (2008) offer a longitudinal view on the change of accounting students characteristics aside from personality traits.

Table 2:
Characteristics related to the Big Five Personality Traits

Lower Scores	*Higher Scores*	*Lower Scores*	*Higher Scores*
Agreeableness		Conscientiousness	
• Critical, sceptical • Shows condescending behaviour • Tries to push limits • Expresses hostility directly	• Critical, sceptical • Shows condescending behaviour • Tries to push limits • Expresses hostility directly	• Eroticizes situations • Unable to delay gratification • Self-indulgent • Engages in fantasy, daydreams	• Behaves ethically • Dependable, responsible • Productive • Has high aspiration levels
Extraversion		Neuroticism	
• Emotionally bland • Avoids close relationship • Overcontrol of impulses • Submissive	• Talkative • Gregarious • Socially poised • Behaves assertively	• Calm, relaxed • Satisfied with self • Clear-cut personality • Prides self on objectivity	• Sympathetic, considerate • Warm, Compassionate • Arouses liking • Behaves in a giving away
Openness to experience			
• Favours conservative values • Judges in conventional terms • Uncomfortable with complexities • Moralistic	• Favours conservative values • Judges in conventional terms • Uncomfortable with complexities • Moralistic		

Source: McCrae and Costa (2003); Ham et al. (2009)

4 Research Design

4.1 Measuring Personality Traits

We utilize the *Big Five Inventory* (BFI) to measure differences in personality traits. The BFI is based on the NEO-PI-R model developed by McCrae and Costa (1987). It consists of five dimensions, which are addressed through multiple positive and negative statements in the questionnaire. Each statement has to be rated on a five- or seven-point Likert-scale, ranging from "I fully disagree" to "I fully agree." The BFI-personality traits are neuroticism, extraversion, openness to experience, conscientiousness, and agreeableness. Table 2 includes a short characterization of the five traits. In a meta-analysis, Barrick and

Table 3:
Principal Component Analysis for the Big Five Personality Traits

		E	C	N	O	A
Extraversion (E)						
6	Is reserved	**0.46**	0.01	-0.04	-0.05	0.00
16	Generates a lot of enthusiasm	**0.36**	-0.02	0.01	0.07	0.00
21	Tends to be quiet	**0.47**	0.02	0.01	-0.02	-0.04
36	Is outgoing, sociable	**0.44**	-0.06	0.00	0.00	0.08
Conscientiousness (C)						
3	Does a thorough job	0.00	**0.35**	0.00	-0.02	-0.01
8	Can be somewhat careless	-0.06	**0.39**	0.05	-0.02	0.06
13	Is a reliable worker	-0.07	**0.37**	0.02	0.03	0.01
18	Tends to be disorganized	-0.04	**0.32**	0.07	-0.04	0.02
23	Tends to be lazy	0.15	**0.33**	0.04	-0.06	0.03
28	Perseveres until the task is finished	-0.04	**0.24**	-0.09	0.08	-0.06
33	Does things efficiently	0.09	**0.24**	-0.06	0.04	-0.01
38	Makes plans and follows through with them	0.13	**0.26**	-0.03	0.04	-0.11
43	Is easily distracted	0.01	**0.30**	-0.12	-0.01	-0.01
Neuroticism (N)						
4	Is depressed, blue	-0.03	-0.01	**0.45**	0.03	-0.06
9	Is relaxed, handles stress well	0.08	0.04	**0.47**	-0.07	0.03
19	Worries a lot	-0.01	0.02	**0.48**	0.03	0.01
39	Gets nervous easily	-0.12	-0.07	**0.38**	0.02	0.04
Openness to Experience (O)						
5	Is orginial, comes up with new ideas	0.10	-0.01	-0.08	**0.29**	-0.02
10	Is curious about many different things	0.11	0.09	-0.03	**0.23**	0.01
15	Is ingenious, a deep thinker	0.02	0.02	0.16	**0.27**	0.00
20	Has an active imagination	0.05	-0.02	0.02	**0.34**	0.01
25	Is incentive	0.08	-0.04	-0.08	**0.32**	-0.04
30	Values artistic, aesthetic experiences	-0.09	0.02	0.05	**0.39**	0.04
35	Prefers work that is routine	0.00	-0.02	**-0.17**	0.09	-0.07
40	Likes to reflect, play with ideas	0.08	-0.05	-0.01	**0.28**	-0.11
41	Has few artistic interests	-0.11	0.02	0.02	**0.39**	0.03
44	Is sophisticated in art, music, or literature	-0.12	-0.07	-0.04	**0.32**	-0.01

Mount (1991) identify conscientiousness and extraversion as particularly good predictors for occupational choices. *Conscientiousness* contains two facets. Dependability is being careful, thorough, responsible, and organized; volitional values are hardworking, achievement-oriented, and persevering. *Extraversion* relates to managerial and sales positions, as

Table 3:
continued

		E	C	N	O	A
Agreeableness (A)						
2	Tends to find fault with others	-0.16	-0.01	-0.12	-0.03	**0.30**
7	Is helpful and unselfish with others	0.05	0.02	0.07	0.10	**0.29**
12	Starts quarrels with others	-0.13	0.12	-0.11	0.05	**0.27**
17	Has a forgiving nature	0.02	-0.12	-0.16	-0.01	**0.26**
22	Is generelly trusting	0.11	-0.14	0.01	-0.02	**0.29**
27	Can be cold and aloof	0.05	-0.03	0.03	-0.10	**0.34**
32	Is considerate and kind to almost everyone	0.12	0.06	0.15	0.11	**0.34**
37	Is sometimes rude to others	-0.01	0.02	0.02	-0.07	**0.39**
42	Likes to cooperate with others	0.03	-0.04	0.00	0.06	**0.27**
45	Have trouble with others*	-0.06	0.11	-0.07	0.05	**0.31**

it is being sociable, gregarious, talkative, and active. Based on the characterizations, "bean counter" accountants in general should score lower in extraversion, agreeableness, and openness. Financial accounting and auditing could relate negatively to openness and agreeableness, as professional skepticism and adherence to norms and standards is profoundly necessary. In contrast, higher scores in extraversion and openness would characterize the "business professional" stereotype.

We employ a modified version of the BFI originally developed by Rammstedt and John (2005). Using their instrument has two major advantages. First, it is an already tested German version, avoiding further translation problems.[4] Second, they offer a 45-item version and a shorter version (BFI-K), which consists of 21 items. To circumvent timing restrictions when conducting the survey, we substituted 14 items with eight items from the shorter version (BFI-K). Our final questionnaire contains 37 statements. Fourteen of these are coded reversely to avoid confirmation bias. To assess the factorial validity of the combined measure, we repeat the steps from Rammstedt and John (2005). First, we conduct a principal component analysis with subsequent varimax rotation for all 37 items.

[4] We use the English formulation of the corresponding items from John et al. (1991) in all subsequent tables. Authors own translations are marked with an asterisk (*).

Table 4:
Mean values and standard deviations as well as the reliability measures for the Big Five personality traits

		Mean	SD	α
	Extraversion			
6	Is reserved	3.47	1.09	
16	Generates a lot of enthusiasm	3.66	0.84	
21	Tends to be quiet	3.67	1.22	
36	Is outgoing, sociable	3.67	0.91	
	Mean	*3.62*	*1.01*	*0.867*
	Conscientiousness			
3	Does a thorough job	4.08	0.68	
8	Can be somewhat careless	3.74	0.94	
13	Is a reliable worker	4.24	0.70	
18	Tends to be disorganized	3.65	1.05	
23	Tends to be lazy	3.44	1.02	
28	Perseveres until the task is finished	3.56	0.93	
33	Does things efficiently	3.76	0.76	
38	Makes plans and follows through with them	3.81	0.81	
43	Is easily distracted	3.33	0.87	
	Mean	*3.73*	*0.86*	*0.770*
	Neuroticism			
4	Is depressed, blue	2.79	0.99	
9	Is relaxed, handles stress well	3.08	1.02	
19	Worries a lot	3.20	1.10	
39	Gets nervous easily	2.84	0.96	
	Mean	*2.98*	*1.02*	*0.800*
	Openness to Experience			
5	Is orginial, comes up with new ideas	3.19	0.93	
10	Is curious about many different things	3.92	0.89	
15	Is ingenious, a deep thinker	3.71	0.98	
20	Has an active imagination	3.56	0.92	
25	Is incentive	3.11	0.85	
30	Values artistic, aesthetic experiences	3.16	1.16	
35	Prefers work that is routine	2.61	1.02	
40	Likes to reflect, play with ideas	3.11	1.07	
41	Has few artistic interests	3.24	1.18	
44	Is sophisticated in art, music, or literature	2.77	1.08	
	Mean	*3.24*	*1.01*	*0.812*
	Agreeableness			
2	Tends to find fault with others	3.21	0.89	
7	Is helpful and unselfish with others	3.86	0.67	
12	Starts quarrels with others	4.43	0.70	
17	Has a forgiving nature	3.50	1.03	
22	Is generelly trusting	3.33	1.05	
27	Can be cold and aloof	2.59	1.07	
32	Is considerate and kind to almost everyone	3.93	0.77	
37	Is sometimes rude to others	2.97	1.10	
42	Likes to cooperate with others	3.80	0.90	
45	Has trouble with others*	4.50	0.69	
	Mean	*3.61*	*0.89*	*0.804*

As expected, the eigenvalues decline sharply after the fifth factor.[5] These five factors explain 47.9% of variance in the sample. Second, we run an additional principal component analysis for five factors with subsequent varimax rotation. Table 3 shows the resulting unique simple structure. All items, except for item #35, have their highest loading on the expected factors. We do not observe any side loadings above 0.3. However, the loadings are much lower than those reported by Rammstedt and John (2005). Since the Kaiser-Meyer-Olkin measure of sample adequacy is 0.8054, we have no concerns regarding the internal consistency of the instrument.

We compute the mean value for each of the five personality traits over the single items assigned to each factor. If one or more of the values for a certain trait is missing, we drop the trait for this observation. The other four traits are still computed, given that there are no missing values (Schmitt et al. 2007). Mean values and the standard deviations for the single items as well as the five traits are shown in Table 4. Cronbach's alpha for the E, C, N, O, and A scores are 0.867, 0.770, 0.800, 0.812, and 0.804. Values higher than 0.8 (0.7) suggest high (sufficient) reliability (Peterson 1994). The reported values suggest a mostly good fit of the instrument. Other studies report similar results (Rubinstein 2005; Schmitt et al. 2007). Mean values for the five personality traits are qualitatively comparable to prior studies, too. A more detailed discussion can be found in Section 5.1.

4.2 Data Collection

We administered a paper-based survey at the beginning of the 2015 summer term at one German university. To assure a reasonable number of students interested in accounting, we deliberately chose foundational and advanced courses in corporate finance, as well as managerial and financial accounting. Four of the courses were part of a Bachelor's program (two foundational, one specialized) and three (all specialized) were part of the Master's program in business administration. To gain a control sample of students who are less prone to finance and accounting, we additionally surveyed students in one Bachelor's course and two Master's courses in international management and marketing at the end of the 2016 summer term. Since we surveyed students at one point in time, we cannot draw any causal inferences. As our research questions are explorative in nature and aim

[5] Eigenvalues for Factor 1: 5.47; Factor 2: 4.01; Factor 3: 3.35; Factor 4: 2.87; Factor 5: 2.03; Factor 6: 1.37; Factor 7: 1.25 (other results not tabulated).

Table 5:
Sample Selection Process

	Returned questionnaires	1,103
./.	Study degrees other than Bachelor and Master	-88
./.	Missing data on demographic, academic and family background	-448
./.	Missing data on career preferences	-81
./.	Missing data on personality traits	-58
=	Final Sample	428

to provide first evidence on the general characteristics of students majoring or pursing a first job in accounting, a causal link is not necessary.

The major advantage of a paper-based survey is the high response rate.[6] A potential non-response bias is minimized (Sax et al. 2003). However, students' decisions to study at a certain university or in a certain program, especially at the Master level, is most likely the result of a structured process rather than coincidence. We would expect similar intentions and characteristics between students. Socialization at the university could reinforce this effect. Furthermore, prior research shows that experience and success in the first accounting course influence the decision to specialize or work in accounting (Tan and Laswad 2009). All these factors are university-specific. We mitigate these concerns by limiting our sample to students from one university. Therefore, Prior courses, experience, and socialization should be comparable. However, the narrow sampling approach comes at the cost of a potentially limited generalization of the results.

4.3 Sampling Procedure

We use three distinct samples to mitigate concerns regarding the generalizability of our results and potential biases in the data. The first sample contains all observations with complete data for the subsequent analysis and matching procedures. Our initial sample consists of 1,103 returned questionnaires. We drop all observations from students in programs that finish with degrees other than a Bachelor's and Master's, e.g., teaching/education or legal studies, which typically culminate with a state examination. This way, we

[6] In our case, the actual response rate is slightly below 100 % because a very small number of students returned blank questionnaires or refused to participate.

achieve a more homogenous group in terms of students' curricula and incentives. Excluding certain groups of students from the analysis may reduce the variance in our sample and would, hence, work against any findings. However, as shown in Section 5.1, the sample still covers the different facets and modes of business and economics education.[7] Furthermore, we drop all observations with missing data on demographic, academic and family background, career preferences, as well as personality traits.[8] Table 5 contains a detailed breakdown of the sample selection process. Our first sample consists of 428 observations.

The second and third samples are specifically designed to address potential biases in our initial sampling approach. We use propensity score matching (PSM) to construct two samples, which contain a similar number of students from the treatment (FACT majors or surveyed in a FACT lecture) and control group (non-FACT majors or survey in a non-FACT lecture). PSM was originally developed to reliably analyze the effect of new medicine by comparing the treatment and control groups (Stürmer et al. 2006). In recent years, PSM has been introduced in many other disciplines, as it allows for the drawing of causal inferences from quasi-experimental settings (Gassen 2014; Ittner 2014; Shipman et al. 2017). However, we are not primarily interested in determining a possible direction of our results, but rather in mitigating systemic differences between the groups of respondents in our sample. In a first step, we estimate a propensity score for each respondent. The underlying logit regressions are elaborated in more detail below. We use a broad set of covariates to achieve a robust and reliable matching without risking over-identification (Caliendo and Kopeinig 2008). In the second step, we use nearest-neighbor matching (without replacement) based on the propensity score to assign each respondent from the treatment group her closest "twin" from the control group.

Matching FACT and non-FACT students (matched majors sample): As described above, we mainly administered the survey in courses covering topics in accounting and finance. Most of the courses were not mandatory. Therefore, students who willingly choose to participate in these courses may have an increased interest in an accounting or finance

[7] Approximately 70 % of the German auditors have a business and/or economics background (Wirtschaftsprüferkammer 2017). Hence, the sample covers the single most important academic discipline with regard to the entry qualification for (future) auditors.

[8] Even though imputation is a commonly used method to handle missing survey data and address a potential non-response bias (Kalton 1983), we did not rely on any such methods since we assume that our sample size is still sufficient and inferences drawn without imputation are stronger.

career in general as well as the professional examinations in particular. Since we are not only interested in whether personality traits differ between FACT and non-FACT students but also whether they affect vocational outcome, i.e., starting a career in accounting or finance as well pursuing the professional examinations, we match students, who major in financial accounting, managerial accounting, tax accounting, or finance, with another student who is not a FACT major but similar in her demographic, academic, and family background, as well as her personality traits. We add personality traits to isolate their marginal effect on vocational choices. If personality traits have an effect, similar students – regardless of the major – should, *ceteris paribus,* be interested in similar occupations. To address these questions, we use the following logit regression to match students:

$$\begin{aligned} FACT_i = {} & \beta_0 + \beta_1 \cdot Field_i + \beta_2 \cdot Bachelor_i + \beta_3 \cdot Abroad_i + \beta_4 \cdot SchoolGrade_i \\ & + \beta_5 \cdot ParEducation_i + \beta_6 \cdot ParAccounting_i \\ & + \beta_7 \cdot TrainBusiness_i + \beta_8 \cdot TrainOth_i + \beta_9 \cdot Female_i \\ & + \beta_{10} \cdot Age_i + \beta_{11} \cdot German_i + \sum \beta_j \cdot Personality_{i,j} + \varepsilon \end{aligned} \qquad (1)$$

FACT is a binary variable, taking the value "1" if a student majors in at least one of the FACT subjects (financial accounting, managerial accounting, tax accounting, and finance). *Field* is a categorical variable indicating the program of study (business & management, economics, industrial engineering, health economics, sports economics, other). The first set of covariates deals with the academic background of the respondent. *Bachelor* is a binary variable taking the value of "1" if a student is enrolled in a Bachelor's program and "0" for Master's students. *Abroad* is a binary variable taking the value of "1" if the student stayed in a foreign country for a longer period of time (e.g., semester or internship abroad). *SchoolGrade* is a student's final grade at school. High school grades are a good predictor for academic aptitude (Grove et al. 2006).[9] Parents have a strong influence on their children's vocational choices (Schulenberg et al. 1984). This effect is especially pronounced in Asian countries (Law and Yuen 2012), but also observable in the West (e.g., for the US, Cohen and Hanno 1993). *ParEducation* is a binary variable indicating whether at least one of the parents holds an academic degree (value "1") or not (value "0"). *ParAccounting* is a binary variable taking the value "1" if at least one of the

[9] Please note that "1" is the best, and "5" the worst grade in the German education system. Hence, a negative coefficient denotes high-ability students.

parents works in tax accounting or auditing. *TrainBusiness* and *TrainOth* are binary variables taking the value "1" if the respondent finished a commercial or any other vocational training before commencing undergraduate studies, respectively. Prior research has shown that men and women differ in their vocational decisions and personality traits (Rubinstein 2005). Such differences relate to job attributes (income, leisure time, working in teams, etc.) under consideration and the values placed on them in the decision process (Konrad et al. 2000). Hence, these may directly affect the decision to major or work in accounting or related disciplines. *Female* takes the value "1" if the student is female, and "0" otherwise. *Age* is a numerical variable representing the age of the respondent in years. *German* takes the value "1" if the respondent is a German native and "0" for any other nationality. The final set of variables *(Personality)* are the BFI-personality traits as described in Section 4.1.

Matching students from FACT and non-FACT lectures (matched lectures sample): Primarily administering the survey in accounting and finance lectures yields another potential disadvantage. Students could be inclined to answer in favor of the subject in question and bias the results upwards, i.e., state a higher likelihood to pursue a career in accounting or finance as well as a professional examination than they actually do. This so-called *social desirability bias* is well documented. It particularly occurs when asked about socially sensitive or personal issues (Grimm 2011). Even though is more likely in personal interviews than in web surveys (Kreuter et al. 2008), we use a second propensity score matching procedure to control for the contingent bias. As outlined above, we administered a second round of the survey in courses in subjects other than finance and accounting (non-FACT courses). We match each of the respondents from the non-FACT courses with its nearest neighbor in the FACT courses population using the following logit regression:

$$\begin{aligned} OtherCourse_i = {} & \beta_0 + \beta_1 \cdot Field_i + \beta_2 \cdot Bachelor_i + \beta_3 \cdot Abroad_i \\ & + \beta_4 \cdot SchoolGrade_i + \beta_5 \cdot ParEducation_i + \beta_6 \cdot ParAccounting_i \\ & + \beta_7 \cdot TrainBusiness_i + \beta_8 \cdot TrainOth_i + \beta_9 \cdot Female_i \\ & + \beta_{10} \cdot Age_i + \beta_{11} \cdot German_i + \sum \beta_j \cdot Major_{i,j} + \varepsilon \end{aligned} \qquad (2)$$

Variables are defined as outlined above. The single notable difference to equation (1) is the substitution of the personality traits for the students' majors. *Major* is an array of indicator variables taking the value of "1" if a student indicates to have chosen this major and "0" otherwise. Relying on students' majors instead of personality traits allows us to

Table 6:
Results of the Propensity Score Matching-Regressions

The table shows the Logit regression results for the estimation of the propensity scores for the matched majors (dependent variable: *FACT,* i.e. student majors at least in one of the following subjects: financial accounting, managerial accounting, tax accounting and finance) and matched lectures (dependent variable: *OtherCourse,* i.e. survey was administered in a lecture outside the FACT field). All other variables are explained in the text. *Field* denotes the inclusion of an array of binary variables for the respondents' selected majors. t-values in parentheses. ***, **, and * denote significance at the 1 %, 5 %, and 10 % level, respectively.

	Matched majors	Matched lectures
Field	-0.073 ***	-0.057 **
	(-4.841)	(-2.373)
Bachelor	0.071	-1.248 ***
	(0.389)	(-4.479)
Abroad	-0.388 ***	-0.134
	(-2.614)	(-0.631)
SchoolGrade	-0.053	0.330
	(-0.346)	(1.450)
ParEducation	-0.088	0.547 **
	(-0.638)	(2.524)
ParAccounting	0.166	0.402 *
	(1.040)	(1.788)
TrainBusiness	-0.077	0.024
	(-0.309)	(0.057)
TrainOth	-0.235	0.082
	(-0.747)	(0.179)
Female	-0.444 ***	0.086
	(-2.936)	(0.428)
Age	0.116 ***	-0.098
	(2.905)	(-1.519)
German	-1.457 **	-0.629
	(-2.299)	(-0.830)
Agreeableness	-0.091	
	(-0.706)	
Extraversion	-0.098	
	(-1.111)	
Consciousness	0.222	
	(1.622)	
Neuroticism	-0.096	
	(-1.047)	
Openness to Experience	-0.198 *	
	(-1.761)	
constant	0.144	1.835
	(0.107)	(1.192)
Majors	Not included	Included
No. obs.	428	428
Pseudo-R^2	0.146	0.279
Area under RoC Curve	0.747	0.852

identify whether students with the same interests and presumptively similar career aspirations give different answers depending on the course in which they were asked. If the

social desirability bias is not an issue, we should not find any significant difference between students in the treatment (Non-FACT courses) and control (FACT courses) group. Put differently, students answer should be coherent independent of the course.

Table 6 shows the results of the logit regressions for the estimation of the propensity scores for the matched majors and matched lectures samples. In both models, *Field* has a significant negative relation to the treatment effect. Due to the coding of the categorical variable, business & management, the program of study with most students in our sample, has an assigned value of "1," which explains the result. The significant negative coefficient for *Bachelor* in the matched lectures sample is a result of surveying approach since most of the non-FACT lectures were in the Master's program. Overall, both models explain a reasonable portion of the variance (14.6% and 27.9% for the major- and lectured matched sample, respectively). The area under the RoC is above 0.5 for both models, rejecting the notion that the predictive results for the dependent variable are mere coincidence. Additionally, Table 7 provides the mean values of the covariates in the propensity score regressions and their respective differences for the matched and unmatched samples. For the matched majors sample (Panel A), some significant differences remain after the matching. This result is attributable to the comparatively small control group (192 FACT students vs. 236 non-FACT students), which hampers the likelihood of particularly good fits. However, the magnitude of the differences for all, and the level of significance for all but one covariate, indicates an overall good performance of the matching procedure. In contrast, we do not observe any significant differences between the covariates for the treatment and control group for the lectures matched sample (Panel B).

Finally, some noteworthy observations: FACT students are less likely to go abroad, are older, mostly male, and exhibit a higher share of international students. In contrast to the prior literature, we find a negative significant positive coefficient for *ParAccounting* in the matched lectures sample. This indicates that students whose parents work in tax advisory or auditing are more likely to participate in non-FACT lectures. For accountants, it appears that she's sometimes not a chip off the old block.

Table 7:

Means and Test of Differences for the Covariates in the Propensity Score Matching Regressions in the unmatched and matched samples

This table shows the mean values of the covariates used in the propensity score matching regressions. Unmatched denotes the initial sample before matching, matched the final sample after the estimation of the propensity score and nearest neighbor-matching. Binary treatment variable indicated in the headlines of the panels. All variables are defined as described in the text. Significance levels were estimated using t-tests and Mann-Whitney U test for continuous and binary variables in the unmatched samples, respectively, as well as paired t-tests and Wilcoxon sign ranked tests for continuous and binary variables in the matched samples. ***, **, and * denote significance at the 1 %, 5 %, and 10 % level, respectively. *Field* and *Majors* (in Panel B) are not tabulated.

	Unmatched						Matched					
	Treatment = 0		Treatment = 1		Difference		Treatment = 0		Treatment = 1		Difference	
	n	Mean	n	Mean	Δ	Sig.	n	Mean	n	Mean	Δ	Sig.
Panel A: matched majors sample (Treatment: *FACT*)												
Bachelor	236	0.78	192	0.69	-0.09	***	192	0.74	192	0.69	-0.05	
Abroad	236	0.37	192	0.26	-0.11	**	192	0.32	192	0.26	-0.06	
SchoolGrade	236	2.12	192	2.12	0.00		192	2.13	192	2.12	-0.01	
ParEducation	236	0.59	192	0.57	-0.02		192	0.58	192	0.57	-0.01	
ParAccounting	236	0.19	192	0.23	0.04		192	0.22	192	0.23	0.01	
TrainBusiness	236	0.07	192	0.15	0.08	***	192	0.08	192	0.15	0.07	*
TrainOth	236	0.06	192	0.05	-0.01		192	0.06	192	0.05	-0.01	
Female	236	0.57	192	0.38	-0.19	***	192	0.52	192	0.38	-0.14	***
Age	236	22.24	192	23.03	0.79	***	192	22.46	192	23.03	0.57	**
German	236	1.00	192	0.96	-0.04	**	192	0.99	192	0.96	-0.03	**
Agreeableness	236	3.65	192	3.55	-0.10	**	192	3.61	192	3.55	-0.06	
Extraversion	236	3.65	192	3.42	-0.23	***	192	3.56	192	3.42	-0.14	
Consciousness	236	3.70	192	3.78	0.08		192	3.71	192	3.78	0.07	
Neuroticism	236	2.89	192	2.77	-0.12		192	2.85	192	2.77	-0.08	
Openness to Experience	236	3.26	192	3.12	-0.14	**	192	3.21	192	3.12	-0.09	

Table 7:
continued

	Unmatched						Matched					
	Treatment = 0		Treatment = 1		Difference		Treatment = 0		Treatment = 1		Difference	
	n	Mean	n	Mean	Δ	Sig.	n	Mean	n	Mean	Δ	Sig.
Panel B: matched lectures sample (Treatment: *OthCourse*)												
Bachelor	372	0.77	56	0.52	-0.25	***	56	0.59	56	0.52	-0.07	
Abroad	372	0.31	56	0.39	0.08		56	0.36	56	0.39	0.03	
SchoolGrade	372	2.11	56	2.16	0.05		56	2.21	56	2.16	-0.05	
ParEducation	372	0.56	56	0.73	0.17	**	56	0.79	56	0.73	-0.06	
ParAccounting	372	0.20	56	0.27	0.07		56	0.30	56	0.27	-0.03	
TrainBusiness	372	0.11	56	0.07	-0.04		56	0.04	56	0.07	0.03	
TrainOth	372	0.05	56	0.05	0.00		56	0.05	56	0.05	0.00	
Female	372	0.48	56	0.54	0.06		56	0.55	56	0.54	-0.01	
Age	372	22.59	56	22.63	0.04		56	22.48	56	22.63	0.15	
German	372	0.98	56	0.96	-0.02		56	0.98	56	0.96	-0.02	

5 Results

5.1 Descriptive Statistics

Table 8, Panel A shows the distribution of the demographic, academic, and family background variables across the three samples. In general, the full (column 1) and the matched majors sample (column 2) are comparable. Roughly a quarter of the students are studying in the Master's program and a little less than a third have been studying or working in a foreign country for a longer period of time. More than half the students have at least one parent with an academic degree. In combination with the higher share of students who finished a vocational training (commercial or other), one can assume that a reasonable share of the students are "educational climbers" who are first in their families to obtain an academic degree. Most notably, the share of students whose parents work in accounting is higher in the matched lectures sample than in the two specifications. This is surprising given the much lower share of FACT students in this sample (Panel D). Students possibly try to emancipate from their parents by choosing a different occupational direction. We observe no notable difference regarding gender, nationality, and age of the students in the three samples. Overall, the results show slightly differing characteristics for students in the FACT and non-FACT courses.

A look at the BFI-personality traits leads to a similar conclusion. Mean values for agreeableness (3.6), extraversion (3.5), and consciousness (3.7) are virtually identical for all three groups (Panel B). Once again, the matched lectures sample shows two notable deviations, as students in this sample score higher on average in neuroticism and marginally lower in openness to experience.

The distribution of courses and major fields of study (Panel C and D, respectively) show that differences in demographic, academic, and family background, as well as personality traits, relate to different major fields of study but not to the courses. Regarding the latter, business & management students constitute approximately 70% of all three samples.

Table 8:
Descriptive Statistics

	Full Sample		Matched Majors		Matched Lectures	
	Abs.	%	Abs.	%	Abs.	%
Panel A: Academic, Demographic and Family Background						
Program						
Bachelor	316	73.8	275	71.6	62	55.4
Master	112	26.2	109	28.4	50	44.6
Abroad						
Yes	137	32.0	112	29.2	42	37.5
No	291	68.0	272	70.8	70	62.5
School Grade						
very good (≥ 1; < 1.5)	35	8.2	31	8.1	7	6.3
good (≥ 1.5; < 2.5)	291	68.0	262	68.2	73	65.2
sufficient (≥ 2.5; < 3.5)	102	28.8	91	23.7	32	28.5
ParEducation						
Yes	250	58.4	221	57.6	85	75.9
No	178	41.6	163	42.4	27	24.1
ParAccounting						
Yes	91	21.3	88	22.9	32	28.6
No	337	78.7	296	77.1	80	71.4
TrainBusiness						
Yes	44	10.3	44	11.5	6	5.4
No	384	89.7	340	88.5	106	94.6
TrainOth						
Yes	23	5.4	21	5.5	6	5.4
No	405	94.6	363	94.5	106	94.6
Gender						
Female	207	48.4	172	44.8	61	54.5
Male	221	51.6	212	55.2	51	45.5
Age						
Mean		22.6		22.7		22.6
Nationality						
German	420	98.1	376	97.9	109	97.3
Other	8	1.9	8	2.1	3	2.7
Panel B: Personality Traits (Mean values)						
Agreeableness		3.6		3.6		3.6
Extraversion		3.5		3.5		3.5
Consciousness		3.7		3.7		3.7
Neuroticism		2.8		2.8		3.1
Openness to Experience		3.2		3.2		3.1
Panel C: Course of Study						
Business & Management	272	63.6	264	68.8	78	69.6
Economics	15	3.5	15	3.9	9	8
Industrial Engineering	25	5.8	24	6.3	7	6.3
Health Economics	24	5.6	17	4.4	3	2.7
Sports Economics	67	15.7	47	12.2	10	8.9
Other	25	5.8	17	4.4	5	4.5

Table 8:
continued

	Full Sample		Matched Majors		Matched Lectures	
	Abs.	%	Abs.	%	Abs.	%
Panel D: Major Fields of Study						
Auditing	33	7.7	33	8.6	4	3.6
Financial Accounting	86	20.1	86	22.4	2	1.8
Managerial Accounting	98	22.9	98	25.5	19	17.0
Tax Accounting	66	15.4	66	17.2	6	5.4
Corporate Finance	94	22.0	94	24.5	9	8.0
FACT	*192*	*44.9*	*192*	*50.0*	*31*	*27.7*
Entrepreneurship	17	4.0	16	4.2	0	0.0
Innovation Management	42	9.8	35	9.1	8	7.1
International Management	102	23.8	92	24.0	42	37.5
Marketing	109	25.5	93	24.2	37	33.0
Organizational Theory	33	7.7	30	7.8	9	8.0
Human Ressources	78	18.2	67	17.4	17	15.2
Operations Management & Logistics	64	15.0	59	15.4	18	16.1
Statistics / Econometrics	5	1.2	5	1.3	3	2.7
Strategic Management	70	16.4	63	16.4	14	12.5
Information Management	23	5.4	23	6.0	8	7.1
Education / Psychology / Sociology	22	5.1	16	4.2	9	8.0
Business Law	14	3.3	13	3.4	2	1.8
Other	51	11.9	44	11.5	18	16.1
Management	2	0.5	2	0.5	2	1.8
Microeconomics	2	0.5	2	0.5	0	0.0
Macroeconomics	6	1.4	6	1.6	2	1.8
CSR / Sustainability / Ecology / Ethics	6	1.4	4	1.0	0	0.0
Services	11	2.6	10	2.6	7	6.3
Sport and Health	11	2.6	8	2.1	2	1.8

However, FACT students represent only 27.7% in the matched lectures sample, as opposed to 44.9% and 50% for the full and matched majors sample, respectively. Within the FACT field, managerial accounting and corporate finance are the most common majors. This effect is particularly pronounced in the matched lectures sample. Financial and tax accounting as well as auditing follow as most common majors, but with a notable gap in the matched lectures sample. The popularity of different FACT sub-fields varies with students' overall focus of study. More technical sub-fields like financial and tax accounting are common and popular within the FACT field, but students with major fields of study outside FACT seem to prefer less rules-based subjects like managerial accounting

Table 9:
Big Five Personality Traits for FACT and Non-FACT Students

	Group = 0		Group = 1		Difference	
	n	Mean	n	Mean		
Panel A: FACT						
Agreeableness	236	3.66	192	3.55	0.11	**
Extraversion	236	3.65	192	3.42	0.23	***
Consciousness	236	3.70	192	3.78	-0.08	
Neuroticism	236	2.89	192	2.77	0.12	
Openness to Experience	236	3.26	192	3.12	0.14	**
Panel B: Financial Accounting						
Agreeableness	342	3.62	86	3.55	0.08	
Extraversion	342	3.56	86	3.47	0.09	
Consciousness	342	3.70	86	3.86	-0.16	**
Neuroticism	342	2.88	86	2.67	0.21	**
Openness to Experience	342	3.22	86	3.09	0.13	*
Panel C: Managerial Accounting						
Agreeableness	330	3.60	98	3.63	-0.03	
Extraversion	330	3.59	98	3.40	0.19	*
Consciousness	330	3.73	98	3.77	-0.04	
Neuroticism	330	2.83	98	2.87	-0.04	
Openness to Experience	330	3.22	98	3.11	0.11	
Panel D: Tax Accounting						
Agreeableness	362	3.62	66	3.54	0.08	
Extraversion	362	3.60	66	3.26	0.34	***
Consciousness	362	3.70	66	3.91	-0.21	***
Neuroticism	362	2.87	66	2.66	0.21	*
Openness to Experience	362	3.23	66	3.01	0.22	***
Panel E: Corporate Finance						
Agreeableness	334	3.62	94	3.57	0.05	
Extraversion	334	3.55	94	3.51	0.04	
Consciousness	334	3.72	94	3.80	-0.09	
Neuroticism	334	2.90	94	2.62	0.28	***
Openness to Experience	334	3.18	94	3.24	-0.05	

and corporate finance. Hence, any inferences drawn heavily rely on the subgroup of students surveyed. As with our focus on career aspirations in accounting and finance, the full sample and major matched sample, which consist (nearly) half of non-FACT students, should be adequate choices for subsequent analysis. Overall, the results indicate a slight relation between personality traits and the major field of study, which are possibly related

to differences in demographic, academic, and family backgrounds.

5.2 Studying FACT

In the first analysis, we investigate whether students who choose FACT or any of its sub-fields as their major field of study show personality traits which are different from those of students in other majors. Table 9 shows the mean values for the BFI-personality traits for students majoring in FACT compared to all non-FACT students as well as students in the FACT sub-fields compared to students in all other fields (FACT and non-FACT). FACT students (Panel A) show significantly lower values for agreeableness, extraversion, and openness to experience. These results seem to be primarily driven by students majoring in financial and tax accounting, who tend to be very similar and exhibit differences to the control group. Differences are most pronounced for tax accounting students (Panel D) who show significantly lower levels of extraversion, neuroticism, and openness to experience as well as higher values for consciousness. Financial accounting students show similar traits, though extraversion is not significant in their case. In contrast, the personality traits of students majoring in managerial accounting or corporate finance are not significantly different from those of students in other major fields of study. This finding confirms our prior notion. Managerial accounting and corporate finance attract more students from other sub-disciplines in business & management, whereas financial and tax accounting are chosen by a more distinct group of students.

To further analyze the relation between choice of major field of study and personality traits, we ran separate logistic regressions for FACT and its sub-fields on the BFI-personality traits:

$$Major = \beta_0 + \sum Personality + \varepsilon \qquad (3)$$

with *Major* being a binary variable taking the value "1" if a student chooses FACT or any of its sub-fields as a major. *Personality* represents the individual mean values for the BFI-personality traits. Results for the sub-fields (columns) and the three samples (Panels) are shown in Table 10. For the full sample (Panel A), they are consistent, with results from the univariate analysis presented above. However, the magnitude is smaller for financial and managerial accounting, where only two (instead of three) or no (instead one) personality traits show a significant relation to the choice of the major. Neuroticism shows the most persistent pattern, as it is significantly negative related to the probability of majoring

in a FACT sub-field in all but one (managerial accounting) specification. Focusing on the sub-fields, the personality traits identified before show a significant relation to tax accounting. However, the magnitude is rather small. For example, a one-unit increase (which is roughly one standard deviation, Table 4) in extraversion lowers the probability to major in tax accounting by 5.8%. The area under RoC curve above 0.5 indicates that the predictive power of the model is not sheer coincidence. Explanatory power, however, is limited (Pseudo-R^2 below 15% for all specifications), indicating that the decision to choose a certain major is mainly driven by factors other than personality traits.

As expected, results get weaker in the matched majors (Panel B) and matched lectures samples (Panel C). In the matched majors sample, students were matched on demographic, academic, and family background as well as their personality traits. Hence, we would not expect to find any effect of personality traits since each student that majors in FACT is balanced by another student with similar personality traits who does not major in FACT. Surprisingly, the results obtained for tax accounting and corporate finance remain significant with comparable coefficients as before, indicating a very robust relation between distinct combinations of personality traits and these two sub-fields. The slightly significant negative relation with openness for experience for tax accounting, and neuroticism for corporate finance, can also be observed in the matched lectures sample (Panel C). Significant relations other than the slightly significant negative coefficient for consciousness in column 1 cannot be observed. This result emphasizes the importance of the sample selection for the survey. As shown before, the sample carries only a small share of FACT students. The FACT students included are mainly majoring in managerial accountants and corporate finance. But these are precisely the two FACT majors with the least differences in personality traits – most likely due to their relative popularity with non-FACT students.

Table 10:
Logit Regressions for the Choice of Major Fields of Study

The table shows the results of following Logit regression:

$$Major = \beta_0 + \sum Personality + \varepsilon$$

Major is a binary variable taking the value "1" if the respondent has chosen the major field of study denoted in the column heading, and "0" otherwise. All other variables are defined as described in the text. Coefficients are marginal effects. z-Statistics not reported. ***, **, and * denote significance at the 1 %, 5 %, and 10 % level, respectively.

	FACT	Financial Accounting	Managerial Accounting	Tax Accounting	Corporate Finance
Panel A: Full Sample					
Agreeableness	-0.093 **	-0.050	0.021	-0.035	-0.028
Conscientiousness	0.076 *	0.070 *	0.032	0.099 ***	0.033
Neuroticism	-0.063 **	-0.053 **	0.000	-0.048 **	-0.073 ***
Extraversion	-0.078 ***	-0.026	-0.039	-0.058 ***	-0.036
Openness to Experience	-0.071 *	-0.039	-0.034	-0.064 **	0.027
N	428	428	428	428	428
Pseudo-R^2	0.038	0.028	0.012	0.082	0.027
Area under RoC curve	0.635	0.619	0.573	0.701	0.605
Panel B: Matched Majors Sample					
Agreeableness	-0.064	-0.039	0.047	-0.031	-0.011
Conscientiousness	0.063	0.068	0.023	0.104 ***	0.026
Neuroticism	-0.040	-0.045	0.017	-0.046 **	-0.066 **
Extraversion	-0.051	-0.012	-0.025	-0.055 **	-0.023
Openness to Experience	-0.051	-0.030	-0.021	-0.064 *	0.043
n	384	384	384	384	384
Pseudo-R^2	0.017	0.017	0.008	0.065	0.020
Area under RoC curve	0.591	0.591	0.561	0.677	0.593

Table 10:
continued

	FACT	Financial Accounting	Managerial Accounting	Tax Accounting	Corporate Finance
Panel C: Match Lectures Sample					
Agreeableness	-0.098	0.028	-0.031	0.032	-0.051
Consciousness	-0.010	-0.039	0.074	0.015	-0.058
Neuroticism	-0.000	-0.013	0.024	0.015	-0.060 *
Extraversion	-0.090 *	-0.034	-0.051	-0.001	-0.024
Openness to Experience	-0.054	-0.002	-0.026	-0.078 *	-0.043
n	112	112	112	112	112
Pseudo-R^2	0.049	0.100	0.041	0.121	0.132
Area under RoC curve	0.644	0.783	0.664	0.763	0.747

Table 11:
Interest in and Preferences for a First Job in FACT-related areas

Panel A: First Job (multiple answers allowed)

	Full Sample		Matched Majors		Matched Lectures	
	Abs.	%	Abs.	%	Abs.	%
FACT	*273*	*63.8*	*259*	*67.4*	*62*	*55.4*
Financial Accounting	106	24.8	104	27.1	14	12.5
Auditing	95	22.2	91	23.7	17	15.2
Financial Accounting / Auditing	151	35.3	145	37.8	24	21.4
Managerial Accounting	148	34.6	141	36.7	37	33.0
Tax Accounting	47	11.0	45	11.7	9	8.0
Tax Advisory	56	13.1	56	14.6	9	8.0
Tax Accounting / Advisory	72	16.8	70	18.2	13	11.6
Corporate Finance	107	25.0	103	26.8	19	17.0

Panel B: Preference to work in an Auditing, Tax Advisory or Consulting Firm

	n	Mean	SD	1. Q	Med	2. Q
Full Sample	428	3.48	1.11	3.00	3.00	5.00
Matched Majors	384	3.52	1.11	3.00	3.00	5.00
Matched Lectures	112	3.17	.99	2.00	3.00	4.00

5.3 Career Aspirations

In our second analysis, we investigate whether and to which extent students are interested in pursuing a first job in any FACT-related sub-field and whether this decision relates to a distinct set of personality traits. Panel A of Table 11 shows the absolute number and relative share of students interested in picking a first job in any FACT-related area. For all three samples, the share of students interested in such a first job (FACT, 55.4% for the matched lectures sample to 67.4% for the matched majors sample) is higher than the share of FACT students documented in the previous analysis. Put differently, these jobs are also attractive to a reasonable share of non-FACT students. Particularly noteworthy is the interest in financial accounting/auditing in the matched lectures sample, which is nearly four-times as high as the share of students in the respective major fields of study (Panel D of Table 8). Furthermore, managerial accounting is the most popular vocational choice by students (between 33.0 and 37.8%), followed by financial accounting/auditing (21.4 to 35.3%), corporate finance (17.0 to 25.0%), and tax accounting/advisory (8.0 to 14.6%).

Table 12:
Big Five Personality Traits and Interest for a First Job in FACT-related areas

	Group = no		Group = yes		Difference	
	n	Mean	n	Mean		
Panel A: FACT						
Agreeableness	155	3.68	273	3.57	0.11	**
Extraversion	155	3.72	273	3.45	0.27	***
Consciousness	155	3.70	273	3.75	-0.05	
Neuroticism	155	2.88	273	2.81	0.07	
Openness to Experience	155	3.31	273	3.13	0.17	***
Panel B: Financial Accounting / Auditing						
Agreeableness	277	3.63	151	3.56	0.07	
Extraversion	277	3.60	151	3.44	0.17	*
Consciousness	277	3.73	151	3.74	0.00	
Neuroticism	277	2.88	151	2.76	0.12	
Openness to Experience	277	3.25	151	3.10	0.15	**
Panel C: Managerial Accounting						
Agreeableness	280	3.61	148	3.61	0.00	
Extraversion	280	3.64	148	3.37	0.27	***
Consciousness	280	3.72	148	3.77	-0.05	
Neuroticism	280	2.85	148	2.82	0.04	
Openness to Experience	280	3.26	148	3.08	0.18	***
Panel D: Tax Accounting / Advisory						
Agreeableness	356	3.62	72	3.56	0.05	
Extraversion	356	3.59	72	3.30	0.30	***
Consciousness	356	3.71	72	3.85	-0.14	**
Neuroticism	356	2.87	72	2.69	0.18	*
Openness to Experience	356	3.25	72	2.94	0.31	***
Panel E: Corporate Finance						
Agreeableness	321	3.64	107	3.51	0.14	**
Extraversion	321	3.53	107	3.59	-0.06	
Consciousness	321	3.72	107	3.77	-0.05	
Neuroticism	321	2.90	107	2.65	0.25	***
Openness to Experience	321	3.17	107	3.28	-0.11	

Observing different patterns for the choices of the major field of study and first job could also transfer to differences in personality traits. Table 12 shows the respective mean values for the BFI-personality traits of the group of students interested in a first job in a FACT-related area (Group = 1), and those who are not (Group = 0). Students generally interested in any FACT-related first job score significantly lower in agreeableness, extraversion, and openness to experience. Compared to the study choice, results become more pronounced for students interested in a first job in managerial accounting and corporate

Table 13:
Differences in Big Five Personality Traits for Inhouse and External Jobs

	Inhouse		External		Difference	
	n	Mean	n	Mean		
Panel A: Financial Accounting (Inhouse) / Auditing (External)						
Agreeableness	56	3.67	95	3.50	0.17	**
Extraversion	56	3.46	95	3.42	0.04	
Consciousness	56	3.67	95	3.78	-0.10	
Neuroticism	56	2.89	95	2.69	0.21	
Openness to Experience	56	3.05	95	3.12	-0.07	
Panel B: Tax Accounting (Inhouse) / Advisory (External)						
Agreeableness	16	3.60	56	3.55	0.05	
Extraversion	16	3.27	56	3.31	-0.04	
Consciousness	16	3.52	56	3.95	-0.43	***
Neuroticism	16	2.81	56	2.65	0.16	
Openness to Experience	16	2.99	56	2.93	0.06	

finance. For managerial accounting, additional to the lower score in extraversion, a lower value for openness to experience can be observed. Students interested in a first job in corporate finance show significantly lower scores in agreeableness and neuroticism. The latter confirms the finding from the studying choices (Table 9). As noted, the interest in a first job in financial accounting/auditing is much higher than that in the respective major field of study. This increase is mainly driven by students with divergent characteristics. Students who would like to start their professional careers in financial accounting/auditing display significantly lower values for extraversion. The difference is three-times as high as for the studying choice. The significant result for openness to experience is comparable to the previous one. Differences in consciousness and neuroticism, which were significant before, are near zero at hand. The increased interest in financial accounting/auditing – compared to the studying choice – led to a partial adjustment towards students with "average" personality types observable for business & management in general. In contrast, we do not find such an effect for the closely related sub-field of tax accounting. Signs, coefficients, and in most cases even the significance levels, remain as previously reported. We further investigate this difference in the next step.

Financial accounting and auditing both primarily deal with financial statements for commercial purposes, whereas tax accounting and advisory are directed towards tax filings

Table 14:
Preference for a First Job in an Accounting, Auditing, Tax Advisory or Consulting Firm

The table shows the results of following ordered Logit regression:

$$Start = \sum \alpha + \beta_1 \cdot FACT + \beta_2 \cdot OthCourse + \sum Personality + \varepsilon$$

Start is an ordinal variable indicating the respondent's preference to start her career in an auditing, tax advisory or consulting firm rated on a scale from 1 ("very unlikely") to 5 ("very likely"). All other variables are defined as described in the text. Coefficients are odds ratios. z-Statistics not reported. ***, **, and * denote significance at the 1 %, 5 %, and 10 % level, respectively.

	Full Sample	Matched Majors	Matched Lectures
FACT	1.190 ***	1.252 ***	1.207 ***
OthCourse	-0.364	-0.351	-0.146
Agreeableness	-0.526 ***	-0.513 ***	-0.502
Consciousness	0.265	0.266	-0.037
Neuroticism	-0.320 ***	-0.381 ***	-0.292
Extraversion	-0.135	-0.161	-0.086
Openness to Experience	-0.268 *	-0.240	-0.253
Constant 1	-4.109 ***	-4.219 ***	-4.817 **
Constant 2	-2.315 **	-2.363 *	-2.595
Constant 3	-1.526	-1.585	-1.788
n	428	384	112
Pseudo-R^2	0.069	0.072	0.054

and financial statements for taxation purposes. So far, we structured the analysis following this functional dichotomy. Another way to structure these activities is by whether they are "built" or "bought." That is, financial and tax accounting services are usually performed by firms' own employees, whereas auditing and tax advisory services are performed by an external third party. Since in-house and external jobs differ with regard to their organizational structure (for particularities of professional service firms, e.g., Norderflycht 2016) and work arrangement (e.g., increased business travels for employees in audit), these may attract different kinds of people as measured by personality traits. To further test this notion, Table 13 shows the differences in personality traits for students interested in a first job in financial accounting versus auditing (Panel A) as well as tax accounting versus tax advisory (Panel B). Students eying a future in auditing exhibit a significantly lower level of agreeableness than their fellow students who like to do commercial work in-house. For taxes, consciousness is more pronounced for students who prefer to work in tax advisory rather than tax accounting. Students who prefer to work in professional service firms also show notably lower – although not significant – levels of neuroticism.

To further substantiate differences in personality traits for students who prefer to start their careers in professional service firms, we run an ordered logit regression with students' preferences as the dependent and personality traits as independent variables:

$$Start = \sum \alpha + \beta_1 \cdot FACT + \beta_2 \cdot OthCourse + \sum Personality + \varepsilon \qquad (4)$$

Start is an ordinal variable indicating the preference, with values ranging from "very unlikely" (1) to "very likely" (5). *FACT* and *OthCourse* are indicator variables for students majoring in a FACT-related sub-field or surveyed in a non-FACT lecture, respectively. *Personality* are the individual mean values for the BFI-personality traits. Descriptive statistics for the dependent variable *Start* are provided in Panel B of Table 11. As observed before, results for the full and matched major sample are very similar, with students showing a mean preference of 3.48 and 3.52 (out of 5, SD: 1.11), respectively. Students in matched lectures sample show a lower preference (mean: 3.17, SD: 0.99) consistent with a lower share of students interested in a first job in accounting, auditing, or tax advisory. Results for the ordered logit regression are reported in Table 14. Students majoring in at least one FACT-related sub-field *(FACT)* show a significantly higher preference in all three samples. Given the different studying choices, one would assume a negative effect for students surveyed in non-FACT lectures. However, *OthCourse* has the predicted sign but is insignificant in all three models. The significantly negative coefficient for agreeableness, neuroticism, and (partly) openness to experience are consistent with the prior results obtained from the univariate tests. Interestingly, agreeableness was only significant for students interested in a first job in corporate finance but not for financial, managerial, or tax accounting. We did, however, observe a significantly lower level of agreeableness for students starting a career in auditing as opposed to in-house financial reporting. This supports the notion that differences in personality traits do not only relate to functional but also to the organizational form of an occupation. As before, the results are not confirmed in matched lectures sample. Students in non-FACT courses who share similar majors and – indirectly – personality traits may have other desires for their jobs. In line with the, once again, low explanatory of personality traits in our model (Pseudo-R^2 below 8 % in all specifications), the same subjective characteristics do not necessarily lead to the same vocational outcomes.

Table 15:
Intentions to Pursue a Professional Examination

Panel A: Interest in Pursuing a Professional Examination						
	Full Sample		Matched Majors		Matched Lectures	
	Abs.	%	Abs.	%	Abs.	%
Auditor	39	9.1	38	9.9	3	2.7
Tax Advisor	43	10.0	42	10.9	6	5.4
Any	56	13.1	55	14.3	8	7.1
Panel B: Preference to Pursue the Auditor Examination						
	n	Mean	SD	1. Q	Med	3. Q
Full Sample	424	1.72	1.07	1.00	1.00	2.00
Matched Majors	381	1.77	1.09	1.00	1.00	2.00
Matched Lectures	112	1.47	0.83	1.00	1.00	1.00
Panel B: Preference to Pursue the Tax Advisor Examination						
	n	Mean	SD	1. Q	Med	3. Q
Full Sample	424	1.72	1.15	1.00	1.00	2.00
Matched Majors	381	1.78	1.18	1.00	1.00	2.00
Matched Lectures	111	1.46	0.92	1.00	1.00	2.00

5.4 Professional Examinations

In our third analysis, we investigate whether and to what extent students are interested in pursuing a professional examination in audit or tax advisory as well as whether this intention relates to distinct personality traits. Panel A of Table 15 presents the share of students interested in pursuing the auditor, certified tax advisor, or both examinations for the three samples. We observe a similar pattern as in prior analysis. That is, results for the full and matched samples are roughly comparable. 13.1% (14.3) of the students in full (matched major) sample express high or very high intention to pursue any examination. The certified tax advisory is slightly more popular than the auditor examination (10.0% vs. 9.1% for the full sample). These results correspond to a higher number of entrants in

Table 16:
Big Five Personality Traits and the Intention to Pursue a Professional Examination

	Group = 0		Group = 1		Difference	
	n	Mean	n	Mean		
Panel A: Any						
Agreeableness	372	3.61	56	3.56	0.05	
Extraversion	372	3.58	56	3.33	0.25	**
Consciousness	372	3.71	56	3.92	-0.21	***
Neuroticism	372	2.88	56	2.57	0.31	***
Openness to Experience	372	3.22	56	3.03	0.19	**
Panel B: Auditor						
Agreeableness	389	3.61	39	3.54	0.07	
Extraversion	389	3.56	39	3.38	0.18	
Consciousness	389	3.71	39	3.98	-0.27	***
Neuroticism	389	2.87	39	2.49	0.38	***
Openness to Experience	389	3.21	39	3.02	0.19	*
Panel C: Tax Advisor						
Agreeableness	385	3.61	43	3.62	-0.01	
Extraversion	385	3.57	43	3.28	0.30	**
Consciousness	385	3.72	43	3.90	-0.19	**
Neuroticism	385	2.86	43	2.66	0.20	
Openness to Experience	385	3.22	43	2.97	0.26	**
Panel D: Tax Advisor (Group = 0) / Auditor (Group = 1)						
Agreeableness	17	3.61	13	3.39	0.22	
Extraversion	17	3.22	13	3.50	-0.28	
Consciousness	17	3.77	13	3.96	-0.18	
Neuroticism	17	2.74	13	2.25	0.49	
Openness to Experience	17	3.07	13	3.26	-0.20	

the tax advisor examination (Bundesteuerberaterkammer 2016; Wirtschaftsprüferkammer 2017). However, the interest in the auditor examination is higher than expected.[10] For the matched majors sample, the comparably low interest in the professional examination is not surprising given the career preferences of students in non-FACT lectures laid out above.

Students with the intent to pursue a professional examination show significantly lower scores in extraversion, neuroticism, and openness to experience, as well as higher values in consciousness (Panel A of Table 16). This pattern is similar to the one observed for

[10] Our sample includes 14 students who participate in a program to move up parts of the audit examination to the course of studies (§ 13b WPO). Of these, 13 (92.9 %) want to pursue the audit, and 10 (71.4 %) the tax examination, respectively.

students who choose to major in tax accounting or consider to pick up a first job in this sub-field. Interestingly, students who intend to pursue a certified tax advisory examination (Panel C) show less pronounced differences. Whereas neuroticism is no longer significant for future tax advisors (0.20), the difference is nearly twice the size (0.38) for students intending to pursue an auditor examination. They also score lower values for openness to experience, though slightly less than students interested in the certified tax advisor examination. Consciousness reveals an inverse picture: higher values and stronger significance for the future auditors. Directly comparing both groups (Panel D) reinforces prior findings, though the differences are not significant, with the 0.49 neuroticism score for auditors only "economically" meaningful.

To examine the joint relation of the personality traits on the preference to pursue a professional examination in tax or audit, we ran the following ordered logit regression which is comparable to equation (4) in Section 5.4:

$$Examination = \sum \alpha + \beta_1 \cdot FACT + \beta_2 \cdot OthCourse + \sum Personality + \varepsilon \qquad (5)$$

Examination is an ordinal variable indicating the preference for either the audit or certified tax advisor examination, with values ranging from "very unlikely" (1) to "very likely" (5). *FACT* and *OthCourse* are indicator variables for students majoring in a FACT-related sub-field or surveyed in a non-FACT lecture, respectively. *Personality* are the individual mean values for the BFI-personality traits. Descriptive statistics for the dependent variables are provided in Panels B and C of Table 15. Overall interest in the professional examination is remote and virtually identical for the auditor and tax examination (mean: 1.72 out of 5, SD: 1.07 and 1.15 for the full sample). More than 50% of the students indicated that it is "very unlikely" that they pursue the professional examinations (even more, 75% of the students in the matched lectures sample for the auditor examination). As expected, the values are even lower in the matched lectures sample.

Table 17 shows the results from the ordered logit regression for the audit (Panel A) and the tax examination (Panel B). The sample size is slightly reduced due to so some missing information about preferences. Overall, the results indicate a negligible relation between the preference for the professional examinations and personality traits. Most notably, neuroticism is negatively related to the preference for the audit examination, which is consistent with our prior findings. Students who major in at least one FACT-related subject are significantly more likely to have a high preference for any examination (except for

Table 17:
Preference for Pursuing a Professional Examination

The table shows the results of following ordered Logit regression:

$$Examination = \sum \alpha + \beta_1 \cdot FACT + \beta_2 \cdot OthCourse + \sum Personality + \varepsilon$$

Examination is either the auditor (Panel A) or tax advisor examination (Panel B) rated on a scale from 1 ("very unlikely") to 5 ("very likely"). All other variables are defined as described in the text. Coefficients are odds ratios. z-Statistic not reported. ***, **, and * denote significance at the 1 %, 5 %, and 10 % level, respectively.

	Full Sample	Matched Major	Matched Lectures
Panel A: Audit Examination			
FACT	1.156 ***	1.053 ***	0.802
OthCourse	-1.108 ***	-1.291 ***	-1.429 ***
Agreeableness	-0.242	-0.281	-0.302
Consciousness	0.149	0.140	-0.698
Neuroticism	-0.291 **	-0.257 *	-0.130
Extraversion	-0.114	-0.071	0.229
Openness to Experience	0.018	-0.047	0.802
Constant 1	-0.591	-0.836	0.038
Constant 2	0.200	-0.031	-2.554
Constant 3	1.535	1.265	-1.742
Constant 4	2.909 **	2.642 *	0.270
n	424	381	112
Pseudo-R^2	0.063	0.060	0.080
Panel B: Tax Examination			
FACT	1.459 ***	1.364 ***	1.405 ***
OthCourse	-0.926 **	-1.092 ***	-1.100 **
Agreeableness	-0.297	-0.311	0.174
Consciousness	0.270	0.238	-0.618
Neuroticism	-0.137	-0.104	0.004
Extraversion	-0.049	-0.019	0.439
Openness to Experience	-0.204	-0.267	-0.712 *
Constant 1	-0.108	-0.364	-1.286
Constant 2	0.708	0.423	-0.265
Constant 3	1.849	1.557	0.986
Constant 4	2.508 *	2.218	1.566
n	424	381	111
Pseudo-R^2	0.080	0.073	0.094

the audit examination in match lectures sample). In contrast, students surveyed in non-FACT lectures have a significantly lower preference.

6 Discussion

Students who choose to major in a FACT-related sub-field show some distinct deviations from non-FACT students. Lower scores in agreeableness and extraversion relate to a skeptical but introvert personality. The decreased levels for openness to experience point to conservative persons who are uncomfortable with complexities. However, there are notable differences between the sub-fields. Students majoring in corporate finance and managerial accounting do, for the larger part, not share these traits. Whereas students in corporate finance do at least share the lower values in neuroticism, students majoring in management accounting do not show significantly different levels for any of the traits. However, their below average score for agreeableness indicates skeptical but more risk-prone personalities. Put differently, these two groups of students are closer to other students in business, management, and economics. In contrast, students majoring in financial and tax accounting have widely similar personality traits. Comparable to FACT students as a whole, they show lower values in openness to experience. The indicated conservative and conventional personality is enriched by productive, responsible, and ethical behavior (higher levels of consciousness), as well as calm and objective decision-making. Taken together, this distinct combination of personality traits shows certain similarities with a "bean counter" stereotype discussed in the accounting literature (see Table 1). Indeed, students in financial and tax accounting tend to be honest and trustworthy. However, students in tax accounting, especially, also show the negative side of the personality, i.e., a possibly duller and more boring personality (Carnegie and Napier 2010; Richardson et al. 2015), as indicated by the significantly lower levels of extraversion.

The observed personality does translate into the aspirations for a first job. Students interested in starting a career in tax accounting, in particular, tend to be typical bean counters. Their curiosity for the job seems to be driven by an interest in the technical aspects of the field. What looks like good news from employers' points of view at first sight could become less favorable in the long-term. Larger firms, in particular, appoint young professionals to more technical but less complex and rather repetitive tasks which require profound but no expert knowledge. To advance their careers, employees need to develop other skills like leadership and customer acquisition and relationship management. Personality traits shown by tax accounting students, in particular, indicate that this transition could become very challenging. This conclusion has practical implications for students,

employers, and the tax profession as a whole. Students need to be aware of the requirements expected to advance their careers. Future tax accountants will have to offer more than the mere technical and regulatory aspects of the field, irrespective of their future work environments. Kornberger et al. (2011) show that audit firms heavily focus on acquisition and customer relation skills in their partner promotion decisions. Technical experts have fewer chances to get into leadership positions. Given the close relation to audit firms in Germany, this notion can most likely be transferred to the tax accounting field as well. However, most certified tax advisors are self-employed.[11] Being self-employed requires technical and management skills yielding similar challenges as outlined before. Anecdotal evidence suggests that tax advisors willing to sell their office (e.g., due to retirement) struggle to find buyers. One potential explanation is the described problem to attract job starters who show the necessary knowledge and personality.

Interestingly, our results indicate a different pattern for students seeking a first job in financial reporting or auditing. The differences in personality traits observed for the studying choice partly diminish with regard to the intention to pick a first job in this field. The higher number of students interested in a career as compared to the number of students majoring in financial accounting may explain this finding. As observed for corporate finance and managerial accounting, increased interest translates into personality traits closer to "average" business, management, and economics students. Put differently, the group of students interested in a first job in financial accounting is more diverse than for tax accounting. In general, audit firms and the audit profession face better chances to hire talents and create interest in long-term careers, as well as the professional examinations, when students already have started working. This may be partly attributable to the idea of auditing as a "stepping stone" or "qualification job." The "Big Four" audit firms, in particular, advertised starting a career in auditing as a chance to get to know a broad set of industries and technical skills necessary to taking care of the accounting and finance function in other companies. This idea seems to appeal even to students outside the FACT-related sub-fields. Our results for the intention to pursue a professional examination provide further evidence for this notion. The share of students who are highly or very highly interested in an auditing or tax examination is nearly identical; but the group of students majoring in tax accounting or having intentions for a first job in this field is lower

[11] Approximately 70 % of German certified tax advisors are self-employed (Bundessteuerberaterkammer 2016).

than for financial accounting. Selecting oneself in a group towards one has a positive image and shares common attitudes, as predicted by the social identification theory, is, hence, more pronounced for tax accounting. However, students with high or very high interest in any of two professional examinations share some common personality traits: higher scores in consciousness and lower scores in openness to experience, indicating responsible and ethical behavior but conservative values and conventional judgement. Students interested in the auditor examination additionally score lower in neuroticism (calm, objective), and those interested in the tax examination lower in extraversion (introvert, submissive). Most notably, we find no significant effect for agreeableness where lower values would indicate a more skeptical personality, a trait particularly desirable for auditors. Professional standards require auditors to exercise "professional skepticism," that is, "[a]n attitude that includes a questioning mind, being alert to conditions which may indicate possible misstatement due to error or fraud, and a critical assessment of audit evidence" (ISA 200). However, this result does not imply that students interested in auditing (or the respective examination) are not skeptical, but only that they are not more or less skeptical than other (business) students. Adequate trainings at the university and firm level may compensate this effect (Hurtt 2010). Since students interested in financial and tax accounting tend to judge in conventional terms and are less open-minded towards complexities and change, it seems reasonable to develop and foster such values at early stages. Preparing students to deal with the ever-changing regulatory and technological environment they operate in would also be beneficial.

7 Concluding Remarks

Prior studies for US students (Wheeler 2011; Kovar et al. 2003; Swain and Olsen 2012) indicated the predominance of "bean counter"-like personality types for accounting students and practitioners. Our results for German students add further modest support on this issue. It remains a field for future study to see whether this is an international pattern. However, there are some interesting points worth mentioning. Tax accounting students were the most distinguished group regarding their personality traits. Financial accounting and auditing students show modest references to the "bean counter" stereotype, which diminish when focusing on the decision to pick a first job in this sub-field. In contrast, students in managerial accounting and corporate finance mostly share the personality traits of other business, management, and economics students. Taken together, our results

support the observation by Dalton et al. (2014) that accounting students are not a homogenous group. Further analysis of the differences and their causes for the three sub-disciplines provide a fruitful area for future research.

Furthermore, our study is subject to some limitations. First, our sample is based on data from one university. Socialization and the effect of deliberate choice of the university could induce structural differences between the students in our sample and the population of (business, management, and economics) students in Germany. However, our approach is in line with other studies which mainly focused on one university (e.g., Swain and Olsen 2012). To our knowledge, no further studies or official statistics on the characteristics or major choices of German (business economics) students exist that would allow us to cross-check our sample. Hence, the generalizability of our results remains an open issue. Second, results are based on a single survey and not a repeated panel-like methodology. There is a strong argument that personality traits shape occupational and academic decisions (Ham et al. 2009; Nieken and Störmer 2010), but we are cautious about the causality of our results. Nevertheless, personality traits themselves tend to be time-invariant, at least in the short run (Cobb-Clark and Schurrer 2012). Third, the actual validity of the personality constructs employed, especially conscientiousness and extraversion, is potentially underestimated from self-assessment (Mount et al. 1998). Additionally, possible age effects affect our results (McGrae and Costa 2003). Fourth, the observed differences diminish in the matched lectures students, which features the highest share of non-FACT students. In conformity with the low explanatory power of our multivariate analysis, this suggests that personality traits alone are a weak predictor of occupational outcomes. Students with similar traits obviously choose different jobs. Even though the reported differences are statistically significant, the magnitude of the differences is rather small (around one-fifth to one-fourth of a standard deviation), attributable to our rather homogenous sample, i.e., business, management, and economics students from one German university.

PART B:
STANDARDS

Costs and Benefits of Accounting Services − Evidence from Europe

Abstract

We empirically analyze the benefits associated with the costs of accounting-related services in 18 European countries. We use the revenues earned from accounting-related services as an estimate of compliance costs and explore whether the cross-country and temporal variation of these costs is associated with benefits for firms (e.g., in the form of lower corporate tax burdens) and/or the public (e.g., through increased earnings quality). Prior studies focused on audit and non-audit (e.g., tax advisory) fees paid by listed companies. Our dataset also includes SMEs and individuals. Empirical results indicate increased spending on accounting-related services is related to decreasing earnings quality, as measured by accrual-based earnings management and real activities management. However, we find no evidence that companies use discretionary spending to decrease their effective tax rates, indicating that accounting services are primarily used to comply with tax laws. Country-level governance mechanisms partially mitigate this relation. Differences in the quality of financial reporting and tax regulation do not alter the benefits from accounting-related services. We attribute these results to an increased demand in accounting advisory services to identify avenues for earnings management and tax planning. Additionally, either the advisory effect of accounting regulation supersedes the effect of audits, which should restrict earnings management, or companies demand accounting services to smooth earnings for tax purposes.

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1 Introduction

Costs and benefits of regulation are a fruitful area of theoretical and empirical research in economics.[12] However, prior research on accounting regulation focuses on (1) the effects of regulatory changes in single countries and (2) audit and non-audit fees of publicly listed corporations. Therefore, we introduce a new macro-economic perspective based on a novel cross-country dataset from the European Union's statistical bureau. EuroStat provides country-level data on revenues from accounting, auditing, and tax advisory services[13], which arise during a given year. Accounting-related services are tradable goods exchanged between two economic subjects. Hence, money spent by a company (or individual) on accounting-related services directly translates into revenues earned by an accounting, auditing, or tax advisory firm, or a certified individual. These costs are usually rooted in a company's obligation to adhere to all (tax and accounting) regulations it is subject to. However, companies face different incentives when using accounting-related services. The concept of compliance costs, as proposed by Johnston (1963), distinguishes between unavoidable (mandatory) and avoidable (voluntary) compliance costs. Mandatory compliance costs have no directly observable benefits other than conforming to legislation and avoiding enforcement actions and sanctions. In contrast, companies could decide to voluntarily increase spending in order to achieve certain beneficial goals, e.g., changing earnings quality to better inform or obfuscate shareholders as well as lowering its corporate tax burden. We use the revenues earned from accounting-related services as an estimate of compliance costs and explore whether the cross-country and temporal variation of these costs[14] is associated with benefits for firms (e.g., in the form of lower corporate tax burdens) and/or the public (e.g., through increased earnings quality).

We extend prior literature in a multitude of ways. First, small and medium-sized enterprises are considered as the motor of the European economy (European Union 2015). Therefore, focusing solely on audit and non-audit fees of publicly listed corporations would not properly reflect the European setting, in which Big 4 accounting firms only represent a comparably minor share of the total market for accounting, auditing, and tax

[12] For an overview of the theoretical foundation, cf. den Hertog (2010), as well as Hahn and Hird (1991) for empirical studies.

[13] For parsimony, we refer to accounting-related services hereafter.

[14] We use the terms costs of, revenues from, and spending on accounting-related services interchangeably.

advisory services. For instance, while "Big 4" firms dominate the German market for auditing of listed firms by large margins[15], they only comprise about 19% all revenues from accounting, auditing, and tax advisory services (Loy and Heidrich 2017).

Second, we analyze the cross-country variation in spending on accounting-related services. Within the European Union (EU), audit requirements are mostly harmonized regarding scope, professional requirements, and procedures (Directive 2006/43/EC). Contrariwise, tax laws remain in the discretion of EU member states (European Parliament 2015). While audit is mandatory, accounting services and especially tax consulting are largely voluntary. Nevertheless, managers' fiduciary duties result in a factual obligation to lower the tax burden on behalf of owners and investors. Having said that, tax research is uncertain about the extent of costs of tax compliance. It mainly builds on firm-level, small-N survey results (for a literature review, e.g., Eichfelder and Vaillancourt 2014). As such, like archival public firm audit fee research, it fails to consider the full range of costs paid for by listed and private firms as well as individual taxpayers. Hence, the EU provides a unique setting to assess macro-economic and industry-specific factors associated with the level of compliance costs.

Third, we explore the benefits of accounting regulation and, as such, of committing resources into financial reporting and tax planning. These likely are twofold. On the one hand, better financial reporting reduces information asymmetries through increased earnings quality for a wide range of stakeholders, including employees, suppliers, and shareholders. On the other hand, firms benefit from improved tax planning and, ultimately, their owners and shareholders through lowering the corporate tax burden. Tax avoidance by individuals as well corporations is well studied (Hanlon and Heitzman 2010). Yet, we explore the country-level association of demand for accounting, auditing, and tax consulting services on average tax savings by all firms in the economy.

Fourth, we investigate whether companies engage in real activities and accrual-based earnings management. Prior literature on private firms primarily focused on the latter

[15] German "Big 4" firms audit between 79 % (2010) and 89 % (2015) of German index constituents. In addition, their market share in all stock market listed clients increased from 64 % (2010) to 68 % (2015). However, in terms of revenues from accounting, auditing, and tax advisory, the "Big 4" account for only 18.0 % (5,030m €) of the market. Second tier firms (top 5 to 25, Lünendonk 2015) cover 4.7 % (€ 1,322m) of the market, leaving 77.2 % (€ 21.547m) of the overall revenues (€ 27.898m) in 2014 to other small and medium-sized accounting, auditing, and tax advisory firms or individuals.

(e.g., Burgstahler et al. 2006). In light of stricter regulation or other governance mechanisms, companies may refrain from accrual-based measures and switch to real activity management, which faces less scrutiny from auditors or regulators. Such behavior is well documented for listed companies (Graham et al. 2005; Zang 2012). In addition, we further build upon and extend the financial economics literature (e.g., Leuz et al. 2003) by examining the link between country-level governance and real activities management.

As mentioned before, costs associated with accounting, audit, and tax legislation are mainly compliance costs; hence, the necessary knowledge and infrastructure to meet legal obligations (Sandford et al. 1989). Hahn and Hird (1991) further divide regulatory costs into transfer payments and changes in net surplus. The former includes wealth transfers from losers to profiteers of a piece of regulation; the latter, changes in economic efficiency. Costs and benefits of accounting, audit, and tax rules – on the market as well as the firm level – are difficult to estimate (e.g., Ahmed et al. 2013; Brüggemann et al. 2013). Therefore, our study focuses on transfer payments from companies and individuals, which are subject to these rules, to specialized service providers as well as the aforementioned benefits for firms and society associated with these payments. In contrast to prior studies, our dataset does not rely on estimates but actual revenues earned through mandatory financial statement audits or tax advisory services necessary to comply with or maximize benefits from tax regulation.

To examine the relationship between the costs and potential benefits of accounting-related services, we use two different measurement approaches. First, the share of revenues from accounting-related services as a percentage of GDP *(RevShare)*. This measure captures the economic importance of accounting and auditing services in each country. Higher regulatory requirements (e.g., extended mandatory audit requirements) or more complex regulation (e.g., tax system) may increase the reliance on external advice. To isolate country-specific effects, which are not driven by general trends in the economic environment, we introduce our second measure. The discretionary or unexpected part of revenues from accounting services *(RevUnexp)* is calculated in a fashion similar to a cross-sectional discretionary accrual model, with the level and change in economic development as explanatory factors.

Costs of accounting-related services vary between US $5.39 in Estonia and US $12.76 per US $1m of GDP in the Netherlands. We hypothesize that the degree to which companies benefit from accounting-related services varies with the country-level spending on

those services. Furthermore, drawing from the financial economics literature, we expect that these benefits are mitigated by country-level governance mechanisms as well as the quality of accounting and tax regulation. To capture the broad array of potential incentives and implementation forms with regard to accounting-related services, we employ three different measures for the potential benefits: (1) accrual-based earnings management measured by discretionary accruals, (2) real activities management estimated by abnormal cash flows, and (3) taxation operationalized by the difference between companies' effective and statutory tax rates.

Our results show a significantly negative relation between (discretionary) spending on accounting-related services and earnings quality. However, lower earnings quality does not translate into lower tax rates. This primary results indicate that firms use accrual-based earnings as well as real activities management to create a less bumpy, smoother earnings path. This result is in line with prior literature highlighting the different financial reporting and tax incentives of private companies as opposed to listed firms (e.g., Burgstahler et al. 2006; Gassen and Fülbier 2015). Furthermore, we find modest evidence on the mitigating effect of country-level governance mechanisms on the relation between spending on accounting-related services and earnings quality. Contrariwise, higher quality financial reporting and taxation systems have virtually no effect. Our results are robust to alternative specifications of the dependent variables as well as tests for endogeneity.

This paper is structured as follows. Section 2 contains a short outline of the differences in accounting and tax legislation in the European Union (EU) as well as a theoretical framework on the classification and measure of compliance costs. Section 3 develops hypotheses. We describe our data and research design in Section 4. Sections 5 and 6 contain the results of our empirical models and robustness checks. Section 7 concludes.

2 Background

2.1 Regulation of Accounting, Auditing, and Tax requirements in the EU

Since 1978, accounting requirements for incorporated companies have been harmonized in the EU. As all European companies operate within the European Single Market, the harmonization of accounting requirements should enhance the exchange of information for cross-border economic activities and establish a level-playing field with regard to the legal framework companies are subject to (Directive 78/660/EC, preface; Van Hulle

1992). Hence, mandatory requirements are much more exhaustive than in other areas of the world (e.g., the United States, cf. Hope and Vyas 2016; Hope et al. 2017). This peculiarity accounts for the distinguished importance of small- and medium-sized enterprises (SMEs) in the EU. SMEs account for 67% of the employment and 58% of the total value added in the EU28 countries (European Commission 2015). For this reason, the regulatory framework for SMEs became one of the cornerstones for European policymaking in recent years. The Small Business Act for Europe, in particular, follows a "think small first" approach. It aims at cutting red tape and decreasing regulatory costs for SMEs which might hinder entrepreneurship.[16] The most recent changes in the accounting legislation can also be seen in this light. One example of reduced regulation is increased audit exemption thresholds effective for fiscal years beginning January 1, 2016 and following Directive 2013/34/EU (FEE 2016).

The fourth (78/660/EEC) and seventh (83/349/EEC) directives state the minimum requirements for accounting principles, measurement bases, and disclosure of single and consolidated financial statements, respectively.[17] All incorporated companies must mandatorily prepare financial statements. The scope differs with respect to a company's size. Since EU directives are not self-executing, they must be implemented by member states to be rightfully adopted. In this process, member states possess direct (member state options) and indirect leeway on how to achieve a directive's goals. In the case of accounting requirements, the criteria for size classes (small, medium-sized, and large entities)[18] vary between countries to account for regional differences in economic development. Besides these obvious differences, the requirements draw substantially different interpretations between countries. Alexander (1993) as well as Alexander and Eberhartinger (2009), for example, document a broad continuum of interpretations of the overriding importance of the true and fair view principle in the fourth directive. One notable explanation are differences in functions attributed to financial reporting. In many common law-countries, financial statements are closely tied to legal consequences (e.g., insolvency, distribution of profits) and are even used for the determination of taxable profits (so-called contracting or stewardship purpose). In case law countries, financial statements are oftentimes solely

[16] For further information, cf. https://goo.gl/rIjUkl.

[17] Both directives have been combined and replaced by directive 2013/34/EU. The new accounting directive had to be implemented by member states until July of 2015. We do not discuss the changes since our sample period does only comprise years up to 2014.

[18] Directive 2012/6/EU introduced "micro entities" as a fourth category below the small enterprises. Member states have an option to further exempt these entities from certain disclosure requirements.

prepared for information purposes of stockholders (and stakeholders) (Bushman et al. 2006; Gassen and Fülbier 2015).

Contrariwise, the reporting requirements for listed firms were standardized by the IAS regulation (Regulation 1606/2002), with no member state discretion regarding scope and content of disclosures. Despite these efforts, the actual reporting behavior of firms still differs due to discretion within the accounting standards, differences in accounting traditions, as well as other institutional settings between countries (Nobes 1998; Nobes 2006; Nobes 2011; Daske et al. 2013).

Auditing requirements are subject to European legislation and harmonization, too. The aforementioned accounting directives state mandatory audit requirements for medium-sized and large companies. Member states possess the option to extend this requirement to small companies. Furthermore, directive 2006/43/EC ("auditor directive") contains requirements regarding the necessary qualification of auditors as well as auditing standards and procedures.

Despite the documented shortcomings, we observe a relatively harmonized picture for the regulation of accounting and auditing requirements in the European Union. In contrast, tax legislation mostly remained within the jurisdiction of the single member states (European Union 2014). Hence, in this "no taxation thesis," the EU has no genuine or direct tax sources and member states mostly retained autonomy. Low-tax countries and the new, mostly Eastern European member states, in particular, display little interest in tax harmonization (Wasserfallen 2014). However, even though there is no primary European tax legislation in existence, many secondary acts restrict and govern member states' formulations of tax rules. Genschel and Jachtenfuchs (2011) document more than 120 secondary acts (regulations, directives, and decisions of the European Court of Justice) with regard to tax policy between 1998 and 2007. In conclusion, tax legislation is also somewhat harmonized in the EU, but to a lesser extent than accounting and auditing requirements.

2.2 Compliance Costs

2.2.1 Theoretical Framework

There are two potential sources why companies would engage in spending on accounting-related services. First, an entrepreneur will need accounting-based information to evaluate whether and to what extent his expectations of profitable economic activity have been

fulfilled. This "exchange guidance demand" (Waymire 2009) even exists in the absence of any regulatory requirement. Second, companies may require professional assistance for complying with rules and regulations. Sandford (1989) defines these compliance costs as "those costs incurred by taxpayers, or by third parties such as businesses, in meeting the requirements laid upon them in complying with a given tax structure" (p. 10).[19] These encompass any costs associated with the preparation of tax returns, gathering, and processing the relevant data, as well as calculating taxes on products or profits. Less obvious costs are wages and salaries of the personnel employed for these tasks as well as additional overhead costs for IT systems or storage.

Compliance costs of tax systems result from four main sources (cf. Eichfelder and Vaillancourt 2014). First, a main component is the complexity of the tax system (e.g., the number of taxes, frequency of tax law changes, number of tax rates). Second, administrative behavior (e.g., the reliability of administrative statements, availability of tax office staff for advising tax payers) is a further, often underestimated, component. Third, the need for business and self-employed persons to compute their own tax liabilities leads to complex issues surrounding tax accounting. This is even more pronounced in jurisdictions without a link between tax and financial accounting. Fourth, international tax issues (e.g., transfer pricing, double tax treaties) add another layer of complexity.

Johnston (1963) further divides compliance costs into unavoidable (mandatory) and avoidable (voluntary or discretionary) costs. The former are costs necessary to comply with rules and regulations, whereas the latter are additional costs incurred for actions to minimize tax payments. While theoretically appealing, it is difficult to strictly disentangle compliance costs by those standards (Sandford 1989). It may be possible to separate the act of calculating tax expenses and filling the respective returns. However, management has the fiduciary duty to minimize tax payments, which requires additional actions (and costs). From this point of view, tax compliance (and advisory) costs are mostly voluntary in nature but unavoidable in a business sense. A similar reasoning applies to accounting-related costs and services. Albeit, some costs, like the fee for mandatory audits, are unavoidable, with companies keeping discretion with regard to earnings management and engaging in window dressing or impression management activities, which are also costly.

[19] Even though this definition and the following primarily focus on tax compliance costs, we see no reason why those should not apply to accounting regulation, too. From economic and legal stands, both areas are closely related.

Moreover, compliance costs consist of two parts: (1) internal (e.g., in-house time effort) and (2) external (e.g., audit and consulting fees) costs (Eichfelder and Vaillancourt 2014). Companies face a make-or-buy decision in handling these costs (Coase 1937). Smaller companies may strictly rely on external advisors, as this is more cost-efficient than building up and maintaining the knowledge, systems, and human resources to comply with regulatory requirements. Yet, larger companies also might face similar considerations when accounting-related tasks reach a certain threshold. In these cases, companies may choose to centralize accounting-related functions, e.g., in shared service centers. Centralized accounting functions – organized as profit or cost centers (Robinson et al. 2010) – can then be transferred to foreign locations (offshoring) or sold to an external service provider (outsourcing). Furthermore, in most cases, companies will not be able to hold expert-level knowledge in all specialized topics of tax and accounting regulation. Demand for accounting-related advisory services will, hence, arise with increased size and complexity of operations (Dunbar and Phillips 2001). Mergers and acquisitions as well as foreign subsidiaries, investments, and trade relationships are notable examples.

In a broader economic sense, all costs incurred through the outsourcing of accounting-related services are "transfer payments" from companies as losers of accounting and tax regulation to accounting, auditing, and tax advisory firms as beneficiaries of the same rules (Hahn and Hird 1991). However, this redistribution of profits does not indicate whether accounting and tax legislation or the respective regulatory costs incurred by companies outweigh potential benefits. The estimation of costs, let alone "net changes in economic efficiency," is difficult, as outlined in the following section.

2.2.2 Measurement

The empirical measurement of compliance costs faces two major challenges. First, the conceptual difficulty to determine the nature of "true" or "actual" compliance costs, as laid out before. Second, neither companies nor individuals need to account for or disclose costs related to tax and accounting requirements. However, in the United States as well as in the EU, certain disclosure requirements grant partial insights. Namely, listed companies in the United States, as well as listed and all large private companies in the European Union (Art. 18, Directive 2013/34/EU), must disclose audit and non-audit fees paid to the auditor of the statutory audit. Focusing on these fees would provide a misleading picture for several reasons. First, the majority of companies (i.e., SMEs) would not be

covered. Second, listed and large companies are, by definition, larger and more complex than the average SME. Third, the disclosed amounts most likely do not fully cover fees paid for accounting-related services. Large firms may also employ firms other than their auditor to fulfill accounting-related services, especially since auditors are prohibited from providing certain services (e.g., tax advisory) to audit clients (Maijoor and Vanstraelen 2012). Fourth, any information on the internal costs of accounting compliance is missing.

As such, it is not surprising that prior literature mainly focused on theoretical considerations regarding accounting-related costs. In general, research determines two main drivers of *financial transparency costs* (Lang and Maffett 2010). First, the adoption of international, more transparent, and comparable financial reporting standards (i.e., IFRS), which are regularly associated with additional and more detailed disclosures. Second, higher audit quality is associated with increased audit fees (Hay et al. 2013). Evidence on the actual costs of compliance with higher quality accounting standards is rather scarce. Some national standard setters provide survey evidence regarding the one-off implementation costs as well as the continuous costs of IFRS adoption (Financial Executives International and Canadian Financial Executives Research Foundation 2013; Korea Accounting Standards Board 2015; Australian Accounting Standards Board 2016). Other studies address the costs of IFRS adoption by focusing on changes in audit fees at the time of adoption (Griffin et al. 2009; Kim et al. 2012; De George et al. 2013). Another approach focuses on companies' cost avoidance behavior towards regulatory changes. Leuz (2007) documents a spike in delisting decisions ("going dark") at the time of the Sarbanes-Oxley Act, which featured increases in compliance and disclosure requirements, hence, increasing the costs of a public listing. Similar effects are assumed around the mandatory adoption of IFRS (Brüggemann et al. 2013).[20]

Studies on tax compliance usually rely on small sample surveys (Eichfelder and Vaillancourt 2014). While this approach offers the advantage to gain insights on the internal *and* external costs associated with tax requirements, the results cover only a small fraction of firms, which makes it difficult to draw generalizable conclusions.

[20] In a recent working paper, Hitz and Müller-Bloch (2016) provide evidence that enforcement actions are another potential cause for going dark decisions. Gutierrez et al. (2017) further substantiate these results for a sample of 18 IFRS adoption countries. In line with the results by Hitz and Müller-Bloch (2016), delisting decisions are especially pronounced in countries with strong enforcement regimes. However, companies may not completely delist but switch to market segments with lower regulatory requirements and lower costs ("going grey"), e.g., Leuz et al. (2008).

Taken together, prior literature on accounting- and audit-related costs mainly focused on listed companies. This is most likely due to the limited data availability for private companies. Research on tax compliance costs took a different stance by directly surveying companies on their respective costs (e.g., tax advisory, staff). This approach allows SMEs but is restricted to smaller samples. Large scale evidence on the overall economic impact and importance of externally provided accounting-related services as well as the nature of those costs – mandatory to comply with rules and regulations or voluntary to achieve company objectives with regard to tax and accounting outcomes – is, to the best of our knowledge, missing.

3 Hypothesis Development

Extant literature on earnings management (for a review, cf. Healy and Wahlen 1999) and corporate tax avoidance (for a review, cf. Hanlon and Heitzman 2010) stipulates that firms have incentives to commit internal and external resources (i.e., accounting, auditing, and tax consulting services) to influence the accounting "bottom line" (e.g., earnings, taxes payable). For instance, European private and public firms alike shift profits onto subsidiaries based in tax havens to lower their effective tax burdens (Jaafar and Thornton 2015), with much public blame also directed at large audit firms which provide a number of additional non-audit services, such as tax advisory (Finley and Stekelberg 2016). Hence, higher spending on accounting-related services should be associated with more complicated tax structures and potentially decreasing auditor independence, which might impair the public good of trust in financial reporting. Unsurprisingly, a number of studies find a negative association between abnormal accruals (e.g., Frankel et al. 2002) as well as going-concern opinions (e.g., Kao et al. 2014) with larger fee dependence.

On the other hand, there is ample evidence on a positive knowledge spillover between non-audit services and audit quality in general, and related to tax advisory services in particular (e.g., Christensen et al. 2015; Krishnan and Visvanathan 2011). This suggests that knowledge-spillovers from offering an increased range of services might supersede potentially negative effects of decreased independence associated with collecting higher fees. Considering the case of SMEs, external service providers are mainly independent of the clients' internal demands for accounting information and, hence, less likely to engage in earnings management activities which show up when handling routine (accounting)

tasks. Besides any discretionary behavior, external service providers supply the necessary skills to efficiently fulfill the tasks required for compliance. A comparable reasoning applies to accounting-related expert knowledge purchased for extremely complex and non-recurring transactions (e.g., M&A actitives). Recent evidence does indeed suggest that small companies, which outsourced their accounting activities, provide high-quality earnings (Höglund and Sundvik 2016). However, which theory finally prevails on a country-level comes down to an empirical question. Hence, we form the following non-directional hypotheses:

H_{1a}: Earnings quality is related to the level of spending on accounting-related services.
H_{1b}: Tax expenses are related to the level of spending on accounting-related services.

Recently, a line of literature emerged which goes beyond the effects of firm-level governance in accounting. On the one hand, in a low investor protection and legal enforcement environment, firms benefit from committing more resources into financial reporting to send a credible signal to stakeholders in general, and capital providers in particular (Doidge et al. 2007). This association is likely most pronounced for financially constrained firms that do not have access to the equity capital market and are subject to large information asymmetries between outside lenders and entrenched owner-managers (i.e., private firms; Hope et al. 2011). The weaker the country-level enforcement mechanisms, the more heavily high-quality owner-managers have to invest in third party independent financial auditing just to be able to send a costly signal differentiating themselves from low quality owner-managers. Indicative of this, higher audit fees are oftentimes regarded as increased audit effort and use of specialist auditor and, thus, a sign of higher audit quality (Bell et al. 2008).

On the other hand, in a high enforcement and litigation environment it is beneficial to commit more resources to comply with this extensive regulation out of self-preservation. As outlined before, spending on accounting-related services is equal to external compliance costs of accounting and tax regulation. Therefore, our estimates are closer to the lower bound of the total costs, as we have no direct measure of internal compliance cost. However, if rules and their enforcement are stricter in the first place, this in itself raises compliance cost. Which theory prevails remains an empirical question. Based on the inconclusive theoretical predictions, we form two non-directional hypotheses:

H_{2a}: *The relation between earnings quality and spending on accounting-related services is mitigated by country-level governance.*

H_{2b}: *The relation between tax expenses and spending on accounting-related services is mitigated by country-level governance.*

Numerous studies exhibit positive capital market implications of IFRS adoption in Europe (for a meta-analysis, Ahmed et al. 2013). Since 2005, the application of IFRS is mandatory for publicly listed firms. Yet, newer evidence shows that accounting harmonization in and of itself does not, *a priori,* contribute to these positive effects (Daske et al. 2013). Specifically, these effects are likely attributable to firm-level correlates related to corporate governance and reporting incentives, such as, but not limited to, the importance of equity financing, audit quality, and analyst following. Moreover, Christensen et al. (2013) exhibit that country-level governance, with a focus on accounting enforcement for publicly listed companies, is equally important. Thus, the literature on the demand for accounting transparency and its contributing factors mainly focuses on listed firms.

In contrast, private firms, which constitute the larger and more important part of the European economy, are attributable to a different set of stakeholder demands for transparency (i.e., prevalence of arm's length debt financing and little separation of ownership and control; e.g., Gassen and Fülbier 2015). Hence, private firms presumably invest less in accounting-related matters. However, in contrast to the United States, a large proportion of European private firms is subject to extensive audit requirements (Hope et al. 2013). As a result, European private firms also demand audit as well as tax advisory services, much like their publicly listed counterparts. Notwithstanding some relaxation of financial reporting and audit duties for smaller private firms, the bulk of the costs associated with financial and tax regulation is independent of relative wealth or size (Bradford 2004). Contrariwise, accounting and tax requirements are harmonized to a different extent, allowing for variation between countries and between both legal frames. In response to divergence regarding the quality, complexity, and enforcement of accounting and tax regulations, companies may face different incentives (see above) to devote resources to either function. Prior evidence suggests that the strength of the national tax enforcement regime as well as features of the taxation system influence the degree of tax avoidance (Atwood et al. 2012). Furthermore, an aggressive tax policy (e.g., measured through

book-tax differences) could be a signal that a company heavily relies on earnings management, which could be a concern for auditors (Kuo and Lee 2016). Assuming an effective financial reporting regime, such indication should, *ceteris paribus*, lead to higher audit fees. To account for these dissimilarities and interdependencies, we form the following two non-directional hypotheses:

H_{3a}: *The impact of spending on accounting-related services varies with the quality of financial reporting regulation.*

H_{3b}: *The impact of spending on accounting-related services varies with the quality of the taxation system.*

4 Research Design

4.1 Data and Sample

In order to derive our variable of interest, the spending on accounting-related services, we cannot refer to firm-level data due to the restrictions in data availability outlined in Section 2.2.2. Since the buying companies' costs are always the supplying companies' revenues, we estimate the spending on accounting-related services by the aggregate revenues and fees earned by accounting, auditing, and tax advisory companies. Our variable of interest, the actual revenues earned from accounting, auditing, and tax advisory services, is based on official European government statistics (EuroStat (NACE Rev. 2 Code M6920). EuroStat collects this data for all EU member states, associated countries (e.g., Norway and Switzerland), and potential member states (e.g., Turkey). Our sample is limited to the years 2008 to 2014 in which data for the accounting industry is available.[21] EuroStat's classification of revenues is based on a company's primary industry. Many accounting, auditing, and tax advisory firms offer general business consulting services as additional businesses. These non-accounting revenues could potentially bias our results. However, we have no reason to believe that the share of non-accounting services offered by accounting firms varies in an unsystematic manner between countries or years. We are therefore confident that the scaling and fixed-effects approaches described below are sufficient controls for this effect.

[21] Before 2008, statistics were aggregated by NACE Rev. 1 in which revenues from accounting, auditing, and tax advisory services were combined with those from the legal industry.

We collect data for our country-level variables from a variety of sources. Economic data (GDP, population) is from the World Bank's World Development Indicators database. Since data from EuroStat (€) and the World Bank (US $) comes in different currencies, we convert all nominal money amounts to US dollars, using the last available exchange rate for each year in the International Monetary Fund's exchange rate database.[22] From the World Bank's World Governance Indicator database, we collect data on country level governance as well as the complexity of the tax systems. The absolute value of state tax revenues is from EuroStat. Statutory tax rates are from European Commission (2016), and information on a link between commercial and tax financial statements as well as audit requirements and respective exemptions are from the European Commission (2009).

For all parameters used to estimate the firm-level measures (e.g., earnings management), we refer to Bureau van Dijk's Amadeus database. We start with the complete universe of company-years in each country and drop all firm-year observations for which at least one financial items required for our research design is missing. All variables are winsorized at the 5 and 95%-level, respectively.

Overall, EuroStat contains data for 33 countries and the revenues from accounting, audit, and tax advisory services for 28 countries. Due to constraints in the data availability in the necessary additional sources and the firm-level data in the Amadeus database, our final sample consists of 19 countries and 126 country-year observations.[23] Panel B of Table 20 contains a breakdown of countries and country-year observations, respectively.

4.2 Measuring the Costs of Accounting-related Services

We employ two measures for the costs of accounting-related services. As mentioned before, accounting-related services are a tradable good exchanged between two economic subjects. Hence, money spent by a company (or individual) on accounting related services directly translates into revenues earned by an accounting, auditing, or tax advisory firm, or certified individual. In reverse, we assume that all revenues earned by accounting, auditing, or tax advisory firms are from accounting-related services. Even if we

[22] Available online: https://goo.gl/GNRQuR.

[23] For France and Sweden, one country-year observation is missing at the beginning or end of our sample period, respectively. With six years each, the continuous time-series is still sufficiently long. We dropped Luxembourg from the sample since the country's fee structure was severely different from any other country. For Luxembourg, the share of revenues from accounting-related services to Gross Domestic Product (GDP) is more than three-times as high as the sample average and more than double the amount of the country with the second-highest share (Netherlands).

acknowledge that the largest accounting firms (e.g., the "Big Four") are constantly strengthening their consulting practices and evolving into multi-business professional service firms (Nordenflycht 2010), most of the respective services should be based on accounting, auditing, and tax advisory or related to these areas (e.g., compliance, proper IT systems). Nonetheless, a potentially (unobservable) higher share of not accounting-related services (e.g., operations or strategic consulting) would undermine our basic line of thought and, hence, work against any findings.

Our first measure for the costs of accounting-related services is their share in relation to GDP *(RevShare)*. It is defined as:

$$RevShare_{it} = \frac{Revenues_{it}}{GDP_{it-1}} \cdot 1{,}000{,}000 \qquad (6)$$

with *Revenues* being the revenues from accounting, auditing, and tax-advisory services in country *i* in year *t*. GDP_{it-1} is lagged gross domestic product. By scaling, we account for an observable size effect.[24] We use lagged GDP since accounting services, e.g., the preparation of tax returns and annual reports or audits, must be deferred until the year is complete and, hence, relate to the prior year. For ease of interpretation, we multiply the term by one million such that it is Euros spent on accounting-related services per one million Euros of GDP.

Whereas *RevShare* varies between countries (Figure 1), it is comparatively stable over time. To further exploit the cross-country and time-series variation in the accounting and tax regulation, we introduce a second measure. *RevUnexp* is the discretionary or unexpected share of revenues from accounting-related services. The intuition behind this measure is as follows: As outlined before, companies have a basic demand in accounting information and, hence, accounting-related services. From a macro perspective, this demand should mainly depend on the level of and the change in economic prosperity of a country. This notion translates into the following cross-country regressions:

$$\frac{Revenues_{it}}{Population_{it-1}} = \alpha_0 + \alpha_1 \cdot \frac{1}{Population_{t-1}} + \beta_1 \cdot \frac{GDP_t}{Population_{t-1}} + \beta_2 \cdot \frac{\Delta GDP_{t/t-1}}{Population_{t-1}} + \varepsilon \qquad (7)$$

[24] Using current year GDP would not alter our results. In our sample, the Pearson correlation between revenues from accounting-related services and GDP is 0.97 for the current as well as prior year.

Table 18:
Estimation results for the measure of unexpected revenues from accounting-related services

Table depicts the average results from the following yearly OLS regressions:

$$\frac{Revenues_t}{Population_{t-1}} = \alpha_0 + \alpha_1 \frac{1}{Population_{t-1}} + \beta_1 \frac{GDP_t}{Population_{t-1}} + \beta_2 \frac{\Delta GDP_{t/t-1}}{Population_{t-1}} + \varepsilon$$

The regressions was performed for each year in the sample period. Coefficients, t-statistics and p-values are the mean value for the seven-year period. $Revenues_t$ are the revenues earned from accounting, auditing and tax advisory services in a country. $Population_{t-1}$ is total population at beginning of the year in one country. GDP_t is the gross domestic product for each country. The error term (ε) is referred to as *RevUnexp* in subsequent analysis. ***, ** and * denotes significance at 1 %, 5 % and 10 % level, respectively.

	Coefficient		t-Statistic	p-Value
$1/Population_{t-1}$	-119.86159		-1.023	0.3324
$GDP_t/Population_{t-1}$	0.00022	***	5.156	0.0009
$\Delta(GDP_{t/t-1}/Population_{t-1})$	0.00000		0.300	0.5957
constant	-0.00197	***	-4.513	0.0019
N			18	
R^2			0.787	
adj. R^2			0.742	

To obtain the country-year specific unexpected revenues from accounting-related services, expected revenues, calculated based on the coefficients from regression (7), are deducted from the actual revenues. This methodology is similar to the estimation of discretionary accruals in the earnings management literature (e.g., Jones 1991).

The average coefficients from the seven yearly regressions are reported in Table 18. Most notably, the variation in the share of revenues, based on the population, is mainly influenced by the level of wealth and economic development, as the strongly significant coefficient for $GDP_t/Population_{t-1}$ suggests. The relation between GDP_t and total $Population_t$ (GDP per capita) is the common measure for economic development and growth in the (financial) economics literature. Wealthier and growing economies have better institutions but are also more complex (Levine 2005). Hence, we expect that revenues from accounting services are tied to a country's economic development. To align our model with the lagged value of GDP per capita and its year-to-year change, we include a scaled intercept ($1/Population_{t-1}$) and divide the dependent variable by lagged population. The estimation model seems to be well fitted as it, on average, explains approximately 74% of the yearly cross-country variation in the dependent variable. Positive (negative) discretionary values for the unexpected revenues measure indicate abnormally high (low) costs, which could be due to changing incentives of the average firm and/or individual

with regard to their earnings or tax strategy. Other potential causes are regulatory changes or unexpected changes in the economic environment.

4.3 Measuring the Benefits of Accounting-related Services

In order to analyze the potential benefits of spending on accounting-related services, we use a broad set of indicators to disentangle the effects of accounting, auditing, and tax advisory services, which are entangled in the dependent variable. Accounting-based indicators are different sets of accrual-based earnings and real activities management measures. Prior literature is inconclusive as to whether higher audit fees increase or decrease earnings quality (see above). Furthermore, the role of tax advisors with respect to earnings quality has yet to be examined. If tax advisors simply help their clients to cut through the regulatory fog and comply with law and regulations, one would expect a slightly positive relation with earnings quality – if any. Contrariwise, if (tax) advisory services are used to help fulfill management's (earnings) goals, a higher accounting-related cost should lower earnings quality and tax expenses, alike.

First, to measure the extent of accrual-based earnings management, we refer to a country's yearly mean value of absolute discretionary accruals *(|DAcc|)*. Following DeFond and Jiambalvo (1994), we apply a cross-sectional model and calculate discretionary accruals as the difference between a company's total accruals and "expected" accruals based on the following industry-year regression:

$$\frac{TAcc_{it}}{A_{it-1}} = \beta_1 \cdot \frac{1}{A_{it-1}} + \beta_2 \cdot \frac{\Delta Rev_{it,t-1} - \Delta Rec_{it,t-1}}{A_{it-1}} + \beta_3 \cdot \frac{PPE_{it}}{A_{it-1}} + \varepsilon \qquad (8)$$

The accrual component (total accruals, *TACC*) is calculated on the firm-level following Dechow et al. (1995):

$$TAcc_{it} = (\Delta CA_{it} - \Delta Cash_{it}) - (\Delta CL_{it} - \Delta STD_{it} - \Delta TP_{it}) - Dep_{it} \qquad (9)$$

With ΔCA_{it} = change in current assets of firm *i* in period *t*, $\delta Cash_{it}$ = change in cash and cash equivalents, ΔCL_{it} = change in current liabilities, ΔTP_{it} = change in taxes payable, and Dep_{it} = depreciation and amortization. Due to data restraints, current liabilities do not include short-term provisions. The amount of tax payable is not available in the Amadeus database. Therefore, we assume these positions to be zero. The other variables are defined as follows: $\Delta rev_{t,t-1}$ and $\Delta rec_{t,t-1}$ = year-to-year change in revenues and trade receivables, respectively, and PPE_t = book value of property, plant, and equipment (fixed assets). The

intercept and all values are scaled by one-year lagged total assets (A_{t-1}). Industries are defined based on two-digit SIC codes. We require a minimum of six observations per industry and year.

Second, we estimate real earnings management based on abnormal cash flows from operations (Roychowdhury 2006; Cohen et al. 2008). |*abCFO*| is the residual from the following industry-year regressions based on two-digit SIC codes with a minimum of six observations:

$$\frac{\mathrm{CFO_{it}}}{\mathrm{A_{it-1}}} = \beta_0 + \beta_1 \cdot \frac{1}{\mathrm{A_{it-1}}} + \beta_2 \cdot \frac{\mathrm{Rev_{it}}}{\mathrm{A_{it-1}}} + \beta_2 \cdot \frac{\Delta \mathrm{Rev_{it,t-1}}}{\mathrm{A_{it-1}}} + \varepsilon_t \qquad (10)$$

With Rev_{it} = sales (revenues), A_{it} = total assets and CFO_{it} = Cash flow from operations calculated indirectly by subtracting the accrual component *(TACC)* from operating income. Operating income is defined as net income before taxes, financial result, and special items.

Third, as our tax-related measure, we use the difference between the statutory tax rate of the country in which a company is residing and its effective corporate tax rate (*TaxDiff)*. To calculate *TaxDiff*, we subtract the effective tax rate from the yearly top statutory corporate income tax for each country as reported by the European Commission (2016). The effective corporate tax rate is defined as the tax expenses divided by pretax income (Dyreng et al. 2008).

4.4 Model Specifications

The standard model applied in the following analysis features the measures for the potential benefits of accounting-related services as the dependent variable and is defined as follows:

$$\begin{aligned} Benefit_{it} = {} & \beta_0 + \beta_1 \cdot Costs_{it} + \beta_2 \cdot Gov_{it} + \beta_3 Costs_{it} \times Gov_{it} \\ & + \sum \beta_j \cdot FirmControl_j + \beta_4 \cdot GDPgrowth_{ii} + \beta_5 \cdot Population_{ii} \\ & + \sum \beta_k \cdot Year_t + \varepsilon \end{aligned} \qquad (11)$$

with $Benefit_{it}$ = one of accrual-based and real earnings management or tax-related measures for country *i* in year *t, $Costs_{it}$* = the share or unexpected fraction of revenues from accounting-related services, Gov_{it} = mean value of z-transformed World Governance Indicators from the World Bank, and $FirmControl_j$ = country-year mean value of

five firm-level control variables which control for differences in firm characteristics across countries and years (Burgstahler et al. 2006). Firm-level controls comprise (1) *Size*, the natural logarithm of total assets, (2) *RoA,* the return on assets (profitability) measured as operating income divided by lagged total assets, (3) *Lev,* the relation of non-current liabilities to the sum of equity and non-current liabilities, (4) *Growth,* the year-to-year change in revenues divided by lagged revenues, and (5) *Cycle,* the length of the operating cycle measured in days.[25] All regressions include year-fixed effects.

The interaction term $Costs_{it} \times Gov_{it}$ shows the incremental effect of higher-level governance on the relation between spending on accounting-related services and the benefits. It is only included in the regression aiming to test H_{2a} and H_{2b}.

To further distinguish between the potentially differing effects of accounting and tax regulation in the test for H_{3a} and H_{3b}, we disaggregate Gov_{it} into two submeasures, which capture the varying effects of accounting and tax regulations between countries and over time. The extended model reads:

$$\begin{aligned} Benefit_{it} = {} & \beta_0 + \beta_1 \cdot Costs_{it} + \beta_2 \cdot FinRep_{it} + \beta_3 \cdot Tax_{it} + \beta_4 \cdot Costs_{it} \\ & \times FinRep_{it} + \beta_5 \cdot Costs_{it} \times Tax_{it} + \sum \beta_j \cdot FirmControl_j \\ & + \beta_6 \cdot GDPgrowth_{ii} + \beta_7 \cdot Population_{ii} + \sum \beta_k \cdot Year_t + \varepsilon \end{aligned} \qquad (12)$$

$FinRep_{it}$ is the z-transformed value of the measure for financial reporting quality used by the World Economic Forum (2015). Precisely, businessmen were asked how they assess the quality of financial reporting in their countries of origin. Higher values indicate a higher perceived financial reporting quality. Tax_{it} is a score consisting of the sum of the yearly z-transformed values for time required to prepare tax filings (in hours), the number of taxes, and the total corporate tax rate (as a percentage of all commercial profits) as reported by the World Bank (2015). A longer time required for the preparation of tax filings, a higher number of taxes, and a higher effective tax rate indicate a more complex system of taxation. To circumvent this disparity with *Gov* and *FinRep,* we multiply the score with -1, such that higher values indicate a less complex system of taxation. All other variables remain as defined before. In line with the standard model, we estimate it with and without the interaction terms $Costs_{it} \times FinRep_{it}$ and $Costs_{it} \times Tax_{it}$. Including the

[25] $Cycle = \frac{\varnothing Rec_{t,t-1}}{Rev_t/360} \bullet \frac{\varnothing Inv_{t,t-1}}{COGS_t/360}$ with *Rec* = trade receivables, *Rev* = revenues, *Inv* = inventories, and *COGS* = cost of goods sold as defined above.

interaction terms shows the incremental effect of stronger (more complex) accounting (tax) regulation on the relation between costs of accounting-related services and the potential benefits.[26]

4.5 Endogeneity Concerns

For the question at hand, endogeneity can stem from two potential sources (Larcker and Rusticus 2007). First, an unobservable factor that jointly determines the dependent and independent variables *(omitted variable bias),* and second, another relation between the dependent and independent variables than is suggested by the regression model *(reverse causality).* We further elaborate both causes and point out how we address possible issues.

It is possible that the spending on accounting-related services and the degree of benefits, regardless of which measure *(|DAcc|, |abCFO|, TaxDiff)* in use, are jointly determined by an unobservable common factor. Prior literature documents such relations between earnings management and country-level governance mechanisms (Leuz et al. 2003). However, since the correlations (Panel C of Table 20) between benefits and country-level governane *(Gov)* are rather small (i.e., all below 0.3), we have no reason to believe that such a relationship exists here. Tax and accounting regulation, the supervision of the professional groups, and legal environment, which covers accountants and their clients alike, are naturally intertwined. Therefore, it is difficult to think of a proper variable which would satisfy the conditions for more sophisticated econometric approaches, like a two-stage least squares estimation with an instrumental variable (Larcker and Rusticus 2010).

The second issue, *reversed causality,* would be severe if we had reasonable doubt regarding the direction of the cause-effect relationship. In light of recent regulatory discussion regarding tax aggressiveness and avoidance, it could be plausible to assume that companies would willingly relocate and accept higher accounting- and tax-related fees in countries with better earnings (tax) management opportunities. However, setting up international tax avoidance schemes or even relocating corporate headquarters to a tax haven is costly and presumes an international presence. Considering the threshold of group revenues above US $750m, which the OECD (2016) proposed for some their action against "Base Erosion and Profit Shifting" (BEPS), most of the companies in our sample are much too small to engage in serious international tax avoidance schemes. In a recent

[26] A detailed description of all variables can be found in the Appendix.

working paper, Schulte Sasse et al. (2017) find that more than two-thirds of the groups in their pan-European sample have no subsidiaries in any country which could be considered a tax haven. Assuming that our SME-dominated sample mainly consists of firms without any group affiliation, we find little reason to acknowledge a serious threat of reversed causality. However, to address this issue empirically, we conduct two tests. First, we re-estimate our standard model using one-year lagged independent variables:

$$\begin{aligned} Benefit_{it} = {} & \beta_0 + \beta_1 \cdot Costs_{it-1} + \beta_2 \cdot Gov_{it-1} + \beta_3 \cdot Costs_{it-1} \times Gov_{it-1} \\ & + \sum \beta_j \cdot FirmControl_{jt-1} + \beta_4 \cdot GDPgrowth_{it-1} \\ & + \beta_5 \cdot Population_{it-1} + \sum \beta_k \cdot Year_t + \varepsilon \end{aligned} \tag{13}$$

All variables are defined as outlined before. Second, we perform another re-estimation of the standard model as a difference equation (Cohen et al., 2008), where Δ denotes the year-to-year change in the respective variable:

$$\begin{aligned} \Delta Benefit_{it/t-1} = {} & \beta_0 + \beta_1 \cdot \Delta Costs_{it,t-1} + \beta_2 \cdot \Delta Gov_{it,t-1} \\ & + \beta_3 \cdot \Delta\left(Costs_{it,t-1} \times Gov_{it,t-1}\right) + \sum \beta_{jt} \cdot \Delta FirmControl_{jt,t-1} \\ & + \beta_4 \cdot \Delta GDPgrowth_{it,t-1} + \beta_5 \cdot \Delta Population_{it,t-1} + \sum \beta_k \cdot Year_t \\ & + \varepsilon \end{aligned} \tag{14}$$

5 Results

5.1 Descriptive Statistics

Costs of accounting regulation, as measured by *RevShare,* range from US $5.39 (Estonia) to US $12.76 per US $1m of GDP in the Netherlands, with a mean value of US $7.79 (Table 19, Panel A of Table 20). The mean and median values for *RevUnexp* are difficult to interpret since regressions similar to those for discretionary accruals have a median and mean value of zero by design. Figure 1 provides a breakdown of the temporal variation of *RevShare* (solid line) and *RevUnexp* (dashed line) for each of the 18 sample countries. Most countries experienced a slight decrease in *RevShare* in 2009. Since then, the trend goes slightly upwards. However, in most countries, *RevShare* remains comparably stable over time. *RevUnexp* shows less year-specific patterns and has a higher variation between countries.

Table 19:
Descriptive Statistics

This table shows descriptive statistics for variables used in the main analysis for 126 country-year observations. *RevShare* is the share of revenues from accounting-related services to GDP. *RevUnexp* is the discretionary measure for unexpected revenues. |*DAcc*| are absolute discretionary accruals estimated on an industry-year basis. |*abCFO*| are absolute abnormal cash flows calculated on an industry-year basis. *TaxDiff* is the difference between the statutory corporate tax-rate and companies' effective tax rates. *Gov* is the z-transformed average value of the six World Bank governance indicators. *FinRep* is the z-transformed value of the Financial Reporting Quality Indicator from the World Economic Forum. *Tax* is the sum of z-transformed yearly values of World Bank's Doing Business Tax Indicators (time to prepare tax returns, number of tax payments, total tax rate as percentage of commercial profits). *Size* is the country-year level median value for the natural logarithm of total assets. *RoA* is operating income divided by lagged total assets. *Lev* is the relation of long-term liabilities to long-term long-term liabilities and equity. *Cycle* is the length of the operating cycle in days. *Growth* is the year-to-year change in revenues scaled by lagged revenues. *GDPgrowth* is defined as year-to-year change in GDP and *Population* is the natural logarithm of a country's total population.

	N	Mean	SD	Q1	Median	Q3
RevShare	126	7.68863	2.17840	6.21557	7.30368	8.46498
RevUnexp	126	0.00000	0.00008	-0.00004	-0.00001	0.00003
|DAcc|	126	0.13431	0.02405	0.12070	0.12990	0.1464
|abCFO|	126	0.06853	0.03373	0.05040	0.07010	0.0821
TaxDiff	126	0.05275	0.06640	0.00050	0.03948	0.09733
Gov	126	0.05312	0.92317	-0.59770	0.05722	0.83028
FinRep	126	0.03643	0.95729	-0.67882	0.24776	0.83808
Tax	126	-0.13117	1.64126	-0.92379	-0.15328	1.26514
Size	126	15.63488	1.58506	14.45076	15.37455	16.37961
RoA	126	0.06567	0.02485	0.04826	0.06399	0.07556
Lev	126	0.14640	0.12123	0.05584	0.09931	0.21463
Cycle	126	82.24033	32.52626	54.00000	76.09484	99.74451
Growth	126	0.03204	0.06465	0.01470	0.04192	0.06044
Population	126	16.34556	1.25410	15.49973	16.13966	17.65661
GDPgrowth	126	0.01580	0.09059	-0.05274	0.02438	0.08142

Table 19 contains summary statistics. A country-breakdown of the three benefits measures and the governance indicators is provided in Panel A of Table 20 as well as for the firm- and macro-level controls in Panel B of Table 20. Our sample is heavily dominated by French and Italian companies. For a firm-level analysis, this skewness could possess problems. Since we use the country-year level median for our firm controls, the distribution of firms does not introduce bias. Panel C of Table 20 reports correlations. Some of our variables display correlations above 0.5. However, variance inflation factors in our empirical are mostly below 5. Hence, multi-collinearity likely is not an issue.

Figure 1:
Temporal and Cross-Country Variation of RevShare *and* RevUnexp

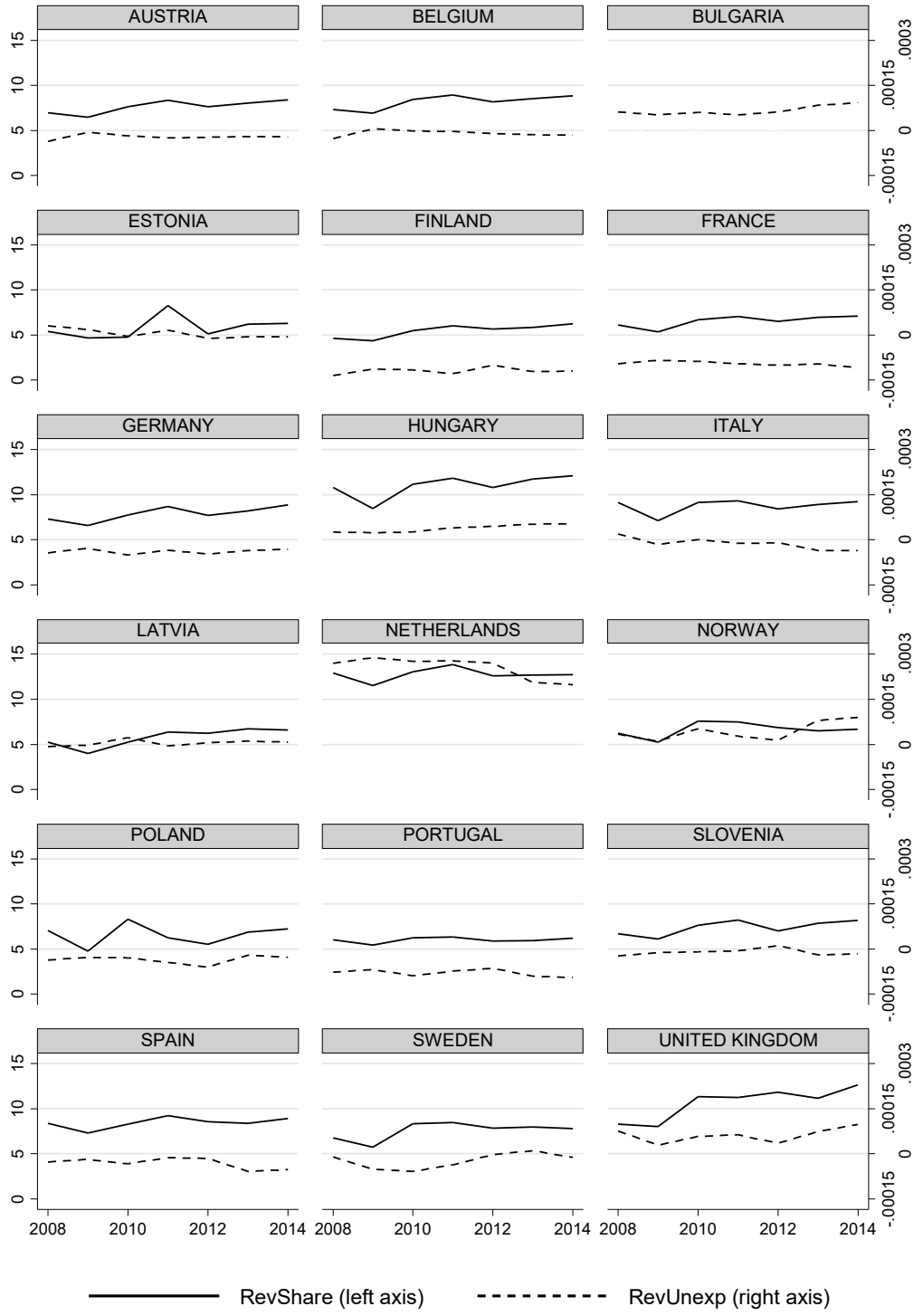

Table 20:
Descriptive Statistics and Correlations

This table shows the mean or median values for the main variables for each of the 18 countries in the sample. *RevShare* is the share of revenues from accounting-related services on GDP. *RevUnexp* is the discretionary measure for unexpected revenues. |*DAcc*| are absolute discretionary accruals estimated on an industry-year basis. |*abCFO*| are absolute abnormal cash flows calculated on an industry-year basis. *TaxDiff* is the difference between the statutory corporate tax-rate and companies' effective tax rates. *Gov* is the z-transformed average value of the World Bank's six governance indicators. *FinRep* is the z-transformed value of the Financial Reporting Quality Indicator from the World Economic Forum. *Tax* is the sum of z-transformed yearly values of World Bank's Doing Business Tax Indicators (time to prepare tax returns, number of tax payments, total tax rate as percentage of commercial profits). *Size* is the country-year level median value for the natural logarithm of total assets. *RoA* is the operating income divided by lagged total assets. *Lev* is the relation of long-term liabilities to long-term liabilities and equity. *Cycle* is the length of the operating cycle in days. *Growth* is the year-to-year change in revenues scaled by lagged revenues. *GDPgrowth* is defined as year-to-year change in GDP and *Population* is natural logarithm of a country's total population.

Panel A: Measures for costs and benefits of accounting-related services / Governance indicators

	RevShare Mean	RevUnexp Mean	|DAcc| Mean	|abCFO| Mean	TaxDiff Mean	Gov Median	FinRep Median	Tax Median
Austria	7.650	-0.00002	0.127	0.168	0.062	0.825	1.362	0.328
Belgium	8.425	-0.00001	0.119	0.155	0.119	0.377	1.037	0.168
Estonia	5.390	0.00000	0.139	0.189	0.182	-0.156	0.284	1.782
Finland	5.675	-0.00012	0.117	0.194	0.000	1.441	1.348	-0.882
France	6.681	-0.00010	0.130	0.164	0.165	0.180	1.183	-1.252
Germany	7.733	-0.00004	0.140	0.200	0.107	0.660	1.542	0.386
Hungary	11.159	0.00004	0.129	0.157	0.110	-0.788	-0.342	-1.377
Italy	9.127	-0.00001	0.165	0.165	-0.065	-1.173	-1.341	-2.982
Netherlands	12.756	0.00027	0.138	0.164	0.017	1.069	1.051	1.348
Norway	6.673	0.00003	0.145	0.199	0.001	1.202	1.101	2.608
Poland	6.882	-0.00003	0.139	0.176	-0.008	-0.623	-1.475	-3.692
Portugal	6.049	-0.00008	0.138	0.148	0.046	-0.310	0.216	0.246
Slovenia	7.663	-0.00001	0.110	0.150	0.002	-0.374	-0.438	-0.311
Spain	8.380	-0.00003	0.121	0.128	0.052	-0.507	-0.138	-0.837
Sweden	7.816	-0.00001	0.127	0.181	0.045	1.265	1.500	1.191
United Kingdom	11.223	0.00006	0.146	0.199	0.023	0.542	1.457	2.563

Table 20:
continued

Panel B: Firm-level and macroeconomic controls

	Firm-years N	Size Median	RoA Median	Lev Median	Cycle Median	Growth Median	Population Mean	GDPgrowth Median
Austria	22,707	16.737	0.044	0.223	53.291	0.023	15.941	0.019
Belgium	76,025	16.035	0.047	0.103	87.042	0.026	16.211	0.019
Estonia	13,568	14.027	0.099	0.021	52.663	0.059	14.100	0.049
Finland	101,659	14.138	0.110	0.088	52.675	0.048	15.497	0.009
France	1,298,356	14.202	0.064	0.097	77.677	0.032	17.993	0.007
Germany	169,240	16.112	0.063	0.454	55.073	0.031	18.220	0.033
Hungary	42,894	20.751	0.061	0.042	74.832	0.042	16.117	0.029
Italy	1,367,705	14.849	0.039	0.379	139.451	0.020	17.899	0.004
Netherlands	4,246	16.821	0.058	0.033	99.205	0.027	16.628	0.018
Norway	288,325	16.489	0.077	0.258	47.875	0.046	15.409	0.026
Poland	120,635	16.312	0.076	0.059	77.233	0.056	17.455	0.048
Portugal	228,285	14.459	0.041	0.176	156.894	0.018	16.172	0.018
Slovenia	26,058	14.653	0.056	0.177	107.555	0.043	14.534	0.031
Spain	775,293	14.804	0.038	0.154	117.138	0.010	17.656	0.009
Sweden	234,669	16.372	0.098	0.076	52.82	0.045	16.058	0.054
United Kingdom	173,601	15.694	0.073	0.028	60.053	0.043	17.959	0.031

Table 20:
continued

Panel C: Correlations															
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1) RevShare	1.000														
(2) RevUnexp	0.614	1.000													
(3) |DAcc|	-0.010	0.206	1.000												
(4) |abCFO|	-0.138	0.112	0.630	1.000											
(5) TaxDiff	-0.057	-0.175	-0.162	-0.076	1.000										
(6) Gov	0.161	0.018	-0.268	0.089	0.095	1.000									
(7) FinRep	0.120	0.074	-0.197	0.162	0.259	0.897	1.000								
(8) Tax	0.076	0.215	-0.179	0.102	0.196	0.660	0.671	1.000							
(9) Size	0.570	0.356	-0.079	-0.077	0.060	0.115	0.208	-0.088	1.000						
(10) RoA	-0.209	-0.050	0.136	0.569	-0.037	0.265	0.365	0.214	-0.104	1.000					
(11) Lev	-0.134	-0.258	0.176	0.094	-0.186	-0.036	-0.186	-0.151	-0.105	-0.280	1.000				
(12) Cycle	0.049	-0.010	-0.047	-0.503	-0.316	-0.510	-0.608	-0.394	-0.208	-0.525	0.167	1.000			
(13) Growth	0.105	-0.018	0.264	0.422	-0.090	-0.016	0.029	-0.011	-0.021	0.588	0.015	-0.179	1.000		
(14) Population	0.366	-0.062	0.144	-0.061	-0.102	0.006	-0.069	-0.295	0.114	-0.312	0.229	0.173	-0.120	1.000	
(15) GDPgrowth	0.178	-0.003	0.161	0.239	-0.057	0.023	0.061	-0.028	0.011	0.421	0.015	-0.144	0.686	-0.048	1.000

The correlations provide initial evidence on the relation between spending on accounting-related services and potential benefits. *RevShare* is weakly but positively correlated with all three benefit measures. *RevUnexp* shows a weak positive correlation with |*DAcc*| and |*abCFO*| but a modest negative correlation with *TaxDiff.* Additionally, the correlation between *RevShare* and *RevUnexep* is only 0.61. Taken together with slightly diverging relations to the benefit measures, *RevShare* and *RevUnexp* seem to indeed cover different aspects of accounting and tax regulation.

5.2 Relation between Costs and Benefits

The first set of analyses addresses the relation between different measures of costs and benefits of accounting-related services. Models 1(a) and 2(a) in Table 21 show the main results. Panel A presents the results for |*DAcc*|, our measure for accrual-based earnings management. The coefficients for *RevShare* and *RevUnexp* are positive but strongly significant only in the latter case. We report comparable results, with a positive but insignificant coefficient for *RevShare* and a positive and significant coefficient for *RevUnexp* with regard to real activities management *(|abCFO|)* in Panel B. Both results imply evidence that companies engage in earnings management more if they increase spending on accounting-related services. With view to the contracting theories in the audit literature, our results provide some cautious evidence on the predominance of higher fee dependence impairing accounting and audit quality. Furthermore, our results contrast the findings of Höglund and Sundvik (2016), who report better financial reporting quality for small Finish companies which rely on outsourced accounting services. Interestingly, companies seem to jointly engage in accrual-based as well as real activities management. Prior literature predicts a potential trade-off between both avenues. Ewert and Wagenhofer (2005) develop an analytical model in which firms are more likely to engage in real earnings management when their accounting flexibility is reduced. Chi et al. (2011) empirically document decreased accrual-based and increased real earnings management if a company is audited by a higher quality (i.e., Big 5) audit firm. Therefore, stronger oversight and stricter rules should increase costs. Not only do larger auditors charge a price premium (Hay et al. 2006), but companies may also demand more advisory services to maintain and better utilize their remaining discretion. Whereas both effects are countervailing, we document a slight predominance in the demand for additional advisory or, alternatively, a decrease in auditors' discretion-limiting function with increasing fees.

Table 21:
Regression results for the standard model and including interaction terms

Table depicts the results from the following OLS regression:

$$Benefit_{it} = \beta_0 + \beta_1 \cdot Costs_{it} + \beta_2 \cdot Gov_{it} + \beta_3 Costs_{it} \times Gov_{it} + \sum \beta_j \cdot FirmControl_j + \beta_4 \cdot GDPgrowth_{ii} + \beta_5 \cdot Population_{ii} + \sum \beta_k \cdot Year_t + \varepsilon$$

$Benefit_{it}$ is the measure for potential benefits of accounting-related services. $Costs_{it}$ is either the share of revenues from accounting-related services to GDP *(RevShare)* in Model 1 or the discretionary measure for unexpected revenues *(RevUnexp)* in Model 2. *Gov* is the z-transformed average value of six World Bank governance indicators. The interaction term (β_3) is only included in Models 1b and 2b. $FirmControl_j$ encompasses the country-year level median values for the natural logarithm of total assets *(Size),* the operating income divided by lagged total assets *(RoA),* the relation of long-term liabilities to long-term liabilities and equity *(Lev),* the length of the operating cycle in days *(Cycle),* and the year-to-year growth rate of revenues *(Growth). GDPgrowth* is defined as the year-to-year change in GDP and *Population* is the natural logarithm of a country's total population. Year-fixed effects are included. Robust standard errors are clustered by country. t-values in parenthesis. ***, ** and * denote significance at 1 %, 5 % and 10 % level, respectively.

Panel A: Earnings Management (|DAcc|)

	Model 1		Model 2	
	(a)	(b)	(a)	(b)
RevShare	0.00255	0.00169		
	(1.02)	(0.64)		
RevShare × Gov		0.00178		
		(0.96)		
RevUnexp			105.34787 ***	127.23866 ***
			(3.55)	(3.31)
RevUnexp × Gov				-29.11684
				(-1.15)
Size	-0.00398	-0.00291	-0.00402 **	-0.00414 **
	(-1.56)	(-0.89)	(-2.51)	(-2.54)
RoA	-0.03621	-0.03117	-0.04113	-0.07705
	(-0.13)	(-0.11)	(-0.15)	(-0.28)
Lev	0.01893	0.02568	0.02601	0.02455
	(0.46)	(0.54)	(0.65)	(0.61)
Cycle	-0.00030	-0.00029	-0.00028	-0.00025
	(-1.24)	(-1.20)	(-1.18)	(-1.06)
Growth	0.02800	0.03965	0.02854	0.03528
	(0.63)	(1.10)	(0.73)	(0.98)
Gov	-0.01242 **	-0.02528 *	-0.01126 ***	-0.01007 ***
	(-2.28)	(-1.81)	(-3.26)	(-3.36)
GDPgrowth	0.04700	0.03518	0.05712	0.06184
	(0.95)	(0.65)	(1.25)	(1.32)
Population	0.00312	0.00331	0.00493 *	0.00512 *
	(0.98)	(1.10)	(1.83)	(1.92)
Constant	0.15304 **	0.13783 *	0.13907 **	0.13781 **
	(2.45)	(2.00)	(2.66)	(2.55)
Fixed Effects	Year	Year	Year	Year
N	126	126	126	126
R^2	0.278	0.297	0.358	0.361
Adj. R^2	0.179	0.194	0.271	0.267

Table 21
continued

Panel B: Real Activities Management (|abCFO|)				
	Model 1		Model 2	
	(a)	(b)	(a)	(b)
RevShare	0.00364	0.00241		
	(1.46)	(0.95)		
RevShare × Gov		0.00253 *		
		(2.01)		
RevUnexp			108.06967 ***	155.53303 ***
			(3.47)	(4.19)
RevUnexp × Gov				-63.13082 **
				(-2.29)
Size	-0.00539 *	-0.00387	-0.00473 **	-0.00498 **
	(-1.90)	(-1.21)	(-2.55)	(-2.74)
RoA	0.47987 **	0.48703 **	0.45122 **	0.37334 *
	(2.52)	(2.46)	(2.35)	(2.05)
Lev	0.06067 **	0.07027 **	0.06331 **	0.06013 **
	(2.64)	(2.49)	(2.83)	(2.86)
Cycle	-0.00059 **	-0.00058 **	-0.00055 **	-0.00050 *
	(-2.40)	(-2.35)	(-2.42)	(-2.08)
Growth	0.02569	0.04223	0.02898	0.04357
	(0.47)	(0.86)	(0.58)	(0.93)
Gov	-0.00922	-0.02749 **	-0.00736 **	-0.00477
	(-1.70)	(-2.86)	(-2.16)	(-1.37)
GDPgrowth	-0.06982	-0.08661	-0.05198	-0.04175
	(-1.23)	(-1.73)	(-1.13)	(-0.89)
Population	0.00038	0.00065	0.00270	0.00310
	(0.14)	(0.26)	(1.14)	(1.37)
Constant	0.24731 ***	0.22571 ***	0.22192 ***	0.21917 ***
	(3.47)	(3.10)	(3.85)	(3.63)
Fixed Effects	Year	Year	Year	Year
N	126	126	126	126
R^2	0.542	0.567	0.584	0.593
Adj. R^2	0.479	0.504	0.528	0.533

Since companies also engage in real activities management at the same time, the first explanations seem more reasonable. Real activities management would not be necessary if auditors became less conservative.

The results for the tax effects (Panel C) offer another potential reasoning. Here, the coefficients are negative for both measures *(RevShare,* Model 1(a) and *RevUnexp,* Model 2(a)) and slightly significant for *RevUnexp.* In most cases, increased spending on accounting-related services does not significantly widen the difference between the effective and statutory tax rates, i.e., lower the tax bill. Inasmuch as companies spend on accounting-

Table 21
continued

Panel C: Taxation (TaxDiff|)				
	Model 1		Model 2	
	(a)	(b)	(a)	(b)
RevShare	-0.00656	-0.00453		
	(-0.71)	(-0.45)		
RevShare × Gov		-0.00419		
		(-0.78)		
RevUnexp			-248.40363 *	-484.95913
			(-1.77)	(-1.68)
RevUnexp × Gov				314.64149
				(1.03)
Size	0.00031	-0.00221	0.00003	0.00129
	(0.03)	(-0.18)	(0.00)	(0.15)
RoA	-1.55735 **	-1.56922 *	-1.53323 **	-1.14505
	(-2.14)	(-2.09)	(-2.18)	(-1.43)
Lev	-0.17256	-0.18847	-0.18681	-0.17096
	(-1.09)	(-1.10)	(-1.24)	(-1.16)
Cycle	-0.00100 **	-0.00102 **	-0.00105 **	-0.00132 **
	(-2.17)	(-2.15)	(-2.38)	(-2.31)
Growth	0.05620	0.02876	0.05347	-0.01926
	(0.43)	(0.21)	(0.43)	(-0.13)
Gov	0.00112	0.03141	-0.00196	-0.01488
	(0.07)	(0.77)	(-0.16)	(-0.67)
GDPgrowth	0.13036	0.15820	0.10252	0.05154
	(0.85)	(1.02)	(0.89)	(0.52)
Population	-0.00133	-0.00177	-0.00584	-0.00782
	(-0.08)	(-0.11)	(-0.44)	(-0.63)
Constant	0.32553	0.36134	0.36432	0.37802
	(1.03)	(1.13)	(1.33)	(1.37)
Fixed Effects	Year	Year	Year	Year
N	126	126	126	126
R^2	0.241	0.256	0.298	0.342
Adj. R^2	0.138	0.146	0.202	0.246

related services, they seem to do this in order to comply with tax rules. Since more stringent tax rules appear to limit tax-induced earnings management, companies most likely switch to real activities management. However, they can still use accrual-based earnings management to either prevent an even further increasing tax bill or to persuade stakeholders other than the tax authorities. The mostly negligible effects of country-level institutions *(Gov)* provide initial evidence that spending on accounting-related services depends more strongly on particular tax and accounting rules than the general legal environment. We will further examine this notion in the next chapters.

Overall, we find some support for H_{1a}, which states that earnings quality, as measured by accrual-based and real activities, varies with the extent of spending on accounting-related

services. Our results show that discretionary accruals and abnormal cash flows increase, i.e., earnings quality decreases. In light of prior literature, this indicates that companies use accounting-related services to achieve favorable results. Similarly, we find some evidence in support of H_{1b}, which states that tax expenses vary with spending on accounting-related services. As we document a weak negative relation, companies' spending appears to be mainly driven by compliance concerns. Taken together, the evidence suggests that companies do indeed manage their earnings to achieve a "smoother" and steadier stream of income, which is preferred by investors (e.g., Graham et al. 2005) as well as a result of aligned tax and financial reporting rules (e.g., Gassen and Fülbier 2015).

5.3 Effects of Country-level Governance

Prior literature in financial economics (e.g., Leuz et al. 2003) provides evidence on a mitigating effect of country-level governance on earnings management. Potential implications for the spending on accounting-related services are twofold. Increased institutional quality, i.e., country-level governance mechanisms, lower the demand for external approval or assistance in performing statutory tasks, like the preparation of tax returns or audit services. Then again, stronger (public) oversight and increased liability for possible errors could lead to more spending in order to comply with laws and regulations. Additionally, one can think of more extensive and complex regulations which, per se, would require more external input.

Models 1(b) and 2(b) in Table 21 show contradicting results for the two measures of spending on accounting-related services. For *RevShare* (Model 1), the incremental effect has the same sign as the coefficient of *RevShare*, indicating a reinforcing effect between governance and spending on accounting-related services. However, in the case of *RevUnexp*, the incremental effect of governance mitigates the effects of spending on accounting-related services for all three measures of benefits. A possible explanation for this surprising result may be that both measures for spending on accounting-related services grasp different facets of cross-country and temporal variation.

With regard to the hypotheses, we document significant but inconclusive results for real-activities management (Panel B) where the coefficients on the interaction terms *(Costs × Gov)* are significant for *RevShare* and *RevUnexp* but inconsistent with regard to the signs. Results are not significant in the other specifications (accrual-based earnings management, Panel A and taxation, Panel C). Taken together, we find weak support for H_{2a},

which states a mitigating effect of country-level governance on the relation between earnings quality and spending on accounting-related services. Due to the opposing results for the two cost measures, it is difficult to trace back whether stricter country-level governance lowers the degree of real activities management or if companies switch to real activities management if their discretion for accrual-based earnings management is restricted by the legal environment. However, we reject H_{2b}, as we do not find any evidence for a mitigating effect of country-level governance on our tax measure.

5.4 Disentangling Accounting- and Tax-related Effects

Accounting-related services combine general accounting, auditing, and tax advisory services. Prior results provide mixed evidence on the relation with more financial reporting- or tax-oriented measures. Hence, the next steps aim at capturing cross-country and temporal variation in accounting and tax regulation. As such, we separate the country-level governance measure, *Gov,* into two measures for the perceived quality of the financial reporting *(FinRep)* and taxation system *(Tax).*

Table 22 contains the results for the modified model. As shown in Models 1(a) and 2(a) of Panels A and C, *FinRep* has a negative relation with accrual-based earnings management and taxation, respectively. That said, it is only slightly significant for *RevShare* in the first case. The negative but insignificant relation with the proxy for real activities management (Panel B) indicates a potential trade-off between the two directions of earnings management in countries with better financial reporting quality. *Tax* is not significant for either measure of the potential benefit. Hence, more complicated tax laws, i.e., a lower quality taxation system, do not impact earnings management or taxation outcomes, per se. Regarding our variables of interest, the two measures for spending on accounting-related services, the inferences drawn from the standard model, remain unchanged. The magnitude and significance levels for |*DAcc*| and |*abCFO*| are comparably less pronounced, but increase for *TaxDiff.*

The incremental effects of *FinRep* and *Tax,* expressed by the interaction terms in Models 1(b) and 2(b), are insignificant in any specification. Hence, the observed relation between earnings quality as well as taxation is not mitigated by higher quality financial reporting or taxation systems. Based on the significant positive relation for *RevUnexp*, with accrual-based earnings management and real activities management as well as the negative and significant relation for taxation, we find no evidence supporting H_{3a} and H_{3b}, respectively.

Table 22:

Regression results including separate financial accounting- and tax-related measures

Table depicts the results from the following OLS regression:

$$Benefit_{it} = \beta_0 + \beta_1 \cdot Costs_{it} + \beta_2 \cdot FinRep_{it} + \beta_3 \cdot Tax_{it} + \beta_4 \cdot Costs_{it} \times FinRep_{it} + \beta_5 \cdot Costs_{it} \times Tax_{it} + \sum \beta_j \cdot FirmControl_j + \beta_6 \cdot GDPgrowth_{ii} + \beta_7 \cdot Population_{ii} + \sum \beta_k \cdot Year_t + \varepsilon$$

$Benefit_{it}$ is the measure for potential benefits of accounting-related services. $Costs_{it}$ is either the share of revenues from accounting-related services to GDP *(RevShare)* in Model 1 or the discretionary measure for unexpected revenues *(RevUnexp)* in Model 2. *FinRep* is the z-transformed value of the Financial Reporting Quality Indicator from the World Economic Forum. *Tax* is the sum of the z-transformed yearly values of the World Bank's Doing Business Tax Indicators (time to prepare tax returns, number of tax payments, and total tax rate as percentage of commercial profits). The interaction terms (β_4 and β_5) are only included in Models 1b and 2b. $FirmControl_j$ encompasses the country-year level median values for the natural logarithm of total assets *(Size),* the operating income divided by lagged total assets *(RoA),* the relation of long-term liabilities to long-term liabilities and equity *(Lev),* the length of the operating cycle in days *(Cycle),* and the year-to-year growth rate of revenues *(Growth). GDPgrowth* is defined as the year-to-year change in GDP and *Population* is the natural logarithm of a country's total population. Year-fixed effects are included. Robust standard errors are clustered by country. t-values in parenthesis. ***, ** and * denote significance at 1 %, 5 % and 10 % level, respectively.

Panel A: Earnings Management (|DAcc|)

	Model 1		Model 2	
	(a)	(b)	(a)	(b)
RevShare	0.00195	0.00147		
	(0.58)	(0.43)		
RevShare × FinRep		0.00415		
		(1.26)		
RevShare × Tax		0.00093		
		(0.67)		
RevUnexp			116.63163 **	129.99799 **
			(2.76)	(2.26)
RevUnexp × FinRep				44.02798
				(0.50)
RevUnexp × Tax				43.75363
				(1.11)
Size	-0.00300	-0.00396	-0.00432 *	-0.00506 *
	(-0.77)	(-1.00)	(-1.90)	(-2.08)
RoA	-0.05931	-0.04749	-0.07455	-0.06612
	(-0.22)	(-0.17)	(-0.28)	(-0.28)
Lev	0.00044	0.01351	0.01255	0.01300
	(0.01)	(0.32)	(0.35)	(0.35)
Cycle	-0.00034	-0.00036	-0.00034	-0.00034
	(-1.23)	(-1.39)	(-1.23)	(-1.17)
Growth	0.02546	0.04788	0.02945	0.02990
	(0.57)	(1.43)	(0.73)	(0.90)
FinRep	-0.01257 *	-0.04098 *	-0.00882 *	-0.00704
	(-2.01)	(-1.85)	(-1.89)	(-1.52)
Tax	0.00031	-0.00532	0.00249	0.00308
	(0.07)	(-0.50)	(0.77)	(0.98)
GDPgrowth	0.04909	0.02033	0.05036	0.04712
	(0.97)	(0.38)	(1.13)	(1.18)
Population	0.00279	0.00322	0.00376	0.00444
	(0.68)	(0.79)	(1.34)	(1.47)
Constant	0.15913	0.16970	0.17475 **	0.17691 **
	(1.48)	(1.70)	(2.35)	(2.23)

Table 22:
continued

	Model 1		Model 2	
	(a)	(b)	(a)	(b)
Fixed Effects	Year	Year	Year	Year
N	126	126	126	126
R^2	0.267	0.308	0.361	0.368
Adj. R^2	0.160	0.192	0.267	0.262

Panel B: Real Activities Management (|abCFO|)

	Model 1		Model 2	
	(a)	(b)	(a)	(b)
RevShare	0.00298	0.00196		
	(0.96)	(0.65)		
RevShare × FinRep		0.00553 **		
		(2.30)		
RevShare × Tax		-0.00062		
		(-0.56)		
RevUnexp			111.11612 **	138.21118 **
			(2.53)	(2.41)
RevUnexp × FinRep				-73.95054
				(-0.91)
RevUnexp × Tax				19.93924
				(0.49)
Size	-0.00424	-0.00489	-0.00458 **	-0.00418 **
	(-1.28)	(-1.24)	(-2.32)	(-2.35)
RoA	0.47348 **	0.48104 **	0.44309 **	0.38947 **
	(2.73)	(2.58)	(2.60)	(2.37)
Lev	0.04618 *	0.07031 **	0.05369 **	0.05323 **
	(1.93)	(2.45)	(2.40)	(2.44)
Cycle	-0.00063 **	-0.00064 **	-0.00060 **	-0.00055 *
	(-2.25)	(-2.53)	(-2.27)	(-2.11)
Growth	0.02067	0.05037	0.02568	0.03617
	(0.39)	(0.88)	(0.52)	(0.81)
FinRep	-0.01082	-0.04868 ***	-0.00745	-0.00761
	(-1.68)	(-3.23)	(-1.35)	(-1.43)
Tax	0.00062	0.00344	-0.00085	-0.00006
	(0.17)	(0.51)	(-0.27)	(-0.02)
GDPgrowth	-0.06599	-0.11070 *	-0.05570	-0.04790
	(-1.07)	(-1.80)	(-1.14)	(-1.01)
Population	0.00051	0.00054	0.00217	0.00235
	(0.13)	(0.17)	(0.75)	(0.80)
Constant	0.24082 **	0.25670 **	0.23672 ***	0.22516 ***
	(2.38)	(2.79)	(3.17)	(3.06)
Fixed Effects	Year	Year	Year	Year
N	126	126	126	126
R^2	0.543	0.606	0.588	0.593
Adj. R^2	0.476	0.540	0.528	0.525

Table 22:
continued

Panel C: Taxation (TaxDiff|)				
	Model 1		Model 2	
	(a)	(b)	(a)	(b)
RevShare	-0.00815	-0.00398		
	(-0.95)	(-0.49)		
RevShare × FinRep		0.01605 **		
		(2.32)		
RevShare × Tax		-0.01329 **		
		(-2.83)		
RevUnexp			-268.00903 **	-393.82909 **
			(-2.36)	(-2.28)
RevUnexp × FinRep				617.44081
				(1.69)
RevUnexp × Tax				-275.00322
				(-1.43)
Size	0.00038	-0.01334	0.00040	-0.00464
	(0.03)	(-0.94)	(0.04)	(-0.41)
RoA	-1.68989 **	-1.51594 **	-1.60316 **	-1.23543
	(-2.38)	(-2.63)	(-2.22)	(-1.69)
Lev	-0.17163	-0.22609	-0.18632	-0.18188
	(-1.14)	(-1.51)	(-1.25)	(-1.29)
Cycle	-0.00078 *	-0.00087 **	-0.00086 **	-0.00120 **
	(-1.95)	(-2.19)	(-2.20)	(-2.29)
Growth	0.10222	0.19170	0.08912	0.02433
	(0.84)	(1.52)	(0.74)	(0.17)
FinRep	0.01428	-0.09560 *	0.00632	0.01344
	(0.89)	(-2.06)	(0.42)	(0.84)
Tax	-0.00030	0.09488 ***	0.00272	-0.00427
	(-0.03)	(3.06)	(0.29)	(-0.40)
GDPgrowth	0.15911	0.14806	0.12658	0.06628
	(1.08)	(0.79)	(1.10)	(0.66)
Population	-0.00093	0.00926	-0.00556	-0.00440
	(-0.06)	(0.72)	(-0.42)	(-0.37)
Constant	0.31015	0.32284	0.33610	0.41657
	(0.87)	(1.17)	(1.12)	(1.41)
Fixed Effects	Year	Year	Year	Year
N	126	126	126	126
R^2	0.261	0.393	0.309	0.362
Adj. R^2	0.152	0.291	0.208	0.255

The effect of spending on accounting-related services does not vary with differences in the quality of accounting and tax regulation.

6 Robustness Checks

6.1 Alternative Measures for Benefits

Measuring the potential firm-level benefits of spending on accounting-related services is tricky, especially as our costs measures are estimated on the country-level. Therefore, we use an additional set of proxies for accrual-based earnings management which was originally developed to capture these effects on a country- (Leuz et al. 2003) or industry-level (Burgstahler et al. 2006). These measures comprise:

(1) Variation of operating income to the variation of cash flows (EM1): A country's median ratio of the standard deviation of operating income to the standard deviation of cash flows. A lower standard deviation implies earnings smoothing, that is, companies reduce the variability of reported earnings. Following Burgstahler et al. (2006), we multiply this measure with -1, such that higher values indicate more earnings smoothing, i.e., lower earnings quality. Cash flow is calculated indirectly by subtracting the accrual component (as defined above) from operating income. Operating income is defined as net income before taxes, financial result, and special items.

(*2) Change in accruals to change in cash flows (EM2):* Pearson correlation between the year-to-year change in accruals and cash flows for the pooled set of all firm-year observations in each country. Due to the nature of accrual accounting, the correlation, on average, should be negative. It is also multiplied by -1 so that higher values indicate more earnings smoothing, i.e., a lower earnings quality (Burgstahler et al. 2006). Both measures are computed as described above.

(3) Absolute accruals to absolute cash flows (EM3): Country-median of the absolute value of accruals divided by the absolute value of cash flows. A higher level of accruals as compared to cash flows indicates more potential accounting discretion to improve earnings and, hence, lower earnings quality.

(4) Relation of small profits to small losses (EM4): Country-level median value of the number of firms reporting a small profit divided by the number of firms with small losses. A profit (loss) is defined as small if it is lower than or equal to 1% (greater than or equal to -1%) of after tax income scaled by lagged total assets. Managers are more likely to use accounting rules to convert small losses into small profits (Burgstahler and Dichev 1997). Higher values indicate more earnings management, i.e., lower earnings quality.

Table 23:

Regression results for the alternative earnings quality and taxation measures

This table depicts the results of the following OLS regression:

$$AltBenefit_{it} = \beta_0 + \beta_1 \cdot Costs_{it} + \beta_2 \cdot Gov_{it} + \beta_3 \cdot Costs_{it} \times Gov_{it} + \sum \beta_j \cdot FirmControl_{jt} + \beta_4 \cdot GDPgrowth_{it} + \beta_5 \cdot Population_{it} + \sum \beta_k \cdot Year_t + \varepsilon$$

$AltBenefit_{it}$ is the measure for potential benefits of accounting-related services. *EM1* to *EM4* are the four measures for earnings management from Leuz et al. (2003) and Burgstahler et al. (2006). |*abProd*| are abnormal production costs (Roychowdbury 2006; Cohen et al. 2008). *TaxSD* is the country-year standard deviation of companies' effective tax rates. $Costs_{it}$ is either the share of revenues from accounting-related services to GDP *(RevShare)* or the discretionary measure for unexpected revenues *(RevUnexp)*. *Gov* is the z-transformed average value of six World Bank governance indicators. The interaction term (β_3) is only included in Models 1b and 2b. $FirmControl_j$ encompasses the country-year level median values for the natural logarithm of total assets *(Size),* the operating income divided by lagged total assets *(RoA),* the relation of long-term liabilities to long-term liabilities and equity *(Lev),* the length of the operating cycle in days *(Cycle),* and the year-to-year growth rate of revenues *(Growth). GDPgrowth* is defined as the year-to-year change in GDP and *Population* is the natural logarithm of a country's total population. Year-fixed effects are included. Robust standard errors are clustered by country. t-values in parenthesis. ***, ** and * denote significance at 1 %, 5 % and 10 % level, respectively. N = 126.

	RevShare		RevShare × Gov		RevUnexp		RevUnexp × Gov		R^2	Adj. R^2
Panel A: Earnings Management										
EM1	-0.01031								0.815	0.790
	-0.00911		-0.00247						0.816	0.789
					-215.31008				0.818	0.793
					281.07823				0.864	0.844
EM2	-0.05165	*							0.152	0.037
	-0.06451	**	0.02645						0.171	0.049
					-257.83915				0.120	0.000
					796.34418				0.150	0.025
EM3	0.00832								0.679	0.636
	0.00667		0.00340						0.683	0.636
					178.53965	*			0.683	0.640
					290.91726	**	-149.47299	**	0.687	0.641
EM4	-0.10216								0.140	0.021
	-0.05384		-0.09686						0.151	0.026
					-6960.12532	***			0.225	0.118
					-11777.92440	**	6411.63803		0.254	0.144
Panel B: Real Activities Management										
|abProd|	0.00517								0.385	0.301
	0.00330		0.00385						0.401	0.313
					137.72432	**			0.401	0.320
					239.15095	**	-134.90714		0.412	0.326
Panel C: Taxation										
TaxSD	0.00202								0.371	0.285
	0.00535		-0.00686	*					0.481	0.405
					-114.86613				0.411	0.331
					-223.62278		144.65677		0.439	0.356

General model specifications are the same as in previous analyses. Panel A of Table 23 shows results for the four alternative measures. At first sight, these may seem to contradict previous results. Negative results for EM1 are insignificant. Even though results are significantly negative for EM2, the measure does not seem to be well-fitted for our purposes, as indicated by an (adjusted) R^2 of 5% or less. Results for EM3 and EM4 completely oppose each other. Overall, as in the main model, results for *RevUnexp* are more pronounced than for *RevShare*, indicating that the discretionary measure of spending on accounting-related services is better suited to account for cross-country and temporal differences. Results for *EM3* confirm those of our main analysis. However, we acknowledge that the evidence on accrual-based earnings management is rather inconclusive.

Additionally, we employ the absolute abnormal production costs *(|abProd|)* as an alternative measure for real earnings activities management. Based on Roychowdhury (2006) and Cohen et al. (2008)[27], we calculate |*abProd*| as the residual from the following industry-year regressions based on two-digit SIC codes with at least six observations:

$$\frac{Prod_t}{A_{t-1}} = \beta_0 + \beta_1 \cdot \frac{1}{A_{t-1}} + \beta_2 \cdot \frac{Rev_t}{A_{t-1}} + \beta_2 \cdot \frac{\Delta Rev_{t,t-1}}{A_{t-1}} + \beta_3 \cdot \frac{\Delta Rev_{t-1,t-2}}{A_{t-1}} + \varepsilon_t \qquad (15)$$

With CFO = Cash flow from operations estimated as the described above, Rev_t = sales (revenues), A = total assets, *Prod* = Cost of production as the sum of cost of goods sold, and the year-to-change change in inventory. Following Burgstahler et al. (2006), we compute cost of goods sold as the revenues minus operating income, since the actual costs of goods sold are not widely available for the firms in our sample.

Results are shown in Panel B of Table 23. Signs and magnitudes of coefficients are comparable to the main analysis. *RevShare* remains insignificant. Even though significance levels for *RevUnexp* slightly decrease compared to our main analysis, the results are qualitatively unchanged.

Finally, we use the variation of effective corporate tax rates (*TaxSD*) as an alternative tax-related measure (e.g., Goncharov and Jacob 2014). *TaxSD* is defined as the yearly standard deviation of the effective corporate tax rate for all companies in a country. The results

[27] In contrast to Roychowdhury (2006) and Cohen et al. (2008), we do not calculate a variable for discretionary expenses which are defined as the sum of R&D, advertising and SG&A expenses. Due to the differing reporting regimes and statements structures for European (private) firms the necessary data is not widely available.

Table 24:
Tests for Endogeneity

Panel A shows the results of the following OLS regression with lagged independent variables:

$$Benefit_{it} = \beta_0 + \beta_1 \cdot Costs_{it-1} + \beta_2 \cdot Gov_{it-1} + \beta_3 \cdot Costs_{it-1} \times Gov_{it-1} + \sum \beta_j \cdot FirmControl_{jt-1} + \beta_4 \cdot GDPgrowth_{it-1} + \beta_5 \cdot Population_{it-1} + \sum \beta_k \cdot Year_t + \varepsilon$$

Panel B shows the results of the following OLS regression in which all variables are defined as year-to-year changes:

$$\Delta Benefit_{it/t-1} = \beta_0 + \beta_1 \bullet \Delta Costs_{it,t-1} + \beta_2 \cdot \Delta Gov_{it,t-1} + \beta_3 \Delta(Costs_{it,t-1} \times Gov_{it,t-1}) + \sum \beta_{jt} \cdot \Delta FirmControl_{jt,t-1} + \beta_4 \cdot \Delta GDPgrowth_{it,t-1} + \beta_5 \cdot \Delta Population_{it,t-1} + \sum \beta_k \cdot Year_t + \varepsilon$$

$Benefit_{it}$ is the measure for potential benefits of accounting-related services. $Costs_{it}$ is either the share of revenues from accounting-related services to GDP *(RevShare)* in Model 1 or the discretionary measure for unexpected revenues *(RevUnexp)* in Model 2. *Gov* is the z-transformed average value of six World Bank governance indicators. The interaction term (β_3) is only included in Models 1b and 2b. $FirmControl_j$ encompasses the country-year level median values for the natural logarithm of total assets *(Size),* the operating income divided by lagged total assets *(RoA),* the relation of long-term liabilities to long-term liabilities and equity *(Lev),* the length of the operating cycle in days *(Cycle),* and the year-to-year growth rate of revenues *(Growth). GDPgrowth* is defined as the year-to-year change in GDP and *Population* is the natural logarithm of a country's total population. Year-fixed effects are included. Robust standard errors are clustered by country. t-values in parenthesis. ***, ** and * denote significance at 1 %, 5 % and 10 % level, respectively. N = 126.

	RevShare	RevShare × Gov	RevUnexp	RevUnexp × Gov	R^2	Adj. R^2
Panel A: Lagged independent variables						
|DAcc|	0.00247				0.279	0.170
	0.00111	0.00265 *			0.335	0.227
			106.73960 ***		0.393	0.302
			137.45968 ***	-39.49612 *	0.400	0.302
|abCFO|	0.00267				0.470	0.390
	0.00153	0.00222			0.492	0.409
			77.94218 **		0.496	0.420
			118.08053 **	-51.60499	0.502	0.421
TaxDiff	-0.00683				0.196	0.075
	-0.00482	-0.00390			0.208	0.079
			-241.62005		0.247	0.134
			-495.29518	326.14443	0.290	0.174
Panel B: Difference estimation						
|DAcc|	-0.00652				0.439	0.355
	-0.00735	-0.00170			0.443	0.352
			-136.59182		0.427	0.340
			-184.05117	100.92274	0.434	0.342
|abCFO|	0.00218				0.436	0.351
	0.00232	0.00028			0.436	0.344
			124.43110		0.442	0.358
			167.85941	-92.35071	0.446	0.355
TaxDiff	-0.00003				0.409	0.320
	0.00129	0.00268			0.419	0.325
			6.60153		0.409	0.320
			-28.61191	74.88171	0.414	0.318

reported in Panel C of Table 23 are basically consistent with the main analysis; the sign for *RevShare* changes, and the coefficient remains insignificant.

6.2 Endogeneity Concerns

In our last set of analyses, we address potential endogeneity concerns discussed in Section 4.5. First, we repeat the main analysis with one year lagged independent variables to mitigate concerns of reversed causality. Using the data from the prior year appears plausible since important parts of the financial accounting and taxation cycle are performed at or after (fiscal) year end. Notable examples are the preparation of financial statements or filing of tax returns. In the course of these processes, companies may apply different earnings management strategies to achieve desired outcomes. Additionally, audit services usually refer to the prior years' financial statements, providing further backing for the use of lagged variables. However, we caution that the previous thoughts do not apply to real activities management. Any such actions (e.g., boosting or slowing sales, increasing or decreasing production) must be performed in a timely manner. Therefore, using lagged values likely introduces bias. Nevertheless, we report the results for the sake of completeness. Panel A of Table 24 exhibits that results are qualitatively similar to our main analysis.

Second, we use a difference estimation, which is not based on the yearly levels of all variables, but rather on their respective year-to-year changes. The results for |*abCFO*| in Panel B of Table 24 are, though not significant, consistent with our main analysis. For *TaxDiff,* the signs change in some specifications. Results for |*DAcc*| are completely reversed. We have no plausible explanation for these results.

7 Concluding Remarks

This study aims to extend the knowledge on the relationship between costs and benefits of accounting-related services. Fees associated with accounting-related services constitute costs for the hiring company. These costs are usually rooted in a company's obligation to adhere to all (tax and accounting) regulations it is subject to. However, companies face different incentives when using accounting-related service. The concept of compliance costs as proposed by Johnston (1963) distinguishes between unavoidable (manda-

tory) and avoidable (voluntary) compliance costs. Prior literature provided extant evidence on the potential positive (knowledge spillover) and negative (impaired independence) implications of (non-)audit service fees. We extend this literature by focusing not solely on audit fees but on any form of spending geared towards auditors, tax advisors, accountants, or their respective firms.

Since firm-level data on costs of or spending on accounting-related services is not widely available, we refer to country-level revenues earned from accounting, audit, and tax advisory services as a proxy. To circumvent potential size bias, we scale these revenues by GDP. Additionally, we estimate the unexpected part of these revenues which cannot be explained by a country's level or change of economic development.

We hypothesize that the degree to which companies benefit from accounting-related services varies with country-level spending on those services. Furthermore, drawing from financial economics literature, we expect that these benefits are mitigated by country-level governance mechanisms as well as the quality of accounting and tax regulation. Our results show a significantly negative relation between (discretionary) spending on accounting-related and earnings quality. However, lower earnings quality does not translate into lower tax rates. Taken together, the primary results indicate that firms use accrual-based earnings as well as real activities management to create a less bumpy, smoother earnings path. This result is in line with prior literature highlighting the different financial reporting and tax incentives of private companies as opposed to listed firms (e.g., Gassen and Fülbier 2015). Furthermore, we find modest evidence on the mitigating effect of country-level governance mechanisms on the relation between spending on accounting-related services and earnings quality.

Our study is subject to some caveats. First, revenues from accounting-related services most likely underestimate the actual costs by a large margin. In-house effort to prepare financial statements and tax returns is not included. In a review of tax compliance costs, Eichfelder and Vaillancourt (2014) show that external costs (i.e., the focus of our study) amount to only about a quarter of total costs and, thus, are relatively dwarfed by time and staff costs. Moreover, we are unable to quantify the psychological cost of compliance. These could result from the stress of not fully understanding legislation with which a preparer or taxpayer has to comply (Chittenden et al. 2003). Therefore, the narrower, more conservative focus of our data works against any findings. Second, it is difficult to disentangle the effects of accounting, auditing, and tax regulation. Most of the literature

(e.g., Goncharov and Jacob 2014) and available data sources (e.g., World Economic Forum, World Bank) focus on corporate taxation. Even though the assumption that (large) companies bear the majority of accounting-related costs seems reasonable, individuals may also have a fairly high interest in minimizing their tax payments with professional help. Additionally, higher costs can be the result of increased regulatory scrutiny (e.g., tax audits), stricter regulation (e.g., mandatory audit requirements), more complex rules, or voluntary demand for accounting services aiming to maximize company profits. Overall, these effects are countervailing. We use a range of tests and control variables to address these concerns. Third, the calculation of all measures is based on the sample of firms retrieved from the Amadeus database. As described, the availability of the necessary financial data is restricted to a certain set of larger companies and varies between countries due to differing disclosure requirements. We caution that the results may, therefore, not be fully representative of the overall population of firms. Smaller companies and individuals, in particular, probably face diverging incentives, e.g., stemming from the missing need to (fully) disclose their financials. If they represent a significant share of the overall revenues from accounting services and rely on accounting service and tax advisory providers mainly to comply with tax regulations, this would bias our results downwards and, hence, work against any findings.

Future research could use more sophisticated measures to disentangle the effects of financial reporting (accounting), auditing, and tax regulation. Regulatory changes (e.g., staggered adoption of the new accounting and audit directives), in particular, could provide interesting settings to isolate and measure the actual costs of (new) accounting regulations. Also, more nuanced changes, such as tax reforms in nine of our 18 sample countries (Sundvik, 2016), provide a good starting point for further elaborations on this issue. Furthermore, our main results indicate a complementary relationship between accrual-based earnings management and real activities management in our sample. Since this study is mainly based upon data from private firms, future research could look into this issue more broadly. Starting with the differing reporting incentives of private firms, it would be interesting to see whether the trade-off relation between both measures of earnings quality documented for listed companies (e.g., Zang 2012) could also be observed for (European) private firms.

Appendix

Variable	Description and Data Sources
RevShare	Relation of revenues earned from accounting, auditing, and tax advisory services to GDP. Revenues are converted to US $ using the latest available yearly conversion rate from the International Monetary Fund's exchange rate database. Data Sources: EuroStat Structured Business Statistics, World Bank World Development Indicators
RevUnexp	Unexpected portion of revenues earned from accounting, auditing and tax advisory services estimated using a methodology similar to those from Jones (1991). Explanatory variables are GDP and GDP growth rate. All variables and the intercept are scaled by the total population at the beginning of the year. Data Source: EuroStat Structured Business Statistics, World Bank World Development Indicators
|DAcc|	Country-year mean value of absolute discretionary accruals calculated following Dechow et al. (1995). Expected portion of accruals is estimated cross-sectionally on the industry level. Data Source: Bureau van Dijk Amadeus Database
EM1	Relation of the standard deviation of operating income to the standard deviation of cash flow from operations from Leuz et al. (2003). Operating income is defined as net income before financial result, taxes and special items. Cash flow from operations is calculated by subtracting the accrual component from operating income using the retrograde method from Leuz et al. (2003) as described in the main text. Calculation based on the pooled sample of firm-year observation per country. Multiplied with -1 (Burgstahler et al. 2006). Data Source: Bureau van Dijk Amadeus Database
EM2	Correlation between the year-to-year change in accruals and the year-to-year change in cash flow from operations from Leuz et al. (2003). Accruals and cash flow from operations are calculated as described for EM1. Expressed as firm-year mean value per country. Data Source: Bureau van Dijk Amadeus Database
EM3	Absolute value of accruals divided by the absolute value of cash flow from operations from Leuz et al. (2003). Accruals and cash flow from operations are calculated as described for EM1. Calculation is based on the median of the pooled sample per country and year. Multiplied with -1. Data Source: Bureau van Dijk Amadeus Database
EM4	Relation of firms with small losses to firms with small profits from Leuz et al. (2003). Based on the relation of pretax income to lagged total assets, small is defined as a value between -0.01 and 0 for losses as well 0 and 0.01 for profits. Data Source: Bureau van Dijk Amadeus Database
|abCFO| |abProd|	Country year mean value of absolute abnormal cash flow from operations or production costs calculated following Roychowdhury (2006) and Cohen et al. (2008). Expected portion of cash flows and production is estimated cross-sectional on the industry level. Data Source: Bureau van Dijk Amadeus Database

Variable	Description and Data Sources
TaxDiff	Country-year level mean value of the difference between statutory tax rate and effective tax rates paid by companies. Effective tax rates are calculated as tax expenses divided by pretax income. Data Source: Bureau van Dijk Amadeus Database, European Commission (2016)
TaxSD	Yearly standard deviation of the effective corporate tax rate for all companies in a single country. Effective tax rates are computed as outlined for TaxDiff. Data Source: Bureau van Dijk Amadeus Database
Gov	z-transformed score of the average value of the six World Governance Indices: Regulatory Quality, Rule of Law, Voice and Accountability, Political Stability, Government Effectiveness and Control of Corruption (Breuer and Salzmann 2015). Data Source: Kaufmann et al. (2009) and http://www.govindicators.org
FinRep	z-transformed value of the measure for financial reporting quality used by the World Economic Forum. Businesspersons were asked how they assess the quality of financial reporting in their country of origin on a scale from "1" (worst) to "7" (best). Data Source: World Economic Forum (2015)
Tax	A score consisting of the sum of the yearly z-transformed values for time required to prepare tax filings (in hours), the number of taxes and the total corporate tax rate (as percentage of all commercial profits). Data Source: World Bank (2015)
Size	Country-year median value of the natural logarithm of total assets for all sample firms. Data Source: Bureau van Dijk Amadeus Database
RoA	Country-year median value of return on assets for all sample firms. Return on assets in calculated as operating income divided by lagged total assets. Data Source: Bureau van Dijk Amadeus Database
Lev	Country-year median value of the relation between non-current liabilities and the sum of equity and non-current liabilities. Data Source: Bureau van Dijk Amadeus Database
Cycle	Country-year median value of the length of the operating cycle in days. Calculation as described in the text. Data Source: Bureau van Dijk Amadeus Database
Growth	Country-year median value of the year-to-year growth rate of revenues. Data Source: Bureau van Dijk Amadeus Database
Population	Natural logarithm of the total population per country and year. Data Source: World Bank World Development Indicators Database
GDPgrowth	Year-to-year GDP growth rate calculated in current US $. Data Source: World Bank World Development Indicators Database

PART C:
SURVIVORS

Duration of the Peer Review Process in Leading Academic Accounting Journals

Abstract

The existing empirical literature on the peer review process in general and in accounting in particular has primarily focused on the fairness of the process and reasons for rejections of submitted papers. There is little evidence on the factors which might influence the overall timeliness of peer review. First, I analyze the duration of peer-peer review for *The Accounting Review* (TAR), *Journal of Accounting and Economics* (JAE), and *Journal of Accounting Research* (JAR) between 2001 and 2010. TAR and JAR provide similar duration, whereas the process is much slower in JAE. Furthermore, results indicate that journals use the peer review process to strategically respond to excess demand for journal publication space. The second analysis is based on a sample of hand-collected data from 477 articles published in *The Accounting Review* (TAR) between 1997 and 2009. I investigate the effect of informal feedback, article- and author-specific factors, as well as fairness indicators on the duration of the peer review process. The results suggest that peer review in TAR is not object to external influence. Noticeably, articles which get highly cited after publication pass the process significantly faster, indicating a certain effectiveness of the process. Collaboration between authors is a more important factor than informal feedback from colleagues, seminars, conferences, etc. If institutional bonds between editor and author(s) exist, the time spent under peer review apparently decreases. This result should be interpreted with caution, as it could simply reflect a self-selection of high-quality faculty. The results are robust to different definitions of author-specific attributes and the inclusion of submission year-, method-, and topic-fixed effects.

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1 Introduction

A double-blind peer review is the distinguishing feature of academic journals. It is characterized by anonymity of the authors to the referees and vice versa to ensure constructive direct feedback on the authors' work and prevent impertinent influences (Bailey et al. 2008b). The referees' advice to the author and his final suggestion to the editor are crucial to a paper's success. Publications in highly ranked journals have gained importance in various areas of academic life, e.g., with respect to cumulative dissertations, promotion to tenured positions (Dunn Jr. 2005; Read et al. 1998; Rouse and Shockley 1984), or the acquiring of research funding (Bence and Oppenheim 2004; Marston and Ayub 2000).[28] Mechanisms to evaluate and assure the quality of publications, like the peer review process, consequently gained increased importance as well. However, there is little theoretical and empirical evidence on the overall duration of the peer review process and its related determinants. Prior literature primarily focused on reasons papers get rejected by journals (e.g., Stout et al. 2006) and certain attributes of fairness in the peer review process (e.g., Laband and Piette 1994; Moizer 2009). Survey results of accounting academics reveal a modest to positive perception of peer review timeliness and quality for top- and second-tier journals (Adler and Liyanarachchi 2011; Bailey et al. 2008a).

Therefore, this study is explorative in nature and its objective is twofold. First, to show differences in the duration of the peer review process over time and between journals. This analysis is based on a sample of 967 articles published in *The Accounting Review* (TAR), *Journal of Accounting & Economics* (JAE), and *Journal of Accounting Research* (JAR) over the 10-year period between 2001 and 2010. Second, it aims to analyze whether and to which extent author- and article-specific factors influence the duration of the peer review process. I further examine the effects of informal feedback (from colleagues, at workshops, conferences, etc.) and potential editor favoritism as an indicator for fairness. My study is based on a unique sample of hand-collected data from the cover sheets, especially the acknowledgements, of 477 articles published in *The Accounting Review* (TAR) between 1997 and 2009. Differences in the sampling times are due to data availability issues.

[28] Taking all these factors into account, a top tier accounting publication increases the annual income of US professors by US $5,609 with a present value of US $145,000 for assistant professors (Asthana and Balsam 2017). Similarly, Swidler and Goldreyer (1998) estimate the present value of a top journal publication in the finance discipline to be between US $19,493 and US $33,754.

The results show a median duration of the peer review process of 487 days. TAR and JAR are quite similar: 457.5 and 450.0 days, respectively. For JAE, the median duration is 590.5 days. Overall, results imply that the duration of the peer review process strongly varies between journals and over time. Publication and duration trends are in line with the observations by Swanson (2004). Top accounting journals did indeed increase the available journal space to meet increasing publication demand from scholars. However, journals can increase authors' costs of submission by prolonged review processes (Azar 1996; Leslie 2005; Lee 2009). The observed increase in the duration of the peer review process may, hence, be a strategic reaction to address remaining excess demand. Besides these overall trends, certain other and article-specific factors seem to relate to the duration of the peer review process. Conference-based papers, in particular, benefit from an accelerated peer review process. Dissertation-based articles usually take longer (at least for JAE and JAR), most likely due to authors' inexperience with the publication process. Co-authorships are beneficial in TAR but show diminishing returns for JAE and JAR.

For the second set of analyses, the results of my base model regression (without fairness indicators) suggest that the peer review process in TAR is certainly efficient, i.e., not fundamentally influenced by characteristics of the article or the authors. Noticeably, high-quality articles, which received many citations following publication, pass the process significantly faster. Co-authorships have a significantly decreasing effect on the duration of the peer review process. Knowledge and skills necessary to conduct high-quality research, hence, seem to be rooted in collaboration and division of labor between multiple authors rather than informal feedback from colleagues, seminars, conferences, etc. At first glance, this result may contradict common wisdom, as senior researchers strongly emphasize the importance of circulating manuscripts (e.g., for accounting (Demski and Zimmerman 2000; Locker 1964; Zimmerman 1989), economics (Hamermesh 1992), marketing (Perry et al. 2003), finance (Green et al. 2002), or health (Swartz 1999)). Yet, informal feedback may be more important to receive unbiased feedback on the quality of a paper or research idea prior to submission (Brown 2005). Once a submission passes the desk rejection-hurdle, other factors seem to be more important for total duration.

I additionally investigate the effect of fairness indicators. The analysis is based on a subsample of articles from 2003 to 2009, for which the accepting editor is known. If institutional bonds between the accepting editor and one of the authors exist, the time spent in

peer review apparently decreases. This result, however, should be interpreted with caution, as it could simply reflect a self-selection of high-quality faculty into high-quality journals (Fogarty and Yu 2010; Swanson et al. 2007). Furthermore, mentioning members of the editorial staff (e.g., associate editors) in the acknowledgements is associated with a significant decrease in peer review duration. Although this could induce strategic behavior by the authors, quality feedback from a member of the editorial team is also a possible criterion for improving the paper in a timely fashion. My results are robust to the inclusion of fixed effects for submission year as well as research method and topic.

My study contributes to several aspects of current research, which sheds some light on the "black box" that is the peer review process. First, I provide evidence on the duration of the peer review process in top accounting journals for a most recent period. Second, mine is the first study to comprehensively address potential factors influencing the duration of the peer review process. Third, based on the several theoretical predictions for determinants of peer review duration and the incentives of the involved parties (authors, referees, editors), I use several new measures to operationalize author- and article-specific factors. Fourth, I build upon a unique, long time-series dataset, including a subsample of articles for which the accepting editor is known. Therefore, my study is the first to empirically relate the issue of fairness, i.e., editor favoritism to peer review duration.

The paper is organized as follows. Section 2 gives an overview of the prior literature. Research questions are explicated in Section 3. Research design, sample selection, and results for the two analysis can be found in Sections 4 and 5. Section 6 contains concluding remarks.

2 Prior Literature

The existing literature on the peer review process is usually classified into three main sections: quality, ethics, and efficiency (Armstrong 1997; Bailey et al. 2008b). A review process is of high quality if it successfully distinguishes promising papers from the bulk of submissions and supports further improvement of the selected papers. While there is general agreement on the latter part, peer review as a selection device faces skepticism. There is an apprehension that peer review harms innovative research, as referees focus too much on methodical issues and embedding previous research (Armstrong 1996). Evidence on rejected papers, which would later get highly cited (Campanario 1996), and

random outcomes from repeated submissions of already published work (Peters and Ceci 1982) provide evidence on this issue.

Editors are thus reacting to criticism by shedding some light on the "black box" of the peer review process. Narratives on personal experiences across different disciplines (e.g., economics (McAfee 2010), management (Brief 2004; Clark et al. 2006; Harrison 2002), and accounting (Clarkson 2012)) have been established as its own strand of literature. Editors use this channel to provide guidelines and suggestions to make the process more beneficial for authors. Another approach to achieve this objective is evaluations of the reasons for rejections. Applying content analysis methodology to editorial letters and review reports, previous studies identified a lack of contribution, methodological flaws, and research topics which did not suit a journal's focus as the main reasons (Clark et al. 2006; Howard and Stout 2006; Stout et al. 2006). Czyzewski and Dickinson (1990) obtained similar results by surveying 350 accounting referees on their perception of the most important reasons. Brown (2005) investigates the editor's decision for 305 papers submitted to *The Accounting Review*, taking the individuals, institutions, and conferences mentioned in the acknowledgements, as well as the author's institutional background and experience, into account. He finds a highly significant influence of institutions but only weakly significant results for the two attributes relating to the author.

Research on ethics in the peer review process mostly focuses on aspects of fairness. In a survey of 505 North American accounting researchers, Bailey et al. (2008a) found that the majority of respondents have neither personally observed nor heard about selfish or cliquish acts in the peer review process. While there seems to be general agreement on the fairness of the process, authors primarily publishing in top journals are less convinced than their peers. Adler and Liyanarachchi (2011) obtained comparable results from 288 authors who published in accounting journals in 2004 and 2005. Unsurprisingly, authors of accepted papers were significantly more satisfied than authors of rejected submissions. An alternative approach to address certain fairness issues is bibliometric analysis. One major topic is the editor's discretion with respect to reviewer selection, the final decision on the acceptance of a submission, and the order of articles within the journal (Oswald 2008). Smart and Waldfogel (1996) conduct a citation analysis of finance and economics journals on the latter issue. They find an editorial bias towards authors outside the top universities. Laband and Piette (1994) perform a citation analysis, too, but find evidence that articles have higher chances of publication if institutional bonds between the authors

and the editorial board of the journal exist. They are, however, cautious with the interpretation of their results. While their results could indicate favoritism, they trace the reasons to the editor screening the market for research papers. The probability of finding a quality paper is higher in top schools, where most of the editorial board members come from, rather than outside of them.

Based on this extant literature, many researchers developed rules and guidelines for authors, referees, and editors to improve the process and assure comparable, qualitative, and effective peer reviews (Alexander 2013; Bailey et al. 2008a; Di Pietra 2013; Harrison 2002; Loeb 1994; Moizer 2009; Ravenscroft and Fogarty 1998; Vaivio 2013). In contrast, most of the editors who publish accounting research do not see a need for a common code of conduct (Borkowski and Welsh 1998).

The third strand of research addresses the efficiency of the peer review process, i.e., its timeliness and resource consumption (Bailey et al. 2008b). Several analytical studies model the behavior and incentives of editors, referees, and authors in the peer review process. Ellison's (2002a) q-r-model notes the publication threshold as a function of originality *(q)* and methodological rigor *(r)*. For papers with a lower q-factor, referees will demand a higher r-factor, thus prolonging the review process. Additional time spent in the review process equals costs for the authors, as they cannot work on the paper or submit it to another journal. This mechanism prevents journals from being drowned with low q- and r-papers or having to publish papers subpar to the standard of the journal (Azar 1996; Lee 2009). Consequently, innovative and methodically sound papers have shorter peer review durations. Leslie (2005) likewise identifies the peer review process duration as submission costs for the author. In his model, the authors' decision to bear these costs is determined by the probability of acceptance. Even given a known publication threshold, the author must rely on a biased signal on the quality of her own work. However, authors could follow a "top-down" strategy, i.e., consecutively submit their paper to journals of different qualities, starting at the top. For this reason, Azar (2007) identifies the first-response time as an important indicator of peer review effectiveness. As long as no initial decision is available, the authors must not submit the paper to another journal. Hence, longer first-response times increase the costs of the authors.

Top accounting journals offer shorter first-response times than most finance and economics journals, indicating an effective peer review process (Azar 2004). More contemporary

survey results, however, indicate a slowdown in first-response times (Adler and Liyanarachchi 2011). Early evidence on the overall duration of the peer review, from submission to acceptance, was provided by Bowen and Sundem (1982) for nine accounting journals in 1980 as well as Trivedi (1993) and Yohe (1980) for many economics journals. For both disciplines the mean duration varied strongly between the journals. Ellison (2002b) documents a steady increase for the average peer review duration in economics journals as opposed to finance and accounting journals between 1970 and 1999. In an additional analysis, he identifies the increased competition for slots in top journals as well as longer papers as major drivers but notes that large parts of the increase in peer review duration cannot yet be explained. Based on the prediction of q-r-theory, Swanson (2004) denotes differences in the competition for publication slots in top journals across different business disciplines. Publishing in a premier accounting outlet is, by his measure, much more competitive than in marketing or finance due to a comparably lower number of yearly articles and a high concentration of faculty represented in the journals (Swanson et al. 2007). While these results cast some doubt on the fairness of the review, they fit with the underlying theory as higher referee demands *(r)*, leading to longer review times adding additional costs, which are less incriminating for authors at top schools.

Survey results on timeliness, as perceived by the authors, yield different results. In general, American scholars are more satisfied with the timeliness of peer review in top journals than in other academic outlets. Authors who primarily publish in top journals, on the other hand, perceive the process there to be slow (Bailey et al. 2008a). For an international sample, Adler and Liyanarachchi (2011) find top journals in the mid-range regarding perceived timeliness and quality of peer review. Overall, prior literature documents differences in the timeliness of peer review across disciplines and journal types. Respective incentives and factors have been partially determined in empirical or theoretical studies. However, to my knowledge, a comprehensive empirical study incorporating these factors has not yet been conducted.

3 Research Questions

Accounting academics show a modest satisfaction with the timeliness of the peer review process in top- and second-tier journals (Adler and Liyanarachchi 2011; Bailey et al.

2008a). However, Ellison (2002b) documents a decreasing trend in the peer review duration for accounting compared to economic journals between 1970 and 1999. Based on this contradictory evidence, the first research question reads:

RQ_1: Do differences in the duration of the peer review process between the top accounting journals, or over time, exist?

As shown in the previous section, prior literature has paid much attention to the occurrences within the peer review process. I argue that the submission of a paper is merely the end of a greater process. Assuming the threshold of quality for a submitted paper to not be immediately rejected is constant, the duration of the peer review is likely to reflect a paper's level of maturity. To mitigate the rejection risk, authors will tend to initially submit a paper of highest possible quality. High quality can, according to Ellison (2002a), be obtained by the degree of innovation *(q)* and/or methodological rigor *(r).* An unbiased assessment (Leslie 2005) regarding the two dimensions of one's own work depends on the experience and knowledge within the team of authors or can be obtained from informal feedback by colleagues, workshop participants, etc. While the theoretical reasoning is well established, to this date I am not aware of any comprehensive study providing evidence on the impact of and relations between those factors. Consequently, my second research question reads:

RQ_2: Is the duration of the peer review process influenced by article- and author-specific factors or the extent of informal feedback authors receive prior to or during the peer review process?

Building upon the existing literature on ethics in the peer review process (e.g., Laband and Piette 1994; Moizer 2009), my third research question reads:

RQ_3: Is the influence of article- and author specific factors as well as informal feedback conditional to an unbiased (i.e., fair) peer review process?

4 Data

Following the suggestion by Hamermesh (1994), I utilize the dates of initial submission and acceptance available on the single published articles. In recent years, publishers offer

information on the publication history directly on the web sites of the journals. If available, the latter option was preferred. Furthermore, for the second analysis (determinants and fairness of the peer review process), the articles need to comprehend acknowledgements to derive information on informal feedback and other paper-specific attributes (dissertation, etc.). To check whether these three items are available, I performed a pre-test based on the leading North American general accounting journals (Bonner et al. 2006; Merchant 2010; Oler et al. 2010): *Journal of Accounting and Economics* (JAE), *Review of Accounting Studies* (RASt), *The Accounting Review* (TAR), and *Contemporary Accounting Research* (CAR). The results are mixed. I further added *Accounting, Organization, and Society* (AOS), and the *European Accounting Review* (EAR) as leading European journals (Bonner et al. 2006; Lowe and Locke 2005). Most of the journals have changed their policies either once over time or do not offer the required information. In detail, JAE offers information on the publication history in 1999 and since 2003. Acknowledgements are available for some articles in 1999 and again since 2013. JAR and TAR offer the data continuously since 2001 and 1979, respectively. For the remaining two journals (AOS, CAR, EAR), at least one item is missing over time.

Based on these results, I selected TAR, JAE, and JAR as the sample for the first analysis (2001 to 2010). Furthermore, TAR provides an even longer time-series for the beginning and end date of the peer review process as well as the acknowledgements. For this reason, I additionally gather author- and article-specific data (determinants) for all TAR articles published between 1997 and 2009. I also selected TAR for the additional analysis on the fairness of the peer review process, as this data is available since 2003.[29] By focusing on one journal, I can directly account for time trends and journal-specific factors (editorial policy, direction regarding methods, and content, etc.), which may vary over time.

To gather information on the articles published in the sample period, meta-data on all articles published in the three journals was retrieved from *Thomson Reuters Web of Knowledge.* For analysis 1, the initial sample consisted of 1,268 articles (Table 25, Panel A) from TAR, JAE, and JAR published between 2001 and 2010. All articles that were not original research articles (e.g., discussions, book reviews) or not subject to a peer review (e.g., invited papers, editorials) were dropped. Additionally, the sample was cleaned from articles with missing data on the publication history (dates of submission

[29] In 2012, JAR started to state the accepting editor in acknowledgement. TAR has kept its editor transparency policy up until today.

Table 25:
Sample Selection of Analysis 1

Panel A: Sample Selection

	TAR	JAE	JAR	Total
All articles 2001 – 2010	578	312	378	1,268
./. Errata, Editorials, Book Reviews	83	4	13	100
./. Discussions and Invited Papers	16	55	50	121
./. Missing Data on Peer Review Process	6	71	1	78
./. Duration = 0	1		1	2
Total	472	182	313	967

Panel B: Sample Coverage

	TAR			JAE			JAR		
	All	Sample	%	All	Sample	%	All	Sample	%
2001	28	28	100 %	10	0	0 %	35	35	100 %
2002	45	39	87 %	16	0	0 %	49	48	98 %
2003	42	42	100 %	33	26	79 %	28	28	100 %
2004	45	45	100 %	22	21	95 %	24	24	100 %
2005	47	47	100 %	26	15	58 %	23	23	100 %
2006	42	42	100 %	30	16	53 %	28	28	100 %
2007	42	42	100 %	29	25	86 %	31	30	97 %
2008	51	50	98 %	37	36	97 %	38	38	100 %
2009	66	66	100 %	24	24	100 %	30	30	100 %
2010	71	71	100 %	26	19	73 %	29	29	100 %

and acceptance) and articles for which submission and acceptance were identical (peer review duration would be zero). The final sample consists of 967 articles. Most notably, the number of observations from TAR is nearly as high (472) as those of JAE and JAR combined (182 + 313 = 495). Breaking the sample down by year (Table 25, Panel B) shows that the share of research articles with available publication data is the lowest for JAE, where the years 2001 and 2002 are completely missing.[30] TAR and JAR have a good coverage over the entire sample period. Hence, results for JAE should be interpreted cautiously.

Analysis 2 features the determinants and fairness of the peer review process. The first part (determinants) is based on articles published in TAR between 1997 (Volume 70) and

[30] For single articles, data is missing in all years but 2009.

up to and including 2009 (Volume 84). According to *Thomson Reuters Web of Knowledge,* a total of 617 articles have been published in this period. Book reviews, discussion articles, and replicas, as well as editorials and invited articles, were excluded, as these provide no original research and/or are not subject to a formal peer review process as outlined above. Of the remaining 493 articles, another 16 articles were dropped due to missing author-specific information. The final sample consists of 477 single research articles. For the second analysis, which includes factors indicating the fairness of the peer review process, information on the editor who accepted the article is required. TAR provides this data since the second issue in 2003. Hence, the number of observations decreases by 170 to a final sample for the second analysis of 307 articles.

5 Analysis 1: Duration of the peer review process in Leading Accounting Journals

5.1 Publication Patterns and Trends

Journal-specific factors in the publication and editorial process can potentially interfere with the duration of the peer review process. To accommodate this issue, Table 26 presents descriptive statistics on the overall publication of the three journals based on the sample articles.[31]

Comparing the three journals (Panel A of Table 26) shows that TAR and JAR are comparable with regard to the number of issues and average length of an article. JAE shows a distinct pattern: a comparably low number of issues with shorter articles. However, the latter can be partly attributed to a changing page layout in recent years. The newer layout features thin margins and a tiny font, increasing the number of characters on one page compared to TAR and JAR. Over time, the three journals increased their output by raising the number of issues (+ 1.67 issues from 2001 to 2010) and average length of an article (+ 8,3 pages; 39.4%). However, the increase in article length mainly took place between 2001 and 2004. Both factors as well as an increasing number of articles led to a strong increase in the total number of pages published. Between 2003 and 2010, the years with coverage for all three journals, the total number of pages increased by 65.6%. Overall, differences in the publication pattern between the journals are rather small but signal a

[31] Please note, that the years 2001 and 2002 do not contain any articles from JAE.

Table 26:
Number of Articles, Issues, Total Pages, and Article Length

	Articles	Issues	Total Pages	Mean Pages
Panel A: By Journals				
TAR	472	4.97	1,401.12	27.18
JAE	182	2.13	741.09	24.73
JAR	313	4.78	1,011.19	31.16
Total	967	4.37	1,150.94	28.00
Panel B: By Year				
2001	63	3.45	666.06	21.06
2002	87	4.55	1,199.31	25.16
2003	96	3.81	964.10	27.26
2004	90	3.88	951.07	29.14
2005	85	4.05	1,015.58	28.78
2006	86	4.44	993.51	28.50
2007	97	4.23	1,086.37	30.42
2008	124	4.53	1,231.27	28.31
2009	120	4.95	1,409.50	28.97
2010	119	5.12	1,596.88	29.36
Total	967	4.37	1,150.94	28.00

strong time-trend. This finding coincides with Swanson's (2004) notion that accounting journals did indeed increase the publication space. However, if his second result, namely a shortage of publication slots compared to demand by an increasing number of researchers, holds, one would expect an increase in the duration of the peer review process to raise authors' costs of submission (Azar 1996; Leslie 2005; Lee 2009).

Two distinct types of publications stem from dissertations and conferences held by the journals. Dissertation-based papers are – by design – prepared by a young and unexperienced scholar who is making her first step in the publishing market. Additionally, topics and ideas used in dissertations could be more novel and experimental since the author has a comparably long time to work on her thesis. Taken together, one would assume that the combination of more of Ellison's (2002b) *q* and an inexperienced author would translate into a longer duration of peer review process. To further investigation this notion, I code papers as dissertations based on whether the acknowledgements contains either the word "dissertation" or "thesis." Column 2 in Panels A and B of Table 27 shows a breakdown

Table 27:
Articles from Conference Issues and based on Dissertations

	All Articles	Dissertation		Conference Papers	
Panel A: By Journal					
TAR	473	65	14 %	0	0 %
JAE	182	11	6 %	44	24 %
JAR	313	32	10 %	50	16 %
Panel B: By Year					
2001	64	14	22 %	0	0 %
2002	87	12	14 %	8	9 %
2003	96	11	11 %	14	15 %
2004	90	7	8 %	15	17 %
2005	85	14	16 %	4	5 %
2006	86	10	12 %	7	8 %
2007	97	11	11 %	11	11 %
2008	124	15	12 %	13	10 %
2009	120	9	8 %	10	8 %
2010	119	5	4 %	12	10 %

of dissertation-based papers for the journals and years. TAR published the most dissertation-based papers (14%), followed by JAR (10%) and JAE (6%). However, these results may underestimate the absolute share dissertation-based papers since acknowledgements are not widely available for JAR and JAE. This, however, works against any findings with respect to process duration. Additionally, the absolute number as well as the share of dissertation-based papers declined over time, particularly in recent years. In contrast, the share of papers presented at the journals' conferences is steady over time (Column 3 in B of Table 27). Articles were coded as conference-based if they were included in a special conference issue of the journal. Other than JAR and JAE, TAR does not devote an annual special issue to conference papers (Column 3 in A of Table 27). JAR and JAE offer an accelerated peer review process to certain papers presented at their respective annual conferences. Hence, the overall results could be affected by a potentially fast review process for 5 to 17% of the papers in the sample. This effect would be most notable for JAE, where conference papers account for 24% of all articles.

Table 28:
Descriptive Statistics on the Duration of the peer review process (in days)

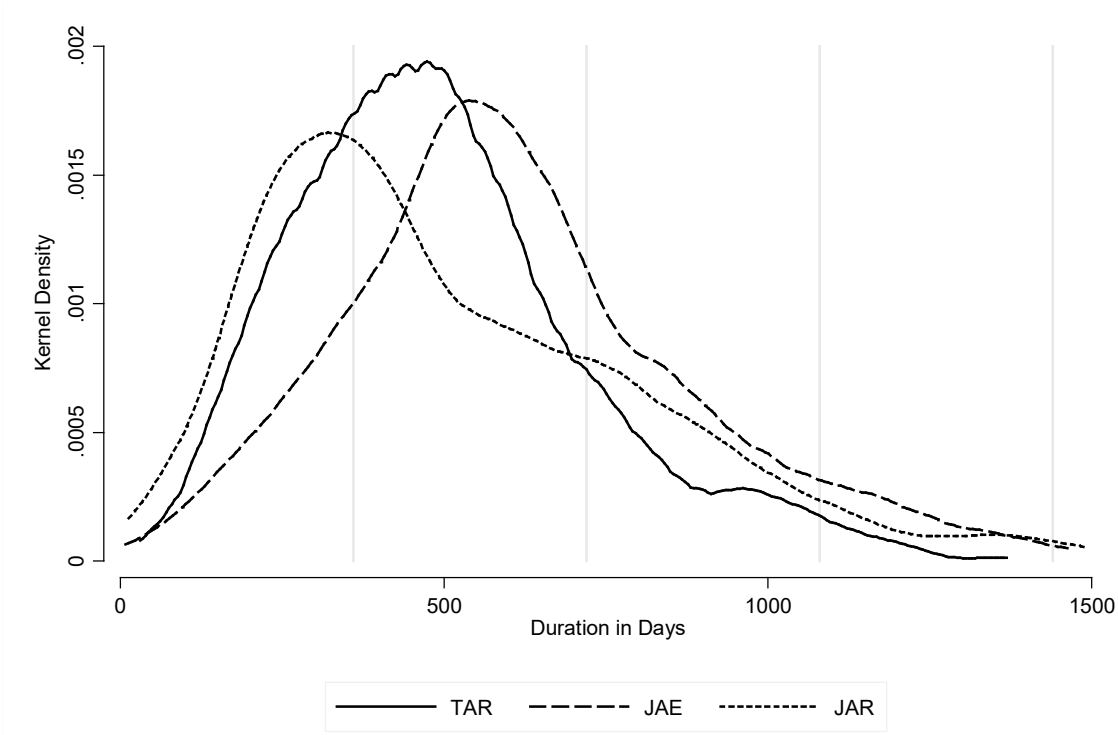
	TAR	JAE	JAR	Total
N	472	182	313	967
Mean	496.79	640.90	527.83	533.96
SD	236.64	311.79	330.60	289.24
Min	30.00	8.00	13.00	8.00
1. Q	334.50	449.00	299.00	334.00
Median	457.50	590.50	450.00	487.00
2. Q.	608.00	794.00	707.00	669.00
Max	1,614.00	1,682.00	2,593.00	2,593.00

5.2 Duration of the Peer Review Process

Table 28 shows descriptive statistics for the duration of the peer review process for the three journals. On average, a paper takes nearly 534 days (~17.8 months) to make it through the peer review process. Even though it does not appear so when looking at the mean values, TAR and JAR share some commonalities. With a median duration of 457.5 and 450.0 days, respectively, papers need approximately 15 months to successfully pass the review hurdle. The comparably high difference in mean values of 31.0 days is caused by an outlier, which circles for 2.593 days (86.4 months; 7.2 years). JAE has the slowest review process, averaging 640.9 days. With 590.5 days, the median value is also more than 140 days higher than for TAR and JAR. There are two potential explanations. First, JAE could offer a very challenging and critical peer review process which is time-consuming for authors and reviewers prolonging response times. Second, JAE could deliberately extend the duration to raise authors' costs of submission (Azar 1996; Leslie 2005; Lee 2009). Given the small number of publication slots, as discussed above, and the comparably high share of conference-based articles, the second explanation seems reasonable. A long review process is a potential avenue to address excess demand. Unfortunately, JAE does not offer an editorial report. Comparing the reported number of yearly submissions with other journals could add further evidence to this notion.

Figure 2 shows the kernel density distribution of the peer review process' duration for the three journals with a bandwidth of 90 days. Grey lines signal year-end (360 days). Density expresses the share of papers accepted at a given period of time. For JAR (dotted line),

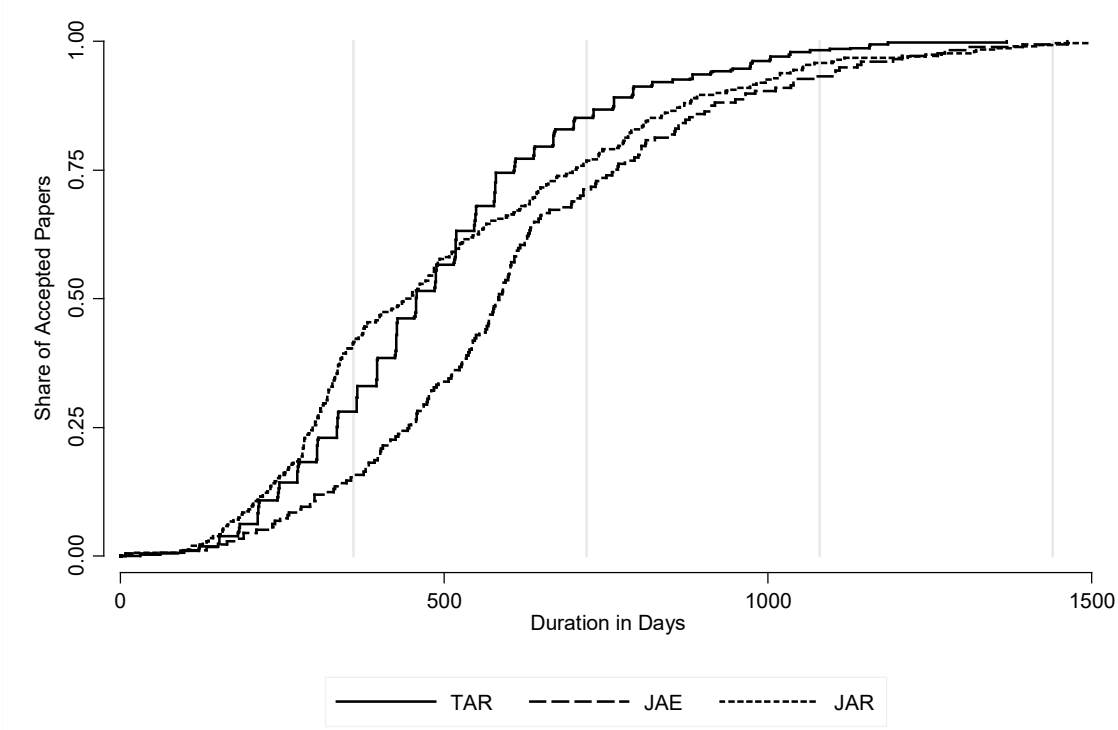
Figure 2:
Kernel Density Plot for the Duration of the peer review process



density peaks early, even before one year. In contrast, JAE shows the highest density (highest share of accepted papers) after more than 500 days. TAR is stuck in the middle. The distribution on the right-hand side is also interesting. Whereas TAR is left-skewed with a comparably low number of papers behind the peak, JAR has a slight plateau starting around the 500 days-mark.

Figure 3 provides another perspective. The Kaplan-Meier Failure Estimate plot (bandwidth: 90 days) shows the cumulative share of "failures" at a given point in time. In the case at hand, "failure" actually means "success," i.e., acceptance of the paper. Looking at the one-year mark (first grey line), the "acceptance rate" is below 20% for JAE, around 25% for TAR, and near 45% for JAR. However, TAR is faster in the second year of reviews. As an author, chances of an acceptance after 500 days in TAR's peer review process are higher than for her colleague at JAR. It is the reverse in the first year. However, the results for JAR may be strongly driven by 50 conference-based papers with an accelerated review. Nonetheless, the results indicate that an acceptance is more likely in the second than in the first year – if there is an acceptance at all.

Figure 3:
Kaplan-Meier Failure Estimates for the Duration of the peer review process



Focusing on temporal changes in the duration of the peer review process yields mixed results. Figure 4 depicts the median duration for the three journals based on year of publication. The timeliness order obtained from the descriptive statistics is stable over time and unchanged since 2004. Most notably, JAR bisected its median duration between 2001 and 2004, switching from slowest to fastest journal. However, median duration increased by more than 100 days since reaching its minimum in 2004. TAR shows fluctuating durations for the first three years, followed by a nearly constant duration for the three-year period from 2004 to 2006. Since then, median duration increased to more than 500 days in 2010. As expected, JAE has the longest duration of the entire eight-year period. Interestingly, it shows a similar decreasing tendency, as JAR from 2003 to 2005 is nearly on par with TAR. Starting in 2006, duration increased again before slightly declining in 2009 and 2010. Taken together, JAR and JAE seem to have taken measures against extreme durations in the first half on the sample period, with some positive effects. However, the achievements diminished in recent years. In contrast, TAR initially had a more constant policy but faces higher durations at the end of the sample period.

Figure 4:
Median Duration of the peer review process over Time

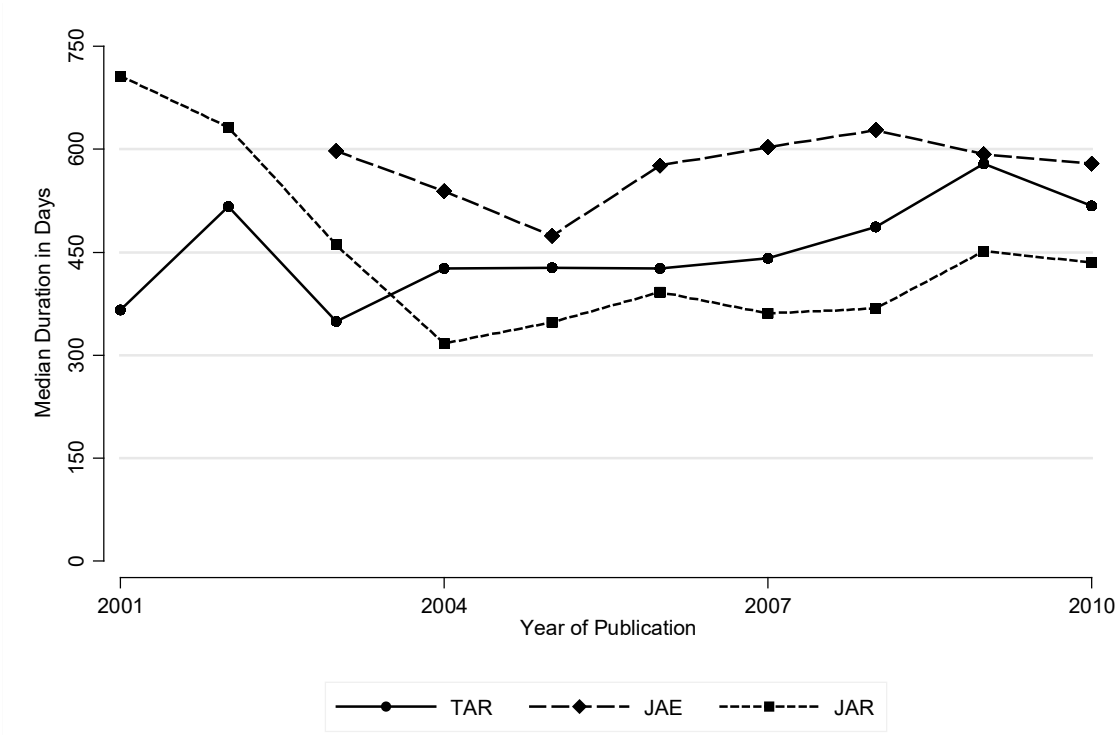


Table 29 provides the results of four split-sample analyses. Results for the time-split sample in Panel A confirm inferences from prior analyses. Mean duration decreases most strongly for JAR (-112. 59 days) in the 2006 to 2010 period compared to 2001 to 2005. This result may be mostly attributable to the strong decline at the beginning of the sample period. However, average duration significantly increased for TAR (+75.15 days), contrasting the stable-looking graph in Figure 4. JAE also shows a 41-day increase. Given its overall long duration, this result is hardly surprising. For dissertation-based papers (Panel B), the expected low experience, high *q*-effect can be observed for two out three journals. Results are most pronounced for JAE (+124.15 days), where dissertation-based papers on average spend more than two years under review (~ 758 days). Interestingly, dissertation-based papers are slightly faster than other papers in TAR (-1.7 days). Conference-based papers (Panel C) usually enjoy an accelerated peer review process, which translates into shorter duration, as observed for JAE (-132.08 days; 4.4 months) and particularly JAR (-239.37 days; 7.98 months). Finally, Panel D shows results for co-authorship patterns. In all journals, single-authored papers take the longest time in the peer review process. Obviously, it is more challenging for a one person to cope with reviewer and editorial comments in a timely manner than for a team. However, the results suggest that having a team

Table 29:
Differences in peer review duration

	n	Mean	n	Mean	Difference	
Panel A: Time-split Sample						
	2001-2005		2006-2010			
TAR	201	453.64	271	528.79	75.15	***
JAE	62	613.86	120	654.87	41.01	
JAR	158	583.58	155	470.99	-112.59	***
Panel B: Dissertation						
	No		Yes			
TAR	408	496.75	65	495.02	-1.74	
JAE	171	633.39	11	757.55	124.15	
JAR	281	523.99	32	561.53	37.54	
Panel C: Conference Issues						
	No		Yes			
TAR	./.	./.	./.	./.	./.	
JAE	138	672.83	44	540.75	-132.08	**
JAR	263	566.07	50	326.70	-239.37	***
Panel D: Co-Authorships						
	1 Author		2 Authors		3+ Authors	
TAR	108	507.38	164	504.32	201	484.30
JAE	27	726.33	69	604.36	86	643.38
JAR	51	503.04	114	482.04	148	571.64

is not always beneficial in terms of speeding up the process. Indeed, papers with two co-authors enjoy the benefit of a faster review process in all three journals. The effect is most pronounced in JAE (approx. –120 days) as compared to JAR (approx. –21 days) and TAR (approx. –3 days). Larger teams with three or more authors only do better in TAR. There, the process shortens by ~20 days on average. In JAE and JAR, larger teams face strongly increasing durations (JAE: approx. +39 days; JAR: approx.: +89 days). Either larger teams tend to submit more rigorous research facing many comments, or the coordination for a larger team is time-consuming and decreases the productivity.

Overall, the results imply that the duration of peer review process strongly varies between journals and over time. In the second half of the sample period, the order of the journals and trends for duration converged. The strong increase in publication space (as measured

by number of articles or the total number of pages) does not translate into a shorter duration of the peer review process for JAE and JAR. TAR shows a steady trend upwards. Both trends are in line with the observations by Swanson (2004). Top accounting journals did indeed increase the available journal space to meet increasing publication demand from scholars. However, journals can increase authors' costs of submission by prolonged review processes (Azar 1996; Leslie 2005; Lee 2009). The observed increase in the duration of the peer review process may, hence, be a strategic reaction to address remaining excess demand. Even though Swanson (2004) and Swanson et al. (2007) document excess demand for top tier accounting publications, it is hard to find direct empirical evidence on this issue. The share of papers *not submitted* because of increased monetary (submission fee) and non-monetary costs (peer review duration) as well as potentially increasing rejection rates and longer turnaround times (until rejection) are unobservable since the necessary data is not publicly available. However, annual statistics on rejection rates and turnaround statistics made public by some journals (e.g., TAR, cf. Kachelmeier (2009); DeFond 2016)) could be used in future research to address this issue. Besides the overall trends mentioned before, certain article-specific and other factors seem to relate to the duration of the peer review process. Conference-based papers, in particular, benefit from an accelerated peer review process. Dissertation-based papers usually take longer (at least for JAE and JAR), most likely due to authors' inexperience with the publication process. Co-authorships are beneficial in TAR but show diminishing returns for JAE and JAR.

6 Analysis 2: Determinants and Fairness in the peer review process of *The Accounting Review*

6.1 Research Design

6.1.1 Model specification and expectations for the base model

To address research questions two and three, two methodological approaches are possible. Applying a survey approach, the subjective intentions and the perceived importance of the different factors affecting the peer review process could be addressed (Adler and Liyanarachchi 2011; Bailey et al. 2008a). Yet, I am rather interested in whether these factors actually have any impact on the duration of review process. As such, I follow

Brown (2005) and Ellison (2002a) by applying a quantitative approach based primarily on hand-collected data.

The dependent variable in my model is the duration of the peer review process in months (ACCDUR). It is calculated as *Year&Month of acceptance − Year&Month of submission.*[32] An alternative measure would be the duration of the entire publication process (PUBLDUR)[33] from submission to the final publication in the printed journal or, in case of an online-first policy, on the website of the journal (Amat 2008; Bowen and Sundem 1982). This measure, however, is noisy, as the process of qualitatively improving the papers ends with the acceptance. Possible editorial changes and other reasons, such as limited journal publication space that causes long(er) output queues, subsequently do not have any impact on the quality of the paper. To control of extreme values, ACCDUR is winsorized at the 95%-level.

As outlined above, the influential factors (independent variables) can be assigned to four classes: informal feedback, article- and author-specific factors, as well as fairness indicators. Informal feedback can be understood as all comments, criticism, ideas, and suggestions the author(s) receives from co-workers, colleagues, and students outside the "formal" peer review process. Possible forms are presenting a paper at workshops, seminars, or conferences, as well as more immediate private conversations or written feedback (beyond any formal frame). To directly address these feedback channels, I include the number of workshops[34] (EVNUMWS), conferences[35] (EVNUMCONF), and individuals[36] (INDNUMCOM) listed in the acknowledgements. According to the empirical results of Brown (2005), I expect a negative relation between the number of sources of informal feedback and the duration of the peer review process.

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[32] Because TAR includes the months of submission and acceptance but no exact dates, submission and acceptance are assumed to be dated on the first day of the month.

[33] Azar (2007) further separates the process into four consecutive stages: (1) "reject-and-revision time" as the time spent searching for a journal which does not desk-reject the paper, (2) "first response […] time" as the time for the first editorial (revise-and-resubmit) decision in the journal which will later publish the paper, (3) "revision time" as time between first editorial response and final acceptance, and (4) "forthcoming-article delay" as time between acceptance and final publication. For this study, I use aggregated measures as the data necessary to separate the stages (1), (2) and (3) are not available. Therefore, *ACCDUR = (2) + (3)* and *PUBLDUR = (2) + (3) + (4).*

[34] Includes all events labeled as research or doctoral workshops or seminars.

[35] Includes all events those names included one of the words conference, colloquium, symposium, meeting, (doctoral) consortium, forum or congress.

[36] Includes all individuals or groups of individuals (e.g., "Ph.D. students at ABC University") for whom no specific function (e.g., editor, associate editor, research assistant, participant in an experiment, etc.) was mentioned.

Regarding the second class, article-specific factors, the first variable is the number of authors (AUTHORS). Prior literature has shown a steady increase in co-authorship patterns in accounting (Englebrecht et al. 2008) and other disciplines (e.g., Hartley 2003). Teams of authors could benefit from division of labor and specialized knowledge of the individual team members. *Ceteris paribus,* this should have a positive effect on the quality of the initially submitted paper. Within the process, team members can simultaneously address remarks and concerns of referees and editors. Assuming this effect to superpose time lags due to potential coordination efforts between authors, co-authorship should lead to shorter response times.

I include the length of an article (LENGTH) measured by the number of pages.[37] Assuming a constant effort of the concerned editors, referees, and authors, the duration of the peer review process should increase with the length of paper (Ellison 2002b). This measure, however, could be partly endogenous. Referees and editors could demand additional arguments, analyses, or tests, which lead to longer articles. The comparatively normal distribution of the variable LENGTH (see Table 31) mitigates this concern.

Ellison's (2002a) *q*-*r*-theory predicts a time-dependent increase in peer review duration for articles treating a comparable (methodological and/or topical) main idea. He traces this back to a diminishing degree of innovation *(q),* as the main idea evolves while referees become more concerned with methodological rigor *(r)*. Current research (Flickinger et al. 2014) addresses this rigor-versus-relevance-issue by applying extensive content-analysis methodology on a sample of 38 articles. For a larger scale study like the one at hand, this approach is not suitable. Therefore, I operationalize some indicators to account for possible differences in the *q*- and *r*-dimensions of the articles. The first indicator is the length of an article's title (TITLECHAR), measured by the number of characters (including spaces). If ongoing research activity around a main idea induces more detailed research questions and methods, authors may want to signal that their work is part of a certain research stream. At the same time, it is necessary to convey information on the incremental novelty of paper, thus prolonging the title.[38] Shorter titles, therefore, tend to

[37] This argument neglects possible changes in page layout, e.g., font size, paragraph spacing or margins. While manually collecting the data, I did not notice any significant changes concerning this matter, though.

[38] Just one example: Botosan's (1997) seminal article on the impact of disclosure on the cost of capital had a title length of 47 characters. A younger study (Kothari et al. 2009), in which a broader scope regarding content and method is applied, has a title with 162 characters.

indicate more innovative articles, which pass the peer review process faster. The second measure is the number of references cited in the article (PAPERSCITED) as obtained from *Thomson Reuters Web of Knowledge.* Articles building upon a new idea are unlikely to resort to a large literature base, hence containing comparatively small numbers of references. Contrariwise, a lower number of cited references could also be the consequence of a highly specialized research area. Besides that, the number of references cited is most likely higher for longer articles. To account for this issue, the number of cited references is scaled by LENGTH. Overall, however, there is no expected outcome for this variable. As it should become apparent that a clear empirical distinction between the innovative and methodological rigor of articles is at least difficult to realize, the final two factors focus on the overall quality of an article. The first quality measure is the number of citations an article received after its publication (CITES).[39] The total number of citations for each article was obtained from *Thomson Reuters Web of Knowledge.* As the measure is based on the total number of citations, that is, all citations an article received since publication, it may be biased towards older papers. However, prior research has shown that articles get most of their citations within a few years after publication (Bricker 1988).[40] At hand, the sample period ends in 2009. The interim three-year period should mitigate concerns about a potential asymmetry in temporal distribution of the citations. The number of citations is a noisy ex post measure of peers' reception on article quality (Smart and Waldfogel 1996). In contrast, the second proxy, whether an article is based on a dissertation or not, builds upon the notion that a paper based on a diligently prepared dissertation should at least meet the high quality standards of the underlying thesis. It is therefore expected to have a decreasing effect on the time spent in peer review. The corresponding dummy variable DISSERTATION takes the value "1" if the acknowledgements contain an indicator that the article is based on a Ph.D. thesis, and "0" otherwise.

The third class of influential factors is author-specific, especially experience, affiliation, and nationality. Experienced academics are more productive in terms of publications than

[39] In contrast to Brown's (2005) second analysis, I do not use the number of citations as the dependent variable. CITES is a measure of quality, which is exogenous to the underlying research project and the peer review process. Moreover, papers do not get cited for having short peer review durations but for their *q*- and/or *r*-quality. Reversed causality, hence, might not be an issue.

[40] Bricker (1988) observes an average citation age between 9 and 11 years, depending on the sample. He assumes a possible upward bias in the average age as accounting was still a young discipline in the sample period (1960-1985).

their younger colleagues (Diamond Jr. 1984; Hasselback et al. 2012).[41] This induces a learning curve effect which makes it easier for senior researchers to adjust to the expectation of the referees. Alongside their trained research and writing skills, they most likely gained some experience from being referees, editors, or members of editorial boards themselves. Author experience (AUEXP) is therefore expected to have a decreasing effect on peer review duration, as documented by prior research (Yegros and Amat 2009). AUEXP is calculated as *Year of Submission−Year of Ph.D. Graduation*.[42] The year of Ph.D. graduation for each author was obtained from the *Accounting Research Rankings* of *Brigham Young University.*[43] For co-authored papers, the arithmetic mean of all authors was used. Another indicator for authors' ability and skillset could be his affiliation with a highly-ranked university for two reasons. First, capable faculty has an incentive to recruit other skillful researchers and, conversely, good researchers may want to profit from network and non-pecuniary benefits arising from an affiliation with a top school. Second, prior research documents the prevalence of some schools for publishing in major accounting journals (Fogarty and Yu 2010; Swanson et al. 2007), whereupon the affiliation with a top-rank research university or a private school is more important in accounting than in other business disciplines (Swanson et al. 2007). As such, I include five variables which capture the share of authors from top 3, 5, 10, 20, and 50 universities, based on *Accounting Research Ranking 2012* for all universities, topics, and methods of the *Brigham Young University*[44] (AFFILUT3, ~5, ~10, ~20, ~50). A secondary effect of the high concentration of universities and business school in accounting journals is an underrepresentation of non-US authors (Jones and Roberts 2005). Potential reasons, like language barriers or unfamiliarity with the conventions of the US publication system, could play a role, though its effect should be rather small in today's globalized world. Survey results of US and non-US academics by Adler and Liyanarachchi (2011) contradict this argument, as non-US authors are less satisfied with the timeliness and quality of peer review in accounting journals. To control for this factor, the variable AUNONUS captures the share of authors which were not affiliated with a US university at the time of

[41] This trend should reverse once academics reach a point in their careers when their focus shifts to other aspects of an academia, e.g., faculty service, teaching, or writing text books (Diamond Jr. 1984).

[42] Experience was expect to be "0" if submission preceded Ph.D. graduation. Brown (2005) as well as Yegros and Amat (2009) used the number of articles published by the authors in the journals investigated as a proxy for author experience. Oster and Hamermesh (1998) argue empirically in favor of the number of citations one author's work received as an adequate indicator for research productivity.

[43] Available online: https://goo.gl/f1e0UV (17.02.2017).

[44] Available online: https://goo.gl/nIz5x3 (17.02.2017).

publication. Although non-US authors could be affiliated with US institutions (false negatives) and vice versa (false positives), I follow the existing literature (Jones and Roberts 2005; Oswald 2008) because this approximate measure should be suitable as an indicator. Against the background of the reasons outlined above, I expect a prolonged peer review process for articles with a higher share of non-US authors.

Furthermore, I include the number of companies (NUMCOMP) and institutions other than universities (NUMINST) as control variables to distinguish informal feedback from other forms of research support. Noticeable forms are monetary and non-monetary (e.g., providing data) support. Therefore, a dummy variable taking the value "1" if at least one of the authors acknowledges financial grants (FINSUPPORT) or provision of data (DATASUPPLIER) are included. Financial support, in particular, e.g., research grants, do have a significant influence on the quality of a paper, measured by the number of citations it receives (Rigby 2013). I therefore expect FINSUPPORT to be negatively connected to the duration of the peer review process but have no unambiguous prediction for DATASUPPLIER.

To increase robustness and eliminate alternative influential factors, I include fixed effects for research methods and topics as well as its submission year. The classification for research methods and topics is based on the submission rules for the *European Accounting Associations* Annual Congress 2014. Regarding research methods, I distinguish analytical/modelling, case/field study, empirical archival, experimental, history, interdisciplinary/critical, market-based, and survey; and for research topics, auditing, accounting education, financial analysis, financial reporting, accounting and governance, accounting and information systems, management accounting, public sector accounting, social and environmental accounting, as well as taxation.[45] The assignment of methods and topics was independently conducted by two researchers. We randomly reassigned articles which were originally classified by the other. The small number of differences was discussed and cleared. Year-fixed effects, on the other hand, could be based on the year of submission, acceptance or publication of a paper. Because peer review, in many cases, spans more than one year, all three proxies are potentially noisy. Submission-year fixed effects are included since I assume the authors, editors, and referees incentives to be steady over

[45] A further description of the research methods and topics can be found in the Appendix.

time. Other factors, e.g., workload of editors and referee or initial quality of the paper, should be determined at the beginning of the process, as well.

6.1.2 Additional specification for fairness indicators

A large fraction of prior research on the peer review process focuses on the fairness of the process (cf. Moizer (2009) provides an exhaustive survey of the relevant literature). One pivotal element is the (associate) editor, who can influence the outcome of the peer review process by selecting the referees, making the final decision about acceptance, etc. (Kachelmeier 2009; Thomas 2011). Survey results for accounting and finance faculty highlight editor favoritism, i.e., publishing sub-quality articles authored by colleagues or graduate students, as one of the major concerns regarding peer review (Bailey et al. 2008a; Bailey et al. 2008b). Citation-based examinations for economics and finance journals document mixed results. Smart and Waldfogel (1996) found favoritism, but against their expectation to the benefit of authors outside of the top institutions. On the contrary, Laband and Piette (1994) provide evidence on the existence of "good" favoritism, whereby the editor uses his personal connections to scout high-quality (i.e., highly cited) papers. Against the background of these mixed results, I include a modified version of Laband and Piette's (1994) editor-connection-variable in my regression. The dummy variable EDDEPENNARROW takes the value "1" if one of the three following dummy variables has a value of "1." The three variables indicate whether the editor and one of the authors have the same Ph.D. granting institution (EDSAMEPHDINST) or were affiliated with the same university at the time of publication of the article (EDSAMEAFFILSUB) or the time of publication of the paper (EDSAMEAFFILPUB).[46] Information on the Ph.D. granting institutions was obtained from *Accounting Research Rankings* of the *Brigham Young University.* Editors' affiliations were derived from their official websites, CVs, or general *Google* searches.

Additionally, I include the dummy variables THANKEDITOR, THANKSTAFF, and THANKREF, which take the value "1" if the acknowledgements contain any reference or thanks to an editor, editorial staff member (e.g., associate editor), or referee, respectively. Referees and editorial staff members had to be explicitly mentioned. For the subsample of articles with explicit information on the accepting editor, I accessorily cross-

[46] Laband and Piette (1994) extend this variables to all editors, associate editors and editorial board members at the time of publication. My measure, in comparison, is more conservative.

Table 30:
General Publication Trends

	# Issue	# Articles	# Pages	∅ Pages/Article
1997	4	26	521	20,0
1998	4	24	485	20,2
1999	4	22	451	20,5
2000	4	19	412	21,7
2001	4	28	607	21,7
2002	4	38	928	24,4
2003	4	42	1100	26,2
2004	4	45	1145	25,4
2005	5	45	1179	26,2
2006	5	42	1121	26,7
2007	6	40	1228	30,7
2008	6	50	1521	30,4
2009	6	61	1799	29,5

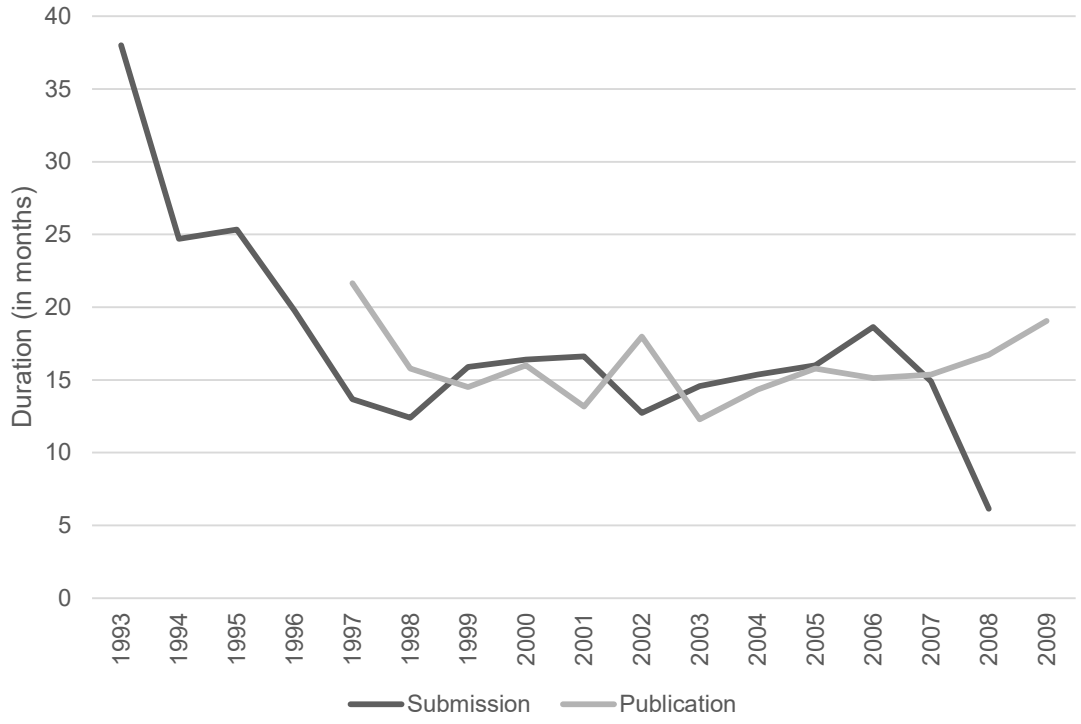
checked if the editor was mentioned by name in the acknowledgements without a notification on her status. Giving credit to the other parties involved in the peer review process could be an indicator for strategic or persuasive behavior of the authors. Although, quality feedback from a member of the editorial team is also a possible criterion for improving the paper in a timely fashion. As for all fairness variables, I have no expectation regarding the influence on the peer review duration.

6.2 Results

6.2.1 Publication Trends and Specific Attributes of Articles and Authors

This paper extends the publication patterns and trends analyzed for the three top tier journals in Section 5.1 by focusing on the TAR-specific particularities. Prior literature documents that research faculty has grown faster than publication spots in the top journals for different business disciplines, i.e., accounting (Swanson 2004) and economics (Ellison 2002b), up to end of the 1990s. Supporting this view, the number of articles published in TAR decreased from 26 in 1997 to 19 in 2000 (-27%, Table 30). This downward trend reversed afterwards with the number of articles more than trebling between 2000 and 2009 (19 to 61, +220%).

Figure 5:
Average Duration of the peer review process



Similarly, the number of pages decreased by 21% until the year 2000 before growing more than four times (412 to 1,799 pages) by 2009. Changing from four to five yearly issues in 2005, and to six in 2007, is a result of the increased publication activity.[47] The higher increase in the number of pages compared to the number of articles was basically driven by a steady increase in the average length of articles over the entire sample period (20.0 pages/article in 1997 to 29.5 in 2009, +48%). Overall, the upward trend in the number of articles published and their respective lengths would, *ceteris paribus,* lead to an increased review duration (Ellison 2002b).

Figure 5 depicts the average duration of the peer review process based on either the year the paper was submitted to TAR (dark line) or the year it was published (bright line). Looking at the latter first, the duration varies between 12.3 and 21.6 months. Put differently, the peer review process on average takes one to two years. For the entire sample period, the mean (median) duration is 16 (15) months, with 50% of the articles passing the review between 10 and 20 months (Table 31). In detail, 14 papers passed through the

[47] Notably, the number of articles did not and the number of pages only slightly increase when TAR switched from 4 to 5 issues per year in 2005 (45 articles/1,145 pages and 45 articles/1,179 pages in 2004 and 2005, respectively).

process in three months or less, whereas only two papers needed four year or more. Coming back to the bright line in Figure 5, the second half of the 1990s is characterized by an increase in the average duration (1997-2000: -26.1%), before fluctuating around 15 months for most of the 2000s (2000-2007: -4.1%) and strongly increasing again to 19 months in 2009 (2007-2009: +24%). Focusing on the average duration based on the submission year, a similar picture evolves. Notably, strong decreases from 1993 to 1997 and 2006 to 2009 are due to the small number of observations at the edges of the sample period.[48] In line with results by Ellison (2002b) for the 1980-1999 period, a clear time-trend cannot be observed, neglecting concerns about a slowdown in the publishing process.[49] Even more, the process in TAR is faster than in most other journals in economics and finance (Ellison 2002b), confirming the positive perception of peer review timeliness in top accounting journals (Bailey et al. 2008a).

The average (median) article passing through the peer review process in TAR has 25.0 (25.9) pages, is written by 2.2 (2.0) authors, has 1.6 (1.6) references per page, and 31.0 (19.0) citations after publication (Table 31). On average, more seasoned authors from the US (0.1 (0.0) are non-US) with 8.05 (7.67) years of post-doctoral experience publish in TAR. Most of these variables are normally distributed. Citations, author experience, and nationality, however, are negatively skewed.

For selected variables, temporal changes are shown in Table 32, Panel A. Most notably, the percentage of non-US researchers, as measured by their affiliation at the time of publication (AUNONUS), is increasing over time from 14.4 to 23.4% (Barth 2013). At the same time, extended collaboration becomes more important.

[48] The oldest paper in the sample was submitted in August 1993 and accepted, after a 48 months peer review process, in August 1997. In stark contrast, the youngest paper in the sample was under review for only one month, being submitted in June and accepted in July 2008.

[49] An untabulated analysis of the mean time period between submission and final publication of an article (publication lag) yields similar results. The publication lag is positively and highly correlated to the duration of the peer review process (0.99 and 0.94 based on the submission and publication year, respectively). Since Issue 4/2008 TAR follows an online first-policy. Papers are available online 3 to 4 months prior to the printed issue, thus shortening the acceptance-publication-lag as this was the case in other disciplines (Amat 2008).

Table 31:
Descriptive Statistics

This table denotes descriptive statistics for the base sample of 477 articles in TAR from 1997 to 2009. DURACC is the submission-acceptance-timespan measured in months. CITES is the number of citation the paper received in other articles according to *Thomson Reuters Web of Knowledge.* AUTHORS denotes the number of co-authors. LENGTH is the number of pages of an article. TITLECHAR is length of an articles title measured by the number of characters. PAPERSCITED is the number of references in an article scaled by its length. DISSERTATION is a dummy variable taking the value "1" if the article is based on a dissertation. EVNUMCONF and EVNUMWS is the number of conferences and workshops the paper was presented at. INDNUMCOM is the number of individuals whom the author(s) thanked in the acknowledgements. NUMCOMP and NUMINST denote the number of companies or institutions the author(s) mentioned in the acknowledgements. FINSUPPORT and DATASUPPLIER are dummy variables taking the value "1" if the author(s) thanked institutions, individuals or companies explicitly for financial support or providing data used in the article, respectively. AUNONUS is the percentage of author(s) who were affiliated with a university outside of the US at time of publication of the paper. AUEXP is the medium experience of the author(s) measured as the positive number of years between their Ph.D. graduation and the submission of the paper. AFFILUT3-50 is the percentage of authors affiliated with a top 3, 5, 10, 20 or 50 university at the time of publication based on the *Accounting Research Ranking* for all years, methods and topics of the *Brigham Young University*. THANKEDITOR is a dummy variable taking the value "1" if the author(s) thank the editor in the acknowledgements anonymously or by name. THANKREF is a dummy variable taking the value "1" if the author(s) thank at least one editor anonymously or by name. THANKSTAFF is a dummy variable taking the value "1" if the author(s) mention at least one member of the editorial staff (Associate Editor or equal) in the acknowledgements.

Variable	n	Mean	SD	Min	1. Q	Median	3. Q	Max
DurAcc	477	16.04	8.32	0.00	10.00	15.00	20.00	53.00
Authors	477	2.20	0.87	1.00	2.00	2.00	3.00	5.00
Length	477	25.87	6.86	8.00	21.00	25.00	30.00	60.00
TitleChar	477	79.98	27.96	14.00	59.00	79.00	97.50	173.00
PapersCited	477	1.61	0.61	0.40	1.14	1.57	1.96	3.70
Cites	477	30.96	38.62	0.00	10.00	19.00	39.00	440.00
Dissertation	477	0.17	0.38	0.00	0.00	0.00	0.00	1.00
EvNumConf	477	0.58	0.82	0.00	0.00	0.00	1.00	4.00
EvNumWs	477	5.23	3.92	0.00	2.00	5.00	8.00	24.00
IndNumCom	477	9.22	6.34	0.00	4.00	8.00	13.00	31.00
NumComp	477	0.10	0.37	0.00	0.00	0.00	0.00	3.00
NumInst	477	0.09	0.36	0.00	0.00	0.00	0.00	3.00
FinSupport	477	0.46	0.50	0.00	0.00	0.00	1.00	1.00
DataSupplier	477	0.25	0.44	0.00	0.00	0.00	1.00	1.00
AuNonUS	477	0.13	0.30	0.00	0.00	0.00	0.00	1.00
AuExp	477	8.05	5.66	0.00	3.50	7.67	12.00	29.00
AffilUT3	477	0.02	0.12	0.00	0.00	0.00	0.00	1.00
AffilUT5	477	0.07	0.20	0.00	0.00	0.00	0.00	1.00
AffilUT10	477	0.12	0.26	0.00	0.00	0.00	0.00	1.00
AffilUT20	477	0.23	0.35	0.00	0.00	0.00	0.50	1.00
AffilUT50	477	0.07	0.21	0.00	0.00	0.00	0.00	1.00
ThankEditor	477	0.37	0.48	0.00	0.00	0.00	1.00	1.00
ThankStaff	477	0.11	0.31	0.00	0.00	0.00	0.00	1.00
ThankRef	477	0.87	0.33	0.00	1.00	1.00	1.00	1.00

Table 32:
Factors and Indicators mentioned in the Acknowledgements / Co-Authorship Patterns

Panel A: Frequency of selected influential Factors and Indicators

	1997-2000		2001-2004		2005-2009		Total	
	n	%	n	%	n	%	n	%
Dissertation	16	17.8%	26	17.1%	40	17.0%	82	17.2%
Financial Support	47	52.2%	69	45.4%	102	43.4%	218	45.7%
DataSupplier	14	15.6%	51	33.6%	56	23.8%	121	25.4%
AuNonUS	13	14.4%	23	15.1%	55	23.4%	91	19.1%
ThankRef	78	86.7%	136	89.5%	203	86.4%	417	87.4%
ThankEditor	1	1.1%	29	19.1%	147	62.6%	177	37.1%
ThankEdStaff	17	18.9%	34	22.4%	1	0.4%	52	10.9%

Panel B: Co-authorship Patterns

	Number of Authors											
	1		2		3		4		5		Total	
1997-1999	24	33.8%	27	38.0%	16	22.5%	4	5.6%		0.0%	71	100.0%
2000-2002	23	27.4%	38	45.2%	19	22.6%	4	4.8%		0.0%	84	100.0%
2003-2005	31	23.5%	51	38.6%	45	34.1%	5	3.8%		0.0%	132	100.0%
2006-2009	37	19.5%	63	33.2%	77	40.5%	12	6.3%	1	0.5%	190	100.0%

The share of papers with one or two authors decreases from 71.8% (1997-2000) to 52.7% (2005-2009), whereas the stake of articles with three or more authors rises from 28.2% to 47.3% (Table 32, Panel B). Put into context, together with the rising share of articles acknowledging data provided by third parties (DATASUPPLIER), international cooperation could indicate more innovative research designs or international institutional settings *(q)* but also point to a higher demand for rigorous methods *(r),* which require an appropriate dataset and division of labor. To further examine this point, I next refer to research methods and topics.

Oler et al. (2010) provide an exhaustive overview on the research methods and topics in premier accounting research for the past 50 years. Empirical archival methods and the field of financial reporting gained a prevalent position in the discipline. The results for my 13-year sample period emphasize these notions. Regarding the research topics (Table 33, Panel B), financial accounting is the predominant stream of research. Within this

Table 33:
Research Methods and Topics over Time

	1997-1999	2000-2002	2003-2005	2006-2009	Total
Panel A: Research Methods					
Analytical/Modelling	18.31%	11.90%	11.36%	10.00%	11.95%
Case/Field Study	0.00%	1.19%	3.79%	2.11%	2.10%
Empirical Archival	26.76%	44.05%	28.03%	40.00%	35.43%
Experimental	18.31%	19.05%	19.70%	17.37%	18.45%
Interdisciplinary/Critical	0.00%	0.00%	0.76%	0.00%	0.21%
Market Based	36.62%	22.62%	33.33%	27.37%	29.56%
Survey	0.00%	1.19%	3.03%	3.16%	2.31%
Panel B: Topics					
Accounting and Governance	14.08%	14.29%	10.61%	11.58%	12.16%
Accounting Education	0.00%	2.38%	0.76%	0.00%	0.63%
Accounting Information Sys.	1.41%	1.19%	0.00%	1.05%	0.84%
Auditing	16.90%	14.29%	21.97%	14.21%	16.77%
Financial Analysis	38.03%	32.14%	36.36%	24.21%	31.03%
Financial Reporting	14.08%	17.86%	15.15%	30.00%	21.38%
Management Accounting	7.04%	9.52%	10.61%	13.68%	11.11%
Public Sector Accounting	0.00%	0.00%	0.00%	1.58%	0.63%
Social & Environmental Acc.	0.00%	1.19%	0.76%	0.53%	0.63%
Taxation	8.45%	7.14%	3.79%	3.16%	4.82%

stream, the focus moved from the users (financial analysis, from 38.0% in 1997-2000 period down to 24.2% in the 2005-2009 period) to the preparers (financial reporting, from 14.1% up to 30.0%). Management accounting increased in importance (7.0% to 13.7%), while the share of taxation articles dropped (8.45% to 3.16%). The other topics did not vary over time. Methodically, empirical-archival and market-based studies dominate throughout the sample period with a combined mean share of 65.0% (Table 33, Panel A). The reduction in analytical/modelling articles (18.3% to 10.0%) went hand and hand with an increase in research methods, which are based on smaller samples, i.e., surveys (0.0% to 3.2%) and case/field studies (0.0% to 2.1%). Overall, the articles are characterized by a predominant financial accounting/archival combination, which may be demanding more methodological rigor *(r).* On the contrary, methods and topics became more diversified over years, indicating a constant supply of innovative ideas *(q).*

Table 34:
Time Trend on Conferences, Workshops/Universities and Individuals Acknowledged

	1997-2000		2001-2004		2005-2009		Total	
	n	%	n	%	n	%	n	%
Panel A: Conferences								
0	60	66.7%	89	58.6%	133	56.6%	282	59.1%
1	23	25.6%	43	28.3%	63	26.8%	129	27.0%
2	7	7.8%	16	10.5%	31	13.2%	54	11.3%
3		0.0%	3	2.0%	5	2.1%	8	1.7%
4		0.0%	1	0.7%	3	1.3%	4	0.8%
Total	90	100.0%	152	100.0%	235	100.0%	477	100.0%
Panel B: Workshops								
0	14	15.6%	14	9.2%	11	4.7%	39	8.2%
1	12	13.3%	11	7.2%	23	9.8%	46	9.6%
2	12	13.3%	16	10.5%	25	10.6%	53	11.1%
3	6	6.7%	19	12.5%	20	8.5%	45	9.4%
4	12	13.3%	10	6.6%	26	11.1%	48	10.1%
5	6	6.7%	17	11.2%	22	9.4%	45	9.4%
6	4	4.4%	16	10.5%	23	9.8%	43	9.0%
7	8	8.9%	14	9.2%	14	6.0%	36	7.5%
8	8	8.9%	4	2.6%	22	9.4%	34	7.1%
9	2	2.2%	7	4.6%	19	8.1%	28	5.9%
10		0.0%	7	4.6%	8	3.4%	15	3.1%
11	2	2.2%	4	2.6%	6	2.6%	12	2.5%
12		0.0%	2	1.3%	8	3.4%	10	2.1%
13	2	2.2%	1	0.7%	2	0.9%	5	1.0%
14	1	1.1%	4	2.6%	2	0.9%	7	1.5%
15		0.0%		0.0%	3	1.3%	3	0.6%
16		0.0%	1	0.7%		0.0%	1	0.2%
17		0.0%	3	2.0%	1	0.4%	4	0.8%
19		0.0%	1	0.7%		0.0%	1	0.2%
21	1	1.1%		0.0%		0.0%	1	0.2%
24		0.0%	1	0.7%		0.0%	1	0.2%
Total	90	100.0%	152	100.0%	235	100.0%	477	100.0%
Panel C: Individuals								
0	8	8.9%	6	3.9%	12	5.1%	26	5.5%
1	5	5.6%	5	3.3%	7	3.0%	17	3.6%
2	6	6.7%	8	5.3%	13	5.5%	27	5.7%
3	3	3.3%	10	6.6%	11	4.7%	24	5.0%
4	7	7.8%	11	7.2%	14	6.0%	32	6.7%
5	5	5.6%	8	5.3%	12	5.1%	25	5.2%
6	10	11.1%	13	8.6%	10	4.3%	33	6.9%
7	3	3.3%	9	5.9%	11	4.7%	23	4.8%

Table 34:
continued

	1997-2000		2001-2004		2005-2009		Total	
	n	%	n	%	n	%	n	%
8	7	7.8%	7	4.6%	29	12.3%	43	9.0%
9	6	6.7%	9	5.9%	13	5.5%	28	5.9%
10	4	4.4%	9	5.9%	7	3.0%	20	4.2%
11	4	4.4%	7	4.6%	16	6.8%	27	5.7%
12	7	7.8%	6	3.9%	8	3.4%	21	4.4%
13	4	4.4%	5	3.3%	14	6.0%	23	4.8%
14	3	3.3%	5	3.3%	4	1.7%	12	2.5%
15		0.0%	7	4.6%	11	4.7%	18	3.8%
16	3	3.3%	6	3.9%	9	3.8%	18	3.8%
17		0.0%	1	0.7%	6	2.6%	7	1.5%
18	1	1.1%	2	1.3%	3	1.3%	6	1.3%
19	1	1.1%	3	2.0%	5	2.1%	9	1.9%
20	1	1.1%	4	2.6%	3	1.3%	8	1.7%
21	1	1.1%	1	0.7%	6	2.6%	8	1.7%
22		0.0%	2	1.3%		0.0%	2	0.4%
23		0.0%	3	2.0%	2	0.9%	5	1.0%
24		0.0%	3	2.0%	4	1.7%	7	1.5%
26		0.0%	1	0.7%		0.0%	1	0.2%
27	1	1.1%		0.0%	4	1.7%	5	1.0%
29		0.0%		0.0%	1	0.4%	1	0.2%
31		0.0%	1	0.7%		0.0%	1	0.2%
Total	90	100.0%	152	100.0%	235	100.0%	477	100.0%

With regard to the fairness indicators, Table 32 (Panel A) signals social norms rather than strategic behavior by authors. The high percentage of acknowledgements to the referees (THANKREF, 87.4%) and constantly increasing references to the editor (THANKEDITOR, 1.1% to 62.6%) can be interpreted as evidence for good scientific conduct and/or a social norm in evolution. Further evidence on this argument is the sharp decline in acknowledgements to the editorial staff (THANKEDSTAFF) in the 2005 to 2009 period, which coincides with Dan Dhaliwal taking over the Senior Editor role in 2006.

Informal feedback may not be a social norm, but an important factor in scientific publishing as well. As the data in Table 31 shows, for more than 75% of the papers, informal feedback was gathered from colleagues (INDNUMCOM) or at workshops (EVNUMWS), and more than 25% of the articles were presented at conferences before

or during the peer review process. Workshops are probably the most important source of informal feedback, as these offer longer presentation slots and direct feedback from a larger group (Brown 2005). Against this background, it is not surprising that articles on average (median) get presented at 5.2 (5.0) workshops but only at 0.6 (0.0) conferences. Direct feedback is obtained from 9.2 (8.0) individuals.

The temporal development presented in Table 34 for conferences (Panel A), workshops (Panel B), and individuals (Panel C) reveals a steady increase in the importance of informal feedback. More and more papers get presented at conferences and workshops with the share of papers not presented declining from 66.7% to 56.6% and from 15.6% to 4.7%, respectively. Individuals acknowledged offers a similar trend (8.9% to 5.1%). Notably, whereas the number of papers with no presentation at a workshop is dominant for the 1997-2000 period, the median value increased slightly from 4 (1997-2000) to 5 workshops (2001-2004, 2005-2009). The proportion of papers presented at two or more conferences equally more than doubled from 7.8% to 16.6%. More demand is also expressed in the number of individuals thanked in most of the papers increasing from 6 (1997-2000, 2001-2004) to 8 (2005-2009). The increased number of informal feedback sources acknowledged by the authors signals a better preparation of the paper for the review process. Possible explanations could be either an increase in the hurdle for acceptance during the sample period, or research projects getting more complex, thus requiring more feedback on certain issues.

For a first glance at potential factors influencing the duration of peer review process, Table 35 depicts correlations for most of the variables defined before. As expected, the number of citations (CITES) and authors (AUTHORS) as well as author experience (AUEXP) are significantly negatively correlated with DURACC. Contrariwise, gathering data from external sources (DATASUPPLIER) is significantly positively correlated to DURACC, i.e., these papers take longer to pass the process. Less surprising, co-authored articles correlate to authors' experience (AUXP), LENGTH, and number of presentations at conferences (EVNUMCONF), implying the advantages of division of labor. Longer papers reference less prior research per page (PAPERSCITED) but are significantly more subject to informal feedback (EVNUMCONF, EVNUMWS, INDNUMCOM) indicating more complex research issues. Presentations at workshops and conferences may improve the visibility of a paper, as these are significantly positively correlated to CITES.

Table 35:
Correlations Matrix

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
(1)	DurAcc	-	**-.14**	.00	-.01	.03	**-.19**	.07	.04	.00	**.12**	-.02	.03	.03	**.09**	.07	**-.11**	-.03	-.01	-.01	-.02	-.02	.05	.04	.00
(2)	Authors	**-.11**	-	**.16**	.03	-.05	.08	**-.62**	**.15**	.00	-.04	-.06	.02	-.05	-.02	.06	**.46**	.02	**.15**	**.14**	.02	.06	.05	**-.10**	**-.14**
(3)	Length	-.02	**.16**	-	**-.11**	**-.24**	-.01	.00	**.13**	**.19**	**.11**	**-.12**	.00	-.01	.04	.01	.07	-.07	-.05	**.14**	.05	.07	**.38**	**-.18**	.08
(4)	TitleChar	.03	.03	**-.09**	-	.08	-.07	**.01**	-.05	-.04	.04	.01	**.12**	.04	-.03	-.06	-.04	.04	.05	.01	-.01	-.08	-.05	.04	-.05
(5)	PapersCited	.03	-.08	**-.26**	.06	-	**.15**	.14	.01	.06	**.19**	**.10**	.08	.06	.01	.01	**-.11**	.07	.05	-.02	.00	-.07	-.01	.03	-.07
(6)	Cites	**-.14**	.02	.05	**-.12**	.07	-	.02	.08	**.12**	.06	-.01	-.01	.05	.06	-.07	-.04	-.04	.00	.02	.04	-.02	**-.23**	.03	-.01
(7)	Dissertation	.05	**-.61**	.00	.00	**.14**	.07	-	-.06	**.29**	**.14**	**.14**	.04	**.17**	.04	-.08	**-.61**	-.02	-.06	**-.10**	-.04	-.04	.01	.04	**.12**
(8)	EvNumConf	.02	**.15**	**.15**	**-.09**	.00	**.10**	-.06	-	**.11**	**.17**	-.01	.03	.06	.04	.05	.01	.01	-.04	.05	.05	-.04	.07	.00	-.01
(9)	EvNumWs	-.02	-.02	**.19**	-.06	.06	**.23**	**.30**	**.11**	-	**.41**	-.03	-.06	**.13**	.01	-.04	**-.12**	**-.09**	.03	.05	-.03	.09	**.10**	-.06	.05
(10)	IndNumCom	.08	-.04	**.10**	.03	**.19**	.04	**.15**	**.15**	**.40**	-	.03	.06	**.12**	.00	**-.16**	**-.19**	-.03	.09	.01	.01	-.08	**.13**	-.04	.02
(11)	NumComp	-.01	-.08	**-.10**	.04	.08	-.03	**.16**	-.03	-.05	.05	-	**.18**	.06	-.04	.08	-.06	**.29**	-.04	-.01	.04	-.03	-.04	.00	-.03
(12)	NumInst	.01	.05	.06	.08	.05	.04	.04	.07	-.05	.03	**.14**	-	-.06	-.04	.05	-.02	.08	.01	.06	-.08	.04	.08	-.05	-.05
(13)	FinSupport	.03	-.05	-.01	.04	.06	.05	**.17**	.05	**.13**	**.11**	.05	-.07	-	-.02	**.11**	**-.12**	.02	.03	.01	-.04	-.01	-.04	.03	.02
(14)	DataSupplier	**.09**	-.02	.04	-.03	.01	.00	.04	.05	.02	-.02	-.04	-.01	-.02	-	-.06	-.02	.00	.01	.07	-.01	-.01	.00	-.05	.08
(15)	AuNonUS	.05	-.01	.04	-.06	.01	-.08	-.03	.05	-.06	**-.12**	.07	.01	**.12**	-.05	-	**.10**	**.13**	**-.14**	**-.17**	-.01	-.09	**.13**	-.02	.04
(16)	AuExp	**-.10**	**.40**	.06	-.04	**-.14**	-.06	**-.56**	-.01	**-.13**	**-.20**	-.06	.00	**-.13**	-.02	.05	-	-.02	.02	.00	.09	.05	-.01	**-.12**	**-.15**
(17)	AffilUT3	-.04	-.02	-.08	.05	.08	-.04	.02	-.01	**-.10**	-.02	**.26**	.07	.00	-.02	**.19**	-.06	-	-.07	**-.09**	-.03	-.03	.07	.05	-.03
(18)	AffilUT5	-.02	.06	-.03	.02	.06	.06	.01	-.02	.01	.08	-.06	.03	.07	.01	**-.13**	-.01	-.06	-	**-.10**	**-.10**	-.06	.03	-.05	.01
(19)	AffilUT10	-.05	.06	**.10**	.00	.01	-.02	-.04	.01	.05	.00	-.01	.05	.02	.06	**-.17**	-.04	-.08	**-.11**	-	**-.18**	**.24**	.03	-.07	-.05
(20)	AffilUT20	-.04	-.08	.03	-.03	-.01	.04	.03	.03	.01	.03	.07	-.07	-.04	-.01	-.03	.03	-.06	**-.14**	**-.21**	-	**-.16**	.01	-.02	**-.13**
(21)	AffilUT50	-.03	-.04	.03	-.07	-.06	-.05	.04	-.06	.09	-.06	-.02	.00	-.03	.03	**-.11**	-.01	-.03	-.07	**.23**	**-.17**	-	-.01	.00	.04
(22)	ThankEditor	.02	.05	**.38**	-.06	-.01	**-.15**	.01	.09	.09	**.12**	-.02	.06	-.04	.00	**.15**	.00	.07	.00	.04	-.01	-.02	-	**-.19**	**.23**
(23)	ThankStaff	.04	**-.10**	**-.18**	.05	.05	.01	.04	-.02	-.05	-.06	-.02	-.06	.03	-.05	.00	**-.12**	.07	-.07	-.04	-.01	.02	**-.19**	-	**.13**
(24)	ThankRef	.01	**-.13**	.08	-.05	-.04	.01	**.12**	.01	.05	.01	-.04	-.02	.02	.08	.04	**-.14**	.00	.01	-.02	**-.10**	.06	**.23**	**.13**	-

Correlation matrix for n=477 observations. In the lower and upper half of the table, Pearson and Spearman coefficients are denoted, respectively. All variables are defined in the text and the tables below. Bold print indicates significance at the 10%-level or higher.

More experienced authors reference less papers and gather less informal feedback (EVNUMWS, INDNUMCOM) as well as financial support (FINSUPPORT). Overall, multicollinearity should not be an issue with exception to the variable DISSERTATION which, by design, strongly correlates with AUEXP and AUTHORS.

6.2.2 Sources of Informal Feedback

In this section, I give a more detailed view on the conferences, workshops, and individuals, as well as financial supporters and data suppliers mentioned in the acknowledgements. All names of conferences, workshops, and individuals were manually coded and standardized. In case of doubt, I checked authors' names in the *Hasselback Directory of Accounting Faculty* provided by the *American Accounting Association* (AAA)[50] and the *Accounting Research Ranking* Database of *Brigham Young University.* Workshops, especially the names of universities and the mapping of (business) schools to universities, were obtained by *Google* searches. The same procedure is applied to conferences. In cases of doubt, I kept the name and diction, as in the acknowledgements. For financial supporters and data suppliers, I combined all Big Four auditors, Arthur Andersen, and their respective foundations. I further introduce a residual category ("undisclosed") for anonymous mentions (e.g., "the firm").

In the acknowledgements, I identify 143 different conferences which were mentioned 522 times in 477 articles. The distribution is heavily skewed, as the top 10 conferences' combined share is 64.1% of all mentions. The top five of the conferences are: AAA Annual Meeting (26.7%), EAA Annual Congress (5.3%), AAA Financial Accounting and Reporting Section Midyear Meeting (4.7%), AAA Management Accounting Section Midyear Meeting (4.4%), and AAA Auditing Midyear Meeting (3.8%). As TAR is a journal published by the AAA, the high concentration of AAA events is not surprising. However, the concentration could also indicate a certain (intentional) North-America bias. In contrast, potential authors may deliberately choose AAA events to gather editors' attention. Overall, nine events hosted by scholarly associations dominate the top 10. Scholarly association contain the AAA with six events as well as EAA, *Accounting & Finance Association of Australia and New Zealand* (AFAANZ), and *Canadian Academic Accounting Association* (CAAA), with one event each.

[50] Available online: http://www.hasselback.org/index (13.10.2013).

The acknowledgements furthermore contained 2,224 references to 291 identified workshops. Workshops with six or more mentions (top 30) have a combined share of 81.9% on all references. Most attended are the workshops at Indiana University (2.1%), University of Washington, University of Iowa and Columbia University (2.0% each), Emory University and Cornell University (1.9% each), New York University, University of Michigan and Harvard University (1.7% each), Michigan State University (1.6%), University of Texas at Austin and Northwestern University (1.5% each), Stanford University, University of Notre Dame and Pennsylvania State University (1.4% each), and University of Chicago (1.3%). The first non-US university, Hong Kong University of Science and Technology, is ranked 11th (1.3%). Of the 16 universities mentioned above, 13 are part of the 40 highest ranked accounting institutions based on citations (Coyne et al. 2010), giving an indication of the institutional concentration in top accounting journals.

Regarding individuals acknowledged for comments, discussions, and suggestions, 1,763 distinct persons with 4,543 mentions in 477 articles were identified. Based on frequency, the top 20 account for only 26.5% of all mentions. The top 10 acknowledged individuals are: T. Shevlin (46), W. R. Kinney (31), M. W. Nelson (28), L. Koonce (27), J. M. Wahlen and G. L. Salamon (26 each), S. J. Kachelmeier (24), J. Zimmerman (23), L. A. Maines (22), S. Basu and L. S. Bamber (21 each), S. E. Salterio, J. H. Pratt, and S. P. Kothari, D. Dhaliwal and M. E. Bamber (19 each). Notably, only three of these sixteen persons are female. Furthermore, three (Shevlin, Dhaliwal, Kachelmeier) served as senior editors and three (Kinney, Nelson, M. E. Bamber) as editors for TAR in the sample period. In this analysis, I solely counted mentions without any explicit reference to an editorial function of the individual acknowledged.

Furthermore, the authors thanked 73 different companies, institutions, or individuals for providing data used in their studies. The actual number is presumably higher because "Undisclosed" (14 mentions) is a residual category for anonymous mentions. Authors oftentimes use anonymous mentions to thank for proprietary or confidential data. Regarding the companies acknowledged, security data providers and investment companies (I/B/E/S International Inc., First Call, Zacks Investment Research, Securities Data Cooperation and Charter Oak Investment Systems Inc.) dominate with 45.0% of all acknowledgements, two Big N auditors (KPMG, Arthur Andersen) following far behind with 1.9% and 1.2% of mentions, respectively. The high stake of I/B/E/S (33.3% of all mentions), in particular, indicates that DATASUPPLIER may proxy for specific research

questions or methods which require particular data (e.g., analyst forecasts provided by I/B/E/S).

Research grants and financial support were provided by 170 single institutions. Primary sponsors of academic accounting research are the Big N auditors (five of top 21), research funds at the universities (11 of top 21), and governmental research councils (3 of top 21). Most of the institutions (Arthur Andersen, KPMG as well as the Universities of Alabama and Southern California are exceptions) kept up financial support over the entire sample period. Particularly, the Big N auditors, which on average sponsored nearly twice as many projects as universities (19.2% for 5 institutions versus 22.4% for 11 institutions), are important supporters of academic research in accounting.[51]

The appendix contains the lists of top 10 conferences, top 30 universities, top 20 individuals, top 10 data suppliers, and financial supporters mentioned in the acknowledgments.

6.2.3 Multivariate Analysis

I follow a two-part approach for my multivariate analysis. In the first part, I inquire the impact of article- and author-specific factors as well informal feedback on the duration of the peer review process. In next step (stage two), I use a smaller sample consisting of articles for which the accepting editor is known. In addition to reexamining the factors from the first stage, fairness indicators are included.

The results for the first stage regression, including informal feedback and article-specific factors, can be found in Table 36. The regression is based on the complete sample of 477 articles. For the base model (Model 1), the three variables CITES, AUTHORS, and DATASUPPLIER show a significant influence on the duration of the peer review process. In line with the expectation, highly cited articles (CITES) pass the peer review process significantly faster. The coefficient, however, is rather small, indicating a moderate effect on the overall duration. Co-authored articles (AUTHOR) seem to benefit from knowledge spillovers and division of labor effects. The negative arithmetic signs for TITLECHAR and DISSERTATION are as expected. The number of referenced research

[51] The pure number of mentions is a noisy indicator for the actual financial support as no conclusion regarding the granted amount is possible. It is therefore possible that governmental research councils, for example, sponsor less projects but grant higher amounts.

Table 36:
Base Model Regression including informal feedback and article-specific factors

The Table shows five different specifications for the base model regression with the Submission-Acceptance-Timespan measured in months as the dependent variable. CITES is the number of citation the paper received in other articles according to *Thomson Reuters Web of Knowledge*. AUTHORS denotes the number of co-authors. LENGTH is the number of pages of an article. TITLECHAR is length of an articles title measured by the number of characters. PAPERSCITED is the number of references in an article scaled by its length. DISSERTATION is a dummy variable taking the value "1" if the article is based on a dissertation. EVNUMCONF and EVNUMWS is the number of conferences and workshops the paper was presented at. INDNUMCOM is the number of individuals whom the author(s) thanked in the acknowledgements. NUMCOMP and NUMINST denote the number of companies or institutions the author(s) mentioned in the acknowledgements. FINSUPPORT and DATASUPPLIER are binary variables taking the value "1" if the author(s) thanked institutions, individuals or companies explicitly for financial support or providing data used in the article, respectively. Fixed effects include year of submission (SY) and research method (M) as well as topic (T), which are defined in appendix A. For each variable the estimation coefficient is stated in first row, the t-statistic is given in parentheses below. *, ** and *** denotes significance at the 10%, 5% and 1% interval, respectively.

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
(Intercept)	17.371 ***	31.113 ***	17.742 ***	18.204 ***	32.479 ***
	(7.51)	(6.87)	(7.71)	(7.32)	(7.06)
Cites	-0.028 ***	-0.035 ***	-0.032 ***	-0.029 ***	-0.04 ***
	(-3.01)	(-3.7)	(-3.41)	(-3.02)	(-4.03)
Authors	-1.378 ***	-1.017 **	-1.579 ***	-1.393 ***	-1.253 **
	(-2.62)	(-2.08)	(-2.98)	(-2.62)	(-2.51)
Length	0.024	0.107 *	-0.007	0.016	0.088
	(0.43)	(1.81)	(-0.12)	(0.29)	(1.46)
TitleChar	-0.001	0	-0.008	0.001	-0.006
	(-0.05)	(-0.02)	(-0.59)	(0.07)	(-0.45)
PapersCited	0.392	0.761	0.03	0.273	0.098
	(0.64)	(1.33)	(0.05)	(0.44)	(0.16)
Dissertation	-0.9	-0.749	-1.44	-0.87	-1.34
	(-0.7)	(-0.63)	(-1.12)	(-0.67)	(-1.12)
EvNumConf	0.236	0.155	0.193	0.238	0.039
	(0.54)	(0.38)	(0.44)	(0.54)	(0.09)
EvNumWs	-0.07	0.04	-0.045	-0.068	0.087
	(-0.67)	(0.4)	(-0.43)	(-0.63)	(0.86)
IndNumCom	0.095	0.081	0.084	0.095	0.074
	(1.56)	(1.41)	(1.36)	(1.55)	(1.3)
NumComp	-0.359	-0.335	-0.103	-0.319	-0.311
	(-0.38)	(-0.38)	(-0.11)	(-0.33)	(-0.34)
NumInst	0.451	-0.025	0.511	0.551	0.032
	(0.46)	(-0.03)	(0.52)	(0.55)	(0.03)
FinSupport	0.788	0.468	0.547	0.817	0.248
	(1.12)	(0.7)	(0.77)	(1.14)	(0.37)
DataSupplier	1.736 **	2.04 ***	1.207	1.761 **	1.688 **
	(2.2)	(2.75)	(1.44)	(2.17)	(2.1)
n	477	477	477	477	477
Fixed Effects	none	SY	M	T	SY M T
adj. R^2	0.034	0.181	0.051	0.034	0.202

(PAPERSCITED) has a moderate positive coefficient, indicating that articles in well-documented fields of research (high *r*-factor) take longer to pass the process. Comparable circumstances could explain the significantly positive and strong coefficient on DATASUPPLIER. As indicated above, the variable is basically driven by providers of security and forecast data. Articles in this stream of research most likely have methodical features *(r)* which require more work in revising the paper before it is finally accepted.

Including fixed effects for the submission year (Model 2), research method (Model 3), and topic (Model 4), as well as all three (Model 5), does not change the basic results. Notably, the inclusion of fixed effects increases the adjusted R^2 of the equation from 3.4% (Model 1) to 20.2% (Model 5). Submission year-fixed effects are the most important factor (Model 2).

Surprisingly, two of the three measures for informal feedback (EVNUMCONF and INDNUMCOM) have a rather small but positive coefficient. This result is counter-intuitive but stable through all specifications. For the third variable (EVNUMWS), the arithmetic sign depends on the included fixed effects. In Model 5, which is the highest specified one, it is also positive. Obviously, informal feedback is an important factor to improve a paper and, thereby, the chances of publication on the academic market (Brown 2005). My results, however, indicate that once a paper reached a certain level, the incremental effect of further feedback is negligible or even negative. Alternatively, and in accordance with the notion of developing social norms, the incentives for attending at conferences and workshops could move from feedback to socializing and networking (Perry et al. 2003). The small coefficient and the specification-dependent switch in the arithmetic sign support the basic argument.

In the next step, the analysis is extended by two author-specific factors. Experience is measured by the years since Ph.D. graduation (AUEXP), affiliation by the share of authors from top 3, 5, 10, 20, or 50 universities (AFFILUT3-50), and origin by the share of non-US authors (AUNONUS). The results are depicted in Table 37. For brevity, I will focus on the results of Model 5, which includes fixed effects for submission year, research method, and topic. Except for AUEXP, the arithmetic signs for the author-specific factors are as expected. A higher share of non-US authors is associated with an insignificantly longer peer review duration. In contrast, articles of authors affiliated with top schools pass the process faster. Whereas this effect is also insignificant, the coefficient is more

Table 37:
Base Model Regression including informal feedback as well as author- and article-specific factors

The Table shows five different specifications for the base model regression with the Submission-Acceptance-Timespan measured in months as the dependent variable. CITES is the number of citation the paper received in other articles according to *Thomson Reuters Web of Knowledge.* AUTHORS denotes the number of co-authors. LENGTH is the number of pages of an article. TITLECHAR is length of an articles title measured by the number of characters. PAPERSCITED is the number of references in an article scaled by its length. DISSERTATION is a dummy variable taking the value "1" if the article is based on a dissertation. EVNUMCONF and EVNUMWS is the number of conferences and workshops the paper was presented at. INDNUMCOM is the number of individuals whom the author(s) thanked in the acknowledgements. NUMCOMP and NUMINST denote the number of companies or institutions the author(s) mentioned in the acknowledgements. FINSUPPORT and DATASUPPLIER are binary variables taking the value "1" if the author(s) thanked institutions, individuals or companies explicitly for financial support or providing data used in the article, respectively. AUNONUS is the percentage of author(s) who were affiliated with a university outside of the US at time of publication of the paper. AUEXP is the medium experience of the author(s) measured as the positive number of years between their Ph.D. graduation and the submission of the paper. AFFILUT3-50 is the percentage of authors affiliated with a top 3, 5, 10, 20 and 50 university at the time of publication of the article based on the *Accounting Research Ranking 2012* (all methods, all topics, all years) of the *Brigham Young University.* Fixed effects include year of submission (SY) and research method (M) as well as topic (T), which are defined in appendix A. For each variable the estimation coefficient is stated in first row, the t-statistic is given in parentheses below. *, ** and *** denotes significance at the 10%, 5% and 1% interval, respectively.

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
(Intercept)	18.338 ***	31.175 ***	18.309 ***	19.247 ***	32.694 ***
	(7.46)	(6.74)	(7.47)	(7.33)	(6.95)
Cites	-0.028 ***	-0.035 ***	-0.032 ***	-0.029 ***	-0.04 ***
	(-2.97)	(-3.64)	(-3.32)	(-2.99)	(-4)
Authors	-1.335 **	-0.99 **	-1.63 ***	-1.366 **	-1.297 **
	(-2.5)	(-1.98)	(-3.01)	(-2.52)	(-2.54)
Length	0.03	0.112 *	0.004	0.025	0.097
	(0.54)	(1.87)	(0.07)	(0.44)	(1.59)
TitleChar	0	0	-0.008	0.001	-0.007
	(-0.03)	(-0.04)	(-0.64)	(0.07)	(-0.58)
PapersCited	0.417	0.758	-0.021	0.303	0.06
	(0.68)	(1.3)	(-0.03)	(0.48)	(0.1)
Dissertation	-1.525	-0.958	-1.749	-1.481	-1.358
	(-1.07)	(-0.72)	(-1.23)	(-1.03)	(-1.01)
EvNumConf	0.17	0.098	0.15	0.173	-0.017
	(0.38)	(0.24)	(0.34)	(0.38)	(-0.04)
EvNumWs	-0.058	0.053	-0.041	-0.054	0.094
	(-0.53)	(0.53)	(-0.38)	(-0.49)	(0.91)
IndNumCom	0.091	0.082	0.08	0.09	0.074
	(1.43)	(1.38)	(1.25)	(1.41)	(1.24)
NumComp	0.076	-0.141	0.246	0.121	-0.127
	(0.08)	(-0.15)	(0.24)	(0.12)	(-0.13)
NumInst	0.467	-0.01	0.431	0.568	0.016
	(0.47)	(-0.01)	(0.43)	(0.56)	(0.02)
FinSupport	0.67	0.339	0.419	0.731	0.139
	(0.93)	(0.5)	(0.58)	(1)	(0.2)

Table 37:
continued

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
DataSupplier	1.836 **	2.144 ***	1.334	1.879 **	1.846 **
	(2.31)	(2.86)	(1.58)	(2.3)	(2.27)
AuNonUS	1.053	1.201	0.685	0.677	0.406
	(0.83)	(1.02)	(0.53)	(0.52)	(0.33)
AuExp	-0.079	-0.029	-0.025	-0.073	0.011
	(-1.04)	(-0.4)	(-0.32)	(-0.94)	(0.14)
AffilUT3	-4.804	-2.625	-4.665	-4.8	-2.723
	(-1.52)	(-0.89)	(-1.45)	(-1.49)	(-0.9)
AffilUT5	-0.831	-0.887	-0.492	-0.899	-0.818
	(-0.46)	(-0.53)	(-0.27)	(-0.5)	(-0.49)
AffilUT10	-1.748	-1.629	-2	-1.727	-2.058
	(-1.22)	(-1.22)	(-1.39)	(-1.19)	(-1.52)
AffilUT20	-1.191	-1.034	-1.637	-1.333	-1.574
	(-1.15)	(-1.07)	(-1.57)	(-1.27)	(-1.6)
AffilUT50	-0.661	-1.146	-0.378	-0.636	-1.173
	(-0.38)	(-0.7)	(-0.21)	(-0.36)	(-0.71)
n	477	477	477	477	477
Fixed Effects	none	SY	M	T	SY M T
adj. R^2	0.031	0.238	0.047	0.031	0.282

distinct for the top schools and declines down the ranking (-2.723 for the top 3 schools to -1.173 for the top 50 schools), indicating either the signaling effect of affiliations, a possible self-selection of good authors to top schools, or bias ("favoritism") of the editors towards their peers. As for EVNUMCONF in the previous and this specification, the arithmetic sign for AUEXP depends on the included fixed effects, indicating a weak and random influence. Experience therefore seems to be compensated by other factors. As a whole, author-specific factors explain about 8% in the variation of peer review duration.

Adjusted R^2 is 28.2% for Model 5 in Table 37 compared to 20.2% Model 5 in Table 36. The results are, for the most part, robust through the other specification, i.e., no fixed effects (Model 1), submission year- (Model 2), research method- (Model 3), or topic-(Model) fixed effects. The basic results for informal feedback and article-specific factors remain unchanged.

Table 38:
Subsample Regression including informal feedback and fairness indicators as well as article-specific factors

The table shows five different specifications for the base model regression with the submission-acceptance-timespan measured in months as the dependent variable. CITES is the number of citation the paper received in other articles according to *Thomson Reuters Web of Knowledge.* AUTHORS denotes the number of co-authors. LENGTH is the number of pages of an article. TITLECHAR is length of an articles title measured by the number of characters. PAPERSCITED is the number of references in an article scaled by its length. DISSERTATION is a dummy variable taking the value "1" if the article is based on a dissertation. EVNUMCONF and EVNUMWS is the number of conferences and workshops the paper was presented at. INDNUMCOM is the number of individuals whom the author(s) thanked in the acknowledgements. NUMCOMP and NUMINST denote the number of companies or institutions the author(s) mentioned in the acknowledgements. FINSUPPORT and DATASUPPLIER are binary variables taking the value "1" if the author(s) thanked institutions, individuals or companies explicitly for financial support or providing data used in the article, respectively. EDSAMEAFFILCUR is a dummy variable taking the value "1" if the accepting editor at the time of acceptance was affiliated to the same university as one of the authors at time of publication. EDSAMEAFFILSUB is a dummy variable taking the value "1" if the accepting editor at the time of submission of the article was affiliated to the same university as one of the authors at the time of publication. EDSAMEPHDINST is a dummy variable taking the value "1" if the accepting editor and one of the author gained their Ph.D. at the university. EDDEPENNARROW is a dummy variable taking the value "1" if one the three dummy variables above has the value "1". Fixed effects include year of submission (SY) and research method (M) as well as topic (T), which are defined in appendix A. For each variable the estimation coefficient is stated in first row, the t-statistic is given in parentheses below. *, ** and *** denotes significance at the 10%, 5% and 1% interval, respectively.

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
(Intercept)	31.928 ***	33.973 ***	33.954 ***	34.075 ***	34.012 ***
	(6.56)	(6.7)	(6.69)	(6.77)	(6.75)
Cites	-0.083 ***	-0.087 ***	-0.087 ***	-0.09 ***	-0.089 ***
	(-5.22)	(-5.44)	(-5.44)	(-5.6)	(-5.57)
Authors	-0.887	-0.808	-0.838	-0.76	-0.711
	(-1.51)	(-1.37)	(-1.42)	(-1.3)	(-1.21)
Length	0.06	0.065	0.06	0.053	0.063
	(0.87)	(0.92)	(0.85)	(0.76)	(0.9)
TitleChar	-0.014	-0.014	-0.014	-0.015	-0.015
	(-0.98)	(-1.03)	(-1.03)	(-1.11)	(-1.1)
PapersCited	0.094	0.26	0.252	0.047	0.114
	(0.13)	(0.35)	(0.34)	(0.06)	(0.15)
Dissertation	-1.777	-1.453	-1.545	-1.633	-1.511
	(-1.25)	(-1.02)	(-1.09)	(-1.16)	(-1.07)
EvNumConf	0.773	0.716	0.714	0.67	0.684
	(1.65)	(1.53)	(1.52)	(1.44)	(1.47)
EvNumWs	0.003	-0.005	0.002	-0.024	-0.028
	(0.03)	(-0.05)	(0.01)	(-0.21)	(-0.25)
IndNumCom	0.1	0.093	0.089	0.108	0.113
	(1.47)	(1.35)	(1.28)	(1.56)	(1.62)
NumComp	0.2	0.398	0.414	0.44	0.426
	(0.17)	(0.34)	(0.35)	(0.38)	(0.37)
NumInst	1.5	1.567	1.589	1.483	1.468
	(1.29)	(1.34)	(1.36)	(1.28)	(1.27)

Table 38:
continued

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
FinSupport	1.455 *	1.378 *	1.321 *	1.343 *	1.424 *
	(1.87)	(1.76)	(1.69)	(1.73)	(1.83)
DataSupplier	1.613 *	1.572 *	1.566 *	1.418	1.46
	(1.75)	(1.7)	(1.7)	(1.54)	(1.59)
ThankEditor		0.736	0.754	0.606	0.582
		(0.8)	(0.82)	(0.66)	(0.63)
ThankRef		-1.767	-1.771	-1.605	-1.605
		(-1.41)	(-1.42)	(-1.29)	(-1.29)
ThankStaff		-4.547 *	-4.537 *	-4.905 **	-4.856 **
		(-1.89)	(-1.88)	(-2.04)	(-2.02)
EdSameAffilCur		-2.768			
		(-0.7)			
EdSameAffilSub			-0.491		
			(-0.1)		
EdSamePhDInst				-3.342 *	
				(-1.96)	
EdDepenNarrow					-2.682 *
					(-1.9)
n	307	307	307	307	307
Fixed Effects	SY M T	SY M T	SY M T	SY M T	SY M T
adj. R^2	0.254	0.260	0.259	0.269	0.269

In summary, the results indicate a certain effectiveness of the peer review process in TAR. While good papers – as indicated by CITES – pass the process faster, more methodologically sophisticated papers in well documented research fields, on the author hand, take longer. Informal feedback has no impact on the duration of the peer review process. Additionally, there are no significant indications of a potential country or top school bias.

In the second step of the multivariate analysis, I further include variables for acknowledgements to editorial team members (THANK*) and indicator variables for institutional bonds between authors and the accepting editor (EDSAME*). TAR provides information for the accepting editor since the second issue of 2003. As a result, I lose 170 observations. The final sample for the second stage consists of 307 articles for the 2003 to 2009 period. To control for differences between the full sample and the subsample used for the following analysis, I rerun the full-specified model for informal feedback and article-

Table 39:
Subsample Regression including informal feedback and fairness indicators as well as author- and article-specific factors

The table shows five different specifications for the base model regression with the Submission-Acceptance-Timespan measured in months as the dependent variable. CITES is the number of citation the paper received in other articles according to *Thomson Reuters Web of Knowledge.* AUTHORS denotes the number of co-authors. LENGTH is the number of pages of an article. TITLECHAR is length of an articles title measured by the number of characters. PAPERSCITED is the number of references in an article scaled by its length. DISSERTATION is a dummy variable taking the value "1" if the article is based on a dissertation. EVNUMCONF and EVNUMWS is the number of conferences and workshops the paper was presented at. INDNUMCOM is the number of individuals whom the author(s) thanked in the acknowledgements. NUMCOMP and NUMINST denote the number of companies or institutions the author(s) mentioned in the acknowledgements. FINSUPPORT and DATASUPPLIER are binary variables taking the value "1" if the author(s) thanked institutions, individuals or companies explicitly for financial support or providing data used in the article, respectively. THANKEDITOR is a dummy variable taking the value "1" if the author(s) thank the editor in the acknowledgements anonymously or by name. THANKREF is a dummy variable taking the value "1" if the author(s) thank at least one editor anonymously or by name. THANKSTAFF is a dummy variable taking the value "1" if the author(s) mention at least one member of the editorial staff (Associate Editor or equal) in the acknowledgements. EDDEPENNARROW is a dummy variable taking the value "1" if the accepting editor at the time of acceptance was affiliated to the same university as one of the authors at time of publication, the accepting editor at the time of submission of the article was affiliated to the same university as one of the authors at the time of publication or the accepting editor and one of the author gained their Ph.D. at the university. AUNONUS is the percentage of author(s) who were affiliated with a university outside of the US at time of publication of the paper. AUEXP is the medium experience of the author(s) measured as the positive number of years between their Ph.D. graduation and the submission of the paper. AFFILTOP10 is a dummy variable taking the value "1" if one of the authors was affiliated with a Top 10 university at the time of publication of the article based on the Accounting Research Ranking 2012 (all methods, all topics, all years) of the Brigham Young University. AFFILUT10-50 is the percentage of authors affiliated with a top 10, 20 and 50 university at the time of publication of the article based ranking mentioned before. Fixed effects include year of submission (SY) and research method (M) as well as topic (T), which are defined in appendix A. For each variable the estimation coefficient is stated in first row, the t-statistic is given in parentheses below. *, ** and *** denotes significance at the 10%, 5% and 1% interval, respectively.

Variable	Model 1	Model 2	Model 3	Model 4
(Intercept)	34.012 ***	34.132 ***	33.854 ***	34.441 ***
	(6.75)	(6.71)	(6.66)	(6.75)
Cites	-0.089 ***	-0.087 ***	-0.09 ***	-0.088 ***
	(-5.57)	(-5.38)	(-5.51)	(-5.43)
Authors	-0.711	-0.725	-0.56	-0.704
	(-1.21)	(-1.22)	(-0.92)	(-1.18)
Length	0.063	0.063	0.067	0.062
	(0.9)	(0.89)	(0.94)	(0.88)
TitleChar	-0.015	-0.015	-0.015	-0.016
	(-1.1)	(-1.06)	(-1.1)	(-1.12)
PapersCited	0.114	0.109	0.158	0.161
	(0.15)	(0.15)	(0.21)	(0.22)
Dissertation	-1.511	-1.426	-1.548	-1.332
	(-1.07)	(-0.91)	(-0.99)	(-0.85)
EvNumConf	0.684	0.707	0.646	0.636
	(1.47)	(1.5)	(1.36)	(1.34)
EvNumWs	-0.028	-0.036	-0.029	-0.021
	(-0.25)	(-0.32)	(-0.25)	(-0.18)

Table 39:
continued

Variable	Model 1	Model 2	Model 3	Model 4
IndNumCom	0.113	0.121 *	0.115	0.106
	(1.62)	(1.71)	(1.62)	(1.48)
NumComp	0.426	0.163	0.313	0.39
	(0.37)	(0.14)	(0.26)	(0.33)
NumInst	1.468	1.311	1.639	1.572
	(1.27)	(1.1)	(1.35)	(1.3)
FinSupport	1.424 *	1.242	1.258	1.211
	(1.83)	(1.57)	(1.59)	(1.52)
DataSupplier	1.46	1.692 *	1.729 *	1.717 *
	(1.59)	(1.81)	(1.85)	(1.83)
ThankEditor	0.582	0.483	0.608	0.645
	(0.63)	(0.51)	(0.64)	(0.68)
ThankRef	-1.605	-1.623	-1.742	-1.842
	(-1.29)	(-1.3)	(-1.39)	(-1.46)
ThankStaff	-4.856 **	-5.204 **	-5.395 **	-5.334 **
	(-2.02)	(-2.15)	(-2.22)	(-2.19)
EdDepenNarrow	-2.682 *	-2.606 *	-2.806 *	-2.608 *
	(-1.9)	(-1.83)	(-1.96)	(-1.83)
AuNonUS		1.448	1.091	0.952
		(1.51)	(1.09)	(0.95)
AuExp		-0.005	-0.014	-0.003
		(-0.06)	(-0.16)	(-0.04)
AffilTop10			-1.126	
			(-1.28)	
AffilUT10				-1.982
				(-1.53)
AffilUT20				-1.414
				(-1.22)
AffilUT50				-0.983
				(-0.5)
n	307	307	307	307
Fixed Effects	SY M T	SY M T	SY M T	SY M T
adj. R^2	0.269	0.267	0.269	0.268

specific factors. The results are virtually equal (Model 1 in Table 38). Notable differences relate to AUTHORS, which is no longer significant but retains a modest negative coefficient. EVNUMCONF and FINSUPPORT, on the other hand, are more important, and nearly or weakly significant in the subsample, respectively. Differences indicate some time-dependent variance regarding the influential effect of certain factors on the duration

of the peer review process. Moreover, this effect is emphasized by a higher adjusted R^2 for the base model (25.4% in the subsample versus 20.2% for the full sample).

Extending the model by fairness indicators, however, offers some interesting insights. First, thanking referees and editorial staff may be a developing social norm in the accounting community, but the negative arithmetic sign for THANKREF (not significant at conventional levels) and THANKSTAFF (significant at the 5%- or 10%-level) could indicate that authors are more likely to thank their peers if they offered timely and constructive feedback, making it easier for the authors to respond to their demands. In contrast, mentioning the editor (THANKEDITOR) is probably a more strategy driven behavior that has no influence on the peer review process.

The variables EDSAMEAFFILCUR, EDSAMEAFFILSUB, EDSAMEPHDINST, and EDDEPENNARROW as an aggregate of the previous three measures are a more narrow definition of the "favoritism" measure developed by Laband and Piette (1994). In Table 38, the results for the four measures are depicted in Models 2 to 5. While the affiliation status at the time of submission or publication of the article is of minor importance, institutional bonds stemming from the education of author and editor have a significant influence (Model 4). In light of an institutional concentration in premier accounting journals (Coyne et al. 2010) and the coincidental importance of the same institutions in doctoral education and research, as indicated by the workshop acknowledgements, results do not necessarily indicate favoritism but a functional screening of high-quality research by the editors (Laband and Piette 1994). Put differently, high-quality research by high-quality researchers from high-quality institutions selects itself into high-quality journals (Fogarty and Yu 2010; Swanson et al. 2007). Favoritism, however, cannot be ruled out as an alternative explanation (Lee and Williams 1999).

Table 39 depicts the result for the extended model, including author-specific information. The results are comparable to those for the full sample. For non-US authors the peer review process takes insignificantly longer, but regarding to more experienced authors, however, the coefficient is slightly negative but not significant in the subsample. These results are robust to subsequent controls for the rank of the authors' affiliation as a binary variable for all papers with at least on author affiliated to a top 10 ranked university (AFFILTOP10 in Model 3) or, alternatively, as the share of authors affiliated to top 10, 20, and 50 universities (Model 4).

The results for my second stage analysis, which includes fairness indicators, confirms the earlier results from the full sample. Institutional bonds between editors and authors relate to differences in the duration of the peer review process. Based on the high concentration of top school and Ph.D. granting institutions observed in premier accounting journals, interpreting the result as evidence for "favoritism" would be an oversimplification.

7 Concluding Remarks

The first objective of my study is to analyze whether and how the duration of the peer review process between three leading North American accounting journals changed in recent years (RQ_1). TAR and JAR offer comparable peer review durations, which shows a steadily increasing trend for the later years in the sample period. JAE exhibits the slowest peer review process over the entire sample period. The increase in peer review duration relates to an expansion of the journal sphere as measured by the number of papers published. Results indicate that journals may use the review process to raise the costs of submission for authors and, hence, account for excess demand in the scarce resource of journal publication space.

The second objective is to examine whether the duration of the peer review process is influenced by article- and author-specific factors or the extant of informal feedback authors utilized prior to or during the peer review process (RQ_2). While the number of articles published in TAR, co-authorships, and sources of informal feedback acknowledged (conferences, workshops, and individuals) increased in the sample period, the average duration of the peer review process does not follow a constant trend over time. Structural shifts in the environment of academic accounting, therefore, do not seem to affect peer review. But the results indicate an ongoing orientation of research on more complex issues which require extensive datasets and methodological rigor as expressed by the increase in article length. Whereas these trends prolong the peer review process, authors benefit from knowledge spillovers and division of labor in collaborative projects, as co-authored papers pass the process significantly faster. In conjunction with the results from analysis 1, this result is most likely not generalizable beyond TAR. Other attributes of authors or papers are no significant determinants of the peer review duration. Nonetheless, high-quality papers, i.e., more frequently cited ones, pass the process significantly faster, indicating its certain efficiency.

In a second step, I analyze whether the influence of article- and author specific factors as well as informal feedback is conditional to an unbiased (i.e., fair) process (RQ_3). The results from the basic model remain basically unchanged, suggesting no conditional relationship between fairness indicators and the other specific factors. Notably, articles pass the process significantly faster if institutional bonds between the editor and one of the authors exist. One possible explanation for this result could be editor favoritism. The high concentration of authors and editors from top schools, in contrast, implies a self-selection effect as a more plausible reason for this finding.

My results, however, should be interpreted with caution. As noted above, several article-specific factors (length, title, etc.), could be endogenously affected by the peer review process. Furthermore, the duration of the peer review process itself could be dependent on journal policy. Based on the notion by Azar (2004; 2007) and Lee (2009) that longer (first) response time increase the costs of authors, editors could use this mechanism to screen out sub-quality submission. Results by Adler and Liyanarachchi (2011), however, suggest that editors in accounting journals use this mechanism selectively to increase the costs for authors of rejected papers, i.e., those suppressed in my study.

Besides these concerns, my study is subject to several limitations. First, my research design primarily focuses on attributes of the article and authors, complemented by the affiliation status of the editor in the second stage analysis. Other important determinants, e.g., (first) response times, attributes of the referees, etc., are not publicly available and are, hence, not operationalized in this study. For similar reasons, other stages of the research process which may influence the maturity of a paper (e.g., preparation time, prior submission to other journals) cannot be included (Azar 2007; Guthrie et al. 2004). Second, the results by Ellison (2002b; 2011) additionally suggest that indirect effects of structural shifts within a discipline possibly effect the peer review process. Fogarty and Holder (2012), for example, document a decrease in new accounting faculty in the recent past. While I do not expect the change in accounting faculty to directly impact peer review duration, the indirect effect of a decrease in competition for the scarce resource top journal spots, could have one. Third, for my analysis, I exclusively focus on articles published in one top journal. This could induce two possible biases. On the one hand, not including rejected papers in the study may bias towards a longer duration, as papers are usually rejected in the early stages of peer review (Kachelmeier 2009). On the other hand, using data from a top journal may, in contrast, lead to underestimating peer review duration, as

these are perceived to be more timely (Adler and Liyanarachchi 2011). Fourth, the comparably small adjusted R^2 and the considerable explanatory power of the submission year-fixed effects emphasize the foregoing mentioned concern with confounding factors. Weak proxies for author and article quality (exemplified by the DATASUPPLIER variable) as well as the rough classification of research methods and topics could be an additional factor pertaining this issue. Fifth, the focus on published articles bias the results. Papers which get rejected during the review process may face shorter review durations, even though they have comparable attributes to published articles. However, information on unpublished or rejected papers is not widely available. Sixth, potential lags in the response times are not publicly available. Time taken by authors, reviewers, and editors may vary across submissions and are interrelated. Extensive comments or changes in demand may increase response times by authors, and vice versa. Additionally, all parties involved could deliberately choose to extend response times.

Against this background, future research could extent the analysis by including more journals or disciplines (e.g., economics, finance, management, marketing). Differences with regard to the cultural, methodological, and topical background of the journals as well as discrepancies between top and second tier journals could be possible starting points for a broader examination of peer review duration. The direct and indirect effects of structural changes in the accounting discipline on the publication process in general, and peer review in particular, are further issues. From a methodological perspective, more precise measures for research method and topic seem to be crucial elements for a deeper understanding of the underlying factors. In particular, the possibly diverging effects between more innovation- (high q) and rigor-driven (high r) papers could be examined.

Appendix A: Acknowledgements

Rank	Name	Frequency	Percentage
Panel A: Top 10 Conferences			
	Top 10 Conferences Acknowledged		
1	AAA Annual Meeting	141	26.65%
2	EAA Annual Congress	28	5.29%
3	AAA FARS Midyear Meeting	25	4.73%
4	AAA MAS Midyear Meeting	23	4.35%
5	AAA Auditing Midyear Meeting	20	3.78%
6	International Symposium on Audit Research	12	2.27%
7	AFAANZ Annual Meeting	10	1.89%
8	Boston Area Research Colloquium (BARC)	7	1.32%
	Joint Conference of the Universities of British Columbia. Oregon. and Washington (UBCOW)	7	1.32%
	CAAA Annual Meeting	7	1.32%
	Conference on Financial Economics and Accounting	7	1.32%
9	Tax Symposium	6	1.13%
	Financial Management Association Annual Meeting	6	1.13%
	Financial Economics and Accounting Conference	6	1.13%
	Accounting Symposium	6	1.13%
	Southeast Summer Accounting Research Colloquium	6	1.13%
	Big 10 Conference	6	1.13%
	Utah Winter Accounting Conference	6	1.13%
10	AAA IAS Midyear Meeting	5	0.95%
	AAA ABO Conference	5	0.95%
	Total		64.08%
	Distinct Conferences		143
	Distinct Acknowledgements		522
Panel B: Top 30 Universities/Workshops			
1	Indiana University	48	2.14%
2	University of Washington	45	2.01%
	University of Iowa	45	2.01%
3	Columbia University	44	1.96%
4	Emory University	43	1.92%
5	Cornell University	41	1.83%
6	New York University	38	1.69%
	University of Michigan	38	1.69%
7	Harvard University	37	1.65%
8	Michigan State University	36	1.60%
9	University of Texas at Austin	33	1.47%
	Northwestern University	33	1.47%
10	Stanford University	32	1.43%
	University of Notre Dame	32	1.43%
	Pennsylvania State University	32	1.43%
11	University of Chicago	30	1.34%

Rank	Name	Frequency	Percentage
12	University of Pennsylvania	28	1.25%
	University of Southern California	28	1.25%
	Georgia State University	28	1.25%
	Hong Kong University of Science and Technology	28	1.25%
	University of Arizona	28	1.25%
	Washington University	27	1.20%
13	University of Minnesota	26	1.16%
14	University of Pittsburgh	25	1.11%
	University of California, Berkeley	25	1.11%
	University of Georgia	25	1.11%
	University of Illinois	25	1.11%
15	Baruch College-The City University of New York	24	1.07%
	Florida State University	24	1.07%
	Duke University	24	1.07%
16	Arizona State University	23	1.02%
17	University of Wisconsin-Madison	21	0.94%
18	University of Rochester	20	0.89%
	Texas A&M University	20	0.89%
	University of Waterloo	20	0.89%
19	University of Illinois at Urbana-Champaign	19	0.85%
	Massachusetts Institute of Technology	19	0.85%
	University of Melbourne	19	0.85%
	University of British Columbia	19	0.85%
	University of Alberta	19	0.85%
	Carnegie Mellon University	19	0.85%
20	Ohio State University	18	0.80%
	University of Maryland	18	0.80%
21	University of Utah	17	0.76%
	University of California, Los Angeles	16	0.71%
	Georgetown University	16	0.71%
	University of Colorado	16	0.71%
	University of Oklahoma	16	0.71%
22	George Washington University	15	0.67%
	London Business School	15	0.67%
	University of Connecticut	15	0.67%
	Temple University	15	0.67%
	Boston College	15	0.67%
23	University of Texas at Dallas	14	0.62%
	Rutgers University	14	0.62%
	University of Toronto	14	0.62%
	University of Houston	14	0.62%
24	Washington University in St. Louis	13	0.58%
	University of Missouri	13	0.58%
	University of Texas	13	0.58%
	Purdue University	13	0.58%
	State University of New York at Buffalo	13	0.58%
25	The Ohio State University	12	0.53%

Rank	Name	Frequency	Percentage
	Southern Methodist University	12	0.53%
	Rice University	12	0.53%
	University of Florida	12	0.53%
26	University of Oregon	11	0.49%
	University of California, Irvine	11	0.49%
	University of Alabama	11	0.49%
	Yale University	11	0.49%
	University of Kansas	11	0.49%
	Syracuse University	11	0.49%
27	University of Kentucky	9	0.40%
	University of Wisconsin	9	0.40%
	Brigham Young University	9	0.40%
	Case Western Reserve University	9	0.40%
28	University of North Carolina	8	0.36%
	University of Nebraska	8	0.36%
	University of Cincinnati	8	0.36%
	Louisiana State University	8	0.36%
	University of Illinois at Chicago	8	0.36%
	Singapore Management University	8	0.36%
	University of Missouri-Columbia	8	0.36%
	Chinese University of Hong Kong	8	0.36%
	University of New South Wales	8	0.36%
	City University of Hong Kong	8	0.36%
	Georgia Institute of Technology	8	0.36%
	Texas Christian University	8	0.36%
	Vanderbilt University	8	0.36%
	Tilburg University	8	0.36%
	Tulane University	8	0.36%
29	Queens University	7	0.31%
	University of North Texas	7	0.31%
	The George Washington University	7	0.31%
	London School of Economics and Political Sciences	7	0.31%
	Dartmouth College	7	0.31%
	Virginia Commonwealth University	7	0.31%
	Norwegian School of Economics and Business Administration	7	0.31%
	University of Arkansas	7	0.31%
	University of California, Riverside	7	0.31%
	INSEAD	7	0.31%
30	University of Auckland	6	0.27%
	Hebrew University	6	0.27%
	University of Colorado at Boulder	6	0.27%
	National Taiwan University	6	0.27%
	Virginia Polytechnic Institute and State University	6	0.27%
	Tel Aviv University	6	0.27%
	Boston University	6	0.27%
	Total		81.90%
	Distinct Workshops		291

Rank	Name	Frequency	Percentage
	Distinct Acknowledgements		2.224
Panel C: Top 20 Individuals			
1	Shevlin, Terry	46	1.0%
2	Kinney, William R.	31	0.7%
3	Nelson, Mark W.	28	0.6%
4	Koonce, Lisa	27	0.6%
5	Wahlen, James M.	26	0.6%
	Salamon, Gerald L.	26	0.6%
6	Kachelmeier, Steven J.	24	0.5%
7	Zimmerman, Jerold	23	0.5%
8	Maines, Laureen A.	22	0.5%
9	Basu, Sudipta	21	0.5%
	Bamber, Linda Smith	21	0.5%
10	Salterio, Steven E.	19	0.4%
	Pratt, Jamie H.	19	0.4%
	Kothari, S. P.	19	0.4%
	Dhaliwal, Dan	19	0.4%
	Bamber, Edward Michael	19	0.4%
11	Shores, D.	18	0.4%
	Peecher, Mark E.	18	0.4%
	Luft, Joan L.	18	0.4%
	Lipe, Marlys Gascho	18	0.4%
	Barth, Mary E.	18	0.4%
	Bowen, Robert M.	18	0.4%
12	Bloomfield, Robert J.	17	0.4%
13	Tubbs, Richard M.	16	0.4%
	Libby, Robert	16	0.4%
	Easton, Peter D.	16	0.4%
	Beaver, William H.	16	0.4%
14	Mills, Lillian F.	15	0.3%
	Schipper, Katherine	15	0.3%
	Hirst, D. Eric	15	0.3%
	Kennedy, Jane Jollineau	15	0.3%
	Brown, Lawrence D.	15	0.3%
15	Sprinkle, Geoffrey B.	14	0.3%
	Hopkins, Patrick E.	14	0.3%
	Balakrishnan, Ramji	14	0.3%
	Dijkman, Thomas R	14	0.3%
	Evans, John H.	14	0.3%
	Blacconiere, Walter G.	14	0.3%
16	Rajan, Madhav V.	13	0.3%
	Magee, Robert P.	13	0.3%
	Miller, Gregory S.	13	0.3%
	Hoffman, Vicky B.	13	0.3%
	Johnson, Bruce	13	0.3%

Rank	Name	Frequency	Percentage
	Burgstahler, David C.	13	0.3%
17	Warfield, Terry D.	12	0.3%
	Waymire, Gregory	12	0.3%
	Wright, Arnie	12	0.3%
	Sunder, Shyam	12	0.3%
	Pownall, Grace	12	0.3%
	Penman, Stephen H.	12	0.3%
	Ohlson, Jim	12	0.3%
	Lee, Charles M. C.	12	0.3%
	Dechow, Patricia M.	12	0.3%
	Baber, William R.	12	0.3%
18	Matsunaga, Steven R.	11	0.2%
	Rajgopal, Shivaram	11	0.2%
	McKeown, James	11	0.2%
	Reichelstein, Stefan	11	0.2%
	Moser, Donald V.	11	0.2%
	Francis, Jere R	11	0.2%
	Feltham, Gerald A.	11	0.2%
	Jorgensen, Bjorn N.	11	0.2%
	Kadous, Kathryn	11	0.2%
	Ali, Ashiq	11	0.2%
	Dichev, Ilia D.	11	0.2%
19	Sedor, Lisa M.	10	0.2%
	Petroni, Kathy R.	10	0.2%
	Jones, Christopher L.	10	0.2%
	Core, John E.	10	0.2%
	Ahmed, Anwer S.	10	0.2%
20	Stuart, Nathan	9	0.2%
	Sloan, Richard G.	9	0.2%
	Shields, Mike	9	0.2%
	Watts, Ross L.	9	0.2%
	Miller, Jeffrey S.	9	0.2%
	Omer, Tom	9	0.2%
	Ryan, Stephen G.	9	0.2%
	Matsumoto, Dawn A.	9	0.2%
	Hodder, Leslie	9	0.2%
	Huddart, Steven J	9	0.2%
	Kaplan, Stee	9	0.2%
	Ke, Bin	9	0.2%
	Felix, Bill	9	0.2%
	Christensen, Theodore E.	9	0.2%
	Bedard, Jean C.	9	0.2%
	Dopuch, Nick	9	0.2%
	Total		26.5%
	Distinct Individuals		1.763
	Distinct Acknowledgements		4.543

	1997-2000		2001-2004		2005-2009		Total	
Company	n	%	n	%	n	%	n	%
Panel A: Top Data Suppliers								
I/B/E/S International Inc.	7	33.3%	22	36.1%	25	31.3%	54	33.3%
Undisclosed	1	4.8%	7	11.5%	6	7.5%	14	8.6%
First Call		0.0%	5	8.2%	4	5.0%	9	5.6%
Zacks Investment Research	2	9.5%	2	3.3%	2	2.5%	6	3.7%
Graham, John		0.0%	1	1.6%	3	3.8%	4	2.5%
Arthur Andersen		0.0%	3	4.9%		0.0%	3	1.9%
Metrick, Andrew		0.0%		0.0%	2	2.5%	2	1.2%
Securities Data Corporation	2	9.5%		0.0%		0.0%	2	1.2%
Keefe, Bruyette, and Woods	2	9.5%		0.0%		0.0%	2	1.2%
Charter Oak Investment Systems Inc.		0.0%		0.0%	2	2.5%	2	1.2%
KPMG		0.0%	1	1.6%	1	1.3%	2	1.2%
Total								61.6%
Distinct Data Suppliers								73
Distinct Acknowledgements								162
Panel B: Mostly Acknowledged Financial Supporters								
Deloitte & Touche	7	6.7%	10	6.9%	15	7.5%	32	7.2%
PricewaterhouseCoopers	5	4.8%	7	4.9%	6	3.0%	18	4.0%
KPMG	11	10.6%		0.0%	5	2.5%	16	3.6%
Indiana University	6	5.8%	6	4.2%	3	1.5%	15	3.4%
Social Sciences and Humanities Research Council of Canada	4	3.9%	2	1.4%	6	3.0%	12	2.7%
University of Chicago	2	1.9%	4	2.8%	5	2.5%	11	2.5%
Stanford University	1	1.0%	5	3.5%	5	2.5%	11	2.5%
Arthur Andersen	3	2.9%	7	4.9%		0.0%	10	2.2%
Ernst & Young	2	1.9%	5	3.5%	3	1.5%	10	2.2%
University of Texas	1	1.0%	4	2.8%	5	2.5%	10	2.2%
Cornell University	1	1.0%	1	0.7%	7	3.5%	9	2.0%
University of Iowa	3	2.9%	2	1.4%	2	1.0%	7	1.6%
University of Alabama	3	2.9%	4	2.8%		0.0%	7	1.6%
University of Washington	2	1.9%	2	1.4%	3	1.5%	7	1.6%
Eugene and Dora Bonham Memorial Fund	1	1.0%	2	1.4%	3	1.5%	6	1.3%
University of North Carolina	2	1.9%	1	0.7%	3	1.5%	6	1.3%
University of Southern California		0.0%	2	1.4%	4	2.0%	6	1.3%
University of Texas at Austin	2	1.9%	2	1.4%	2	1.0%	6	1.3%
Hong Kong Research Council	1	1.0%	2	1.4%	2	1.0%	5	1.1%
American Institute of Certified Public Accountants	2	1.9%	2	1.4%	1	0.5%	5	1.1%
University of Pennsylvania	1	1.0%	2	1.4%	2	1.0%	5	1.1%
Australian Research Council	1	1.0%	2	1.4%	2	1.0%	5	1.1%

	1997-2000		2001-2004		2005-2009		Total	
Company	n	%	n	%	n	%	n	%
Total						48.9%		
Distinct Financial Supporters						170		
Distinct Acknowledgements								447

Appendix B: Research Topics & Methods

Name	Description
Panel A: Topics	
Auditing	Articles in the area of auditing and assurance.
Accounting Education	Articles dealing with any educational aspects of accounting, for example related to professional accountants, students, and pupils, but also institutions of education.
Financial Analysis	Articles in the area of financial accounting which focus on the users; it uses a set of methods to extract information from financial statements and other sources information and relate it to value of equity and debt investment and to interests of other stakeholders.
Financial Reporting	Submission in the area of financial accounting which focus on the preparers; it analyses the choices and methods concerning the preparation of financial statements, taking into account firm characteristics, accounting standards, as well as institutions.
Accounting and Governance	Articles, which relate to the interface between corporate governance and accounting.
Accounting and Information Systems	Articles in the area of the interface between accounting, information technology and systems.
Management Accounting	Articles in the area of management accounting and control systems.
Public Sector	Articles on accounting in the public and voluntary sectors.
Social and Environmental Accounting	Articles dealing with all aspects of social and environmental accounting.
Taxation	Articles on the subject of taxation.
Panel B: Methods	
Analytical/Modelling	Articles which discuss the definitions of and relationships among concepts; economic modelling is often used.
Case/Field Study	Articles, which utilize the case study method or conduct field, study research through various methodologies (e.g. ethnographies).
Empirical Archival	Articles which involve the testing of a statistical hypothesis to answer the research question (s); a database is normally used.
Experimental	Articles, which utilize an experimental design to address the research, question(s).
History	Articles which adopt an historical perspective, and investigate historical issues of accounting thought and practices.
Interdisciplinary/Critical	Articles that draw on more than one discipline, ideally exploring their interrelations, or that draw on any of the various strands of critical theory.
Market Based	Articles, which examine the relation between financial statement and other information and capital markets, including equity and debt markets.
Survey	Articles, which utilize a survey methodology to address the research, question(s).

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