

**Mandatory Audit Firm Rotation and Prohibition of Auditor-provided Tax  
Services – Evidence from Investment Consultants' Perceptions**

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# **Mandatory Audit Firm Rotation and Prohibition of Auditor-provided Tax Services – Evidence from Investment Consultants' Perceptions**

## **Abstract:**

Audit firm rotation instead of audit partner rotation and a restriction of non-audit services, especially on auditor-provided tax services, are discussed to improve auditor independence in appearance and investors' assessment of audit quality. For the first time, this study provides experimental evidence on the effects of the rotation system, the impact of non-audit services (i.e. auditor-provided tax services), and the interaction effect between both regulatory issues. Based on the assessment of 140 professional investment consultants from credit institutions, our results show that the provision of tax services by the audit firm decreases independence in appearance and perceived audit quality, while the rotation system does not induce a significant effect. Interestingly, an interaction effect between the rotation system and the provision of tax services by the auditor on the assessment of audit quality has been revealed. While the provision of tax services is perceived as reducing audit quality in an audit partner rotation setting, it improves perceived audit quality in an audit firm rotation setting. Besides the theoretical contribution, the practical implications of our findings, particularly on balancing regulatory measures in order to create a high audit quality environment, are discussed.

**Keywords:** audit quality, independence in appearance, experiment, audit firm rotation, auditor-provided tax services;

## 1. Introduction

This study investigates experimentally the effect of audit firm rotation versus audit partner rotation, the provision of an important type of non-audit services (i.e. tax services) versus a ban of non-audit services, and the interaction effect between both regulatory measures on auditors' independence and audit quality in professional investors' perceptions (i.e. investment consultants from banks).

The investors' perception of audit quality (i.e. the investors' perceived joint probability that a given auditor will both, detect a breach in the clients' accounting system, and report the breach; DeAngelo, 1981) is at the heart of the auditing function, since it determines the reliability of financial statements. A prominent discourse in auditing research argues that audit firm rotation instead of audit partner rotation and a prohibition of non-audit services is needed to sustain a high level of audit quality (e.g. Moore et al., 2006; Gavious, 2007). Although the debate on the role of auditor rotation and the provision of non-audit services goes back more than four decades (e.g. Metcalf Report, 1976), these policy issues are still highly topical. The US Government Accountability Office (GAO) asked for more research on audit rotation after issuing the Sarbanes Oxley Act (SOX) (GAO, 2003) and investigated auditor-provided tax services (GAO, 2005), revealing issues on audit quality and independence in appearance. Further, the Public Company Accounting Oversight Board has determined that it is appropriate to consider the impact of tax services on auditor independence (PCAOB, 2004a) and adopted rules for the provision of tax services (PCAOB, 2005)<sup>1</sup>. Only recently, the PCAOB raised the question of the need for mandatory audit firm rotation once again with the issuance of the *concept release on auditor independence and auditor rotation* (PCAOB 2011). Also the European Commission proposed mandatory audit firm rotation<sup>2</sup> and further restrictions on the provision of non-audit services to clients, such as the prohibition of auditor-provided tax services, as a measure to improve independence and audit quality (European Commission, 2010; European

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<sup>1</sup> According to PCAOB Rule 3522, audit firms impair their independence by marketing aggressive tax positions to clients.

<sup>2</sup> The European Commission (2011) proposed mandatory audit firm rotation after six periods, or nine periods in the case of joint audits.

Commission, 2011). This led to an ongoing debate on a European level<sup>3</sup>. Previous research left significant ambiguity on the impact of audit firm rotation and the provision of auditor-provided tax services on auditor independence and audit quality of public-interest entities (e.g. Quick, 2012). Furthermore, although previous literature argued that both regulatory measures, audit firm rotation and a restriction of non-audit services, might improve auditors' independence, though also decreasing auditors' client-specific expertise, an experimental investigation of joint effects on investors' assessment of auditor independence and audit quality has not taken place so far.

To examine the effects of the rotation system, the provision of non-audit services and interaction effects of both regulatory measures, we use an experimental design which has been well established by previous auditing research (Kaplan and Mauldin, 2008; Libby and Kinney, 2000; Gul, 1991). In a 2x2 between subject experiment, the rotation system and the provision of auditor-provided tax services are manipulated to investigate the assessment of auditors' independence and audit quality by professional investment consultants from banks. Our results indicate that auditor independence in appearance improves with a ban of non-audit services, while the rotation system does not impact significantly auditors' independence in appearance. Also, audit quality in investors' perception improves with a restriction of auditor-provided tax services, while the rotation system does not show a significant effect on perceived audit quality. Interestingly, we find that the improvement of audit quality, as perceived by professional investors, also depends on the rotation system. While audit partner rotation is perceived as leading to high audit quality in case tax services are not provided, audit firm rotation leads to higher perceived audit quality in case tax services are provided. We interpret these findings as showing that professional investors do not only take auditors' independence into account, but they also look for other factors (e.g. auditors' client-specific expertise) in their assessment of audit quality. In an audit firm rotation setting the provision of auditor-provided tax services might

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<sup>3</sup> The European Commission suggested prohibiting the provision of certain non-audit services which are fundamentally incompatible with the independent public-interest function of audit to their audited entities in all cases (black list), such as the provision of auditor provided tax-services, while for other non-services that are not fundamentally incompatible with the audit services, a pre-approval by the audit committee or the competent authority would be required (grey list). In contrast, other related financial audit services may be provided to audit clients (white list). The fees for such services shall be limited to no more than 10 % of the fees paid by the audited entity for the statutory audit. Furthermore, large audit firms shall not provide non-audit services to any public interest entity (European Commission, 2011). The Committee on Legal Affairs of the European Parliament suggested a maximum duration of the audit engagement of 14 years (European Parliament, 2013).

be advantageous since the auditor gains client-specific expertise through the provision of tax services, which mitigates the loss of knowledge due to the audit firm rotation, while economic incentives are kept low in an audit firm rotation setting. Our findings show that regulators must not only focus on auditors' independence (in appearance), but they have to balance regulatory measures in order to provide high audit quality for professional investors.

The present work contributes to scientific discourse and practice in several ways. First, our study uses an established experimental design, which allows for commensurability of the results. Second, while previous experimental research mainly based their investigations on non-professional investors (i.e. student subjects), our study uses real-world subjects. Beyond that, by investigating the assessment of professional investment consultants from credit institutions, we provide evidence for an important group of financial statement users which has been neglected by prior research. Since other investors pay for their advice and follow their suggestions in their investment decisions, the investment consultants' assessment of auditors' independence and audit quality can easily be assumed to trigger multiplier effects. Third, previous research on the impact of prohibiting non-audit services as well as audit partner and audit firm rotation on independence in appearance, or perceived audit quality, was mainly conducted in the US and other Anglo-Saxon countries. There is a lack of research regarding Continental European countries. Our paper analyses perceptions of Austrian investors and thus narrows this gap. Fourth, related contemporary research mainly performs archival studies and analyses capital market reactions whereas an experimental design is rarely applied (Hill, Booker, 2007; Davies, Hollie, 2008). Finally, as a consequence of numerous accounting scandals and the economic and financial crisis, the regulatory environment of auditing has changed substantially. Therefore, findings from the last millennium might not be informative for legislators and standard setters. Our study complements research results from archival studies through experimental evidence and thus extends insights into the effectiveness of the regulatory measures discussed to strengthen auditor independence and audit quality. Moreover, to the best of our knowledge, the interaction effect between the rotation system and the provision of non-audit services has not been subject to prior research. Therefore, our findings provide new evidence and direct implications for regulators.

The remainder of this paper proceeds as follows. Section 2 provides the theoretical framing on audit firm rotation, auditor rotation, and the provision of non-audit services as well as hypotheses development. Section 3 specifies the study design applied and section 4 shows the obtained results. Finally, section 5 discusses the findings against the backdrop of previous literature and presents the implications and limitations.

## **2. Theoretical background and hypotheses development**

### *The impact of audit firm rotation vs audit partner rotation on auditor independence and audit quality*

Audit firm rotation and audit partner rotation have different benefits and costs (Bamber and Bamber, 2009). The most important effect of audit firm rotation is the limitation of economic rents from an individual client for the audit firm (Jennings et al., 2006). The reduced economic incentives due to audit firm rotation are assumed to lead to higher auditor independence and as a consequence to higher audit quality. Further, while audit partner rotation induces the auditor only to undertake minor changes in the audit team and audit procedures, audit firm rotation means a new audit team will be installed, and a new audit methodology and additional procedures for new clients will be applied. According to Bamber and Bamber (2009), audit partner rotation only forestalls the familiarity threat between the audit partner and the boundary spanners of the clients, but does not prevent independence issues of the audit firm. Also Orin (2008) states that newly appointed audit partners would have practical, financial, and legal incentives to acquiesce in existing patterns of improprieties perpetuated by their predecessor partners. In contrast, newly appointed audit firms are thought to have opposite incentives. The auditor of a newly appointed audit firm would be motivated, from the perspective of both self-preservation and natural competitiveness, to disclose and attempt to correct problems from the former auditor (Orin, 2008), which induces also the former auditor to improve audit quality beforehand.

On the other hand, audit firm rotation leads to a greater loss of company-specific knowledge than audit partner rotation, which might affect audit quality negatively.<sup>4</sup> Although previous literature proposed an implementation of smooth transition processes between the entering audit firm and the retiring audit firm (Sanders et al., 2009; Gaviious, 2007), these measures might not be sufficient to offset any negative effects due to higher fluctuation of the audit team, and the more frequent start-up phases, where the auditor has to familiarize himself with the client business (Orin, 2008).

The impact of audit firm rotation vs audit partner rotation on the assessment of auditor independence and audit quality has been in the focus of numerous studies. Particularly, archival studies have been used to examine the relationship between audit tenure on investors' perception of audit quality (proxied by earnings response coefficients and costs of financing). These studies came up with mixed results (e.g. Gosh and Moon, 2005; Mansi et al., 2004; Boone et al., 2008), not allowing for clear implications. Since archival studies derive their inferences on the rotation system mainly from their findings on audit tenure in non-mandatory rotation environments, their results also might not be applicable to a regime with mandatory auditor rotation (Gosh and Moon, 2005).

Although experiments might be an effective tool to investigate effects induced by mandatory audit firm rotation vs audit partner rotation, only little experimental research has focused on the impact of the rotation system so far. Gates et al. (2007) report from an experiment with MBA and law students that audit firm rotation increased the confidence in reported earnings. Contrarily, Kaplan and Mauldin (2008) conclude from another experiment with MBA students that non-professional investors' assessment of auditor independence and audit quality does not increase with audit firm rotation. Jennings et al. (2006) find from an experiment with 49 judges that auditor independence in appearance is higher in an audit firm rotation environment, independently of the level of corporate governance in an audit partner rotation system. To the best of our knowledge an analysis of professional investors' assessment has not taken place so far.

Since Daniels and Booker (2009) report from an exploratory study that loan officers perceive audit firm rotation to significantly improve auditors' independence, and also other commentators

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<sup>4</sup> For an intensive discussion of pros and cons with regard to audit firm rotation see e.g. Arrunada and Paz-Ares (1997), Brody and Moscove (1998), and Catanach and Walker (1999).

argue that only mandatory audit firm rotation ensures a high level of perceived auditor independence and audit quality (Bazerman et al. 1997; Gaviious, 2007; Moore et al., 2006), we set up our hypotheses as follows

*Hypothesis 1a: Auditor independence in professional investors' assessment is higher in case the audit firm is rotated instead of the audit partner.*

*Hypothesis 1b: Audit quality in professional investors' assessment is higher in case the audit firm is rotated instead of the audit partner.*

#### *The impact of auditor-provided tax services on auditor independence and audit quality*

Auditor-provided tax services are an important type of non-audit services for audit firms (Maydew, Shackelford, 2005). The provision of non-audit services is believed to have several potentially negative effects on auditor independence and audit quality. According to Francis (2004), audit quality will always be somewhat suspect if other services are provided that are perceived to potentially compromise the auditor's objectivity and scepticism. One of the major threats of the provision of non-audit services is the higher exposure of the auditor to the bargaining power of the client. As the auditor becomes economically more dependent on the client, it is in the auditor's self-interest to prolong the mandate, maybe even at the cost of auditor independence (self-interest threat). Non-audit services also entail the threat that auditors review their own work performed for the client. In that case the auditor can easily be assumed to have a lower level of professional skepticism (Johnstone et al. 2001). As further negative factors that might jeopardize auditor independence and audit quality, the familiarity threat (Quick, 2012), and the advocacy threat (Firth, 2002) have been discussed in prior literature.

In contrast, it has been theorized that non-audit services enhance audit effectiveness, as knowledge is gained from consulting services and transferred to the audit task (knowledge spillover or theory of economies of scope). Via consulting services the auditor gets more familiar with the client company and this enables the auditor to perform the audit task better (Joe and Vandervelde, 2007) or at lower costs (Antle et al., 2006).



A large number of studies investigated the effect of the provision of non-audit services on the assessment of auditor independence and audit quality using surveys (e.g. Chien and Chen, 2005; Quick and Warming-Rasmussen, 2005; Quick and Warming-Rasmussen, 2009; Dart, 2011), archival data (e.g. Frankel et al., 2002; Ashbaugh et al., 2003; Raghunandan, 2003; Brandon et al., 2004; Mishra et al., 2005; Krishnan et al., 2005; Francis and Ke, 2006; Gul et al., 2006; Higgs and Skantz, 2006; Khurana and Raman, 2006; Lim and Tan, 2008; Lai and Krishnan, 2009; Chahine and Filatotshev, 2011) and experiments (e.g. Patel and Psaros, 2000; Swanger and Chewning, 2001; Jenkins and Krawczyk, 2002; Hill and Booker, 2007; Davis and Hollie, 2008; Meuwissen and Quick, 2009). These studies came up with ambiguous results on the effect of non-audit services on the perception of auditors' independence and audit quality. Although there are mixed results, recent literature reviews conclude that the majority of these studies find non-audit services to have an adverse effect on auditors' independence in appearance and the perception of audit quality (Quick, 2012; Habib, 2012).

Since different types of non-audit services might have different effects, previous literature has examined the provision of tax services by the auditor specifically. Beyond the effects generally ascribed to non-audit services, auditor-provided tax services have been found to have distinct implications. However, the discussion of these implications came up with opposing arguments. On the one hand, it has been argued that auditor-provided tax services might be less likely to decrease auditor independence and audit quality, since tax services do not directly affect the accounts where most mis-statements originate (Gleason, Mills, 2011). On the other hand, Omer et al. (2006) state that tax services can provide a direct impact on client income and cash flows in contrast to other types of non-audit services. Further, since tax services are rather routine tasks, previous literature has argued that the providers of such services are easily replaceable and therefore auditor independence is lower than compared to non-routine services (Pany and Reckers, 1983; Goldman, Barlev, 1974). Quick, Meuwissen (2009) provide evidence from supervisory board members that auditor-provided tax services are seen as less threatening compared to other types of non-audit services.

Previous research on the effects of auditor-provided tax services on audit quality mainly did not find a negative effect, indicating that tax services are less threatening to auditor independence in

fact and audit quality (Kinney et al., 2004; Cook et al., 2008; Robinson, 2008; Seetharaman et al., 2011; Krishnan and Visvanathan, 2011; Cook and Omer, 2013).<sup>5</sup> However, previous studies, which investigated the impact of auditor-provided tax services on auditors' independence in appearance and perceived audit quality, which is in the focus of this study, have shown ambiguous results on the impact of auditor-provided tax services. The findings of Fortin and Pittman (2008) show that bondholders reward public firms that pay proportionately more tax fees to their auditor with lower yield spreads. Also the results of Krishnan et al. (2013) indicate that the value-relevance of earnings increases with the ratio of tax fees over total fees paid to the auditor, suggesting that investors perceive auditor-provided tax services to be positively related with perceived audit quality. In the same vein, Cook and Omer (2013) show evidence that debt and equity markets view dismissals of auditors as tax-service providers negatively. On the other hand, the GAO (2005) reported from interviews with firm representatives that the threat of lower audit quality and the threat of decreased independence in appearance led them to stop obtaining tax services from the auditor. Also Maydew and Shackelford (2005) report that the market in auditor-provided tax services undertakes a dramatic shift away from obtaining tax services from one's auditors, because auditor-provided tax services have come under increased scrutiny from financial statement users. Evidence on a negative impact of auditor-provided tax services on independence in appearance and perceived audit quality have been shown by the following studies: Mishra, Raghunandan, Rama (2005) show that the tax fee ratio has a positive association with the proportion of votes against auditor ratification. Also the study of Thornton and Shaub (2013) reports from an experiment with 168 jurors that audit quality is perceived as significantly lower when the audit firm provided aggressive tax-planning services to a client. However, they did not find a significant difference between when the audit firm provided tax compliance services and where the audit firm did not provide tax services.

Against the backdrop of ambiguous results regarding the impact of auditor-provided tax services on independence in appearance and perceived audit quality, we set up our hypotheses in line with the concerns of regulators (e.g. European Commission, 2010, 2011) that auditor-provided tax

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<sup>5</sup> However, negative results were reported e.g. by Elder et al. (2008);

services might decrease auditors' independence in appearance and perceived audit quality. Thus, the hypotheses are formulated as follows:

*Hypothesis 2a: Auditor's independence in appearance in professional investors' assessment is lower in case auditor-provided tax-services are rendered.*

*Hypothesis 2b: Audit quality in professional investors' assessment is lower in case auditor-provide tax-services are rendered.*

*The interaction effect between the rotation system and auditor-provided tax services*

As regulators are discussing to implement both regulatory measures, a restriction of auditor-provided tax services and audit firm rotation, jointly, it might be relevant to consider interaction effects. Based on prior literature, the following interdependencies between audit tenure and the provision of non-audit services can be expected:

The main argument for both regulatory measures is the reduction of economic incentives in order to increase auditors' independence (e.g. Francis, 2004; Jennings et al., 2006). However, since the same effect in terms of economic incentives is addressed, it is questionable whether the implementation of both regulatory measures leads to additional benefits for auditors' independence in appearance. Economic incentives induced by auditor-provided tax services can be assumed to be mainly relevant in an audit partner rotation setting and might have an inferior effect in an audit firm rotation setting. Stefaniak et al. (2009) identified non-audit services as a factor that potentially hinders auditor resignation for profitability reasons. Also Ye, Carson, Simnett (2011) state that incumbent audit firms receiving high levels of non-audit services from their clients may be less likely to resign from such a relationship. Since audit firm rotation mandatorily interrupts audit firm tenure, the economic incentives induced by non-audit services might be alleviated by audit firm rotation. An audit partner rotation setting would not put a stop to the rents from a client firm and therefore non-audit services might bring greater economic incentives in such an environment.

Contrarily, auditor-provided tax services have also been found to increase auditors' client specific expertise. Auditors' knowledge on clients' business and clients' risks is critical for high-quality audits. Since audit firm rotation causes a lessened level of client-specific knowledge, the

provision of auditor-provided tax services might help the auditor to alleviate negative effects on his/her expertise due to audit firm rotation.

Thus, a combination of audit firm rotation and a ban of auditor-provided tax services might not lead to higher auditor independence in appearance since economic incentives are alleviated with just one regulatory measure and, in terms of auditors' expertise, audit quality might even be lessened due to adverse combination effects. We therefore set up the following hypotheses:

*Hypothesis 3a: The combination of both regulatory measures, audit firm rotation and the ban of non-audit services, does not lead to higher independence in appearance in professional investors' assessment.*

*Hypothesis 3b: The combination of both regulatory measures, audit firm rotation and the ban of non-audit services, leads to decreased audit quality in professional investors' assessment.*

### **3. Research Design**

#### **a. Procedure and task**

We conducted a 2x2 between-participants online experiment that manipulates the level of non-audit services (2 conditions: tax services provided by the auditor, no non-audit services provided) and auditor rotation (2 conditions: audit firm rotation, audit partner rotation). To provide for commensurability of the results, we adapted the experimental design from prior research (Kaplan, Mauldin 2008; Libby, Kinney, 2000; Gul, 1991). Although the experimental design has been applied in prior studies with high values on task realism, the case material was pretested with 5 Austrian investors and 3 Austrian auditors to ensure that the study design is also suitable for the selected environment and that it contains the right technical terms. In the course of the pretests only minor verbal changes have been made.

First, the questionnaire provided a few demographic questions. Subsequently, the participants were provided with a short case of an audit of a company. Constant over all treatments, the case material described a medium-sized publicly traded auto parts manufacturer, Capital Auto Parts, Inc. (CAP), and its company details. Pre-audit information was given on sales, financial statement balances, inventories, net earnings, earnings per share (EPS) and analysts' consensus forecast. The

case delineated a setting where investors are to expect high standards of corporate governance. Beyond the information on the listing of CAP it was specified that an audit committee had been established at CAP. Regarding the audit firm, the participants were informed that the audit has been conducted by a Big4 audit firm for five years. Furthermore it was pointed out that the audit firm discovered a single misstatement due to an accounting estimate of the inventory obsolescence allowance: “The auditor believes that the recorded allowance is outside a reasonable range by an amount that overstates current earnings per share by € .03”. In accordance with Kaplan and Mauldin (2008) and Libby and Kinney (2000), the case was designed such that under traditional benchmarks the audit difference would be considered quantitatively immaterial. It was specified that the deviation represented less than 3% of earnings, less than 1% of inventory, and less than .3% of the total assets. However, the full correction of the overstated pre-audit earnings would lead to the fact that the company missed analysts’ forecasts of € 1.09 EPS by € .02, providing management with an incentive not to correct the misstatement.

After reading the case materials the participants were asked to assess their perception of (i) the auditor’s independence and (ii) audit quality. Regarding auditors’ independence in appearance the participants had to answer a direct question on the independence of the auditor on a seven-point Likert scale anchored by “low independence” (coded 1) and “high independence” (coded 7). To assess the perceived audit quality, the participants had to indicate the “most likely EPS amount CAP would finally report in the audited financial statements for the year”, ranging from € 1.07 (all the audit difference corrected) to € 1.10 (none of the audit difference corrected) in an interval of € .01.

#### **b. Treatment variables**

The participants were randomly assigned to one of two conditions of the level of auditor-provided tax services and the audit rotation system. For the treatment in the case of a high level of auditor-provided tax services, the case provided the following information: “Beyond the audit the audit firm also rendered tax advisory services to CAP. The fees for these services amount to 60% of the total audit fees”. The value of 60% auditor-provided tax service fees on total audit fees exceeds a threshold, where investors can be expected to perceive a high importance of non-audit services (SEC, 2000; Quick, Warming-Rasmussen, 2005; Quick, Warming-Rasmussen, 2009). Previous literature reported non-audit services ratios in practice to account even for a higher percentages of total audit

fees (e.g. Gleason and Mills, 2011; Knechel and Sharma, 2012). According to the investigation of Maydew, Shackelford (2005), for the years 2002 to 2003 the tax to audit ratio was between .47 and .71. The ratio of .60 tax to audit fees used in the experimental case can therefore be assumed to be within a realistic range. The treatment of no auditor-provided tax services specified that “according to company policy of CAP the audit firm must not render any non-audit services to CAP”.

For the treatment on rotation, two different conditions were implemented: (i) audit partner rotation, and (ii) audit firm rotation. In both treatments, the case delineated that it is the year prior to the rotation. This procedure and the statements specifying the conditions concur with prior research (Kaplan and Mauldin, 2008). In the audit partner rotation it was stated that “CAP has been audited by the same audit firm and the same auditor for 5 years. According to company policy the auditor will be rotated in the following year, while the audit firm is envisaged to be retained”. In the audit firm rotation condition the following information was provided: “CAP has been audited by the same audit firm and the same auditor for 5 years. According to company policy the audit firm will be changed in the following year.”

To ensure the validity of the experimental design, comprehension questions on the case and the treatments were included. The first question addressed the comprehension of management’s incentive to reach analysts’ forecast: “If the management fully corrects the misstatement, EPS will be below analysts’ forecast”. Further questions targeted the participants’ understanding of the treatment variables, auditor rotation, audit firm rotation and the provision of tax services by the audit firm.

### **c. Participants**

Participants of the experiment were investment consultants of credit institutions in Austria. In a first step, all investment consultants of credit institutions, which were listed with names on the web pages of credit institutions’ local affiliates, (n=981) were contacted by telephone between April to June 2013. Those 315 who agreed to participate in the survey received a mail with an invitation to participate in the survey and an online link. To start the online experiment the participants had to follow this link. Pressing the link activated a program with a random generator in the background that ensured that the participants were randomly assigned to one case. 223 responded to the invitation by filling out the online survey. However, only 170 participants answered all questions. Dropping further

those who answered the questions on the manipulation checks inappropriately, the final sample comprised 140 participants. Hence, the return rate based on the total sample equals 14.27%. Compared to other studies who examined professional participants the return rate as well as the total number of participants is satisfactory. We further examined the dataset for potential non-response bias (Rogelberg and Stanton, 2007) and did not find any notable systematic bias.

Table 1 presents the demographic profile of the 140 participants of the final sample.

(insert TABLE 1 about here)

The mean age of the participants was 43.21 (STD=10.18) and the mean work experience was 20.62 years (STD=11.76). The self-assessment on competence in financial reporting resulted in a mean score of 5.07 (STD=1.39), which strongly exceeds the middle point of the scale. The examination of systematic differences across treatment conditions was negative on a 10%-level, indicating that the randomization process worked effectively.

#### **d. Institutional Setting**

The participants of our study are professional investment consultants from Austrian credit institutions. Since investment consultants usually deal with investment decisions on an international level, the participants' knowledge on audit regulation might be not limited to the domestic market. However, at least their educational background can be expected to be rooted in an Austrian environment and therefore a greater familiarity with the Austrian setting has to be assumed.

Generally, as a member of the European Union, Austria bases its audit regulations on European statutory provisions. Although the European provisions leave discretion for the member states on the specific details of the regulation, the 8th EU directive requires the member states at least to implement a partner rotation requirement and also the provision of non-audit services is permitted only on a restricted basis. Some characteristics of Austria's institutional setting are notable for our study.

First, regarding the rotation requirements Austria opted for an audit partner rotation for public interest companies on a 5-year basis. In line with most countries worldwide, an audit firm rotation requirement has not been implemented.<sup>6</sup>

Second, regarding the provision of non-audit services for public-interest entities, Austria's regulation adopted the principle-based rule of the 8th EU directive. According to Austrian law, those services that cause a self-review threat are strictly forbidden. The provision of tax advisory services is only allowed to the extent they refer to the presentation of structuring alternatives. They must not directly and materially affect the presentation of financial statements. However, in Austria (equally to Germany) financial accounting income and taxable income are more closely related compared to Anglo-Saxon countries. According to the authoritative principle (the so called *Maßgeblichkeitsprinzip*), the financial statements form an authoritative basis for the tax accounts in the absence of rules specific to the contrary. Although the admissibility of auditor-provided tax services therefore might be a contentious issue for Austrian audit firms, auditor-provided tax services are an important source of income for audit firms in Austria.<sup>7</sup> Austria's special setting in terms of the closer relationship between the financial accounts and the tax accounts can be expected to intensify the effects of auditor-provided tax services: On the one hand, investors might perceive a potential knowledge-spillover effect more strongly, since the knowledge gained on tax services is more easily applicable in the audit procedure in the Austrian setting. On the other hand, the stronger link between the financial accounts and the tax accounts might also increase the threat of a self-review of the auditor.

Third, Austria has a two-tier system, in which the executive board is responsible for the management of the company and the supervisory board, which is composed of various stakeholders, appoints and monitors the executive board. The supervisory board also hires the auditor and examines the annual financial statements. Previous research stated that investors might be less concerned about auditors' independence in a two-tier system, because they tend to rely on the monitoring performed by

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<sup>6</sup> Austria implemented mandatory audit firm rotation in 2004. However, the regulation was repealed before it became effective.

<sup>7</sup> E.g. in the year 2011/12 consulting services of Deloitte Austria accounted for 63% of total sales; 62% of all advisory services were tax advisory services.



the supervisory board (Quick and Warming-Rasmussen, 2009). However, the supervisory board strongly relies on the auditor's monitoring task, which brings again auditor independence and audit quality to the fore (Köhler et al., 2008). Additionally, in Austria it is also more difficult for investors to sue auditors for damages associated with misstated financial statements compared to Anglo-Saxon jurisdictions (Weber et al., 2008). Civil liability of Austrian auditors is characterized by a liability cap and limited liability to third parties like shareholders (Quick and Warming-Rasmussen, 2009). Therefore, investors can be expected to focus more strongly on companies' policies related to auditor independence and audit quality.

Overall it can be noted that Austria's institutional setting is quite similar to other continental European countries (Germany: Quick and Warming-Rasmussen, 2009; France: Baker et al., 2008; Spain: Garcia-Benau et al., 2008; Belgium: Vanstraelen and Willekens, 2008). Therefore, the findings of this study may be valid for other countries, too. The special characteristics of the relationship between financial accounts and tax accounts in the Austrian environment offer the possibility to investigate the effects of auditor-provided tax services in a reinforcing environment. However, the findings must be interpreted by taking into account the special framework Austrian investors are embedded in.

#### **4. Results**

Independence in appearance and perceived audit quality have been examined as dependent variables. Table 2 and 3 shows the descriptive results regarding independence in appearance (assessment of auditor's independence) and audit quality (assessment of most likely (audited) reported earnings per share (EPS)). The highest mean value of independence in appearance appears in the audit firm rotation setting with no non-audit services (mean=4.829). Although this result is as expected, it shows that the treatment with audit partner rotation where no tax services are provided leads to a similar value (mean=4.790). The lowest mean value results in the audit partner rotation setting with auditor-provided tax services (mean=3.389).

Interestingly, the results on assessed audit quality differ distinctly from investors' assessment of auditors' independence in some cases. The highest value of audit quality (lowest value of most

likely (audited) reported EPS) is also obtained in the audit partner rotation setting with no non-audit services provided and in the audit firm rotation setting with auditor-provided tax services (mean=1.078). While independence in appearance shows the highest values in case non-audit services are not provided, the investors' assessed audit quality increases in case tax services are provided in an audit firm rotation setting. Consistent with the assessment of auditors' independence, the lowest value of audit quality (highest value of most likely (audited) reported EPS) results in the audit partner rotation setting with auditor-provided tax services (mean=1.087).

(insert TABLE 2, 3 about here)

To test our hypotheses ANOVA is employed.

(insert TABLE 4, 5 about here)

(insert Figure 1, 2 about here)

Regarding H1a, investors' assessment of auditor independence is compared in the audit firm rotation setting and the audit partner rotation setting. It shows that with audit firm rotation investors perceive a higher level of auditor independence. Although this result is in line with our hypothesis, H1a cannot be confirmed, since the difference is not significant ( $p=.253$ ). For H1b investors' assessment on most likely reported audited EPS is examined. Again, investors perceive higher audit quality in case of audit firm rotation. However, since the difference is (marginally) not significant ( $p=.115$ ) H1b cannot be confirmed either.

Regarding H2a, results show that investors perceive higher auditor independence in case no auditor-provided tax services are performed. Since the difference is highly significant ( $p=.000$ ), H2a can be confirmed. H2b can also be confirmed, since investors perceive higher audit quality in case auditor-provided tax services are not provided and the difference is weakly significant ( $p=.097$ ).

Regarding the interaction effect between auditor-provided tax services and audit firm rotation, results show that the assessment of auditor independence in appearance is not significantly affected ( $p=.326$ ). Since we hypothesized that both regulatory measures might not have an additional positive effect on auditors' independence in appearance, H3a can be confirmed. In terms of audit quality the findings show that investors assess higher audit quality in case tax services are provided by the auditor

in an audit firm rotation setting than in an audit partner rotation setting. The prohibition of non-audit services in an audit firm rotation setting lessens audit quality. The interaction effect is highly significant ( $p=.007$ ). Thus H3b can also be confirmed.

## **5. Discussion and Conclusion**

The study investigated the effects of two regulatory measures, recently discussed by regulators in order to achieve higher auditor independence and higher audit quality: Audit firm rotation and a ban of auditor-provided tax services. Our results indicate that auditor independence in appearance improves with a prohibition of non-audit services, while audit firm rotation does not improve investors' assessment of auditors' independence significantly. The findings on auditor-provided tax services on auditor independence in appearance confirm arguments in literature, according to which these services produce (at least in investors' perceptions) high incentives for auditors to decrease their independence (e.g. Francis, 2004; Thornton and Shaub, 2013). Our results on audit firm rotation are in line with findings of prior literature (e.g. Kaplan and Mauldin, 2008), which showed that audit firm rotation does not impact the level of perceived auditor independence significantly.

Investors' assessment of audit quality also improves with a ban of non-audit services. This result indicates that at least in professional investors' perception the negative effects, particularly the assessment of lower auditor independence, due to the provision of tax services by the auditor, outweigh any positive effects (e.g. knowledge spillover effects). While this result is in line with the general concerns that non-audit services decrease perceived audit quality (e.g. Maydew and Shackelford, 2005; Mishra et al., 2005), it questions the results of recent archival studies showing a positive effect on investors' perception of audit quality (Fortin and Pittman, 2008; Krishnan et al., 2013; Cook and Omer, 2013). Furthermore, although the rotation system does not significantly impact the assessment of audit quality, we find a significant interaction effect between non-audit services and the rotation system. According to this, professional investors do not perceive that a ban of non-audit services leads to higher audit quality in all cases. Instead, audit firm rotation is perceived as producing higher audit quality in case tax services are provided by the auditor. Contrarily, audit partner rotation produces high audit quality in case non-audit services are not provided. This shows that professional

investors do not only take auditors' independence into account, but they also look for other factors in their assessment of audit quality. One potential explanation might be that both, a restriction of non-audit services and audit firm rotation lead to reduced client-specific expertise of the auditor. Therefore, in an audit firm rotation setting investors might perceive it as advantageous that client-specific expertise is gained by the auditor in the course of providing tax services.

For regulators our findings show that an increase in auditor independence in appearance does not automatically lead to higher audit quality in professional investors' perceptions. Instead, professional investors differentiate obviously between auditor independence and audit quality. Since, regulators aim at a high level of audit quality, the interaction effect between the audit rotation system and the provision of non-audit services (i.e. auditor-provided tax services) should be taken into account. Based on our findings, regulators might consider either a restriction of auditor-provided tax services in an audit partner rotation environment or the permission of auditor-provided tax services in an audit firm rotation setting. The implementation of both regulatory measures (audit firm rotation and a restriction of auditor-provided tax services) at the same time might not lead to higher audit quality in professional investors' perception.

However, the conclusions must be interpreted by taking the study's limitations into account. As with all experimental research, this study uses a scenario which is more simplistic than situations in the real world. In the case used for the experiment, the client was a car parts manufacturer and it is possible that the provision of advisory services to clients from other industries results in different independence and quality perceptions. In addition, our case refers to a specific economic situation of the client and subjects might have different perceptions e.g. regarding financially distressed companies. Furthermore, the audit firm rendered tax advisory services and we cannot claim that other services would lead to similar perceptions. Moreover, we analysed the year before a rotation took place and findings could be different for earlier stages of the rotation cycle. Finally, the participants in our study were investment consultants from Austria. We cannot prove that other stakeholders or shareholders from other countries have identical independence and quality perceptions. As a consequence, our findings are valid in our experimental setting but we cannot prove generalizability. On the other hand, task realism has been confirmed in pretests of the research design and the design

has been used several times in prior research. Thus, we are confident that the investors view the tasks as coherent abstractions of the real world.

Additionally, it has to be noted that the participants in our study have not been paid. Rewards lead to more participation (Patel et al., 2003), should attract those who are motivated by more extrinsic reasons, thus provide a sample that is more representative regarding motivational characteristics (Sharp et al., 2006), and may enhance subjects' motivation and performance (Cameron et al., 2001). On the other hand, some researchers argue that incentives commonly make no difference (Camerer and Hogarth, 1999) or even that negative effects of rewards are pervasive (Deci et al., 1999), because they could destroy people's intrinsic motivation (Pierce et al., 2003). We also have to acknowledge that our study design does not account for cost effects and potential market effects due to the rotation system and the regulation on non-audit services, which have to be considered by regulators.

These limitations point out avenues for future research, i.e. subsequent research projects could use other experimental settings and analyse different types of consulting activities. Beyond that, it would be of interest to investigate the concrete reasons for the interaction effect identified and to analyse whether there are similar interactions between alternative means for the strengthening of auditor independence.

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Table 1

Profile of 140 Participants

	Mean	STD	Minimum	Maximum
Age	43.21	10.18	24.00	63.00
Years of professional work experience	20.62	11.76	0	44.00
Gender (0=female, 1=male)	.80	.81	0	1
Competence in financial reporting (1-7 point Likert scale)	5.07	1.39	1.00	7.00
Prior experience as a CEO (1=yes, 0=no)	.16	.37	0	1
Prior experience as a supervisory board member (1=yes, 0=no)	.12	.33	0	1
Prior experience as an audit committee member (1=yes, 0=no)	.11	.32	0	1

Table 2

Analysis of auditor rotation system and the provision of tax services on independence in appearance <sup>a</sup>

## Descriptive Statistics

Provision of tax services	Auditor Rotation		
	Partner Rotation	Audit Firm Rotation	Overall
No non-audit services	N	N	N
	Mean	Mean	Mean
	(STD)	(STD)	(STD)
	38	35	73
	4.790	4.829	4.808
	(1.143)	(1.200)	(1.1626)
auditor-provided tax services (60% of total audit fees)	N	N	N
	Mean	Mean	Mean
	(STD)	(STD)	(STD)
	36	31	67
	3.389	3.903	3.627
	(1.644)	(1.660)	(1.659)
Overall	N	N	N
	Mean	Mean	Mean
	(STD)	(STD)	(STD)
	74	66	140
	4.108	4.394	4.243
	(1.566)	(1.497)	(1.536)

<sup>a</sup> Auditor independence in appearance has been measured with a direct question on a 7-point Likert scale anchored by “low independence” (coded 1) and “high independence” (coded 7). A high value indicates high auditor independence.

Table 3

Analysis of auditor rotation system and the provision of tax services on most likely (audited) reported EPS<sup>a</sup>

## Descriptive Statistics

Provision of tax services	Auditor Rotation		
	Partner Rotation	Audit Firm Rotation	Overall
No non-audit services	N	N	N
	Mean	Mean	Mean
	(STD)	(STD)	(STD)
	38	35	73
	1.078	1.080	1.079
	(.012)	(.012)	(.012)
auditor-provided tax services (60% of total audit fees)	N	N	N
	Mean	Mean	Mean
	(STD)	(STD)	(STD)
	36	31	67
	1.087	1.078	1.083
	(.013)	(.011)	(.013)
Overall	N	N	N
	Mean	Mean	Mean
	(STD)	(STD)	(STD)
	74	66	140
	1.082	1.079	1.081
	(.013)	(.012)	(.013)

<sup>a</sup> Most likely (audited) reported earnings per share (EPS) has been measured from € 1.07 (all the audit difference corrected) to € 1.10 (none of the audit difference corrected) in an interval of € .01. A high value indicates low audit quality.

Table 4

Analysis of auditor rotation and the provision of auditor-provided tax services (NAS) on independence in appearance <sup>a</sup>

GLM ANOVA	df	F	Prob.	Hypothesis
Auditor rotation	1	1.320	.253	1a
Provision tax services	1	23.318	.000	2a
Auditor rotation by provision of auditor-provided tax service	1	.973	.326	3a
Error	136			

<sup>a</sup> Auditor independence in appearance has been measured with a direct question on a 7-point Likert scale anchored by “low independence” (coded 1) and “high independence” (coded 7).

Table 5

Analysis of auditor rotation and the provision of non-audit services (NAS) on most likely reported audited EPS<sup>a</sup>

GLM ANOVA	df	F	Prob.	Hypothesis
Auditor rotation	1	2.520	.115	1b
Provision of tax services	1	2.790	.097	2b
Auditor rotation by provision of tax services	1	7.602	.007	3b
Error	136			

<sup>a</sup> Most likely (audited) reported earnings per share (EPS) has been measured from € 1.07 (all the audit difference corrected) to € 1.10 (none of the audit difference corrected) in an interval of € .01.

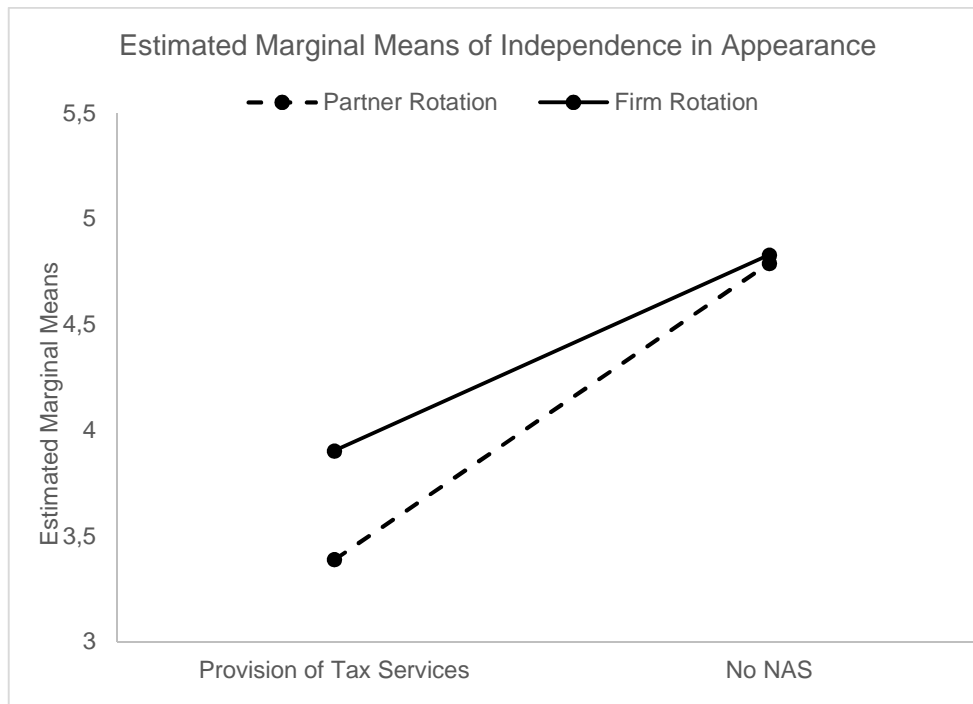


Figure 1: ANOVA analysis of the provision of non-audit services (NAS) and the rotation system on auditor independence in appearance (independence in appearance has been measured with a direct question on a 7-point Likert scale anchored by “low independence” (coded 1) and “high independence” (coded 7); a high value indicates high auditor independence)

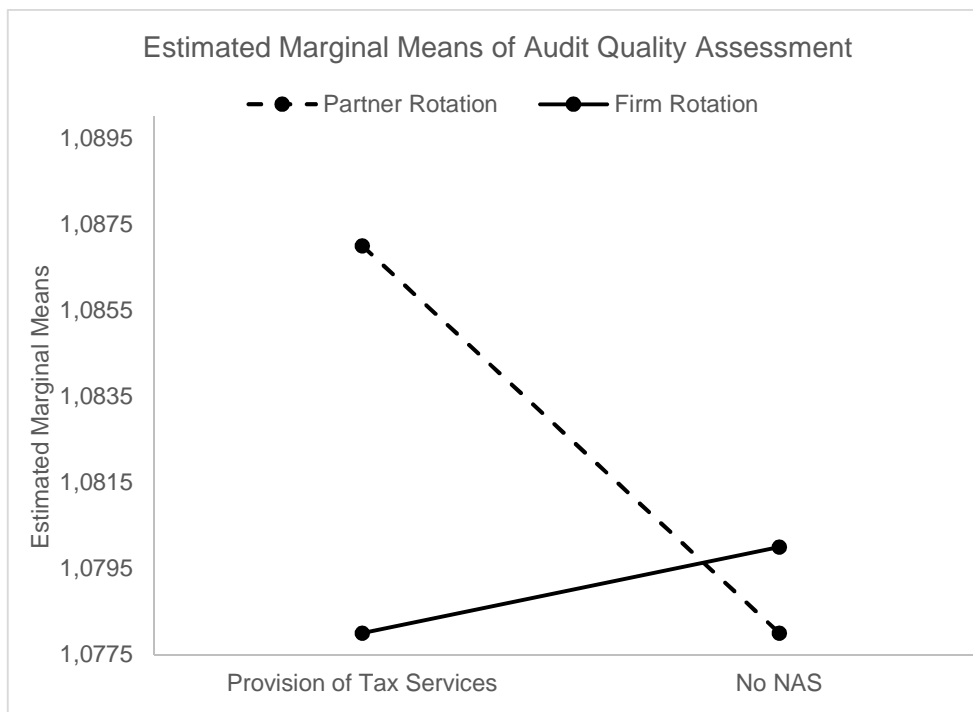


Figure 2: ANOVA analysis of the provision of non-audit services (NAS) and the rotation system on most likely (audited) reported EPS (measured from € 1.07 (all the audit difference corrected) to € 1.10 (none of the audit difference corrected) in an interval of € .01; a high value indicates low audit quality)