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# CAN OVERSIGHT MITIGATE AUDITOR'S MOTIVATED REASONING? AN EXPERIMENTAL STUDY\*

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**ABSTRACT:** *Evidence of auditors' failure to provide an independent opinion has reopened debates on measures to ensure auditor independence. We examine the effectiveness of oversight on two prominent determinants of auditor's biased opinion – financial incentives and a personal relationship with the client. We conduct a between-subject experiment involving an accounting choice task. We find a significant effect of a personal relationship on the auditor's choice after controlling for financial incentives. Oversight has a significant negative effect on auditor's choice arising from financial incentives, whereas a personal relationship significantly reduces the effectiveness of oversight. Our results show that, in addition to oversight, other solutions that break up personal ties are needed to ensure auditor independence.*

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**Keywords:** *auditing, bias, financial incentives, motivated reasoning, oversight, personal relationship*

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**JEL Classification:** M48, M42

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## 1. INTRODUCTION

The recent global financial crisis has shaken users' confidence in financial statements (Sikka, 2009; Richard, 2008). Sikka (2009) reports that many distressed financial institutions in different countries received unqualified audit opinions on their financial statements just prior to publicly declaring financial distress. Prior to the financial crisis, the accounting profession underwent a profound regulatory reform in the U.S. (Sarbanes-Oxley Act of 2002) as well as in the EU (Directive 2006/43/EC). One of the most radical measures of the reforms was the introduction of public oversight. It was expected that effective public oversight would mitigate the negative effects of auditor dependence. Recent evidence shows that the quality of auditing and the quality of financial reporting have improved

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since the Sarbanes-Oxley Act was passed (DeFond & Lennox, 2011; Carcello et al., 2011; Chambers & Payne, 2011).

In spite of these positive developments, new regulatory debates have been initiated due to a continuing concern that the last regulatory changes did not succeed in effectively enforcing auditor independence and mitigating the vital drivers of an auditor's conflict of interest. The issue of audit tenure was revisited by the European Commission Green Paper (2010: 11), where the Commission recognised that "*situations where a company has appointed the same audit firm for decades seem incompatible with desirable standards of independence*".

The reason that audit firm rotation debates have regained relevance lies in the essence of the threat to auditor's independence. Although several studies provide evidence of a positive relationship between audit firm tenure and audit quality (Myers et al., 2003; Johnson et al., 2002; Geiger & Raghunandan, 2002; Carcello & Nagy, 2004; Ruiz-Barbadillo et al., 2009), explaining it with the learning process, a number of other studies point out that auditors are inclined to serve their client's interests, in particular in long-lasting relationships with ambiguous accounting choices (Hackenbrack & Nelson 1996; Kadous et al., 2003; Shafer et al., 2004; Blay, 2005; Kadous et al., 2008; Moore et al., 2010; Chu et al., 2011). As argued by Callao and Jarne (2010), the scope for ambiguity has increased with the adoption of IFRS in Europe. A biased judgment arises from an interpersonal auditor-client relationship which makes an auditor hesitant to act with professional rigor in order not to impair the relationship with the client (Johnstone et al., 2001). Some scholars believe that in order to restore the integrity of the audit function audit firms (not just lead auditors) should work on a contract for a fixed number of years (Bazerman & Moore 2011: 310)<sup>4</sup>.

The aim of our study is to shed more light on the intentionality of auditor bias. Financial incentives and a personal relationship create so-called directional goals that elicit motivated reasoning (Kunda, 1990). These goals drive individuals to process information in a biased manner, seemingly achieving objective support for the desired goal (Kunda, 1990; Blay, 2005). One of the controversies of motivated reasoning lies in the question of whether it occurs intentionally (consciously) or unintentionally (i.e. without awareness). As stressed by Bazerman et al. (2006), the distinction of the intentionality of the bias is key to regulatory intervention not only because such a distinction offers an insight into the effectiveness of various prevention measures, but also because it is only intentionality that gives grounds for legal charges.

While Kunda (1990) and Nelson (2005) propose that people are not aware that their information processing is biased by their goals, empirical evidence in accounting settings suggests that professionals are sensitive to high practice risks (Farmer et al., 1987; Lord, 1992; Blay, 2005; Kadous et al., 2008). Such sensitivity implies that this bias is, at least to some extent, deliberate. As biases are hard to observe with standard research methodology, the studies do

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4 In April 2014, after four years of discussions, the EU adopted mandatory audit firm rotation for public-interest entities. This calls for a mandatory audit firm rotation after 10 years of audit firm engagement with an option of prolongation for another 10 years when specific criteria are met (Regulation 537/2014 of the European Parliament and of the Council on specific requirements regarding statutory audit of public-interest entities).

not distinguish which of the two conditions – financial incentives or personal relationship – accounts for each type of bias. Most studies investigate either financial incentives (Farmer et al., 1987; Lord, 1992) or personal relationships (Blay, 2005; Bamber & Iyer, 2007), whereby the motives arising from a personal relationship may also be trimmed down to financial dependence. Although biases arising from a personal relationship have been investigated in (social) psychology (Milgram, 1974; Neuberg & Fiske, 1987; Kunda, 1990), corporate governance (Morck, 2008) and auditing (Bamber & Iyer, 2007; Moore et al., 2010), they are much less understood. To the best of our knowledge, the only study to simultaneously analyse the effects of financial incentives and a personal relationship on auditor choice is by Moore et al. (2010). The authors suggest that a personal relationship elicits non-conscious bias. Although the results of their experimental study do not confirm such a hypothesis, they show that auditors are inclined to serve their client and that they cannot entirely de-bias their actions.

Without neurological analysis it is difficult to discern conscious bias from non-conscious bias. To some extent, however, their presence may be observed behaviourally by varying the auditor's practice risk. The auditor's tendency to serve the client's preferences decreases with increasing practice risk such as a loss of reputation, litigation costs or licence withdrawal (Bauwhede & Willekens, 2004; Hope & Langli, 2010). The absence of practice risk is a limitation of the Moore et al. (2010) study. Our study advances their analysis by proxying for practice risk in the form of public oversight. Assuming that individuals are not aware of non-conscious bias, public oversight is expected to only mitigate conscious bias, while non-conscious bias should remain largely unaffected. Our results largely confirm our hypotheses. We find that a personal relationship affects the subject's actions beyond financial incentives. The relevance of a personal relationship becomes evident in the interaction with the exposure of subjects to the oversight. A personal relationship significantly offsets the mitigating effect of oversight on auditor's support for a client's preference.

The paper provides the following contributions to the literature. First, it adds to the theory of motivated reasoning and the relatively scarce empirical evidence of bias that arises in a personal relationship after controlling for financial incentives. Second, by studying the simultaneous effects of financial incentives, a personal relationship and the oversight risk, it advances previous findings and allows for a differentiation between biases that can or cannot be mitigated by the introduction of oversight. Finally, the finding that a personal relationship significantly diminishes the effect of oversight may hold important implications for the debate on audit firm rotation, as well as corporate governance in general. Despite the fact that after four years of debates the EU regulation (Regulation 537/2014) has not introduced any form of effective audit firm rotation, our findings suggest that mechanisms to counter familiarity remain important. Their enforcement continues to lie in the hands of the decision-makers involved in the auditor appointment process (audit committees and boards of directors).

## 2. THEORETICAL BACKGROUND AND HYPOTHESES DEVELOPMENT

Auditor independence is considered a vital determinant of the integrity of financial reporting (Spira, 1999). Lee and Gu (1998: 534) define it as “*the absence of collusion between*

*the auditor and the manager of the client firm*". Although the auditors are expected to subordinate their self-interest in favour of the public interest, different threats to auditor independence and their impact on earnings management have been thoroughly investigated in the accounting and auditing literature. While agency theory stresses intentional distortions, behavioural literature points out that auditor bias arises from the cognitive limitations of individuals (Blay, 2005; Kadous et al., 2008).

Kadous et al. (2003) explain the mechanisms of auditor decision-making with emotion-based motivated reasoning. When a person perceives that his or her outcome depends in some way on the actions taken by another person, such outcome dependency creates a directional goal. A directional goal, in turn, influences the cognitive process of reasoning by affecting the type of information that someone will consider, its evaluation and interpretation. As Kunda, the author of the motivated reasoning account, explains, the confusing fact is that a person is able to provide evidence to support his or her (biased) decision without realising the bias: "*The objectivity of this justification construction process is illusory because people do not realize that the process is biased by their goals, ... they might even be capable of justifying opposite conclusions on different occasions*" (Kunda, 1990: 486). In the audit setting, the more auditors aspire to benefit from their support for their client's preferences, the more likely it is that they will find sufficient evidence and interpret it in a way that is aligned with the client's preferences.

A necessary condition for motivated reasoning is the ambiguity of the choice. If the preferred choice cannot be seemingly objectively justified, individuals will not take it, regardless of their commitment to a directional goal (Kunda, 1990).

Two major conditions that create directional goals in auditing are contingent financial incentives and a personal relationship with the client (Nelson, 2005, 2006; Blay, 2005; Moore et al., 2010). The client's ability to influence auditor reporting decisions is stronger if the incumbent auditor perceives the client as a source of perpetual annuity (Gul, 1991; Seabright et al., 1992; Acemoglu & Gietzmann, 1997; Ruiz-Barbadillo et al., 2009).

To promote independence and disconnect auditors from the interests of the management, auditors receive a fixed fee for their services. Nevertheless, their financial incentive is implicitly variable. The nature of the auditor-client relationship creates a variable fee structure in the sense that a long audit tenure increases labour productivity as the auditor is increasingly more familiar with the client's business and lower audit engagement is needed to perform an audit.

Overall, the stronger the auditor's support for the client's preferences, the more likely is the extension of the contract to future years. Johnstone et al. (2001) suggest that contingent fees (i.e. an implicit promise of future rents dependent on the auditor's support for the client) directly threaten auditor's independence. Hence, we propose the following hypothesis:

*H1: Financial incentives increase the probability of the auditor's support for the client's preferences.*

An alternative and/or complementary venue that affects biased decision-making is the nature of the relationship between the auditor and the client. Existing literature suggests different

drivers of a personal relationship on decision choice. Rennie et al. (2010) indicate that continuity of the auditor–client relationship results in a closeness between auditors and their clients and that it is positively related to the auditor's trust in a client. Bamber and Iyer (2007) report that auditors who identify more closely with a client are more likely to consent to the client-preferred position. Similarly, Nelson (2009) and Johnstone et al. (2001) report that identification with a client leads to a low professional scepticism. Neuberg and Fiske (1987) report that outcome dependency enhances the probability of a target person (i.e. a client) being liked. Liking somebody introduces emotions into the decision-making process that is no longer based purely on rational behaviour.

An alternative explanation of the influence of a personal relationship on choice can be drawn from the field of social psychology, in particular from the work of Milgram (1974). He argues that humans have an instinctive predisposition for loyalty, an impulse to obey authority. Building on the work of Milgram (1974), Morck (2008) points out the predisposition of individuals for excessive loyalty (obedience) to the principal in the field of corporate governance. Excessive loyalty depends on the nature of the personal relationship between the agent and the principal. Applied to the lasting relationship between non-executive directors and executive managers, Morck (2008) spotlights the phenomenon of a so-called agentic shift according to which non-executive directors become excessively subservient to executive managers due to a different effective distribution of power than what is formally defined. Parallels can be drawn to the relationship between the auditor and executive manager who may be seen by an auditor as a principal (authority). Shafer et al. (2004), for example, provide evidence that auditors consider it perfectly appropriate to align their judgment regarding choices of accounting principles with that of their clients.

Related to the effects of a personal relationship on a subject's choice, we hypothesise that:

*H2: A personal relationship increases the probability of the auditor's support for the client's preferences.*

The two drivers inducing auditor bias are, however, essentially different. The preferences influence decision-making in various ways, some of which the decision-maker (auditor) may have some insight into, but for many he does not. A cue to bias awareness may be obtained by varying auditor practice risk and by simultaneously estimating how it interacts with both drivers of bias. A regulatory measure in the form of public oversight of auditors is supposed to represent such a practice risk. The oversight may result in litigation costs, licence withdrawal and negative reputation effects (all leading to the loss of future business). Prior experimental studies unanimously show that, while serving their clients, auditors and tax advisors are sensitive to the variation of risks that might threaten their own interests (Farmer et al., 1987; Lord, 1992; Hackenbrack & Nelson, 1996; Cloyd & Spilker, 1999; Kadous et al., 2003; Shafer et al., 2004; Blay, 2005; Kadous et al., 2008). However, the susceptibility of auditors to different drivers of bias is not explicitly addressed. This distinction is important as the oversight is more likely to reduce the bias that an individual is aware of, but less likely to mitigate the bias of which an individual is unaware of.

A closer examination of manipulation conditions in previous research shows that a personal relationship only captures the financial incentive dimension, rather than the affec-

tive processes innate in long-lasting relationships. None of the studies has attempted to separate the financial and affective underpinnings of a personal relationship. Consequently, the finding that an auditor's support for a client's preferences could be effectively mitigated by introducing high practice risk may be attributable to the fact that the bias arose from financial incentives alone. However, the affective component of bias that arises from a personal relationship may be more resistant to oversight. We propose that oversight has a weaker impact on bias arising from a personal relationship (after controlling for financial incentive) because the auditor is not completely aware of that bias.

In sum, based on prior findings we conjecture that oversight has a significant mitigating effect on choices arising from financial incentives. We suggest that this effect occurs because financial incentives are predominantly conscious. In line with the literature on personal relationships, developing affection for a person may be largely non-conscious. We therefore predict that bias arising from a personal relationship is less effectively mitigated by oversight. In other words, it reduces the effectiveness of oversight.

Hence, we propose the following hypothesis:

*H3: The mitigating effect of oversight on auditor's choice is more pronounced when that choice is motivated by financial incentives and less pronounced when the choice is affected by a personal relationship.*

### 3. EXPERIMENTAL SETTING

**Participants.** We analysed the hypotheses experimentally with a two-by-two-by-two, between-subjects design that involved a choice task. For this purpose, we recruited 312 students of the Faculty of Economics, University of Ljubljana. Subjects assumed the roles of auditors (217 students) or clients, i.e. Chief Financial Officers (95 students). Subjects playing the role of clients were used to create the atmosphere of auditor-client familiarity. To motivate the participants, we set up a compensation scheme in which they could earn between EUR 0 to EUR 6. Their expected compensation was EUR 3 for half an hour of activity, which roughly represents the average hourly rate for student work. We recruited senior undergraduate (90%) and graduate (10%) accounting and finance students in order to assure that they were familiar with the task. Nevertheless, we had to exclude 12 subjects in the role of auditors from our final sample due to their answers provided in the manipulation checks. The final number of subjects in the role of auditors was 205 (44% female, average work experience 2.8 years).

**Procedure.** The subjects in the role of auditors were either seated alone or matched in pairs with the subjects who assumed the role of the CEO of the client. The auditors were presented with the task of making a decision regarding the value of an asset on the company's balance sheet. They could either approve the high valuation of the asset, as proposed by the client, or choose an alternative (lower) valuation, which was not in their client's interest. Clients were given the same scenario with the task to persuade the auditor to approve the valuation in their interest. Two alternative values of the investment were measured with a valuation model. In the first model, a more realistic assumption about the growth of cash flows was used, which

produced a lower value of the investment. In the second model, a very aggressive assumption about the future growth of cash flows was incorporated, yielding a higher value of the asset in favour of the client. In the first five minutes of the experiment, the auditor-client pairs were instructed to discuss personal matters in order to create an atmosphere of familiarity. They then read the case and learned their task. In the next ten minutes they were asked to discuss the valuation and the auditor's decision. After the discussions the auditors indicated their decision. The client's reward was calculated on the basis of the auditor's response. In the subgroup without the presence of the client the auditors took their decisions without any client interaction. Finally, following the experimental task, the participants completed an exit questionnaire with manipulation checks and demographic questions.

As a robustness check, we measured the difference in decision-making with a question in which the task was repeated, but where the role of the participants was changed from auditors to investment advisors (adopted from Moore et al., 2010). According to Lord et al. (1984), subjects are unable to de-bias their choice even if they are told to be objective. A person can effectively undo the bias only if asked to consider the choice from another perspective or another personal role.

**Design.** The experiment had a two (personal relationship: anonymous vs. personal) by two (financial incentive: fixed fee vs. 'variable' fee) by two (oversight: 50% probability of oversight, no probability of oversight) between-subjects factorial design. Subjects in the role of auditors were randomly assigned to eight groups. We manipulated the experimental conditions in following ways. In the condition of an anonymous client, auditors received instructions and completed their decision individually in the absence of any interaction with other participants. In the condition of a personal relationship with the client, we set out to match auditors and clients. We asked participants to pair with those people they know best.

In the fixed fee condition, the auditors were paid a fixed fee of EUR 2 regardless of their decision. In the 'variable' fee condition, the auditors received a EUR 2 fixed fee if they supported the valuation which was not in the interest of their client, but based on more realistic assumptions. In addition, they could earn another euro as the present value of future business with the company if they supported the valuation the client preferred. In total, they could receive EUR 3 for this decision. Clients received EUR 2 in compensation if the auditor disagreed with their valuation and EUR 3 if the auditor agreed to the valuation based on the aggressive assumption of growth. The extra compensation for the clients was based on the bonus they were set to receive if the profits of their company were above a certain threshold. In order to achieve that, an auditor had to agree to the higher valuation of the asset on the audited company's balance sheet. The compensation scheme for clients was therefore designed to correspond to the compensation scheme for auditors and to make them eager to convince agents to support the valuation in their interest.

Oversight was manipulated in the following way: subjects in the no-oversight condition were assured that no oversight would take place. Those in the oversight condition were told that it was possible that their audit would be subject to regulatory oversight. The probability that the oversight would take place was 50%. If they had approved the lower value of the asset, the oversight authority would not have opposed their opinion. If they had approved the higher



value of the investment, it is certain that the oversight authority would have disagreed with their decision and the penalty would have been applied.

The financial incentives in the future business condition and the oversight condition were composed of a EUR 2 fixed fee and an additional EUR 4 if approving the higher value of the investment. Under both incentive schemes – fixed fee and future business – the compensation would be zero if the auditor supported the client's choice and the oversight took place. In the future business condition, the expected value of the total compensation in the oversight condition was kept equal to the expected value of the compensation in the no-oversight condition.

As soon as the auditors made a choice in the oversight condition, a random number drawn by a computer mimicked whether the oversight had taken place or not. This determined the value of the auditor's compensation given their valuation choice. Clients were paid based on the valuation choice and were not penalised if the oversight had disapproved of the auditor's decision. The auditor payoffs under the different schemes are presented in Table 1.

Table 1: Auditor payoff under all schemes

Variable No oversight	Fixed No oversight	Variable Oversight	Fixed Oversight
2+1	2	2+4 (50%), 0 (50%)	2 (50%), 0 (50%)

#### 4. RESULTS

We first analysed the mean values of the choices made by the subjects across subgroups by computing the predicted means. In Table 2 we present the proportions of decisions for a high valuation under the different incentive, relationship and oversight conditions.

Table 2: Decision by two-by-two-by-two groups. Numbers represent proportion of high valuations.

*Difference represents t-test of proportion differences. n=205*

Incentive	Relation	No oversight		Oversight		Difference	
		Anonymous	Personal	Anonymous	Personal	3-1	4-2
		1	2	3	4		
<b>Fixed</b>	mean	35.5%	55.0%	11.1%	48.3%	-24.4%	** -6.7%
	std. dev.	48.6%	51.0%	32.0%	50.9%		
	n	31	20	27	29		
<b>Variable</b>	mean	64.0%	72.2%	18.5%	71.4%	-45.5%	*** -0.8%
	std. dev.	49.0%	46.1%	39.6%	46.0%		
	n	25	18	27	28		

\*\*\* denotes significance at the level below 0.01, \*\* denotes significance at the level below 0.05

We first look at the results without the presence of oversight (columns 1 and 2 in Table 2). The results show that 35.5% of the subjects in the fixed fee condition and an anonymous relationship decided to approve the valuation in favour of the client, whereas in the variable fee condition and an anonymous relationship this proportion increased to 64.0%. Further, 55.0% of the subjects chose the valuation in favour of the client in the personal relationship and fixed fee condition, while the percentage rose to 72.2% in the combined condition of a personal relationship and variable fee. The results show that the effect of the type of relationship on the decision is stronger in the absence of contingent compensation – i.e. in the condition of fixed pay. The proportion of decisions favourable to the client increases by roughly 20 percentage points (55.0%–35.5%) in the case of fixed pay compared to an increase of around 8 percentage points in the case of variable pay (72.2%–64.0%).

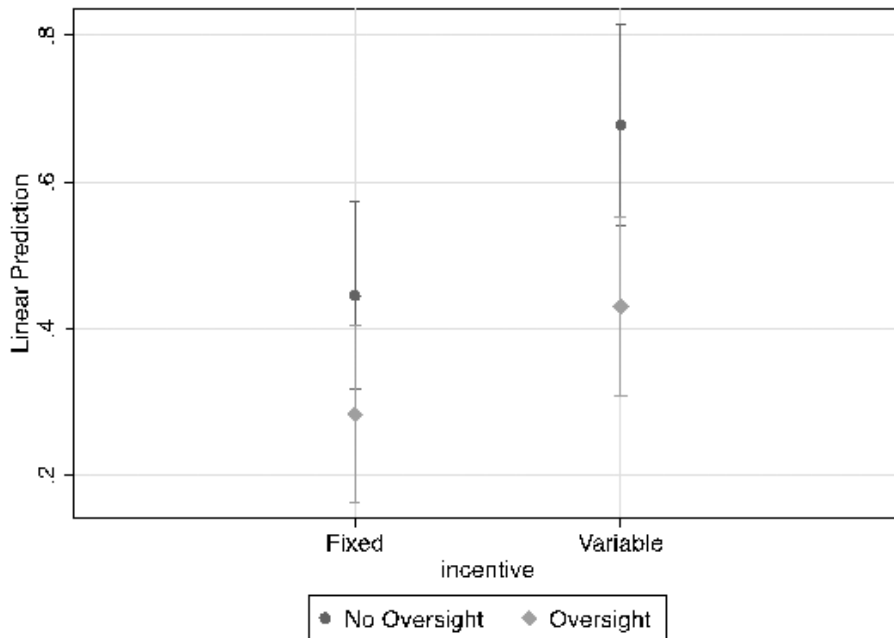
Next, we look at the results in the presence of oversight (columns 3 and 4 in Table 2). The share of subjects who chose the valuation in favour of the client in the fixed fee condition without oversight amounted to 35.5%, whereas in the oversight condition it was just 11.1%. The difference of 24.4 percentage points is statistically significant. In the variable fee condition without oversight, 64.0% of subjects chose the higher valuation, while in the same condition with the presence of oversight the proportion dropped to 18.5%. Again, the difference of 45.5 percentage points is statistically significant.

Contrary to these results, the effect of oversight is much less pronounced in the case of a personal relationship. The share of subjects who selected the valuation in favour of the client was somewhat smaller in the fixed pay and personal relationship conditions in the presence of oversight, but the difference of 6.7 percentage points is not statistically significant. Interestingly, oversight had no effect in the condition of a personal relationship and variable pay.

The results clearly show that the oversight affects the decisions made by the subjects. However, the effect of the oversight has only a significant impact on the decision in the anonymous relationship condition, which leads us to believe that the oversight is able to mitigate the effect of financial incentives, but has little or no effect when it comes to a personal relationship.

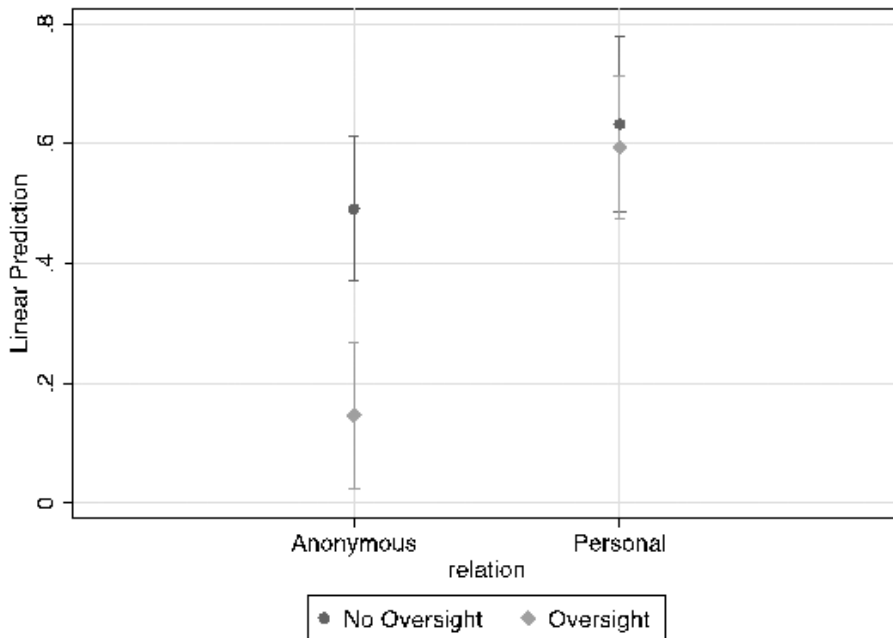
In Figures 1 and 2 we illustrate the effect of oversight on decisions made by the subjects in the financial and relationship conditions by estimating marginal effects of the introduction of the oversight. By doing so, we further investigate the channel through which the effect of oversight takes place.

Figure 1: *Financial Incentive by Oversight plot for Decision (High Valuation=1) with and without Oversight.*



The oversight should have a minimum effect in the fixed fee condition as this condition does not give any incentive to support the client's preferences. However, the results presented in Figure 1 surprisingly demonstrate a large impact of the oversight in both financial conditions: with the fixed fee the share of subjects choosing the higher valuation amounts to 44.5% in the no-oversight condition compared to 28.3% in the oversight condition. With the variable fee in the no-oversight condition, this share amounts to 67.8% compared to 43.0% in the oversight condition. In the figure we also show 95% confidence interval of the linear prediction and, as observed, albeit the mentioned difference seems large, it is not statistically significant. Note that the effect of joint conditions when estimating predictive margins or marginal effects (fixed and variable) in the personal relationship is presented such that the reported means are not directly comparable to those shown in Table 2. The results suggest that subjects who supported the client preference did so not only due to the financial incentives but also due to incentives arising from the personal relationship.

Figure 2: *Personal Relationship by Oversight* plot for Decision (High Valuation=1) with and without Oversight.



In Figure 2 we present the effect of the oversight on decision incentives arising from a personal relationship. Like before, we observe a large difference in the percentage of subjects choosing the higher valuation in the condition of an anonymous relationship: the share of higher valuation choices amounts to 49.1% in the no-oversight condition and 14.7% in the oversight condition (note that here the difference is also statistically significant). In the personal relationship condition, the presence of oversight makes almost no difference: the share of auditors choosing the higher valuation is 63.2% in the no-oversight condition compared to 59.3% in the oversight condition.

In line with the predictions in Hypothesis 3, oversight seems to influence the subjects' decision mostly through its effect on financial incentives, while its effect seems to be much weaker in the personal relationship condition.

To confirm the bivariate results we perform logistic regressions where a dependent variable is a decision. The results are presented in Table 3.

Table 3: *Logistic Regression. Dependent Variable: Decision (High Valuation=1). n=205*

<b>Dependent Variable</b>										
<b>Decision</b>	<b>Coef.</b>	<b>Mfx</b>	<b>SE</b>	<b>Sig.</b>		<b>Coef.</b>	<b>Mfx</b>	<b>SE</b>	<b>Sig.</b>	
<i>incentive</i>	0.898	0.219	0.313	0.004	***	1.010	0.244	0.438	0.021	**
<i>relation</i>	1.429	0.341	0.322	0.000	***	0.620	0.151	0.447	0.165	
<i>oversight</i>	-0.981	-0.239	0.324	0.002	***	-1.718	-0.401	0.607	0.005	***
<i>incentive*oversight</i>						-0.152	-0.037	0.637	0.811	
<i>relation*oversight</i>						1.610	0.382	0.663	0.015	***
<i>intercept</i>	-0.778	N/A	0.296	0.009	***	-0.525	N/A	0.337	0.120	

\*\*\* denotes significance at the level below 0.01, \*\* denotes significance at the level below 0.05; Mfx stands for marginal effects and SE for robust standard errors.

The financial incentive condition takes the value of 0 for a fixed fee and the value of 1 for a variable fee. The personal relationship condition takes the value of 0 for an anonymous relationship and the value of 1 for a personal relationship. Similarly, oversight takes the value of 0 in the no-oversight condition and the value of 1 in the oversight condition. We present two separate specifications. In the first specification, we do not include interaction terms between the main conditions and the oversight, while in the second specification we add the two interaction terms.

The results of the basic model are in line with our expectations in Hypotheses 1 and 2. Financial incentive significantly positively affects the probability of choosing the higher valuation (i.e. the one in the client's interest) (a coefficient of 0.898 and marginal effect of 0.219<sup>5</sup>). Personal relationship also has a significant positive effect on the probability of choosing the higher valuation (coefficient of 1.429 and marginal effect of 0.341). Oversight has a significant negative effect on the probability of choosing the higher valuation (coefficient of -0.981 and marginal effect of -0.239).

However, as implied by the bivariate results, oversight seems to have a differential impact on the two drivers that we regard as proxies for conscious and non-conscious bias. To analyse its impact (Hypothesis 3), we add two interaction terms (*incentive\*oversight* and *relation\*oversight*) to the basic specification. The results of the extended model show that the significant positive effect of the financial incentive on the probability of choosing the higher valuation persists (a coefficient of 1.010 and a marginal effect of 0.244). The same holds for the negative effect of the oversight – i.e. a reduced probability of choosing the higher valuation (a coefficient of -1.718 and a marginal effect of -0.401). However, we now find no significant effect of a personal relationship on the decision. Moreover, the interaction term between a relationship and the oversight has a significant positive effect (a coefficient of 1.610 and marginal effect of 0.382) that almost entirely offsets the negative effect

5 Marginal effect is the change in probability of choosing a high valuation as opposed to a low valuation when the value of a binomial independent variable (incentive, relation and/or oversight, as well as interaction terms) changes from 0 to 1.

of the oversight on a stand-alone basis. This result corroborates our previous findings that the oversight impedes the financial incentive channel, but has very little if no effect on the relationship channel. We interpret this finding as providing evidence to support our third hypothesis about the stronger effect of oversight on financial incentives than on a personal relationship.

As a robustness test, we investigate the decisions taken by the subjects when playing a different role in the experiment. In one of the exit questions the subjects were asked to indicate the value of the investment if they were in the role of experts advising an investor. In other words, they were asked what they really thought the true value of the asset was.

Table 4: *Difference in the decision taken in the role of auditor and expert with and without presence of the oversight (n=203, two missing values)*

	Number	Percent	Number	Percent
	<i>No oversight</i>		<i>With oversight</i>	
<b>No Bias</b>				
As auditor "60", as expert "60"	33	35.5%	39	35.5%
As auditor "60", as expert "50"	10	10.8%	22	20.0%
<b>Conscious Bias</b>				
As auditor "80", as expert "50"	17	18.3%	15	13.6%
As auditor "80", as expert "60"	23	24.7%	12	10.9%
<b>Non-conscious Bias</b>				
As auditor "80", as expert "80"	10	10.8%	14	12.7%
<b>Other</b>				
As auditor "60", as expert "80"	0	0.0%	8	7.3%
Total	93	100.0%	110	100.0%

Note: 50, 60 and 80 refer to low or high valuation of the company in the scenario.

In Table 4 we compare the responses given in the role of experts to the responses given in the role of auditors in both the conditions with and without the oversight. We denote the responses where the subjects as experts chose a lower value than they actually chose as auditors as 'conscious bias'. This indicates that the subjects were aware of a different value of the asset that they provided in a different role. We observe that 43% of the subjects provided a higher value as auditors in the no-oversight condition than they did as experts and only 24.5% of subjects did so in the oversight condition. In addition, we observe that 46.3% of the subjects do not seem to exhibit any bias in the no-oversight condition, while the percentage of no bias is 55.5% in the oversight condition. Finally, we characterise 10.8% of the subjects as exhibiting 'non-conscious bias' in the no-oversight condition – these are the ones who chose the more aggressive valuation of the asset in both roles. This share amounts to 12.7% in the oversight condition.

We define a new multiple response variable related to ‘bias.’ The variable “bias” takes the value of 1 for “conscious bias” (subjects who chose the higher valuation, but believed that the true value of the asset is lower and 0 otherwise), and the value of 2 for “non-conscious bias” (subjects who chose the higher valuation in which they truly believed). Note that we exclude eight subjects who selected higher values as experts compared to the decision they made in the role of auditors. These subjects were excluded since on one hand they cannot be regarded as ‘unbiased’ and, on the other hand, they do not exhibit any of the two ‘biases’ in which we are interested. This leaves us with 195 responses for which we performed a multinomial probit analysis to investigate the factors affecting the biases.

Table 5: *Multinomial Probit Regression. Dependent Variable: No Bias=0, Conscious Bias=1, Non-conscious Bias=2 (n=195; excluded 8 observations that do not fit into these categories)*

Dependent Variable Bias	Conscious			Non-conscious		
	Coef.	Robust		Coef.	Robust	
		SE	Sig.		SE	Sig.
<i>incentive</i>	0.697	0.384	0.069 *	1.133	0.557	0.042 **
<i>relation</i>	0.199	0.395	0.613	1.403	0.574	0.014 **
<i>oversight</i>	-1.890	0.542	0.000 ***	0.409	0.773	0.597
<i>incentive*oversight</i>	0.237	0.577	0.681	-1.297	0.726	0.074 *
<i>relation*oversight</i>	1.793	0.592	0.002 ***	0.268	0.751	0.722
<i>intercept</i>	-0.438	0.291	0.133	-2.387	0.625	0.000 ***

\*\*\* denotes significance at the level below 0.01, \*\*denotes significance at the level below 0.05, \* denotes significance at the level below 0.1

The results shown in Table 5 demonstrate that financial incentives affect both conscious and non-conscious bias (coefficients of 0.697 and 1.133, respectively). Oversight is only effective in the case of conscious bias (a significantly negative coefficient of -1.890). However, in the personal relationship condition oversight fails to deliver (a significantly positive coefficient of the interaction effect between a relationship and oversight of 1.793 which almost entirely compensates for the negative stand-alone effect of oversight). Next to financial incentives, a personal relationship is a significant explanatory variable for non-conscious bias (a positive coefficient of 1.403), while oversight does not have any effect on a stand-alone basis. It can offset the effect of financial incentives (a significantly negative coefficient of -1.297), but it is not effective in mitigating the effect of a personal relationship.

Overall, our results confirm the first and second hypotheses about the main effect of financial incentives and a personal relationship, as well as the third hypothesis that the mitigating effect of oversight is stronger in the financial incentive condition than in the personal relationship condition. Oversight can only effectively unravel the effect of financial incentives. We conjecture that the ineffectiveness of oversight in a personal relationship is an indication of the presence of emotion-based decision-making that people are not entirely aware of.

## 5. DISCUSSION

Being provoked by high-impact audit failures during the recent global financial crisis, the aim of this study is to provide new evidence regarding the intentionality of auditor biases and add to the debates on how to resolve auditor conflicts of interest. As argued in moral seduction theory by Moore et al. (2006), the understanding of perceptual biases importantly indicates the effectiveness of regulatory measures. In particular, the study intends to contribute to the debates on whether oversight can effectively mitigate auditors' biases and which alternative measures (if any) are additionally required. This might be particularly important to audit committees in the auditor appointment process.

To analyse these questions, we looked separately at personal relationships and financial incentives that create directional goals according to theory of motivated reasoning. Regarding financial incentives, our results corroborate prior evidence that financial incentives adversely influence auditor's independence. Although audit fees are fixed in practice, the notion of variable financial incentives is based on the premise that the probability of auditor reappointment increases if an auditor delivers an affirmative audit opinion. Despite the evidence that the introduction of audit committees had a mitigating effect on earnings manipulation (Bedard et al., 2004; Baxter & Cotter, 2009) by interfering between auditor's opinion and managers' selection of the auditor, it would be naïve to expect that audit committees are perfectly informed about the negotiations that take place between managers and auditors (Gibbins et al., 2007). Their analysis of survey responses by CFOs shows that less than one-fifth of the solutions are adopted as originally proposed by the auditor; others are either adopted as proposed by the client or negotiated among them. This indicates that managers are able to exercise a subtle influence in the process of auditor reappointments.

Regarding a personal relationship we found that it significantly affects the choice of the auditor. The subjects who were in the personal relationship condition were more inclined to accept the less realistic assumptions put forward by clients. Further, our more detailed analysis suggests that a personal relationship significantly offsets the otherwise mitigating effect of oversight.

We find that oversight effectively reduces the overall bias and its magnitude. Interestingly, oversight decreases the bias related to the financial incentive condition of both those with a fixed fee and those with a variable fee. This suggests that the subjects with a fixed fee schedule also had intentional bias. Such bias could only arise from the personal relationship which half the subjects were exposed to in the fixed fee condition. But we also show that a personal relationship significantly offsets the mitigating effect of oversight. We interpret this finding as evidence of non-conscious, unintentional bias in a personal relationship.

Based on our analyses and results, we argue that a combination of several measures is needed to efficiently address the issues of auditor bias. While oversight is efficient for mitigating conscious bias, our findings imply that only the termination of a personal rela-



tionship would help eliminate biases arising from auditors' allegiances. Although debates on mandatory audit firm rotation are currently off the regulatory agenda due to the adoption of the new EU regulation (Regulation 537/2014), this mechanism should be considered as an important complementary control mechanism. As reported by Wang and Tuttle (2009), auditors report fewer cooperative negotiation strategies with their clients in the case of mandatory auditor rotation. Milgram (1974) demonstrated that excessive loyalty can be substantially reduced by introducing a so-called 'dissenting peer'. Having the auditor action challenged or reviewed by a different auditor would create such an effect. The public oversight that was introduced following the recent auditing regulatory reform to scrutinise audit quality beyond professional self-regulation can be regarded as an effective measure to improve audit quality. The only question is how far-reaching it is given that the public oversight authority cannot examine the entire market frequently enough. On the other hand, peer oversight – the crucial element of audit firm rotation – can extend to all market participants and could represent an effective complementary mechanism for mitigating auditor biases.

## 6. LIMITATIONS AND FUTURE RESEARCH

The validity of our results is to be weighed up against the limitations of the study. Probably the greatest limitation is the fact that the experimental subjects were students. To some extent, we attempted to control for this limitation by inviting only senior accounting and finance students to participate. These students were most familiar with the auditing profession and regulation. Moreover, they had on average 2.8 years of work experience and many of them have worked as audit assistants in audit firms. An important argument in favour of the use of students is that when sensitive issues such as professional ethics are being investigated auditors relatively easily recognise politically appropriate answers to which students may be less susceptible (Randall & Fernandes, 1991).

In some well-cited studies that use students to proxy auditors (i.e. Moore et al., 2010 Curtis, 2006) a clear case is made that students are expected to behave in a similar way as auditors when it comes to making a choice in an experimental task on the condition that the experiment adequately addresses the auditor's decision problem. Our experiment is essentially a game in which the financial rewards are explicit, while the relationship is implicit. Accordingly, in our experimental conditions the students were better aware of the financial incentives than they were of the personal relationship and this may have driven the result whereby they reacted more to oversight under a financial incentive manipulation. Our focus was, however, not on financial incentives as this effect has been robustly proven in a number of previous experimental studies which used practising auditors as experimental subjects. The contribution of this study lies in highlighting the role of a personal relationship that may create unintentional bias after controlling for the strong effect of financial incentives and in the additional robustness analysis.

In the robustness test a limitation may stem from our assumption (like in Moore et al., 2010) that the subjects would be able to de-bias their choice when they changed their role.

Some subjects might have been unaware that they were giving a biased answer when they made their initial judgments. Later, when asked to take on the role of an expert, they realised that they had failed to consider the alternative point of view previously, and responded differently. However, this limitation in our approach does not inflate non-conscious bias, but rather underestimates it.

Although the only possible examination of non-conscious or conscious decision-making would entail the emerging neuroscientific methods, we believe we managed to shed some light on the cognitive effect of a personal relationship on non-conscious bias, which was (to the best of our knowledge) previously neglected in the literature.

Overall, we consider the experiment a sufficiently powerful tool to reveal the effects of the studied variables. We believe that the question of conscious and non-conscious biases in auditors' decision-making is worth pursuing further. Future research could complement our findings by refining the measurement methods of non-conscious bias and directly addressing the effectiveness of various measures when it comes to mitigating both types of bias.

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## RESEARCH EXPERIMENT

### Background

You work as an auditor for an established audit firm. Currently, you are auditing financial statements of a major public company A. As it seems, the company will report a modest operating profit of 30 million EUR. Some years ago Company A bought shares of Company B, which operates in the food industry. At the time Company A paid 100 million EUR for this significant stake in Company B that provided Company A with the significant influence over Company B. Due to the financial crisis and the fact that cash flows of Company B are not meeting the expectations, Company A is faced with the issue of investment impairment due to the decrease in the fair value of its stake in Company B. The current market value of the mentioned financial investment is 50 million EUR. The Chief Financial Officer (CFO) of Company A believes that it is inappropriate to value their investments in Company B by using the market value, because of the extremely low liquidity in the market. Therefore, he proposed to value the investment with a valuation model. As the auditor you are currently reviewing the valuation model the CFO has proposed. In the model the CFO assumed a 5% growth of cash flows without any apparent capital expenditure to support this growth. The valuation based on this assumption gives the value of the investment into Company B of 80 million EUR.

Historical patterns show that the growth in demand for products of Company B is closely related to the growth of the purchasing power of population. Generally, the purchasing power is reflected in the growth of the gross domestic product. According to forecasts GDP is expected to grow in the next years by 1% only. At the assumption of a 1% growth rate in the valuation model, the estimated value of the investment is 60 million EUR.

If the investment value proposed by the CFO will be used in the financial statements, an impairment of 20 million EUR will have to be accounted for. If, on the other hand, the lower investment value will be recognized, an impairment of 40 million EUR will be needed. In this latter case the valuation of the investment will cause a net loss of Company A, while the valuation according to the assumption proposed by the CFO, would not.

## SUMMARY

Purchase price of the investment in Company B: 100 million, projected growth of GDP: 1%.

Valuation model	Mark-to-model value	Assumption regarding growth of cash flows	Impairment of the investment	Operating profit of Company A	Net profit / loss of Company A after impairment
CFO's	80 million	5%	20 million	30 million	10 million
Alternative	60 million	1%	40 million	30 million	-10 million

As the auditor you are aware of the importance of your professional reputation and the fact that the auditor is primarily committed to serve public interest - namely, that the creditors, shareholders and other users of financial information get the reliable information about fair presentation of the financial position and financial performance of Company A.

## FINANCIAL INCENTIVE CONDITION

Either:

**FIXED CONDITION:** Your payment for auditing services is fixed, regardless which of the two valuation models you confirm. Your payment is EUR 2.

Or:

**FUTURE BUSINESS CONDITION:** Your payment for auditing service is fixed and amounts to 2 EUR. If you require the recognition of the lower value of the investment, next year you will no longer be hired by Company A. If you approve the higher value of the investment, your contract with the Company A will be renewed in the next years. Present value of future business with Company A amounts to 1 EUR. Your total compensation will hence amount to 3 EUR (2 EUR of fixed fee + 1 EUR of future business).

### OVERSIGHT CONDITION

Either: **NO OVERSIGHT:** Your audit firm was inspected by the Agency for public oversight just last year. Therefore, no oversight will take place in your audit firm.

Or:

**OVERSIGHT:** There is a 50 % probability that your audit firm will be subject to public oversight this year.

### FINANCIAL INCENTIVE UNDER THE OVERSIGHT CONDITION

Either:

**FIXED CONDITION:** Your payment for auditing services is fixed, regardless which of the two valuation models you confirm. Your payment is EUR 2.

Or:

**FUTURE BUSINESS CONDITION:** Your payment for auditing service is fixed and amounts to 2 EUR. Your payment for auditing service is fixed and amounts to 2 EUR. If you require the recognition of the lower value of the investment, next year you will no longer be hired by Company A. If you approve the higher value of the investment, your contract with the Company A will be renewed in the next years. Present value of future business with Company A amounts to 4 EUR. Your total compensation will hence amount to 6 EUR (2 EUR of fixed fee + 4 EUR value of future business).

If you approve the valuation model with a lower growth rate, the oversight will not disapprove of your audit.

If you approve the valuation model with a higher growth rate, oversight will disagree with your decision. You will get fined and reprimanded. In this case your payment will be 0 EUR.

### **Your decision**

Please specify which valuation model you will approve in the financial statements audit (tick the box).

- **the valuation model that takes into account the lower growth rate:** You request that the value of the investment is set at **60 million EUR** and that the impairment of the investment amounts to 40 million EUR.
- **the valuation model that takes into account the higher growth rate:** You approve the model that was prepared by the CFO with the value of the investment at **80 million EUR**. You agree that the impairment of the financial investment amounts to 20 million EUR.