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The influence of the CEO's value perception towards auditing on audit demand in private firms

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Abstract

Audit demand is generally considered to be a direct reflection of the level of agency conflicts. This study examines the CEO's value perception towards auditing as additional driver for both *auditor reputation* demand (hiring a Big 4 auditor or not) and *audit effort* demand in private firms. Examining the CEO's value perception in a multidimensional way, the regression results indicate that the CEO's *functional* value perception towards auditing positively affects the demand for *audit effort*, while the CEO's *social* value perception towards auditing negatively affects the demand for *audit effort* but positively affects the demand for *auditor reputation*.

Keywords: audit demand; CEO's value perception; upper echelons theory; auditor reputation; audit effort.

JEL classification: M42

1. Introduction

While external auditing is considered a crucial service to protect the interests of a firm's stakeholders, its value is especially articulated in a listed firm context. Lennox (2005), however, suggests that the value of auditing could even be higher for private firms because they are less vulnerable to takeovers, are less monitored by analysts and stock markets, and are required to disclose much less accounting information to their stakeholders. Several studies also support this view by examining the demand for external auditing in private firms (e.g. Niskanen *et al.*, 2011; Hope *et al.*, 2012; Dedman *et al.*, 2014), in which both the demand for a voluntary audit (e.g. Dedman *et al.*, 2014) and the demand for audit quality (e.g. Niskanen *et al.*, 2011) was examined, dependent on whether the sample firms had a statutory audit requirement or not. These studies, however, continue to rely almost exclusively on the agency theory to explain this demand in line with their listed firm counterparts. They generally hypothesize a direct positive relationship between the level of agency conflicts and audit demand.

While a qualitative study by Cohen *et al.* (2010) pointed out that management is mostly the driving force behind auditor appointments and terminations, studies examining the influence of management on audit demand remain scarce (Cohen *et al.*, 2004; Carcello *et al.*, 2011). This is probably due to the fact that agency theory suggests that management will also demand an (high quality) auditor when shareholder-manager agency conflicts are high. Therefore, considering management in the analyses would not lead to an additional effect, as management will take into account the level of agency conflicts when making the audit decision. The finding of Cohen *et al.* (2010) therefore does not necessarily contravene the main hypothesis (agency conflicts lead to audit demand) of prior audit demand studies.

The hypothesis that agency conflicts lead to audit demand however, is largely founded on the agency assumption that all actors in a firm will behave in an economically rational way, which does not (always) seem to hold. Several scholars (e.g. Hambrick and Mason, 1984; Jensen, 1994; Radner, 1996; Van den Berghe and Carchon, 2003) agree that people often behave in a bounded or even non-rational way. This view is also embraced by the upper echelons theory, which argues that strategic choices are based on managerial perceptions (Hambrick and Mason, 1984; Hambrick, 2007), which in turn are determined by both the cognitive base of the manager and his/her values. Therefore, management decisions can at most be considered bounded rational decisions (Hambrick and Mason, 1984).

This bounded rational behavior by managers could also have a strong influence on audit demand. This may especially be the case in private firms, which generally have no requirement to install an audit committee and often lack an effective (monitoring) board of directors as well (e.g. Fiegener *et al.*, 2000a, b; Voordeckers *et al.*, 2007). In this way, management may be more likely to make the actual audit decision, even if this decision is not a reflection of the firm's need for auditing but rather a reflection of the management's value perception towards auditing. In this study, we therefore take this bounded rationality and the resulting managerial perceptions into account by examining the CEO's value perception towards auditing as an additional driver of audit demand in private firms.

Examining private firms with a statutory audit requirement, we consider audit demand to be the demand for audit quality in line with other studies that examined a similar context (e.g. Lennox, 2005; Niskanen *et al.*, 2011). However, while prior studies often focused on only one aspect of audit quality, we focus on both the demand for *auditor reputation* (whether the firm hires a Big 4 auditor or not) and the demand for *audit effort* (the amount of audit effort demanded from the auditor as indicated by the level of audit fees, after controlling for supply-side effects) as aspects of audit quality. We hypothesize that the CEO's value perception

towards auditing may affect both the demand for *auditor reputation* and the demand for *audit effort*.

In line with the marketing literature (e.g. Sweeney and Soutar, 2001; Woo and Ennew, 2005), we consider the CEO's value perception towards auditing as a multidimensional construct consisting of four dimensions: functional value (perceived overall utility and quality), social value (perceived capacity to increase the 'social image'), price value (perceived 'value for money') and emotional value (which feelings does it arouse). Therefore, we will examine the individual influences of these dimensions on *auditor reputation* and *audit effort* demand instead of using an overall perception measure. In this way, we add to the studies of Collis *et al.* (2004) and Niemi *et al.* (2012), which accounted for the overall value perception of management towards auditing when examining audit demand. Because of their unidimensional approximation (functional value) with only one item (the extent of agreement that the audit improves the quality of the financial statement information), they were not able to fully take into account the fact that management may also take bounded rational and irrational decisions.

As no prior scales exist in the literature to capture the CEO's value perception towards auditing in a multidimensional way, we translated the items of the 'perceived value'-scale of Sweeney and Soutar (2001) to an auditing context. We relied on the roles of external audits as defined in the auditing literature (signaling information to stakeholders, reducing information asymmetries, etc.) (e.g. Dye, 1993; O'Reilly *et al.*, 2006) and on interviews with both auditors and managers to make this translation from the value perception towards a general product/service to the value perception towards the specific service of auditing as accurate as possible.

Using questionnaire data combined with archival data of Belgian private firms with no audit committee, several of the underlying dimensions of the CEO's value perception towards

auditing were found to be associated with *auditor reputation* and/or *audit effort* demand. This indicates that the CEO's value perception towards auditing should be considered as an important additional driver of audit demand in private firms. More specifically, the perceived functional value of auditing was found to be significantly positively associated with the demand for *audit effort*, but not with the demand for *auditor reputation*. CEOs who praise the functional value of an audit therefore seem to invest mainly in more audit effort rather than a more reputed auditor. This suggests that private firm CEOs do not necessarily consider the provided audit quality of Big 4 auditors to be higher than those of non-Big 4 auditors. The perceived social value was found to be significantly positively associated with *auditor reputation* demand, while being significantly negatively associated with *audit effort* demand. This indicates that CEOs who consider the social aspect of an audit to be valuable mainly want to invest in a reputed auditor to increase the firm's social image while keeping the amount of audit effort as low as possible. Therefore, while private firm CEOs may not consider the actual audit quality of Big 4 auditors to be higher than those of non-Big 4 auditors, they seem to value the reputational gains of engaging a Big 4 auditor. The perceived price value of auditing was found to be significantly negatively associated with *audit effort* demand only. While counterintuitive, this may suggest that CEOs who consider the price of an audit to be reasonable may have a better understanding about how this price is set, and may therefore have invested more in their own control environment so that the control risk of their firm, and therefore the needed audit effort and accordingly the audit fee, is significantly reduced. The perceived emotional value of auditing was not found to be significantly associated with *auditor reputation* or *audit effort* demand.

Through this study, we answer the call of several accounting researchers to relate management to accounting and auditing outcomes, as management is likely driving these outcomes (Cohen *et al.*, 2004; Carcello *et al.*, 2011). Moreover, by examining the influence of

the CEO's value perception towards auditing on audit demand and by directly measuring this CEO's value perception instead of using proxies for it, we also assist in moving forward to examine behaviors, processes and personality traits in an accounting context as proposed by Carcello *et al.* (2011). Furthermore, we take a more nuanced view on agency theory by taking into account that people do not always behave in a rational way, but also make bounded rational decisions, as suggested by the upper echelons theory (Hambrick and Mason, 1984). In this way, we answer the call of Cohen *et al.* (2008) to use different theories in accounting and auditing literature. Overall, we believe this study adds to the current knowledge about what drives audit demand in private firms, and we hope that legislators will take this added knowledge into account when evaluating the current governance regulations. While recent studies show that external auditing is also valuable for private firms, the influence of the CEO's value perception towards auditing on audit demand may jeopardize this value. More specifically, when this CEO's value perception differs from the firm's actual need for an (high quality) audit, the demanded level of *auditor reputation* and *audit effort* may be insufficient to fulfil the need if the CEO is able to make the audit decision. This could be detrimental for the firm's stakeholders, as they may not obtain the required level of audit quality to make good decisions. Therefore, legislators should evaluate whether the current governance regulations of private firms suffice to face this threat and/or whether existing governance mechanisms of listed firms (e.g. independent boards of directors, audit committees, etc.) should also be made mandatory for private firms.

This study proceeds as follows. In the next section, we elaborate on the potential influence of management's value perception towards auditing on audit demand and develop testable hypotheses. In section 3, we describe our methodology. In section 4, we discuss our results and conclusions follow in section 5.

2. Theory and hypotheses

2.1 Audit demand

External auditing is considered to be one of the most important governance mechanisms to protect the stakeholders' interest of a company. Its value and therefore its demand is generally explained by the agency theory, which considers auditing as one of the main devices to reduce agency conflicts. These conflicts arise when a shareholder (the principal) hires a manager (the agent) to take decisions on his/her behalf since this manager will not always act in the best interest of the principal and/or the firm (Jensen and Meckling, 1976). As this self-interested behavior by managers can decrease the welfare of the shareholders, the shareholders will try to monitor the agents in order to prevent this decrease in their welfare. The financial statements of the company are one of the most important monitoring tools, but these are generally prepared by management itself (Chow, 1982; Lennox, 2005). An audit is therefore considered to be demanded since it increases the reliability of these financial statements and in this way increases the monitoring effectiveness of the shareholders and thus reduces the agency conflicts (Becker *et al.*, 1998).

According to the agency theory, audit demand is considered to be a direct result of the (potential) level of agency conflicts, in which the actual demand initiative may both arise from the shareholders and the managers. In case of (potential) agency conflicts, the shareholders will demand an audit to be better able to monitor managers, while the managers will demand an audit to avoid shareholders anticipating their self-interested behavior and remunerate them accordingly (Jensen and Meckling, 1976). The fact that a qualitative study of Cohen *et al.* (2010) pointed out that "…management [is] … often the driving force behind auditor appointments and terminations" (p. 752), which is also supported by several other studies (Cohen *et al.*, 2010; Carcello *et al.*, 2011), does therefore not necessarily contravene the proposition of agency theory that agency conflicts lead to audit demand.

Most audit demand studies therefore hypothesize a direct positive association between the level of shareholder-manager agency conflicts and audit demand[1], in which audit demand can both mean the demand for a voluntary audit and the demand for a high quality audit, dependent on whether the sample firms are already required by law to have their financial statements audited. As the quality of an audit is not directly observable, audit quality demand is generally measured by whether the firm hires a reputed audit firm or not (Lennox, 2005; Niskanen *et al.*, 2011) and/or by the amount of audit effort demanded (e.g. Carcello *et al.*, 2002; Knechel and Willekens, 2006).

Although the hypothesized positive association between the level of agency conflicts and audit demand is supported by several studies (e.g. DeFond, 1992; Firth and Smith, 1992; Francis *et al.*, 2009; Hope *et al.*, 2012), these studies generally focus on listed companies. The value of an external audit was long considered to be minimal for private firms as these firms were expected to incur fewer agency conflicts due to a low separation between ownership and management (Fama and Jensen, 1983a, b). Recent studies (Carey and Guest, 2000; Niskanen *et al.*, 2011; Dedman *et al.*, 2014), however, show that external auditing is also highly valuable for private firms because agency conflicts may be omnipresent within those firms as well. Lennox (2005) suggests that the value of external auditing could even be higher for private firms than for listed firms because private firms are less vulnerable to takeovers, are less monitored by analysts and stock markets, and are required to disclose much less accounting information to their stakeholders. Within this private firm setting, the demand for auditing is

[1] Several audit demand studies (e.g. Firth & Smith, 1992; Reed *et al.*, 2000) also hypothesized and found a positive association between the level of shareholder-debtholder agency conflicts and audit demand. We will not focus on this type of agency conflict in this study, but we will control for its influence in our regressions.

also explained by the agency theory, stating that agency conflicts directly lead to a higher audit demand.

2.2 Bounded rational behavior

The premise that audit demand is a direct result of the level of agency conflicts, irrespective of whether the actual auditor choice is made by management or the shareholders, is founded on the agency theory's assumption of rational behavior. However, several authors (e.g. Radner, 1996) argue that people do not always act in a rational way, but rather behave in a bounded or even non-rational way. Even one of the founders of the agency theory, Jensen (1994), agrees that people take both rational and non-rational decisions, leading to defensive and unchangeable behavior. Such behavior can be caused by incomplete information and limited capabilities to process the available information (Van den Berghe and Carchon, 2003).

Translated to our context, managers may consider an audit as too expensive although it may in fact be a cost-effective way to reduce agency conflicts. Managers may also not be aware of the negative consequences of agency conflicts (e.g. limited remuneration because shareholders expect them to behave opportunistically and remunerate them accordingly). Moreover, non-rational behavior may also be caused by risk/pain avoidance (Jensen, 1994; Gomez-Mejia *et al.*, 2001). Managers may, for example, not want to be monitored by an auditor because this could possibly reveal their weaknesses (e.g. they may have behaved opportunistically or they may have performed below expectations) or they may just want to preserve the status quo.

This view is also in line with the upper echelons theory, which is also built on the premise of bounded rationality (Cyert and March 1963, March and Simon 1958, in: Hambrick, 2007) caused by the natural limitations of human beings (Cyert and March 1963, in: Nielsen, 2010). This theory argues that strategic choices are based on *managerial perceptions*

(Hambrick and Mason, 1984; Hambrick, 2007), which in turn are determined both by the manager's cognitive base and his/her values (Hambrick and Mason, 1984). More specifically, the manager's values and cognitive base will create a screen between the actual situation and the manager's perception of it (Hambrick and Mason, 1984). They will influence where the *attention* is directed, as well as the *selected information* of certain phenomena to which the attention was directed, and they will influence the *interpretation* of this information (Hambrick and Mason, 1984).

As bounded rationality may affect strategic decisions, it may also affect audit demand. For example, a manager may not want an (high quality) audit because he/she is not interested in how this would influence the relationship with the shareholders (attention). He/she may therefore only focus on the high fee of an audit and not take into account the potential gains of an audit (information selection) and accordingly consider it as too expensive (interpretation), which will eventually lead to a low value perception towards auditing (managerial perception). Another manager could have a different value perception towards auditing because he/she has a different cognitive base and different values, even if the organizational context is completely the same.

While managers may have bounded rational perceptions towards auditing in both listed and private firms, it is more likely that these perceptions may actually lead to a level of audit demand that does not reflect the actual need for an audit (i.e. the level of agency conflicts) in private firms. Private firms often do not have the legal requirement to install an audit committee. Since auditor selection is one of the main responsibilities of the audit committee (Menon and Williams, 1994; Abbott and Parker, 2000; Chen *et al.*, 2005), the audit committee will check whether the auditor choice, which can be suggested by management, is made in line with the firm's needs. In the absence of audit committees, the board of directors should take over this role. However, boards of directors in private firms may be more likely to lack the

necessary accounting expertise and are generally less independent (e.g. Fiegener *et al.*, 2000a, b; Voordeckers *et al.*, 2007). Moreover, management (and especially the CEO) in private firms generally has a high level of power (Fiegener *et al.*, 2000b), which makes them more able to drive audit demand, even if this is a choice which does not reflect the level of agency conflicts.

2.3 CEO's value perception

Given the potential influence of management's (bounded rational) perceptions towards auditing on audit demand in private firms, in the present study we consider the CEO's value perception towards auditing as an additional driver of audit demand. Because of the assumption of rational behavior, agency theory would consider this perception to be fully dependent of the level of agency conflicts (in which the CEO would also perceive an audit as (un)necessary when the level of agency conflicts is high (low)), making the CEO's value perception towards auditing a redundant variable in the audit demand curve. The previous section indicated, however, that the CEO's value perception will not depend on the level of agency conflicts only, but is also influenced by bounded rationality. Moreover, because of a lack of oversight from audit committees or boards of directors, which could increase the rationality of the audit decision again, we argue that this perception might actually lead to an additional audit demand effect in private firms.

The present study defines the CEO's value perception in line with Zeithaml *et al.* (1988, in: Ulaga and Chacour, 2001, 529). They consider value perception as "[t]he consumer's overall assessment of the utility of a product [or service] based on a perception of what is received and what is given" (p. 529). It is considered to be subjective (Ulaga and Chacour, 2001) and "…highly personal, idiosyncratic and may vary widely from one customer to another" (Holbrook, 1994, in: Hu *et al.*, 2009, 114). Moreover, in contrast to satisfaction, which is generally considered to be a post-purchase evaluation, value perception can be determined

during the pre-purchase stage (Woodruff, 1997, in: Sweeney and Soutar, 2001). The more positive the perceived balance between what is received and what is given, the higher the probability that we acquire the product or service (Sheth *et al.*, 1991).

While perceptions are rarely taken into account in audit demand studies, two exceptions are the studies of Collis *et al.* (2004) and Niemi *et al.* (2012), which controlled for the influence of managerial perceptions about auditing on voluntary audit demand, and indeed found a significant positive association. They considered these managerial perceptions as a unidimensional construct (the extent of agreement that the audit improves the quality of the financial statement information (Collis *et al.*, 2004; Niemi *et al.*, 2012)). However, recent literature about value perception distinguishes between several dimensions (Sánchez-Fernández and Iniesta-Bonillo, 2007). More specifically, it is argued that the perception of what is received not only relates to the functional value of, in our case, the audit, but also relates to its emotional and social value (what does it communicate to others) (Sweeney and Soutar, 2001). In this way, the bounded rationality that drives value perceptions is also better grasped. In this study, we therefore want to add to the studies of Collis *et al.* (2004) and Niemi *et al.* (2012) by examining the individual effects of these dimensions on audit demand. Since we examine firms that are already legally required to hire an auditor, we will not link the CEO's value perception towards auditing to whether the firm hires an auditor or not (voluntary audit demand). As indicated by Sheth *et al.* (2005), perceived value is not only applicable to the 'buy versus do not buy' decision, but can also be applied to, for example, brand choice, and therefore we will link it to which type of auditor is chosen (*auditor reputation*) and the amount of *audit effort* that is demanded.

2.4 The dimensions of value perception

Sweeney and Soutar (2001) define four dimensions of value perception: *functional* value regarding performance and/or quality, *functional* value in comparison to its price (to which we will further refer as *price* value to prevent confusion with the previous dimension), *social* value and *emotional* value.

Functional value is traditionally considered to be the primary driver of consumer choice and can be described as the perceived utility of the product or service regarding functional, utilitarian or physical performance, in which reliability will be an important driver (Woo and Ennew, 2005). *Price* value, often referred to as 'value for money', is sometimes considered as a part of *functional* value but Sweeney and Soutar (2001) consider it, in line with other recent value models (Sánchez-Fernández and Iniesta-Bonillo, 2007), as a separate dimension since *functional* value is closely related to quality, but quality and price were found to have opposite influences on value perception (e.g. Dodds *et al.*, 1991, in: Sweeney and Soutar, 2001). *Social* value relates to the 'social image' that is acquired by purchasing a certain product or service, and is found to be especially important for highly visible goods and services (Woo and Ennew, 2005). Finally, *emotional* value relates to the feelings associated with the purchase of a certain good or service (Woo and Ennew, 2005) and can, especially in the case the purchase is legally required like in our context, both be positive and negative. Since the four dimensions may have different effects on *auditor reputation* and/or *audit effort* demand, we will consider these dimensions as separate drivers in our audit demand models.

Since *functional value* is considered to be the primary driver of consumer choice (Woo and Ennew, 2005), we expect that CEOs with a low functional value perception towards auditing will not want to further invest in a high quality audit. As the firms that we examine are all legally required to engage an auditor, these CEOs will already consider the balance

between what is received and what is given to be negative. Investing in a higher quality audit would make this balance even more negative because of the increase in cost that is associated with demanding a high quality audit (Hay *et al.*, 2006). We therefore do not expect them to prefer such a higher quality audit since they will only be concerned about fulfilling the legal requirement to hire an auditor. CEOs with a higher functional value perception towards auditing on the other hand, may be more willing to invest in a high quality audit. Considering the service to be of high functional value, they may also want to make sure that the service is provided by a reputed audit company. We therefore hypothesize a positive association between the perceived functional value of auditing and the demand for *auditor reputation*.

We expect a positive relationship between the CEO's perceived functional value of auditing and the demand for *audit effort* as well. CEOs who have a low functional value perception towards auditing will not prefer more profound audit activities since they already consider the current level of (legally required) *audit effort* to be dysfunctional and therefore too high. CEOs who have a higher functional value perception towards auditing on the other hand, may demand additional audit effort to maximize the functional benefits of an audit. Overall, we therefore hypothesize:

H1a: The CEO's perceived *functional* value of auditing is positively associated with *auditor reputation* demand.

H1b: The CEO's perceived *functional* value of auditing is positively associated with *audit effort* demand.

The relationship between perceived *price value*, the extent to which a good or service is perceived to provide 'value for money', and *auditor reputation* demand is difficult to predict since the price of a good or service is considered both as "…an indicator of the amount of sacrifice needed to purchase a product and an indicator of the level of quality" (Astrachan,

2010, 308). However, since price value is closely related to the concept of perceived price (un)fairness and Sinha and Batra (1999) hypothesized and found that an overall perceived price unfairness will lead to an increased price consciousness, which in turn will lead to the purchase of lower priced private label brands, we hypothesize a positive association between the perceived price value of auditing and *auditor reputation* demand. In line with Sinha and Batra (1999), we expect that CEOs who consider the price value of an external audit to be low (high price unfairness) will prefer to engage less expensive second tier auditors instead of the more expensive but more reputed first tier auditors, while CEOs who perceive the price value of auditing to be high (high price fairness) will be more willing to engage these more reputed auditors.

Regarding *audit effort* demand, perceived price (un)fairness and a perceived high (low) price value are generally considered to lead to higher (lower) buying intentions (e.g. Campbell, 1999; Bei and Chiao, 2001; Xia *et al.*, 2004; Fandos Roig *et al.*, 2009). Fandos Roig (2009) also found empirical evidence for this association in a financial services market, and we therefore also expect that when the cost of an audit is considered to be reasonable, more audit effort will be demanded. We thus hypothesize a positive association between the CEO's perceived price value of auditing and *audit effort* demand. Formally, we therefore hypothesize:

H2a: The CEO's perceived *price* value of auditing is positively associated with *auditor reputation* demand.

H2b: The CEO's perceived *price* value of auditing is positively associated with *audit effort* demand.

We also hypothesize a positive association between the perceived *social value* of auditing and both *auditor reputation* and *audit effort* demand. If CEOs consider audits to have a high social value (i.e. they consider an audit to be able to increase their reputation towards customers,

suppliers, banks, etc.), we expect them to be more likely to prefer a reputed auditor and to demand more audit effort. Since all firms in our sample were already legally required to have their financial statements audited, CEOs are not able to increase their social image by just complying with this requirement. If they want to increase their social image and they consider an audit to be able to assist in this, we expect them to demand a reputed auditor in the first place, because this can be easily observed by their peers. In fact, the name of the auditor seems almost the only noticeable difference among financial statements of companies since the practices of audit firms have become very similar (Han, 1994). Therefore, auditors are often considered to serve as symbols, in which not necessarily the content of the statement is important, but rather the reputation of the audit firm that signed it (Han, 1994). Therefore we expect a positive association between the CEO's perceived social value of auditing and *auditor reputation* demand.

We expect a similar association with *audit effort* demand since the amount of audit effort (which can be proxied by the audit fee) is also observable in the financial statements of the companies within our sample, although it is less observable than the name of the auditor. Formally, we therefore hypothesize the following regarding the influence of social value:

H3a: The CEO's perceived *social* value of auditing is positively associated with *auditor reputation* demand.

H3b: The CEO's perceived *social* value of auditing is positively associated with *audit effort* demand.

The hypotheses regarding the influence of *emotional value* can be developed rather intuitively. We expect that CEOs who perceive the emotional value of an audit to be low (e.g. they *feel* threatened by the control activities of an auditor, they *experience* it as a reduction of their flexibility, they *consider* it as a waste of their time, etc.) to invest as little as possible in an

audit, leading to a lower demand for both *auditor reputation* and *audit effort*. On the other hand, if CEOs perceive the emotional value of an audit to be higher (e.g. it *reassures* them about the quality of the financial reports of the firm), we expect them to prefer higher investments in both *auditor reputation* and *audit effort*. In line with the previous hypotheses, we therefore hypothesize a positive association between the CEO's perceived emotional value of auditing and both *auditor reputation* and *audit effort* demand.

H4a: The CEO's perceived *emotional* value of auditing is positively associated with *auditor reputation* demand.

H4b: The CEO's perceived *emotional* value of auditing is positively associated with *audit effort* demand.

3. Data and methodology

3.1 Sample

We identified a population of all active Belgian private firms that have a statutory audit requirement and are not part of the financial services industry from the Bel-First database of Bureau Van Dijk, which contains comprehensive information (financials, ownership data, legal information, etc.) of both listed and private Belgian firms. In line with several other European countries, the thresholds to be legally required to hire an auditor are relatively low. More specifically, a Belgian firm is required to hire an auditor if the annual average workforce is higher than 100 or if at least two of the following thresholds are exceeded: annual average workforce of 50 employees, balance sheet total of 3,650,000 EUR and turnover of 7,300,000 EUR (article 15 of the Belgian Company Legislation). While private firms in Belgium are not required to install an audit committee, they remain required to disclose a lot of information in

their financial statements. The use of a structured questionnaire to collect data regarding our explanatory variables does therefore not lead to a common method bias threat since we were able to collect the data regarding the dependent variables directly from the Bel-First database and the sample firms' financial statements.

The questionnaire was sent to the firms within our population (except those with insufficient contact details) in February 2015, and we asked the CEO to complete it (N = 8,662). 740 CEOs filled out the questionnaire, leading to a response rate of 8.5 percent. We performed t-tests between early and late respondents to check for potential response bias (cut-off points at 10, 20 and 30%) regarding the CEO's value perception towards auditing but found no significant differences. For the control variables, we combined this dataset with additional publicly available accounting data (of 2014) from the Bel-First database. We obtained a final sample of 586 firms after removing cases with incomplete data regarding the necessary items included in the questionnaire or the accounting data. We performed a dropout analysis by comparing the means regarding turnover, total assets and the number of employees of our sample firms with the population but found no significant differences. In order to alleviate potential outlier problems, all continuous variables were winsorized at the 1st and 99th percentiles.

3.2 Model

In order to proxy *auditor reputation* demand, we use a dummy variable *BIG4* coded 1 if the firm hired a Big 4 auditor and 0 if it hired a non-Big 4 auditor, which is in line with most audit demand studies (e.g. Firth and Smith, 1992; Piot, 2001; Fan and Wong, 2005; Lennox, 2005; Hope *et al.*, 2012). This audit quality proxy is based on DeAngelo (1981), who states that larger audit firms have more to lose in case of an audit failure and will therefore provide a higher

level of audit quality. More specifically, the larger the audit firm, the higher the level of reputational capital that is at risk in case of an audit failure, and large audit firms will therefore require both a high level of independence and competence of their auditors (DeAngelo, 1981). Moreover, large audit firms will be less financially dependent on one client compared to smaller audit firms, reducing the incentive to behave opportunistically (i.e. reducing the level of audit quality to retain a client) even more (DeAngelo, 1981). Several studies also found empirical support for this view (e.g. Becker *et al.*, 1998; Francis *et al.*, 1999).

In order to proxy *audit effort* demand, we use the natural logarithm of the audit fee (*AUDITFEE*), in which a higher audit fee is associated with a higher level of audit effort and therefore a better audit quality. This is also in line with most other studies that examine the amount of audit effort/assurance demanded (e.g. Carcello *et al.*, 2002; Abbott *et al.*, 2003; Knechel and Willekens, 2006; Bliss, 2011; Aldamen *et al.*, 2016). Since the audit fee is influenced by both supply and demand effects (Hay *et al.*, 2006), we will control for the supply-side effects by using additional control variables.

In line with Copley *et al.* (1994; 1995), Ireland and Lennox (2002) and Dao *et al.* (2012), we employ a simultaneous equations analysis to account for the fact that both the choice for a Big4 auditor and the level of audit fees are "…mutually determined by the interaction of the client's demand for, and the audit firm's supply of, audit quality" (Copley *et al.*, 1994, 244). More specifically, the level of audit fees can be influenced by whether the audit is performed by a Big 4 audit firm or not, as Big 4 firms generally charge a Big 4 premium (e.g. Craswell *et al.*, 1995; DeFond *et al.*, 2000; Choi *et al.*, 2008). At the same time, if a firm is already expected to be charged a higher audit fee due to, for example, its high business risk, such a firm may be more likely to hire a non-Big 4 auditor as a Big 4 auditor might become too costly due to the premium that is added to this already increased fee (Copley *et al.*, 1994). Therefore, *auditor reputation* can be considered as an explanatory variable in the *audit effort* model and the

amount of *audit effort* can be considered as an explanatory variable in the *auditor reputation* model and failure to account for this endogeneity might lead to biased estimations and inferences (Copley *et al.*, 1994). We therefore specify the simultaneous equations model as follows:

$$BIG4 = \beta_0 + \beta_1 AUDITFEE' + \beta_2 FUNCTIONAL\_VALUE + \beta_3 PRICE\_VALUE + \beta_4 SOCIAL\_VALUE + \beta_5 EMOTIONAL\_VALUE + control\ variables + \varepsilon$$

$$AUDITFEE = \beta_0 + \beta_1 BIG4' + \beta_2 FUNCTIONAL\_VALUE + \beta_3 PRICE\_VALUE + \beta_4 SOCIAL\_VALUE + \beta_5 EMOTIONAL\_VALUE + control\ variables + \varepsilon \quad (1)$$

We employ the two-stage probit least squares estimation method of Maddala (1983, in: Keshk, 2003) to estimate this model, as it is specifically designed for simultaneous equations models in which one of the endogenous variables is continuous (in our case *audit effort*) and the other endogenous variable is dichotomous (in our case *auditor reputation*).

3.3 Explanatory variables

In order to measure the value perception of the CEO towards auditing, we relied on the four general value perception dimensions as identified by Sweeney and Soutar (2001) and translated its items to an auditing context. We relied on the roles of external audits as defined in the auditing literature (signaling information to stakeholders, reducing information asymmetries, etc.) (e.g. Dye, 1993; O'Reilly *et al.*, 2006), including studies that specifically focus on the Belgian context (e.g. Sarens *et al.*, 2012), and on interviews with both auditors and managers to be able to make the translation from a general product/service to the specific service of auditing as accurately as possible (see table 1 for an overview of all the items). Our respondents had to indicate to what extent they agree with 20 statements regarding auditing using a 5-point

Likert scale. The final questionnaire was reviewed thoroughly by both academics and practitioners before it was sent out.

Before running regression models, we first had to examine whether the CEO's value perception towards auditing indeed consists of the four expected dimensions. Since there are, to our knowledge, no previous studies that have examined the dimensions of perception in the context of external auditing, we executed an exploratory factor analysis, more specifically a principal component analysis. We evaluated the appropriateness of our data for such an analysis based on the recommendations of Hair *et al.* (2006). All recommendations are met: our sample is sufficiently large (respondent-variable ratio of approximately 29:1, which is better than the recommended threshold of 10:1), there is sufficient intercorrelation according to the Bartlett test (the test rejects the null hypothesis 'variables are not intercorrelated' with a p-value of 0.000), the overall Kaiser-Meyer-Olkin measure (0.938) is considered to be meritorious and the individual measures of sampling adequacy (MSA) are all found to be higher than 0.83 (while it is advised to delete variables with an MSA value below 0.50) (Hair *et al.*, 2006).

Based on both the latent root criterion (each factor should have a latent root or eigenvalue greater than 1) and the percentage of variance criterion (60 percent of the total variance should at least be extracted by all the factors together) (Hair *et al.*, 2006), the factor results lead to a four-factor model, which is in line with our expectations. In line with Sweeney and Soutar (2001), we allowed the factors to be correlated and therefore we applied an oblique factor rotation.

The factor results we obtained after deleting two items with factor loadings below the threshold of 0.50 to be practically significant (Hair *et al.*, 2006) can be found in table 1. This table also includes the Cronbach's alpha for each factor (which are all found to be higher than

the proposed threshold of 0.70 to be considered internally consistent (Hair *et al.*, 2006)), the cumulative percentage of variance explained, the Kaiser-Meyer-Olkin Measure of Sampling Adequacy and the result of the Bartlett test. While the items are ranked per factor in table 1, please remark that the order in which the items appeared in the questionnaire was random.

Insert table 1 about here

When taking a closer look at the items of each factor, the expected dimensions plainly emerge. The first factor clearly relates to the functional value of an audit while the second factor contains the items that relate to how an audit would affect the perception of other stakeholders (banks, the government, customers, suppliers, the public in general, etc.) and can therefore be associated with its social value. The third factor relates to the fee of an audit and thus its price value while the last factor contains items regarding how a CEO *feels* about an audit and can therefore be labeled as its perceived emotional value.

In order to examine how the different dimensions affect audit demand, the factor scores of each factor are calculated and used as independent variables (Hair *et al.*, 2006), which leads to the following variables: *FUNCTIONAL_VALUE*, *PRICE_VALUE*, *SOCIAL_VALUE* and *EMOTIONAL_VALUE*.

3.4 Control variables

In line with former audit demand studies (e.g. Firth and Smith, 1992; Reed *et al.*, 2000; Lennox, 2005; Chen and Jian, 2007; Allee and Yohn, 2009), we include the variables *MAN_OWN*, *LEVERAGE*, *SIZE* and *ROA* in both the *auditor reputation* and *audit effort* models to control for other audit demand effects.

We include *MAN_OWN*, defined as the percentage of shares that is owned by management, to control for the traditional shareholder-manager agency conflicts and *LEVERAGE*, defined as total debt to total assets, to proxy for the agency conflicts between shareholders and debtholders. *SIZE*, defined as the natural logarithm of total assets, is included to control for firm complexity, as firm complexity may lead to higher audit demand to compensate for the loss of control (Abdel-Khalik, 1993) and *ROA*, defined as the ratio of annual net income to total assets, is included as profitable firms may have sufficient internally generated funds to finance investments and therefore do not need audited financial statements to attract external investors or banks (Lennox, 2005). We also control for industry effects using four dummy variables *PRODUCTION*, *CONSTRUCTION*, *TRADE* and *SERVICES* as the firm's industry may affect the choice of an auditor, the amount of audit effort demanded as well as the audit difficulty (supply effect) (Lennox, 2005; Hay *et al.*, 2006).

We include *GROUPCHOICE*, coded 1 if the auditor choice was made by the parent company of the firm's group (if applicable) and 0 otherwise, in the *auditor reputation* model to control for this external demand effect. We did not include this variable in the *audit effort* model since it theoretically only relates to the choice of the auditor but not necessarily to the audit fee of the individual firm.

In the *audit effort* model, however, we also include some additional variables to control for additional supply effects that may influence the audit fee. The choice of these variables is based on the meta-analysis of Hay *et al.* (2006), which gives a very clear overview of the most important drivers of the audit fee.

More specifically, we include *INV_REC_ASSETS*, defined as inventory and receivables divided by total assets, since these accounts are generally considered to be difficult to audit and may therefore increase the audit fee (Hay *et al.*, 2006; Dao *et al.*, 2012). We also control for

the busy season using a dummy variable *BUSY* which is coded 1 if the fiscal year-end is December 31 and 0 otherwise, as an audit conducted during the busy season often requires staff working overtime and may therefore be more expensive (Hay *et al.*, 2006; Johnstone *et al.*, 2014). Finally, we control for *NONAUDITFEE*, defined as the natural logarithm of the non-audit fees. The provision of such services may lead to fee cutting because of cross-subsidization or synergies between audit and non-audit services. However, it may also lead to fee increases because firms are less likely to switch auditors because of these synergies and this therefore creates a kind of monopoly power that the auditor could exploit to charge a higher fee. Moreover, the audit fee might also increase if additional audit effort is required after organizational changes that are the result of the non-audit services (Hay *et al.*, 2006).

4. Results

4.1 Descriptive statistics and correlations

The descriptive statistics of our sample (minima, maxima, medians, means and standard deviations) are presented in table 2. Approximately 39 percent of our sample firms hired a Big 4 auditor and the average audit fee is found to be 18,221 EUR. Regarding the control variables, the average value of *MAN_OWN* is found to be approximately 42 percent, which is rather high, but this is due to the private context in which we test our hypotheses and is in line with other audit demand studies that examine a similar context (e.g. Lennox, 2005; Allee and Yohn, 2009; Niskanen *et al.*, 2011). The values regarding the other control variables are in line with the expectations as well.

Insert table 2 about here

Both the Pearson (below the diagonal) and the Spearman (above the diagonal) correlations are presented in table 3. In line with H1a and H3a, the correlations between *FUNCTIONAL_VALUE* as well as *SOCIAL_VALUE* and hiring a Big 4 auditor are significantly positive. The Pearson correlation coefficient between *EMOTIONAL_VALUE* and *BIG4* is only marginally significant while the Spearman correlation between both variables is even not significant. *PRICE_VALUE* is found to be negatively correlated with both hiring a Big 4 auditor and with the audit fee, indicating that CEOs who consider the price of an audit fair will also prefer auditors that provide the service at a lower (i.e. below average) cost. The correlations between *FUNCTIONAL_VALUE*, *SOCIAL_VALUE* as well as *EMOTIONAL_VALUE* and *AUDITFEE* are all found to be significantly positive, which is in line with H1b, H3b and H4b.

Insert table 3 about here

The correlations between the explanatory and control variables and among the control variables never exceed the critical value of 0.8 (the highest value is 0.67) and therefore there seems not to be a multicollinearity threat. This is also supported by the variance inflation factors, which are all found to be lower than the critical value of 10 (the highest value is 2.65).

4.2 Regression results

The second stage regressions with corrected standard errors resulting from the two-stage probit least squares estimation are presented in table 4. Both the beta coefficients and the corrected standard errors are reported per variable for each model. All models are found to be significant ($p < 0.0001$) and the R^2 values are found to be 0.37 and 0.40 for the *auditor reputation* models (*BIG4*) and 0.60 and 0.63 for the *audit effort* models (*AUDITFEE*).

Model 1 can be considered as benchmark model since it examines the influence of the traditional explanatory audit demand variables on hiring a Big 4 auditor and the audit fee, and does not yet include the influence of CEO perception. In line with former audit demand studies (e.g. Firth and Smith, 1992; Reed *et al.*, 2000), *MAN_OWN* is found to be significantly negatively associated with hiring a Big 4 auditor, supporting the traditional view of agency theory that shareholder-manager agency conflicts lead to *auditor reputation* demand, but was not found to be significantly associated with *audit effort* demand (*AUDITFEE*). Conversely, while agency theory also considers the level of shareholder-debtholder agency conflicts, proxied by *LEVERAGE*, as a determinant of audit demand (e.g. Chow, 1982; Firth and Smith, 1992; Reed *et al.*, 2000), we only find support for this in the *AUDITFEE* model, indicating that debtholders require a higher level of *audit effort*, but not necessarily a higher level of *auditor reputation.* Moreover, *GROUPCHOICE* is found to be significantly positive in the *auditor reputation* model, indicating that parent companies often require their subsidiaries to hire a Big 4 auditor (probably the same auditor in order to have one overall group auditor), and *SIZE* is found to be significantly positive in the *audit effort* model, indicating that larger firms need more audit effort, which is in line with prior literature (e.g. Knechel *et al.*, 2008; Niskanen *et al.*, 2011). *NONAUDITFEE* is found to be significantly positive in the *audit effort* model as well, indicating that audits become more expensive when also engaging the auditor to perform non-audit services, which is probably due to the required additional audit effort after organizational changes that are the result of the non-audit services (Hay *et al.*, 2006).

Insert table 4 about here

In model 2, the CEO perception variables are added. In line with our benchmark results regarding *auditor reputation* demand, the coefficient of *MAN_OWN* is found to be significant and negative, while the coefficient of *GROUPCHOICE* is found to be significantly positive. In

the *audit effort* model, the coefficients of *LEVERAGE*, *SIZE* and *NONAUDITFEE* are all found to be significantly positive, which is completely in line with our benchmark results as well.

Regarding our explanatory variables, the coefficient of *FUNCTIONAL_VALUE* is found to be significant in the audit fee model only. CEOs who perceive an external audit as a useful service are therefore found to demand more audit effort in the first place, supporting H1b, but we were not able to confirm the hypothesis that they will also demand more auditor reputation (i.e. hire a Big 4 auditor) (H1a). This may indicate that private firm CEOs do not consider the audit quality of Big 4 auditors to be higher than the quality of non-Big 4 auditors, which is in line with the results of the study of Ojala et al. (2014) reporting no significant association between the engagement of a Big 4 auditor and the perceived functional benefits of an audit.

While the *PRICE_VALUE* coefficient is found to be insignificant in the *auditor reputation* model, it is found to be significantly negative in the *audit effort* model. This direction is opposite to what we initially hypothesized and therefore rejects hypothesis H2b. Since the marketing literature argues that perceptions of price fairness are influenced by information regarding the processes that lead to the observed prices and the buyer's general knowledge about the seller's practices (Xia *et al.*, 2004), this negative coefficient may indicate, however, that CEOs who consider the price of an audit to be reasonable may have a better understanding about how this price is set, and they may therefore have invested more in their own control environment so that the control risk of their firm is significantly reduced, which will lead to less audit effort needed and therefore to a reduced audit fee.

SOCIAL_VALUE is found to be the only significant explanatory variable in the *auditor reputation* model, supporting H3a. In the *audit effort* model, however, the *SOCIAL_VALUE* coefficient is found to be significantly negative, in this way rejecting H3b. These results indicate that CEOs who perceive the social aspect of an audit to be valuable will have a stronger

preference for a Big 4 auditor (i.e. *auditor reputation*), but will demand the least *audit effort* possible since they are mainly interested in the social image that is gained when hiring a Big 4 auditor, but not necessarily in the actual audit service. These CEOs therefore seem to use the reputation of Big 4 auditors for window-dressing as they do not seem to be interested in the actual audit service. This result also explains why some studies (e.g. Boone *et al.*, 2010; Karjalainen, 2011) find that Big 4 audits are still considered to be of higher value, even though no difference in actual audit quality was found between Big 4 and non-Big 4 auditors. In combination with our finding regarding *FUNCTIONAL_VALUE*, this suggests that Big 4 audits may still be considered to be more valuable than non-Big 4 audits for reputational aspects but not necessarily for functional aspects as well.

EMOTIONAL_VALUE was not found to be significant in either model and we therefore did not find any support for H4a and H4b. We therefore find no support that indicates that audit demand is driven by the perceived emotional value of auditing. This could indicate that the influence of the CEO on audit demand is not necessarily a direct influence, but could be mediated by other bodies within the firm. As in most countries, the final auditor choice in our context (Belgium) is suggested by the board of directors and approved by the general shareholders' meeting. It is therefore possible that the CEO can only influence audit demand when being able to convince these bodies of why a certain level of *auditor reputation* or *audit effort* should be demanded. The board of directors and/or the general shareholders' meeting may therefore only agree with the preferences of the CEO if these preferences are based on strong arguments, which the CEO is likely to have regarding the perceived *FUNCTIONAL_VALUE*, *PRICE_VALUE* and *SOCIAL_VALUE* of auditing but not necessarily regarding the perceived *EMOTIONAL_VALUE*.

4.3 Additional analyses

In order to examine the importance of the influence of CEO's value perception towards auditing on audit demand, we calculated the standardized coefficients of our audit demand model to assess the magnitude of the perception effects (model 1 of table 5a). *GROUPCHOICE* is found to be the main driver of *auditor reputation* demand, followed by *MAN_OWN*. The third main driver is found to be *SOCIAL_VALUE*, supporting our thesis that the CEO's value perception should be considered as an important driver of *auditor reputation* demand, and that the upper echelons theory is a valuable additional theory to explain this demand. The *audit effort* regression with standardized coefficients leads to a similar conclusion. *SIZE* is found to be the main driver of the audit fee, followed by the endogenous variable *BIG4'*. The effect of *PRICE_VALUE* is found to be the third largest, followed by *NONAUDITFEE*, *FUNCTIONAL_VALUE* and *SOCIAL_VALUE*.

Insert table 5 about here

We also examined whether our results may be influenced by cases in which the CEO was appointed after the engagement of the auditor. We therefore ran a regression in which we only included firms in which the CEO has had a tenure of more than three years (model 2 of table 5a). This criterion is based on the fact that an auditor is generally appointed for a period of three years in Belgium (after which the engagement can be extended, so there is no rotation requirement). Although this is a very stringent criterion since not every audit engagement will be in its third year, the results remained completely in line with our main results.

In order to make sure that the interpretation of our results within the *AUDITFEE* model is not distorted by additional supply-side effects, we further controlled for supply-side effects induced by risk and audit problems, as they may influence the level of audit effort needed and

therefore the audit fee (model 3 of table 5a). More specifically, we included *LOSS*, a dummy variable coded 1 if the firm reported a loss in 2014 and 0 otherwise to further control for risk, and *AUDIT_OPINION*, a dummy variable coded 1 if the firm did not obtain an unqualified opinion and 0 otherwise to control for audit problems (Hay *et al.*, 2006). The results remain completely in line with our main results, while the coefficients of these additional variables were not found to be significant.

As industry specialism is often considered to be a good measure for *auditor reputation* as well, we also ran our analyses with INDUSTRY_SPECIALIST (coded 1 if the firm hired an industry specialist and 0 otherwise) instead of BIG4 (model 4 of table 5b). We identified industry specialists by the market share approach (based on audit fees) and used the Palmrose (1986, in: Neal and Riley, 2004) criterion that considers auditors that have a minimum of 15 percent within-industry market share to be industry specialists. In line with our main results, we find a significantly positive coefficient for FUNCTIONAL_VALUE and a significantly negative coefficient for PRICE_VALUE in the AUDITFEE model. SOCIAL_VALUE is not found to be significant, neither in the AUDITFEE model nor in the INDUSTRY_SPECIALIST model. As SOCIAL_VALUE mainly relates to reputation building towards outsiders, an industry specialist is probably considered to be less able to do so as other firms are not always aware of which firm is an industry specialist and which firm is not. For reputational matters, it seems therefore more interesting to hire a Big 4 auditor as they are well-known by the market and within every industry.

Moreover, as mid-tier firms are also generally associated with providing a higher level of audit quality, we also ran our regressions with FOF instead of BIG4. FOF is coded 1 if the firm hired an auditor that is part of the forum of firms, which includes Big 4 auditors and mid-tier firms that committed themselves “to adhere to and promote the consistent application of

high-quality audit practices worldwide" (IFAC, 2017a, b). The results, which can be found in model 5 of table 5b, are also in line with our main results.

Finally, even though the importance of employing a simultaneous equations analysis to take into account potential endogeneity threats is stressed within the literature (e.g. Copley *et al.*, 1994; Copley *et al.*, 1995), a lot of prior audit demand studies (e.g. Firth and Smith, 1992; Piot, 2001; Lennox, 2005; Niskanen *et al.*, 2011) have still relied on multivariate logistic regression analyses to examine *auditor reputation* demand and therefore did not take this endogeneity into account. We therefore examined whether our results remain in line with our main results when also employing such approach (model 6a of table 5b), which is the case: *MAN_OWN* and *GROUPCHOICE* were found to be significant at the 1% significance level, while *SOCIAL_VALUE* is found to be significant at the 5% significance level. Similarly, we also ran a cross-sectional OLS regression model in line with most other audit fee studies (Hay *et al.*, 2006) to test the robustness of our findings regarding *audit effort* demand (model 6b of table 5b). *FUNCTIONAL_VALUE*, *PRICE_VALUE*, *SIZE*, *NONAUDITFEE* and BIG 4 were all found to be significant at the 1% significance level, and *LEVERAGE* at the 5% significance level, which is in line with our main results. Deviating from our main results, *SOCIAL_VALUE* was not found to be significant in this model, while *MAN_OWN* was found to be strongly significant. This, however, is probably due to the fact that we did not control for endogeneity in this model as SOCIAL_VALUE was found to be a strong predictor in the BIG4 model. This therefore confirms the value of the simultaneous equations analysis.

5. Summary and conclusions

In this study, we examined the influence of the CEO's value perception towards auditing on audit demand in a Belgian private firm context. In line with our hypotheses, we found that

several of the underlying dimensions of this perception (functional value, price value, social value and emotional value) were associated with the demand for *auditor reputation* (whether a Big 4 auditor is hired instead of a non-Big 4 auditor) and/or *audit effort* (the amount of audit effort that is demanded from the auditor).

Using the two-stage probit least squares estimation analysis, the perceived functional value of auditing was found to be positively associated with *audit effort* demand but not with *auditor reputation* demand, indicating that CEOs who praise the functional value of an audit will mainly prefer to invest in more audit effort rather than a more reputed auditor. However, this result may also indicate that private firm CEOs do not consider the audit quality of Big 4 auditors to be higher than those of non-Big 4 auditors but this needs further examination.

Also the perceived price value of auditing was only found to be significantly associated with the demand for *audit effort* but its effect is negative. As the perceived price value is considered to be influenced by information regarding the processes that lead to the observed prices and the buyer's general knowledge about the seller's practices (Xia *et al.*, 2004), this might indicate that CEOs who consider the price of an audit to be reasonable may have a better knowledge about how this price is set, and may therefore have invested more in their own control environment so that the control risk of their firm and therefore the needed audit effort and accordingly the audit fee is significantly reduced.

The perceived social value of auditing was found to be significantly positively related with *auditor reputation* demand but significantly negatively related with *audit effort* demand, indicating that CEOs who only consider the social aspect of an audit to be valuable prefer to invest in a reputed auditor to increase their social image while keeping the amount of audit effort as low as possible. Therefore, while private firm CEOs may not consider the actual audit quality of Big 4 auditors to be higher than those of non-Big 4 auditors, they seem to value the

reputational gains of engaging a Big 4 auditor. This interpretation sheds new light on recent audit quality literature, which found that Big 4 audits are still considered to be of higher value than non-Big 4 audits, even though no significant difference in actual audit quality was found between both types of firms (e.g. Boone *et al.*, 2010; Karjalainen, 2011; Lawrence *et al.*, 2011). More specifically, our results suggest that especially the reputational capital of Big 4 audit firms explains why these firms are still considered to provide more value compared to non-Big 4 audit firms, rather than the potential difference in actual audit quality. However, more research on this issue is needed.

Emotional value was not found to be significantly associated with audit demand in our analysis. While this is an optimistic result, since it indicates that emotions may not influence actual audit demand, we hope future research will further examine the influence and role of emotions on audit demand as recent literature argues that emotions may have a significant influence on decision-making processes such as strategic decision making in private firms (Kellermanns *et al.*, 2014).

Moreover, our results on the whole also suggest that CEOs can only influence audit demand if they are able to convince the board of directors and/or the general shareholders' meeting of why a certain level of *auditor reputation* or *audit effort* should be demanded, based on strongly underpinned arguments, and these bodies will not accept a CEO's preferences if they are mainly based on emotions. A closer examination of this mediating role of the board of directors and/or the general shareholders' meeting may therefore also be considered as a very interesting path for future research.

This study contributes to the audit demand literature in several ways. In the first place, we filled an important gap in this research stream by actually examining the influence of the CEO on audit demand (Cohen *et al.*, 2004; Carcello *et al.*, 2011). Although it is generally

acknowledged that the CEO has a large influence on audit demand (Cohen *et al.*, 2010), studies that examined the extent of this influence remained very scarce (Cohen *et al.*, 2004; Carcello *et al.*, 2011). This is probably due to the fact that most studies rely on agency theory to explain audit demand, arguing that the level of agency conflicts is the main driver for demanding an (high quality) audit, and CEOs are considered rational decision makers who take into account the level of agency conflicts in their audit decision (Jensen and Meckling, 1976). These studies have therefore examined the direct relationship between the level of agency conflicts and audit demand (e.g. Lennox, 2005; Niskanen *et al.*, 2011; Hope *et al.*, 2012; Dedman *et al.*, 2014). However, since people are considered to make bounded or even non-rational decisions as well (e.g. Hambrick and Mason, 1984; Radner, 1996; Van den Berghe and Carchon, 2003), measuring and integrating the individual influence of management in the audit demand model could be valuable, which is also supported by our results.

Moreover, we rely on the upper echelons theory, which argues that strategic choices are often based on managerial perceptions instead of rational behavior (Hambrick and Mason, 1984; Hambrick, 2007), to explain the importance of integrating the CEO's value perception towards auditing within the audit demand models. In this way, we also answer the call of Cohen *et al.* (2008) to use different theories in accounting and auditing literature.

Since no multidimensional scale exists to our knowledge to measure the CEO's value perception towards auditing, we also believe that the development of our scale based on the work of Sweeney and Soutar (2001) is an important contribution. Moreover, the development of this scale, and the link to audit demand also answers the call of Carcello *et al.* (2011) to examine behaviors, processes and personality traits in an accounting context.

Our study also has some limitations that have to be acknowledged, and which provide interesting research avenues for the future. First, when interpreting our results, one should take

into account that very little is known about how management might actually influence audit demand. We therefore hope that future studies will continue the examination of this topic in order to open the black box of how management precisely influences audit demand, for example by looking at interactions with the board of directors and the shareholders..

Second, while we consider the development of the CEO's value perception scale to be highly valuable, we relied on the role of external audits as described in the literature for this development. However, private firms may have other or additional (functional) needs compared to their listed firm counterparts, which may also explain the insignificant association between the CEO's functional value perception and hiring a Big 4 auditor. Examining these specific needs might therefore be a very interesting avenue for future research as well.

Third, we tested our hypotheses in the Belgian private firm context. While this could be considered as a contribution since several researchers have called for more studies that relate to the non Anglo-American context (deZoort and Salterio, 2001; Cohen *et al.*, 2004; Carcello *et al.*, 2011), it could also be considered a limitation because one should be careful when generalizing these results to an Anglo-American context. In the United States for example, shareholders are considered to be better protected (Francis *et al.*, 2011), which may influence both the CEO's perception towards auditing and the influence of this perception on the actual audit decision. Moreover, the Belgian private firm context mainly exists of rather small firms compared to other settings, and this should also be taken into account. Belgian private firms may, for example, not be very important clients for Big 4 auditors. The audit teams working with these clients may therefore be less stable compared to the teams in listed or larger foreign private firms, which may influence both the actual and perceived level of audit quality and therefore also the demand effects. We therefore consider this limitation to be a very fruitful avenue for further research as well. Moreover, the fact that we only examined private firms is a limitation in its own right, since CEO perceptions may also affect audit demand in public

firms. Even though we would expect this influence to be smaller in this context, it may still have significant implications for the stakeholders of these firms and is therefore worth investigating.

Fourth, since our main results indicate that the CEO's value perception towards auditing should be considered as an important additional driver for audit demand, examining the determinants of these perceptions would be very interesting to both theorists and practitioners. Therefore, we hope that this study encourages other researchers to examine how the board, corporate law, advertising, etc. may influence the CEO's value perception towards auditing. This would enable the government and audit firms to manage these perceptions in order to reduce a potential discrepancy between the need (the level of agency conflicts) and demand (the auditor that is hired and the amount of audit effort that is demanded), caused by the CEO's perception.

Finally, while we examined the influence of the CEO's value perception towards auditing on audit demand, we did not examine whether this may also lead to differences in actual audit quality. While the auditor choice and the demanded level of audit effort may already influence the actual level of audit quality, this CEO's value perception may have an additional effect. Auditors may for example be less rigorous when they are aware of the CEO's low value perception towards auditing in order not to risk the discontinuation of their audit engagement. Moreover, CEOs with a low value perception towards auditing may also be less cooperative towards the auditor, which may change the desire to resolve disagreements during the auditor-management negotiations regarding the financial statements (e.g. Gibbins *et al.*, 2001; Salterio, 2012). Examining the influence of the CEO's value perception towards auditing on the actual level of audit quality could therefore be considered as a very interesting avenue for future research as well.

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Table 1. Factor results

	Factor 1	Factor 2	Factor 3	Factor 4
	Functional value	*Social value*	*Price value*	*Emotional value*
1. An external audit increases the quality of the financial statements of our company.	**0.7631**	-0.0333	0.0342	0.0363
2. An external audit has a positive influence on the financial performance of our company.	**0.7306**	0.0174	0.0900	-0.0874
3. An external audit strengthens the corporate governance of our company.	**0.8213**	0.0911	-0.0829	-0.0425
4. An external audit provides us with useful advice.	**0.7726**	-0.0421	0.1237	-0.0147
5. An external audit improves the efficiency and reliability of our business processes/internal control.	**0.8267**	0.0752	-0.0802	-0.0844
6. I consider an external audit as a waste of time. (R)	**0.7048**	-0.0907	0.0953	0.3078
7. An external audit reassures me about the financial reporting of our results.	**0.7089**	0.1142	-0.0163	0.0090
8. An external audit provides no added value to an external accountant. (R)	**0.7816**	-0.1439	0.0285	0.2122
9. An external audit increases my personal credibility towards the board of directors and the shareholders.	**0.6953**	0.1044	-0.0169	-0.1210
10. An external audit increases the level of trust customers and suppliers have in our company.	0.2457	**0.5536**	0.0151	0.0865
11. An external audit facilitates the access to debt financing (bank loans).	0.1983	**0.6063**	-0.0915	-0.0414
12. An external audit increases the level of trust the treasury has in our company.	-0.1834	**0.8637**	0.0470	0.0389
13. An external audit confirms the good performance of a company to the public.	0.1224	**0.6966**	0.0657	0.0337
14. The price of an external audit is fair.	-0.0200	0.0701	**0.9618**	-0.0750
15. The fee an auditor charges for its services is too high compared to the service itself. (R)	0.0614	-0.0190	**0.8790**	0.0637
16. An external audit gives me the unpleasant feeling of being controlled as CEO. (R)	0.0307	0.0650	0.0025	**0.7821**
17. The attendance of an external audit disturbs me. (R)	0.2402	0.0356	-0.0076	**0.7329**
18. An external audit limits my flexibility as a CEO. (R)	-0.1700	0.0107	-0.0248	**0.8284**
19. An external audit is a useful service in comparison to its cost.	*Deleted*			
20. The advantages of an external audit exceed the costs (the time investments included)	*Deleted*			
Kaiser-Meyer-Olkin Measure of Sampling Adequacy: 0.924 Cronbach's alpha:	0.9193	0.7377	0.8637	0.7285
Bartlett test of sphericity: 0.000 Cumulative perc. of variance explained:	0.4256	0.5293	0.5965	0.6544

n = 586; R = Reverse coded

This table presents our factor results and includes the factor loadings of each item (except for item 19 and 20 since they did not reach the threshold of 0.50), the Cronbach's alpha for each factor, the cumulative percentage of variance explained, the Kaiser-Meyer-Olkin Measure of Sampling Adequacy and the result of the Bartlett test. The order in which the items appear in the table is chosen to give a clear overview but is not the order in which they appeared in the questionnaire.

Table 2. Descriptive statistics

Continuous variables	Min.	Max.	Median	Mean	s.d.
AUDITFEE†	2.70	147.60	9.53	18.22	23.71
FUNCTIONAL_VALUE	-2.67	1.99	0.21	0.00	1.00
PRICE_VALUE	-2.25	2.34	0.07	0.00	1.00
SOCIAL_VALUE	-3.13	2.30	0.10	0.00	1.00
EMOTIONAL_VALUE	-3.18	1.82	0.06	0.00	1.00
MAN_OWN	0.00	100.00	10.00	42.13	45.71
LEVERAGE	0.05	1.21	0.67	0.62	0.24
SIZE†	2,160.52	907,680.00	11,483.93	45,584.06	127,495.70
ROA	-0.26	0.43	0.05	0.07	0.10
INV_REC_ASSETS	0.01	0.96	0.49	0.48	0.24
NONAUDITFEE†	0.00	58.50	0.00	3.51	9.29
Dichotomous variables	Sum	Proportion			
BIG4	231	0.39			
GROUPCHOICE	218	0.37			
BUSY	491	0.84			
PRODUCTION	214	0.37			
CONSTRUCTION	60	0.10			
TRADE	193	0.33			
SERVICES	119	0.20			

n = 586; This table presents the descriptive statistics (means or proportions, medians, minima, maxima and standard deviations); † The natural logarithm of this variable is used in our statistical analysis. The value in this table is the nominal value in 1,000 EUR.

Variable definitions:

Dependent variables

BIG4: a dummy variable coded 1 if the firm hired a Big 4 auditor and 0 if it hired a non-Big 4 auditor

AUDITFEE†: the audit fee

Explanatory variables

FUNCTIONAL_VALUE: the factor score regarding the perceived functional value of external auditing

PRICE_VALUE: the factor score regarding the perceived 'value for money' of external auditing

SOCIAL_VALUE: the factor score regarding the perceived social value of external auditing

EMOTIONAL_VALUE: the factor score regarding the perceived emotional value of external auditing

Control variables

MAN_OWN: the percentage of shares that is owned by management

LEVERAGE: the ratio of total debt to total assets

SIZE†: total assets

ROA: the ratio of annual net income to total assets

INV_REC_ASSETS: inventory and receivables divided by total assets

NONAUDITFEE†: the non-audit fee

GROUPCHOICE: a dummy variable coded 1 if the auditor choice was made by the parent company of the firm's group (if applicable)

BUSY: a dummy variable coded 1 if the fiscal year-end is December 31

PRODUCTION, *CONSTRUCTION*, *TRADE* and *SERVICES*: 4 dummy variables that control for industry

Table 3. Correlation matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. BIG4	1.00	0.56***	0.14***	-0.12***	0.20***	0.05	-0.52***	-0.08*	0.33***	-0.02	0.58***	-0.15***	0.03	0.20***
2. AUDITFEE	0.57***	1.00	0.22***	-0.14***	0.19***	0.12***	-0.50***	-0.01	0.56***	-0.01	0.47***	-0.13***	0.00	0.40***
3. FUNCTIONAL_VALUE	0.16***	0.24***	1.00	0.46***	0.48***	0.35***	-0.15***	0.00	0.20***	0.06	0.02	-0.14***	-0.03	0.14***
4. PRICE_VALUE	-0.11***	-0.13***	0.45***	1.00	0.20***	0.37***	0.04	-0.01	0.08*	0.09**	-0.15***	-0.07*	0.01	-0.02
5. SOCIAL_VALUE	0.20***	0.20***	0.52***	0.20***	1.00	0.16***	-0.11***	0.04	0.23***	0.02	0.06	-0.08*	0.03	0.07*
6. EMOTIONAL_VALUE	0.07*	0.12***	0.33***	0.38***	0.14***	1.00	-0.08*	0.02	0.19***	-0.02	0.00	-0.08*	0.06	0.11***
7. MAN_OWN	-0.54***	-0.50***	-0.18***	0.03	-0.14***	-0.11***	1.00	0.05	-0.26***	0.06	-0.61***	0.10**	-0.07*	-0.16***
8. LEVERAGE	-0.07	-0.03	0.03	0.00	0.06	0.01	0.04	1.00	-0.11***	-0.18***	-0.09**	0.26***	-0.01	-0.02
9. SIZE	0.37***	0.67***	0.21***	0.07	0.23***	0.16***	-0.31***	-0.12***	1.00	-0.06	0.23***	-0.26***	0.02	0.27***
10. ROA	-0.02	-0.05	0.04	0.09**	0.04	-0.06	0.05	-0.15***	-0.08**	1.00	0.00	-0.05	0.01	0.10**
11. GROUPCHOICE	0.58***	0.46***	0.04	-0.15***	0.07*	0.02	-0.60***	-0.08**	0.25***	-0.02	1.00	-0.08**	0.03	0.18***
12. INV_REC_ASSETS	-0.15***	-0.18***	-0.13***	-0.07*	-0.09**	-0.10**	0.11***	0.29***	-0.30***	-0.06	-0.08*	1.00	0.05	-0.08*
13. BUSY	0.03	-0.01	-0.02	0.01	0.03	0.06	-0.06	-0.02	0.02	0.03	0.03	0.05	1.00	-0.07
14. NONAUDITFEE	0.25***	0.45***	0.15***	-0.03	0.07*	0.14***	-0.22***	-0.03	0.36***	0.09**	0.22***	-0.11***	-0.05	1.00

n = 586; *, **, *** indicate significance at the 10%, 5% and 1% levels respectively (two-tailed); For variable definitions, please refer to table 2. The Pearson correlations are reported below the diagonal, the Spearman correlations above the diagonal; Due to space constraints, the correlations with the industry dummies *PRODUCTION*, *CONSTRUCTION*, *TRADE* and *SERVICES* are not reported but these are available from the authors on request.

Table 4. Regression results

Model	**1**		**2**	
Dependent variable	*BIG4*	*AUDITFEE*	*BIG4*	*AUDITFEE*
Explanatory variables:				
BIG4'		0.2836*** (0.0474)		0.2519*** (0.0455)
AUDITFEE'	0.5962 (0.4050)		0.6494 (0.4786)	
FUNCTIONAL_VALUE			0.0580 (0.1112)	0.1013*** (0.0288)
PRICE_VALUE			-0.1201 (0.1151)	-0.1129*** (0.0283)
SOCIAL_VALUE			0.2262*** (0.0768)	-0.0697** (0.0273)
EMOTIONAL_VALUE			0.0179 (0.0710)	0.0074 (0.0238)
Control variables:				
MAN_OWN	-0.0073*** (0.0023)	-0.0010 (0.0009)	-0.0069*** (0.0024)	-0.0011 (0.0009)
LEVERAGE	-0.2660 (0.2827)	0.2541** (0.1013)	-0.3667 (0.2938)	0.2604*** (0.0970)
SIZE	0.0752 (0.1663)	0.2789*** (0.0252)	0.0216 (0.1922)	0.2972*** (0.0239)
ROA	0.2158 (0.6190)	-0.0152 (0.2338)	0.1146 (0.6555)	0.1229 (0.2239)
GROUPCHOICE	0.9378*** (0.1932)		0.9520*** (0.2016)	
INV_REC_ASSETS		0.1351 (0.1082)		0.1235 (0.1018)
NONAUDITFEE		0.1192*** (0.0232)		0.1036*** (0.0221)
BUSY		-0.0470 (0.0618)		-0.0404 (0.0582)
PRODUCTION	-0.0235 (0.1712)	0.0810 (0.0635)	-0.0527 (0.1732)	0.0737 (0.0599)
CONSTRUCTION	-0.1032 (0.2308)	-0.0709 (0.0894)	-0.1317 (0.2343)	-0.0664 (0.0841)
TRADE	-0.2611 (0.1712)	0.0632 (0.0691)	-0.3180* (0.1740)	0.0655 (0.0659)
Intercept	-2.3614*** (0.8557)	-0.3711 (0.2604)	-1.9159** (0.9275)	-0.5550** (0.2459)
F-statistic		81.93***		68.63***
Chi-square	291.88***		311.50***	
Adjusted/pseudo R^2	0.37	0.60	0.40	0.63

n = 586; *, **, *** indicate significance at the 10%, 5% and 1% levels respectively (two-tailed); For variable definitions, please refer to table 2.

This table presents our two-stage probit least squares estimation results. Both the beta coefficients and the corrected standard errors (between brackets) are reported per variable for each model. In this table, also the F-statistic and the Chi-square statistic are reported for the *AUDITFEE* (i.e. *audit effort*) model and the *BIG4* (i.e. *auditor reputation*) model respectively, as well as the adjusted (for the *AUDITFEE* models) and pseudo (for the *BIG4* models) R^2 values. Due to space constraints, we only reported the final second stage regressions with corrected standard errors. The first stage and second stage regressions without corrected standard errors are available from the authors on request.

Table 5a. Additional regression results

Model	**1**		**2**		**3**	
Dependent variable:	*BIG4*	*AUDITFEE*	*BIG4*	*AUDITFEE*	*BIG4*	*AUDITFEE*
Explanatory variables:						
BIG4'		0.2962*** (0.0536)		0.2204*** (0.0463)		0.2557*** (0.0464)
AUDITFEE'	0.5522 (0.4070)		0.4751 (0.4073)		0.6163 (0.4803)	
FUNCTIONAL_VALUE	0.0580 (0.1112)	0.1192*** (0.0339)	0.0726 (0.1086)	0.1006*** (0.0288)	0.0632 (0.1113)	0.1002*** (0.0290)
PRICE_VALUE	-0.1201 (0.1151)	-0.1328*** (0.0332)	-0.1488 (0.1090)	-0.1138*** (0.0288)	-0.1263 (0.1159)	-0.1116*** (0.0286)
SOCIAL_VALUE	0.2262*** (0.0768)	-0.0820** (0.0321)	0.2362*** (0.0840)	-0.0578** (0.0282)	0.2252*** (0.0768)	-0.0715** (0.0276)
EMOTIONAL_VALUE	0.0179 (0.0710)	0.0087 (0.0280)	0.0044 (0.0778)	0.0126 (0.0243)	0.0187 (0.0716)	0.0075 (0.0241)
Control variables:						
MAN_OWN	-0.3135*** (0.1089)	-0.0586 (0.0468)	-0.0074*** (0.0024)	-0.0015* (0.0009)	-0.0070*** (0.0024)	-0.0011 (0.0009)
LEVERAGE	-0.0875 (0.0701)	0.0731*** (0.0272)	-0.1704 (0.3030)	0.1764* (0.0991)	-0.3570 (0.2951)	0.2576** (0.1007)
SIZE	0.0260 (0.2312)	0.4203*** (0.0338)	0.0748 (0.1668)	0.2897*** (0.0247)	0.0343 (0.1928)	0.2968*** (0.0243)
ROA	0.0110 (0.0628)	0.0138 (0.0252)	0.1278 (0.7213)	0.1942 (0.2304)	0.1294 (0.6540)	0.0985 (0.2550)
GROUPCHOICE	0.4605*** (0.0975)		1.0353*** (0.1919)		0.9620*** (0.2025)	
INV_REC_ASSETS		0.0349 (0.0288)		0.1469 (0.1034)		0.1268 (0.1026)
NONAUDITFEE		0.1311*** (0.0279)		0.1450*** (0.0229)		0.1042*** (0.0224)
BUSY		-0.0175 (0.0252)		-0.0146 (0.0587)		-0.0329 (0.0590)
AUDIT_OPINION						0.2549 (0.1783)
LOSS						-0.0205 (0.0688)
PRODUCTION	-0.0254 (0.0835)	0.0418 (0.0339)	0.0784 (0.1877)	0.0085 (0.0618)	-0.0495 (0.1739)	0.0674 (0.0604)
CONSTRUCTION	-0.0400 (0.0711)	-0.0237 (0.0300)	-0.2099 (0.2568)	-0.0715 (0.0851)	-0.1346 (0.2364)	-0.0726 (0.0850)
TRADE	-0.1496* (0.0819)	0.0362 (0.0364)	-0.2306 (0.1906)	0.0126 (0.0660)	-0.3165* (0.1751)	0.0618 (0.0663)
Intercept	-0.4046*** (0.0638)	0.1196*** (0.0331)	-2.2479** (0.8819)	-0.4502* (0.2575)	-1.9641** (0.9279)	-0.5535** (0.2493)
F-statistic		68.63***		51.09***		60.36***
Chi-square	311.50***		249.58***		311.35***	
(Adjusted/pseudo) R^2	0.40	0.63	0.38	0.60	0.40	0.63
n	586		501		586	

*, **, *** indicate significance at the 10%, 5% and 1% levels respectively (two-tailed); For variable definitions, please refer to table 2. This table presents our additional two-stage probit least squares estimation results. Both the beta coefficients and the corrected standard errors (between brackets) are reported per variable for each model. In this table, also the F-statistic and the adjusted R^2 value are reported for every *AUDITFEE* (i.e. *audit effort*) model and the Chi-square statistic and the pseudo R^2 for every *BIG4* (i.e. *auditor reputation*) model, as well as the number of cases included in each analysis.

Table 5b. Additional regression results

Model	**4**		**5**		**6a**	**6b**
Dependent variable:	*INDUSTRY_ SPECIALIST*	*AUDITFEE*	*FOF*	*AUDITFEE*	*BIG4*	*AUDITFEE*
Explanatory variables:						
INDUSTRY_SPECIALIST'		0.5168*** (0.1457)				
FOF'				0.2574*** (0.0791)		
BIG4'						0.3851*** (0.0536)
AUDITFEE'	0.2841 (0.4624)		1.3970* (0.7245)		1.1884*** (0.2435)	
FUNCTIONAL_VALUE	0.0000 (0.1129)	0.1149** (0.0496)	-0.1378 (0.1570)	0.1247*** (0.0447)	0.1332 (0.1693)	0.1226*** (0.0279)
PRICE_VALUE	-0.0228 (0.1131)	-0.1206** (0.0470)	0.1201 (0.1682)	-0.1422*** (0.0424)	-0.2635 (0.1635)	-0.1580*** (0.0253)
SOCIAL_VALUE	0.0035 (0.0790)	-0.0192 (0.0440)	0.2871*** (0.1025)	-0.0842* (0.0458)	0.3999** (0.1596)	-0.0286 (0.0251)
EMOTIONAL_VALUE	0.0576 (0.0738)	-0.0214 (0.0427)	-0.0751 (0.0953)	0.0322 (0.0381)	0.0354 (0.1380)	0.0109 (0.0235)
Control variables:						
MAN_OWN	-0.0059** (0.0024)	0.0003 (0.0018)	-0.0041 (0.0033)	-0.0011 (0.0014)	-0.0126*** (0.0035)	-0.0033*** (0.0006)
LEVERAGE	-0.2327 (0.3038)	0.3511** (0.1654)	-0.0918 (0.4194)	0.1193 (0.1554)	-0.6178 (0.5266)	0.1981** (0.0962)
SIZE	0.1103 (0.1884)	0.2478*** (0.0463)	-0.2378 (0.2897)	0.2997*** (0.0398)	0.0809 (0.1533)	0.3379*** (0.0212)
ROA	0.7254 (0.6549)	-0.2257 (0.3884)	0.1311 (0.9594)	0.1247 (0.3687)	0.6629 (1.1637)	0.1493 (0.2272)
GROUPCHOICE	0.5236** (0.2206)		0.7067** (0.3112)		1.7280*** (0.2782)	
INV_REC_ASSETS		0.0985 (0.1750)		0.1999 (0.1668)		0.1292 (0.1035)
NONAUDITFEE		0.1036*** (0.0353)		0.0678 (0.0412)		0.1233*** (0.0216)
BUSY		-0.1053 (0.1073)		-0.1007 (0.0940)		-0.0397 (0.0573)
PRODUCTION	-0.0508 (0.1830)	0.1054 (0.1046)	-0.1559 (0.2514)	0.0740 (0.0983)	-0.1267 (0.3307)	0.0650 (0.0610)
CONSTRUCTION	-0.7082** (0.2884)	0.2739 (0.1969)	-0.1828 (0.3257)	-0.0470 (0.1371)	-0.1576 (0.4441)	-0.1078 (0.0845)
TRADE	-0.1434 (0.1800)	0.0624 (0.1124)	-0.3772 (0.2452)	0.0637 (0.1068)	-0.6444* (0.3343)	0.0063 (0.0646)
Intercept	-2.2089** (0.9371)	0.1308 (0.5035)	-0.7320 (1.3766)	-0.6241 (0.4030)	-3.8937*** (1.3744)	-1.0591*** (0.2319)
F-statistic		63.54***		68.63***		73.20***
Chi-square	138.70***		294.30***		181.05***	
(Adjusted/pseudo) R^2	0.21	0.63	0.36	0.63	0.43	0.65
n	546		586		586	

*, **, *** indicate significance at the 10%, 5% and 1% levels respectively (two-tailed); For variable definitions, please refer to table 2. This table presents our additional two-stage probit least squares estimation results (model 4 and 5), our additional logistic regression results (model 6a) and our additional OLS regression results (model 6b). Both the beta coefficients and the (corrected) standard errors (between brackets) are reported per variable for each model. In this table, also the F-statistic and the adjusted R^2 value are reported for every *AUDITFEE* (i.e. *audit effort*) model and the Chi-square statistic and the pseudo R^2 for every *BIG4* (i.e. *auditor reputation*) model, as well as the number of cases included in each analysis.