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*Published in:*  
 Auditing: A Journal of Practice and Theory

*DOI:*  
[10.2308/ajpt-51487](https://doi.org/10.2308/ajpt-51487)

**IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.**

*Document Version*  
 Publisher's PDF, also known as Version of record

*Publication date:*  
 2017

[Link to publication in University of Groningen/UMCG research database](#)

*Citation for published version (APA):*  
 Bik, O., & Hooghiemstra, R. (2017). The Effect of National Culture on Auditor-in-Charge Involvement. *Auditing: A Journal of Practice and Theory*, 36(1), 1-19. <https://doi.org/10.2308/ajpt-51487>

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# The Effect of National Culture on Auditor-in-Charge Involvement

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**SUMMARY:** Regulators and professional accounting bodies have identified auditor-in-charge involvement as one of the key indicators of audit quality. A potentially important, yet overlooked, issue is that auditor-in-charge involvement is affected by numerous contextual factors. In this study, we aim at advancing our understanding of what affects differences in auditor-in-charge involvement by focusing on the influence of national culture in general and power distance, (in-group) collectivism, and uncertainty avoidance in particular. Based on archival, proprietary data from a Big 4 audit firm comprising time-record data of 2,251 individual audit engagements in 50 countries, we find robust evidence supporting our expectations that differences in the extent of auditor-in-charge involvement are negatively associated with power distance and (in-group) collectivism, and positively with uncertainty avoidance. An implication of our findings is that, while the extent of auditor-in-charge involvement may serve as a relevant audit quality indicator, regulators, firms' management, and academics need to take culture into account and may want to consider different thresholds for different regions in the world. Hence, unless the role of culture is well understood, the use of auditor-in charge involvement as an audit quality indicator could be uninformative or even misleading.

**Keywords:** auditor behavior; auditor-in-charge involvement; cross-national cultural differences; international auditing; national culture.

## INTRODUCTION

Although audits are conducted by teams, the auditor-in-charge<sup>1</sup> performs a pivotal role in the audit process (e.g., Sundgren and Svanström 2014; Zerni 2012). For instance, the Public Company Accounting Oversight Board (PCAOB 2011, 2) notes that the auditor-in-charge is “at the center of the [audit engagement] effort. The auditor-in-charge is responsible for the engagement and its performance.” Both regulators and academics seem to be aware of the vital impact the auditor-in-charge has throughout the audit process. In the European Union, the Eighth Directive (EU 2006) requires disclosure of the identity of the auditor-in-charge; while in the United States, the PCAOB (2011) proposed a similar requirement.

More recently, policy documents of regulators and professional accounting bodies suggest that auditor-in-charge involvement, i.e., the time an auditor-in-charge spends on an engagement, is one of the key indicators of audit quality (e.g., CAQ 2014; IAASB 2014; PCAOB 2015). According to these policy documents, audit firms should report the number of hours an auditor-in-charge has spent on an audit in a belief that “less extensive supervision [by the auditor-in-charge] raises the risk of

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We gratefully acknowledge the helpful comments of Stephan Asare, Joost van Buuren, Jeffrey R. Cohen (editor), Carlin Dowling, Christine Nolder, Roland Speklé, Arnold Wright, and two anonymous reviewers. We also appreciate the comments received at ISAR 2015 at Northeastern University in Boston, the University of Groningen, and Nyenrode Business University.

Editor's note: Accepted by Jeffrey R. Cohen.

*Submitted: August 2015*  
*Accepted: April 2016*  
*Published Online: May 2016*

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<sup>1</sup> We use the term “auditor-in-charge” to refer to the signing auditor, consistent with Sundgren and Svanström (2014). Others refer to “audit engagement partner” (e.g., PCAOB 2009; Ittonen, E. Vähämaa, and S. Vähämaa 2013), “engagement auditor” (e.g., Chen, Sun, and Wu 2010), “signing partner” (e.g., Chi and Chin 2011), “engagement partner” (Knechel, Niemi, and Zerni 2013b; Zerni 2012), and “audit partner” or “audit partner in charge” (Knechel, Krishnan, Pevzner, Shefchik, and Velury 2013a; Knechel et al. 2013b).

less effective audit procedures and a reduction in audit quality” (PCAOB 2015, A3). It is likely that the intended users of information about auditor-in-charge involvement, including regulators, investors, and ultimately the public at large, may implicitly or explicitly consider some standardized number of hours to indicate whether the auditor-in-charge was sufficiently involved. Similarly, in an attempt to strengthen audit quality, global audit firms may contemplate setting some standardized thresholds for the number of hours an auditor-in-charge should spend on an audit. However, a potentially important issue is that auditor-in-charge involvement is affected by numerous contextual factors at both the engagement level and the country level. In this study, we aim at advancing our understanding of what affects differences in auditor-in-charge involvement by focusing on the effects of national culture. In doing so, our study may help researchers, practitioners, policy setters, and (other) intended users to develop a more nuanced approach toward the information value of auditor-in-charge involvement as potentially indicating audit quality.

In our study, we propose that national culture is an important factor that is associated with differences in auditor-in-charge involvement. Consistent with prior research suggesting that both leadership styles and practices (e.g., Dickson, Den Hartog, and Mitchelson 2003; House, Hanges, Javidan, Dorfman, and Gupta 2004) and teamwork vary by national culture (e.g., Gibson and Zellmer-Bruhn 2001; Tsui, Nifadkar, and Ou 2007), we posit that national culture defines how auditors-in-charge view their position, relationships, or roles *vis-à-vis* the other members of the team and how they act consistent with those views that, ultimately, may be associated with differences in their involvement. Specifically, we focus on three dimensions of national culture identified by House et al. (2004), *viz.* power distance, individualism versus collectivism, and uncertainty avoidance, which we postulate and hypothesize to be related to auditor-in-charge involvement. These dimensions have been shown to be particularly important in explaining cross-cultural differences in leadership and their effects on team effort and performance (e.g., Dickson et al. 2003), as well as in auditors’ professional behavior (e.g., Cohen, Pant, and Sharp 1993, 1995; Patel, Harrison, and McKinnon 2002).

Our analyses are based on unique, archival data from a Big 4 audit firm comprising time-record data regarding 2,251 individual audit engagements reflecting local audit practices in 50 countries across the globe. The data enable us to measure auditor-in-charge involvement (AIC) as the percentage of the number of auditor-in-charge hours relative to the total audit engagement hours as registered on the audit engagement. We employ House et al.’s (2004) scores to represent differences in power distance, individualism versus collectivism, and uncertainty avoidance. The ability to rely on a large international sample adds to the strength of the conclusions that can be drawn from a study on the effects of national culture (e.g., Smith, Peterson, and Schwartz 2002), making our study particularly suitable to examine cross-national cultural differences in the extent of auditor-in-charge involvement.

We find robust evidence that differences in the extent of auditor-in-charge involvement are associated, as predicted, with power distance, individualism versus collectivism, and uncertainty avoidance. Indeed, we find that average auditor-in-charge involvement is about 4.5 (6) percent in high (low) power distance countries, about 4 (6) percent in high (low) in-group collectivistic countries, and about 6 (4) percent in high (low) uncertainty avoidant countries. The implication of these findings is that context matters and that looking at auditor-in-charge involvement in the aggregate has its limitations. Specifically, our findings suggest that, while the extent of auditor-in-charge involvement may serve as a relevant audit quality indicator, regulators, firms’ management, and academics need to take culture into account and may want to consider different thresholds for different regions in the world. Our research documents that the extent of auditor-in-charge involvement differs across cultures and, hence, in itself may not necessarily be an effective key indicator of quality across the globe. Requiring a minimum level of auditor-in-charge involvement may even be counterproductive in certain cultures. In other words, unless the role of culture is well understood, such a key quality indicator could be uninformative or even misleading.

Our study is timely for several reasons. First, our study is relevant for audit firms given their desire to globalize their approach to and procedures followed during audits (e.g., Barrett, Cooper, and Jamal 2005; Cohen et al. 1993). Given the importance of auditor-in-charge involvement as an audit quality indicator and as audit firms “implicitly assume that through standardized firm-wide policies and knowledge sharing [. . .], all audits across practice offices and audit partners within an audit firm are uniform” (Zerni 2012, 315), audit firms may consider to set a global standard regarding the amount of hours an auditor-in-charge should spend on an audit. Furthermore, regulators, perhaps in an attempt to help users interpret information on auditors-in-charge involvement, may also set some standards about auditors-in-charge involvement. However, our study suggests that auditor-in-charge involvement is associated with cultural differences and, hence, that a uniform, global standard regarding auditor-in-charge involvement may actually be counterproductive, uninformative, and even misleading, as auditors-in-charge oftentimes work in environments with different cultural backgrounds. Hence, for internationally operating audit firms, regulators, public policy bodies, and researchers it is important to understand the existence and nature of the effects of cultural differences on audits (e.g., Barrett et al. 2005; Hurtt, Brown-Liburd, Earley, and Krishnamoorthy 2013; Bik 2015), as cultural differences add to the complexity of organizational control in multinational audit firms (Cohen et al. 1993).

Second, we show that differences in national culture may lead to differences in the extent of auditor-in-charge involvement after controlling for factors widely considered to affect audit scope, for instance, client risk assessment, size, and complexity.

Through that, our study contributes to the emerging literature in accounting and auditing that considers the impact of national culture on financial reporting choices (e.g., Han, Kang, Salter, and Yoo 2010; Kanagaretnam, Lim, and Lobo 2014) and various key drivers of audit quality such as auditors' risk assessments, ethical judgments, decision-making behavior, and conflict behavior (e.g., Cohen et al. 1993, 1995; Yamamura, Frakes, Sanders, and Ahn 1996; Arnold, Bernardi, and Neidermeyer 1999; Chanchani and MacGregor 1999; Patel and Psaros 2000; Barrett et al. 2005; Leung, Bhagat, Buchan, Erez, and Gibson 2005; Smith and Hume 2005; Bik 2010; O'Donnell and Prather-Kinsey 2010; Nolder and Riley 2014). Nevertheless, much remains unknown about the impact of differences in national culture on auditors' professional behavior (e.g., Chanchani and MacGregor 1999; Nolder and Riley 2014), such as auditor-in-charge involvement.

Third, by using a more precise, less noisy measure reflecting actual auditor practices, which we employ in a large, multi-country sample, we both add to the literature on auditor-in-charge "busyness" (e.g., Sundgren and Svanström 2014; Goodwin and Wu 2016) and respond to calls by researchers (e.g., DeFond and Francis 2005; Bedard 2012) for international auditing research at the individual auditor-in-charge level. Prior studies on auditor-in-charge "busyness" rely on distal proxies of auditor-in-charge involvement (the number of audit engagements held by the auditor-in-charge) and, through that, do not necessarily take into account the actual time spent on each audit engagement, thereby overlooking the possible impact of (assessed) riskiness, size, and complexity of the engagement. Furthermore, although prior (cross-national) studies have shown a significant effect of auditor-in-charge involvement on audit quality, these studies are often limited to a small number of countries (e.g., countries that prescribe the disclosure of the auditor-in-charge's name in the audit report) or are single-country studies (e.g., Karjalainen [2011] for Finland; Goodwin and Wu [2014, 2016] for Australia; Sundgren and Svanström [2014] and Zerni [2012] for Sweden). By contrast, our data allow us to study the actual time spent on each audit by the auditor-in-charge in a multi-country setting. As such, our study provides an important first step to move auditing research at the individual auditor-in-charge level beyond a single country.

## LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

### Auditor-in-Charge Involvement

An audit engagement encompasses a process in which a hierarchically structured team<sup>2</sup> applies various testing procedures with the aim to "meet the broad requirements of audit standards to collect sufficient competent evidence in support of the audit report" (Francis 2011, 137). The audit process comprises a series of consecutive audit procedures conducted and decisions made by different team members regarding the client's financial reporting process and financial statement assertions (e.g., Bamber 1983).

Even though auditors-in-charge spend relatively little time on individual audit engagements (Sanders, Steward, and Bridges 2009; Sundgren and Svanström 2014), they are involved at strategic points during an audit engagement. Specifically, the auditor-in-charge manages client relationships, is responsible for assessing client risk, oversees the design and implementation of the audit plan, reviews critical assessments, and follows up on work carried out by the audit team (e.g., Sanders et al. 2009; Sundgren and Svanström 2014). Ultimately, the auditor-in-charge assesses audit evidence to decide on the type of audit report to be issued to the client as the outcome of the audit engagement (e.g., Zerni 2012). To arrive at an informed decision about the type of audit report, the auditor-in-charge has to spend a certain amount of time on the engagement (e.g., Pierce and Sweeney 2005; Knechel et al. 2013a).

A growing number of studies show that audit quality is shaped by characteristics of the auditor-in-charge (e.g., Chen et al. 2010; Chi and Chin 2011; Zerni 2012; Itonen et al. 2013; Knechel et al. 2013b; Sundgren and Svanström 2014; Goodwin and Wu 2014, 2016; Knechel, Vanstraelen, and Zerni 2015; Wang, Yu, and Zhao 2015; Hardies, Breesch, and Branson 2016). It appears that an important incentive for auditors-in-charge to be involved is that they do not want to jeopardize their reputations (and possibly face litigation) by causing reporting errors (e.g., incorrectly issuing an unqualified audit report) (e.g., Pierce and Sweeney 2005; DeFond and Zhang 2014). Audit research also demonstrates that reputations partly reside in individual auditors-in-charge (cf. Zerni 2012; see also, e.g., Caramanis and Lennox 2008; Francis and Yu 2009; Reichelt and Wang 2010; Knechel et al. 2015). Other studies show that auditor-in-charge "busyness" negatively affects audit performance (e.g., Sundgren and Svanström 2014) or find such a negative effect in out-of-equilibrium conditions such as in the 2002 to 2004 accounting crisis (Goodwin and Wu 2016). These studies reflect the idea that "a very large number of assignments [i.e., audit engagements] negatively affect the time and effort invested in each assignment" (Sundgren and Svanström 2014, 531). In other words, the less time an auditor-in-charge spends on an engagement, i.e., lower auditor-in-charge involvement, the more likely the auditor-in-charge will be inclined to take shortcuts in important audit procedures (Sundgren and Svanström 2014) and,

<sup>2</sup> Audit teams typically consist of junior assistants, senior assistants, supervisors, managers, and an auditor-in-charge (e.g., Rich, Solomon, and Trotman 1997; Rudolph and Welker 1998).

hence, the higher the possibility that the auditor-in-charge overlooks existing problems (Caramanis and Lennox 2008). Ultimately, this reduced involvement may compromise audit performance and, with that, auditor reputation.

Further underscoring the importance of auditor-in-charge involvement are studies looking at the effects of audit team leadership. In line with the idea that leaders play a key role in enabling individual and team performance (e.g., Burke et al. 2006; Morgeson, DeRue, and Karam 2010), several auditing studies demonstrate that audit team leadership is crucial for both team performance and the quality of an audit (e.g., Otley and Pierce 1996; Rudolph and Welker 1998; Viator 2001; Chang 2004; Pierce and Sweeney 2005). In a similar vein, it is suggested that the auditor-in-charge has an important role in creating the right audit team “climate” or “tone” (e.g., Covalesski, Dirsmith, Helan, and Samuel 1998; Jenkins, Deis, Bedard, and Curtis 2008; Sweeney, Arnold, and Pierce 2010; Gold, Gronewold, and Salterio 2014), ultimately impacting “the degree with which individual [team member] efforts coalesce into a well-informed audit [report]” (Rudolph and Welker 1998, 1).

### The Impact of National Culture on Auditor-in-Charge Involvement

National culture can be defined as “shared motives, values, beliefs, identities, and interpretations or meanings of significant events that result from common experiences of members of collectives and are transmitted across age generations” (House et al. 2004, 57). In a similar vein, culture has been described as the collective programming of the mind that distinguishes members of one group from another (Hofstede 2001). Such shared values define what represents acceptable and/or desirable behavior, including leadership behavior.

There has been an increasing interest in how differences in national culture (i.e., cross-cultural differences) affect auditors’ professional behavior (e.g., Cohen et al. 1993, 1995; Yamamura et al. 1996; Arnold et al. 1999; Chanchani and MacGregor 1999; Patel and Psaros 2000; Barrett et al. 2005; Leung et al. 2005; Smith and Hume 2005; Bik 2010; O’Donnell and Prather-Kinsey 2010; Nolder and Riley 2014). Cohen et al. (1993, 1995) focus on the effects of national culture on auditors’ ethical decision making. They theorize on how and do actually find that differences in national culture are associated with differences in auditors’ ethical perceptions (i.e., identification of whether some action was [un]ethical) and the extent to which the auditors would perform such an action. More recently, Nolder and Riley (2014) present an overview of the literature on the effects of national culture on auditors’ professional behavior. By and large, their review suggests that several types of auditors’ professional behavior, including risk and probability judgments, risk decisions, and ethical judgments are associated with such cross-cultural differences. Overall, this research suggests that culture and context matter in informing differences in auditors’ behavior. Still, the number and robustness of studies on cross-national differences in auditors’ behavior are relatively limited, especially studies that have included cross-national cultural differences as an explanatory variable. More importantly, despite the significance of auditor-in-charge involvement in relation to audit quality internationally, to the best of our knowledge, no empirical research has been conducted on the impact of cross-cultural differences on the extent of auditor-in-charge involvement.

The manner in which the auditor-in-charge defines her working relationships (or acts in such a relationship) can be expected to be culturally defined in view of prior research showing that leadership styles and practices vary by national culture (e.g., Gibson and Zellmer-Bruhn 2001; Dickson et al. 2003; House et al. 2004; Dickson, Castaño, Magomaeva, and Den Hartog 2012). In this vein, Tsui et al. (2007, 445) note that “the meaning of teamwork may differ across cultures and, in turn, imply potential differences in team norms and team-member behavior.” For example, in the context of auditing, Cohen et al. (1995, 43) remark that “the strong independence-based focus of Western auditing practice reflects individualist cultural values” and “is based on the so-called Western view of the individual as an independent, self-contained, autonomous entity” (Patel and Psaros 2000, 317). Barrett et al. (2005) also emphasize that, despite International Standards on Auditing and an audit firm’s global audit approach, auditors still exercise considerable discretion in how they apply those standards and rules, reflecting local practices, requirements, and relationships.

Accordingly, in this study we posit that the extent of auditor-in-charge involvement may differ cross-nationally. Specifically, the dimensions that have been shown to be particularly important in explaining cross-national differences in leadership and their effects on team effort and performance are power distance, (in-group) collectivism, and uncertainty avoidance (e.g., Dickson et al. 2003). Moreover, these dimensions feature prominently in prior studies on cross-national differences in auditors’ professional behavior (e.g., Cohen et al. 1993; Roxas and Stoneback 1997; Tsui and Windsor 2001; Patel et al. 2002). Below we address how differences in these cultural dimensions affect the extent of auditor-in-charge involvement.

#### Power Distance

Power distance has been defined as the degree to which members of an organization or society expect and agree that power should be stratified and concentrated at higher levels of an organization (e.g., House et al. 2004). While countries such as



Argentina, China, Germany, and Russia are examples of countries scoring higher on power distance, Australia, The Netherlands, Sweden, and the United States are generally considered to score lower on this dimension.<sup>3</sup>

Power distance plays a significant role in leadership behavior (e.g., [Offermann and Hellmann 1997](#); [Dickson et al. 2003](#)). Research shows that autocratic and directive leadership styles are more accepted and legitimate in countries higher on power distance than in countries lower on power distance (e.g., [Earley 1999](#); [Hofstede 2001](#); [Dickson et al. 2003](#)). Moreover, [Newbury and Yakova \(2006\)](#) suggest that in countries higher on power distance, leaders are less willing to share decision-making power. Similarly, [Dickson et al. \(2003, 737\)](#) note that in these countries subordinates “are more reluctant to challenge their supervisors and more fearful in expressing disagreement with their managers,” possibly out of fear of leaders and their importance in the evaluation and promotion processes (e.g., [Taylor and Curtis 2013](#)). Indeed, these behaviors and tendencies are in line with prior research showing that in countries higher on power distance, people generally accept hierarchy ([Cohen et al. 1993](#); [Fischer and Mansell 2009](#)). Moreover, people in these cultures know (and abide by) their position within that hierarchy ([Arnold, Bernardi, Neidermeyer, and Schmee 2006](#)). At the same time, leaders in countries that score higher on power distance rely more on formal rules and procedures in handling work events ([Smith et al. 2002](#)) and would be inclined to protect their power and create barriers for others to develop their skills for higher positions ([House et al. 2004](#)). Indeed, in these cultures there is less freedom in decision making ([Arnold et al. 2006](#)) as there is a preference for standardization of activities as standardization may render it unnecessary for leaders to monitor subordinates’ activities closely (cf. [Newbury and Yakova 2006](#)), also because in these countries subordinates accept and follow instructions of their leaders obediently ([Pellegrini and Scandura 2006](#)).

Based on the discussion above, in the context of auditing it can therefore be expected that in higher power distance countries the auditor-in-charge spends less time and effort (i.e., shows lower levels of involvement) throughout an audit engagement as the auditor-in-charge is less likely to intervene during the engagement. Moreover, as a directive leadership style is generally more accepted and legitimate in these higher power distance countries, it is likely that an auditor-in-charge in high power distance countries relies on directives or formal mechanisms of audit team management. Specifically, while standardization is an important aspect of auditing ([Barrett et al. 2005](#)), it is likely that in high power distance countries standardization of activities is emphasized even more (cf. [Newbury and Yakova 2006](#)), and at the same time it is likely that audit team members obediently and closely (i.e., with no deviation) follow instructions from the auditor-in-charge. Accordingly, we hypothesize:

**H1:** The level of power distance and the extent of auditor-in-charge involvement are negatively associated.

### *Individualism versus Collectivism*

Collectivism indicates a preference for a tightly knit social framework in a society in which individuals focus on the group rather than on themselves. In countries higher on collectivism, such as Brazil, China, and Russia, priority and trust is given to the in-group (for instance, the audit team) for which personal sacrifices are made to fulfill mutual obligations in the group (e.g., [Schwartz 1990](#); [Oyserman, Coon, and Kimmelmeier 2002](#); [House et al. 2004](#)). In contrast, in countries higher on individualism, such as The Netherlands, the United Kingdom, and the United States, personal independence, rights above duties, personal autonomy, promoting self-reliance, and self-fulfillment are more central and decisions based on individual needs prevail (e.g., [Hofstede 2001](#); [Oyserman et al. 2002](#)). These prevailing preferences and behaviors can largely be attributed to how people view themselves and how they pursue self-esteem. In countries high on collectivism, an *interdependent* self-construal prevails, suggesting that people view themselves “not as separate from the social context but as more connected and less differentiated from others” ([Markus and Kitayama 1991, 227](#)). This self-construal also involves group membership as a central aspect of identity and that individuals are motivated to maintain harmonious relationships with other members of the in-group (e.g., [Oyserman et al. 2002](#); [Liu, Friedman, and Hong 2012](#)). In contrast, in countries high on individualism an *independent* self-construal prevails involving a “conception of the self as an autonomous, independent person” ([Markus and Kitayama 1991, 226](#)). In general, people from countries higher on individualism prefer to enhance self-esteem or self-image (cf. [Liu et al. 2012](#)). In these countries individuals are seen as more focused on satisfying their own self-interests and personal goals (e.g., [Jung and Avolio 1999](#)).

Differences in the levels of collectivism and prevailing self-construals have important implications for leader and employee behavior. Specifically, prior studies document that collectivism is positively related to team cooperation, efficacy, and an intrinsic emphasis on cooperative team processes (e.g., [Eby and Dobbins 1997](#); [Gibson 1999](#); [Kirkman and Shapiro 2001](#); [Kirkman, Lowe, and Gibson 2006](#)), which, in turn, are related to higher team performance (e.g., [Erez and Somech 1996](#); [Gelfand, Erez, and Aycan](#)

<sup>3</sup> See Appendix A for an illustration of countries higher and lower on each of the three national culture dimensions taken into consideration in this study and Table 2 for the range of scores for each of these three dimensions as included in our study.

2007; House et al. 2004). Individuals from countries higher on collectivism are also likely to engage less in social loafing and shirking (i.e., behavior that diverges from the interests of the team as a whole) if they are working with in-group members (House et al. 2004) as this may harm the achievement of the group's goal. According to Gelfand et al. (2007), these differences in behaviors can be attributed to underlying differences in employees' motivation. In their review of the literature on cross-cultural organizational behavior, they remark that "while the need for control seems to be universal, personal control is critical in individualistic cultures, and collective control is more critical in collectivistic cultures" (Gelfand et al. 2007, 482).

In the context of auditing, it can be expected that in more collectivistic countries, dysfunctional or audit quality-threatening behaviors, such as collecting insufficient audit evidence or failure to complete audit tasks as instructed (e.g., Kelley and Margheim 1990; Bedard, Deis, Curtis, and Jenkins 2008) are less prevalent. This also means that, to the extent that such behaviors cause reporting errors, the auditor-in-charge may feel less need to "compensate" by increasing his or her involvement (e.g., by spending additional hours on reviewing the work of lower-ranked team members). That is, the auditor-in-charge in countries higher on collectivism may be expected to rely more on the social workings in the audit team to function properly based on obligation and loyalty toward the in-group and its common goal, and therefore may find it less necessary to be actively involved. Accordingly, we hypothesize:

**H2:** The level of collectivism and the extent of auditor-in-charge involvement are negatively associated.

### *Uncertainty Avoidance*

Uncertainty avoidance is the degree to which members of a country feel uncomfortable with uncertainty and ambiguity (Hofstede 2001; Dickson et al. 2003). In contrast to low uncertainty avoidant countries (e.g., Brazil, Italy, and Russia), in higher uncertainty avoidant countries such as China, Germany, Singapore, and to some extent the United States, individuals strive to avoid uncertainty by relying on established social norms, rituals, and bureaucratic practices (e.g., Hofstede 2001; House et al. 2004). Individuals in high uncertainty avoidant countries possess a greater proclivity for orderliness, consistency, structure, and rules to reduce ambiguity and have a strong dislike of breaking rules (House et al. 2004). Moreover, while people in general prefer to avoid losses (Tversky and Kahneman 1991), this loss aversion or risk-averse tendency is even stronger in high uncertainty avoidant countries (Arkes, Hirshleifer, Jiang, and Lim 2010; Li, Griffin, Yue, and Zhao 2013; Bryan, Nash, and Patel 2015).

Differences in levels of uncertainty avoidance have been shown to affect leaders' behaviors in various ways (e.g., Dickson et al. 2003). For instance, Offermann and Hellmann (1997) find that leaders from high uncertainty avoidant countries, compared to those from low uncertainty avoidant countries, tend to be more controlling and less delegating. Also, people from countries that are more uncertainty avoidant have a stronger preference for consultative management to reduce feelings of uncertainty (House et al. 2004).

These differences are likely to affect auditor-in-charge involvement as well. Specifically, the greater proclivity for loss aversion in high uncertainty avoidant countries may involve an even stronger fear for possible loss of reputation than auditors-in-charge generally already possess. Moreover, given the preference of reducing feelings of uncertainty, auditors-in-charge are expected to be more concerned with a need for effective coordination, including a willingness to invest in the availability, seeking and sharing of information, consultation, and knowledge in the team. Finally, it can be expected that, given their greater tendency to control more and to delegate less, the auditor-in-charge in high uncertainty avoidant cultures may spend more time on an audit engagement. Accordingly, we would expect higher levels of auditor-in-charge involvement in higher uncertainty avoidant countries leading to the following hypothesis:

**H3:** The level of uncertainty avoidance and the extent of auditor-in-charge involvement are positively associated.

## METHODS

### Sample and Data Collection

To empirically examine the impact of national culture on the extent of auditor-in-charge involvement, we rely on unique, proprietary data from a Big 4 audit firm. These comprise time-record data regarding individual audit engagements that were collected from the firm's hours registration system as part of an annual audit process quality review throughout the firm's global network of affiliated audit firms. As per the instructions of the firm's global quality review team, the size and nature of the audit engagements selected per country for review were to reflect the size and nature of the local audit practice<sup>4</sup> and client portfolios

<sup>4</sup> Given the network function of affiliated local audit firms within the international Big 4 firm, it would be generally unlikely that, for example, a U.K. audit team would travel to Austria to conduct an audit, although we cannot rule this out based on the available data.

**TABLE 1**  
**Sampling Procedure**

	<u>Number of Countries</u>	<u>Number of Audit Engagements</u>
Initial Sample 2005	116	1,939
Omitted:		
Obs. for which House et al. (2004) provide no data	63	481
Obs. with missing data on AIC hours	1	45
Obs. with missing data on country-level controls	2	49
Final Sample 2005	50	1,364
Initial Sample 2006	114	1,362
Omitted:		
Obs. for which House et al. (2004) provide no data	62	414
Obs. with missing data on AIC hours	1	30
Obs. with missing data on country-level controls	2	31
Final Sample 2006	49	887
Final Sample	50	2,251

in each of these countries (such as industry sectors, higher-risk engagements, public-interest-entities, and large and medium-sized companies, all of which are characteristics we incorporated as engagement-level control variables in our analysis). Access to these data was obtained after having received permission from the firm under arrangements of strict confidentiality and anonymity.

The time-record data relate to financial statement audits performed on financial statements for fiscal years 2005 and 2006.<sup>5</sup> In total, the initial sample of time-record data includes 1,939 audit engagements for 116 countries relating to 2005 audits and 1,362 audit engagements for 114 countries relating to 2006 audits.<sup>6</sup>

Missing data on one of the variables of interest (at the audit engagement level) and a number of deleted observations due to the inability to match time-record data to data on national cultural dimensions and country-level control variables (see Table 1) reduced the sample to 50 countries and in total 2,251 engagements (of which 1,364 and 887 engagements related to 2005 and 2006, respectively). Table 1 provides the sampling procedure.

## Variables

### *Dependent Variable: Auditor-in-Charge Involvement*

As noted previously, auditor-in-charge involvement (AIC) is measured as the percentage of the number of auditor-in-charge hours relative to the total audit engagement hours as registered on the audit engagement.<sup>7</sup>

### Independent Variables

#### *Culture*

Researchers studying the impact of culture on auditing (and accounting) generally use a limited number of well-known taxonomies of cross-national cultural differences such as Hofstede's (1980, 2001) cultural taxonomy or the cultural dimensions of House et al. (2004). Both Hofstede (2001) and House et al. (2004) offer a set of dimensions that provide

<sup>5</sup> The agreement with the audit firm allowed us to publicize based on the data only after taking into consideration a "cooling off" period. While our reliance on data from 2005 and 2006 may limit the generalizability of the results to a more contemporary period, at the same time it can be considered a strength as our data originate from the period before regulators and various countries displayed an increased focus on auditor-in-charge involvement, and hence reflect actual auditor practices *not* influenced by regulators' intervention.

<sup>6</sup> As instructed by the firm's global quality review team, every year different engagements were selected (although certain high-profile engagements were to be selected for the firm's review process at least once in three years). As all engagements were anonymous, it was not possible to check whether an engagement was included twice (e.g., both for 2005 and 2006). The audit firm decided to include fewer engagements in 2006. Our study comprises the full available sample (we have not excluded engagements ourselves, apart from reasons for data management mentioned below).

<sup>7</sup> By using a relative measure, we overcome the limitation of prior studies that an absolute number of hours spent depends on engagement characteristics such as size, riskiness, and complexity.



researchers with “a means for characterizing and differentiating the way people in different societies think and behave” (Stahl and Tung 2015, 392). While acknowledging Hofstede’s (2001) seminal work, which has been employed in numerous cross-cultural management (e.g., Kirkman et al. 2006; Stahl and Tung 2015) and accounting studies (e.g., Chanchani and MacGregor 1999; Hope, Kang, Thomas, and Yoo 2008; Han et al. 2010; Kanagaretnam et al. 2014), House et al.’s (2004) project currently is considered the most up-to-date and perhaps also the most sophisticated study to date,<sup>8</sup> although the latter has been subject to extensive debate (e.g., McSweeney 2002; Earley 2006; Javidan, House, Dorfman, Hanges, and de Luque 2006; Smith 2006; Hofstede 2010; Venaik and Brewer 2010).<sup>9</sup> In line with prior studies (e.g., Parboteeah, Addae, and Cullen 2012; Cieslewicz 2014) we use House et al.’s (2004) cultural practices scores to represent each country’s national culture. In our analysis, we included the raw power distance (*PD*), in-group collectivism (*IGC*), and uncertainty avoidance (*UA*) scores (on a 1 to 7 scale) for each individual country included in our final sample (see Appendix A for interpretation of scores on each dimension).<sup>10</sup>

### Engagement-Level Control Variables

The audit process and, hence, the involvement of the auditor-in-charge is influenced by characteristics that are unique for each individual audit engagement. First, we control for client riskiness (*RISK*) as “auditors adjust their production plan in response to increased risk factors (e.g., increase effort)” Knechel et al. (2013a, 394) given that “the resources [including time] needed to obtain ‘reasonable assurance’ vary across engagements” (Knechel et al. 2013a, 391). *RISK* is a dummy variable assuming the value of 1 if the engagement was assessed by the audit firm to meet certain predefined criteria indicating the engagement’s possible higher risk to the reputation of the firm, and 0 otherwise.

Second, we control for whether the audit engagement is classified as a “public-interest-entity” (*PIE*). *PIE* engagements refer to audits of organizations that are of significant public relevance because of their size or the nature of their business, such as listed companies, banks, pension funds, insurance companies, and state-owned enterprises or public institutions. Arguably, public-interest-entities are more complex and prior audit research shows that “the degree of client complexity and risk significantly influence audit production in terms of the planned extent or hours of testing” (Knechel et al. 2013a, 394). *PIE* is a dummy variable assuming the value of 1 if an audit engagement is classified as a public-interest-entity, and 0 otherwise.

*YEND* is a dummy variable assuming the value of 1 if it involves an engagement regarding financial statements that have a year-end on December 31, and 0 otherwise. By including *YEND* we control for the possibility that auditors-in-charge may be “overloaded” during the “busy season” and, consequently, that their involvement may suffer as the majority of firms have a December 31 year-end. We include year<sup>11</sup> and industry dummies<sup>12</sup> to control for the time-series and cross-sectional differences in auditor-in-charge involvement. Data regarding these engagement-level control variables were collected as part of the annual audit process quality review of the audit firm noted earlier.

Last, we include a measure (*SIZE*) representing the size of the engagement in terms of the (natural logarithm) total number of hours all audit team members have spent on the engagement. Arguably, the relative time the auditor-in-charge spends on an engagement is inversely related to the total number of hours spent by all team members.

<sup>8</sup> Having conducted a ten-year extensive quantitative and qualitative study based on responses on 735 questionnaire items of 17,370 managers from 951 organizations functioning in 62 societies throughout the world, House and colleagues (House et al. 2004) have incorporated 30 years of cumulative research after the landmark work of Hofstede (1980, 2001) and, with that, have taken the cultural taxonomies of prior scholars a step further by “unzipping” them to form the newest set of cultural dimensions for studying cross-national cultural differences. House et al. (2004, 92) conclude that “the constructs measured by the GLOBE scales generalize beyond the sample from which the data were obtained, the method used to collect these data, and the ‘sets of operations’ applied on these data [and thus that] [t]he findings reflect the broader societal and organizational cultures under study.”

<sup>9</sup> It should be acknowledged that each such cultural taxonomy has its inherent limitations, such as oversimplified constructs of cultural values and practices, stereotyping, and fallacious multilevel inferences (e.g., Hofstede 1996; Van de Vijver and Leung 1997; Baskerville 2003; House et al. 2004; Smith 2006). Nevertheless analyzing cultures through the cultural taxonomies has been generally accepted (e.g., Wong-On-Wing and Lui 2013) and proven to work well in providing for “a practical synthesizing framework for understanding, structuring, and expressing the ‘native categories’ that auditors employ to address the potential impact of cross-national cultural differences in day-to-day practice” (Bik 2015, 283).

<sup>10</sup> Note that House et al. (2004) identified nine distinct cultural dimensions: power distance, uncertainty avoidance, assertiveness, institutional collectivism, in-group collectivism, future orientation, performance orientation, humane orientation, and gender egalitarianism. Consistent with a number of prior cross-cultural studies (e.g., Kanagaretnam et al. 2014; Hooghiemstra, Hermes, and Emanuels 2015), we do not include scores for the other dimensions into the analysis in order to circumvent possible multicollinearity problems.

<sup>11</sup> Specifically, we include a dummy variable (*Y2005*) that assumes the value of 1 if it involves an engagement regarding fiscal year 2005 financial statements, and 0 otherwise.

<sup>12</sup> We use dummy variables as included in the Big 4 data and distinguish four broadly defined industries (i.e., Industrial and Consumer Goods and Services (*ICGS*), Financial Institutions (*FI*), Information, Technology, Entertainment, and Communication (*ITEC*), Privately Owned Businesses (*POB*)). These dummy variables are equal to 1 if a firm belongs to a particular industry, and 0 otherwise. The reference group was “Privately Owned Businesses.”

### Country-Level Control Variables

Consistent with prior cross-country auditing research (e.g., Francis, Khurana, and Pereira 2003; Choi and Wong 2007; Choi, Kim, Liu, and Simunic 2008; Francis and Wang 2008; Hope et al. 2008) we include three country-level variables that might be associated with the extent of auditor-in-charge involvement. We include these variables as these studies indicate that institutional differences at the country level play an important role in influencing auditor effort (cf. Choi et al. 2008) due to differences in the corporate governance environment or level of economic development. As there is no clear theory on the relation between auditor-in-charge involvement and the three country-level control variables, we do not predict the sign of their coefficients.

First, we control for the extent to which shareholders' rights are protected. Specifically, in line with prior research (e.g., Engelen and van Essen 2010; Boulton, Smart, and Zutter 2011), our proxy for investor protection is the product of the "strength of minority investor protection" and the "rule of law" indices. Data regarding these indices are from the World Bank. While the "strength of minority investor protection" index generally measures the extent to which the rights of minority shareholders are protected *de jure*, the "rule of law" index indicates the level of *de facto* protection. The "strength of minority investor protection" index is based on the methodology developed by Djankov, La Porta, Lopez-De-Silanes, and Shleifer (2008).<sup>13</sup> The "rule of law" index is part of the World Governance Indicators as developed by Kaufmann, Kraay, and Mastruzzi (2009).<sup>14</sup> Higher values on *INVP* indicate a higher level to which shareholders' rights are protected.

Second, the level of stock market development is constructed using a procedure similar to Francis, Nanda, and Olsson (2008) and Shao, Kwok, and Guedhami (2010). Specifically, *STKDVLP* entails World Bank data regarding (1) the market capitalization of listed companies (as percentage of GDP), (2) the total value of shares traded during the period (as percentage of GDP), and (3) the number of domestically incorporated companies listed on the country's stock exchanges at the end of the year. For 2005 and 2006, separately, we calculated a composite measure equaling the sum of the standardized values of items (1) to (3). Subsequently, we created an indicator variable (*STKDVLP*) that assumed the value of 1 if in 2005 (or 2006) the value on the composite measure was equal to or greater than the (year) median of composite measure of all countries.

Third, consistent with, e.g., Choi and Wong (2007) and Hope et al. (2008), we control for the economic development in a country. Specifically, we include the logarithm of GDP per capita (in \$US) (*LOGGDP*).

## RESULTS

### Descriptive Analysis

In Table 2, Panel A we provide descriptive statistics pertaining to our dependent variable (*AIC*) as well as our independent variables (including the range of scores on the three culture dimensions included in our study). As Table 2, Panel A shows, the average auditor-in-charge involvement is 0.055, implying that about 5.5 percent of the total hours spent on the engagement relates to auditor-in-charge hours.<sup>15</sup>

Table 2, Panel B provides a univariate comparison of auditor-in-charge involvement across the three cultural dimensions. Per cultural dimension we distinguish two groups, i.e., a *higher* and a *lower* group. For instance, a country scores *higher* (*lower*) on power distance if the country's score on that dimension is higher (lower) than the median value of power dimensions scores of all countries included in the sample. Table 2, Panel B shows statistically significant differences in average auditor-in-charge involvement along the three dimensions. Specifically, we see that the average auditor-in-charge involvement is lower in high power distance countries ( $AIC_{PD\_HIGH} = 0.045$ ) than in low power distance countries ( $AIC_{PD\_LOW} = 0.060$ ), a difference that is statistically significant ( $t = 8.607$ ;  $p\text{-value} < 0.01$ ). In a similar vein, average auditor-in-charge involvement is significantly ( $t = 11.027$ ;  $p\text{-value} < 0.01$ ) lower in high in-group collectivistic countries ( $AIC_{IGC\_HIGH} = 0.042$ ) than in low in-group collectivistic countries ( $AIC_{PD\_LOW} = 0.062$ ). Finally, average auditor-in-charge involvement is significantly ( $t = -9.197$ ;  $p\text{-value} < 0.01$ ) higher in high uncertainty avoidant countries ( $AIC_{UA\_HIGH} = 0.061$ ) than in low uncertainty avoidant countries ( $AIC_{UA\_LOW} = 0.044$ ). Taken together, the results of these comparisons provide preliminary support for the idea that culture is associated with differences in the actual level of involvement of the auditor-in-charge on audit engagements.

<sup>13</sup> Data and an outline of this index can be found at: <http://www.doingbusiness.org/methodology/protecting-minority-investors>

<sup>14</sup> This index captures "the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of, for instance, contract enforcement and property rights" (Kaufmann et al. 2009).

<sup>15</sup> The arrangements of confidentiality and anonymity agreed upon with the audit firm for data access do not allow us to disclose information regarding auditor-in-charge involvement at the country level.

**TABLE 2**  
**Descriptive Statistics**

**Panel A: Descriptive Statistics**

	<u>Mean</u>	<u>Median</u>	<u>Max.</u>	<u>Min.</u>	<u>Std. Dev.</u>
<i>AIC</i>	0.055	0.047	0.261	0.003	0.041
<i>ICGS</i>	0.548	1.000	1.000	0.000	0.498
<i>FI</i>	0.195	0.000	1.000	0.000	0.396
<i>ITEC</i>	0.181	0.000	1.000	0.000	0.385
<i>RISK</i>	0.201	0.000	1.000	0.000	0.401
<i>PIE</i>	0.497	0.000	1.000	0.000	0.500
<i>YEND</i>	0.889	1.000	1.000	0.000	0.314
<i>Y2005</i>	0.606	1.000	1.000	0.000	0.489
<i>SIZE</i> (in hours)	1,861.353	943.000	16,600.000	60.000	2,705.002
<i>INVP</i>	6.169	7.362	17.337	-5.730	6.336
<i>GDPCAP</i> (in \$)	26,046.830	31,973.130	57,346.950	740.114	17,367.700
<i>STKDVLP</i>	0.551	1.000	1.000	0.000	0.498
<i>PD</i>	5.126	5.160	5.800	3.890	0.389
<i>IGC</i>	4.817	4.700	6.360	3.530	0.764
<i>UA</i>	4.287	4.150	5.370	2.880	0.602

**Panel B: AIC Comparison per Cultural Dimension**

	<u>HIGH</u>	<u>LOW</u>	<u>t-statistic</u> <u>(HIGH/LOW)</u>	<u>n_HIGH</u>
<i>PD</i>	0.045 (0.027)	0.060 (0.046)	8.607***	820
<i>IGC</i>	0.042 (0.026)	0.062 (0.045)	11.027***	778
<i>UA</i>	0.061 (0.045)	0.044 (0.030)	-9.197***	1,453

\*, \*\*, \*\*\* Denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively (two-tailed).

This table presents descriptive statistics. Panel A provides descriptive statistics regarding the full sample. Panel B provides a comparison of average AIC per cultural dimension.

All variables are defined in Appendix B.

**Hypothesis Testing**

In this section, we empirically analyze the relation between culture and auditor-in-charge involvement.<sup>16</sup> As the number of audit engagements for each country-year range from 3 to 120, we employ a weighted least squares (WLS) regression where the weight is inversely proportional to the number of observations for each country-year combination. Using WLS ensures that uneven country-year representation in the sample will not bias the results toward countries (and years) that are more heavily represented (Choi et al. 2008; Han et al. 2010). We report Huber-White robust standard errors and winsorize all continuous variables at the 1 percent level in each tail to limit the influence of outliers.

Table 3 presents the coefficients and Huber-White robust standard errors (in parentheses) from weighted least squares regressions. In Column (1) we present the results of a “controls only” analysis. In Columns (2) to (4) we respectively add *PD*, *IGC*, and *UA*. Last, Column (5) presents the results based on the full model.

In Column (2) of Table 3, we find a significantly negative association between *PD* and *AIC* ( $\beta = -0.023$ ; p-value < 0.01). This finding lends support to H1 and suggests that the extent of auditor-in-charge involvement is lower for countries higher on power distance. Furthermore and in support of H2, in Column (3) of Table 3, the association between *IGC* and *AIC* is

<sup>16</sup> In a few cases, correlation coefficients (untabulated) between independent variables are greater than the absolute value of 0.6. To reduce concerns about multicollinearity, we also checked the variance inflation factors. All VIFs were less than 5.0, and the average VIFs in the analyses were less than 2.6, indicating that multicollinearity should not be problematic.

**TABLE 3**  
**Weighted Least Square (WLS) Regressions of Auditor-in-Charge Involvement on Culture and Control Variables**

		(1)	(2)	(3)	(4)	(5)
Intercept		0.072 (0.013)***	0.190 (0.021)***	0.208 (0.019)***	-0.014 (0.016)	0.172 (0.026)***
<i>ICGS</i>	?	-0.006 (0.005)	-0.002 (0.006)	-0.002 (0.005)	-0.006 (0.005)	-0.001 (0.005)
<i>FI</i>	?	-0.014 (0.005)***	-0.009 (0.006)	-0.009 (0.005)*	-0.014 (0.005)***	-0.009 (0.005)*
<i>ITEC</i>	?	-0.007 (0.006)	-0.002 (0.006)	-0.002 (0.005)	-0.008 (0.005)	-0.002 (0.005)
<i>RISK</i>	+	0.005 (0.002)**	0.004 (0.002)*	0.002 (0.002)	0.005 (0.002)**	0.003 (0.002)
<i>PIE</i>	+	0.008 (0.002)***	0.008 (0.002)***	0.008 (0.002)***	0.008 (0.002)***	0.008 (0.002)***
<i>YEND</i>	-	-0.003 (0.003)	-0.003 (0.003)	-0.003 (0.003)	-0.002 (0.003)	-0.002 (0.003)
<i>Y2005</i>	?	0.003 (0.002)	0.003 (0.002)*	0.003 (0.002)	0.003 (0.002)	0.003 (0.002)
<i>SIZE</i>	-	-0.009 (0.001)***	-0.009 (0.001)***	-0.008 (0.001)***	-0.008 (0.001)***	-0.007 (0.001)***
<i>INVP</i>	?	-0.001 (0.000)**	-0.001 (0.000)**	-0.001 (0.000)**	-0.002 (0.000)**	-0.002 (0.000)**
<i>LOGGDP</i>	?	0.011 (0.003)***	0.010 (0.003)***	0.001 (0.003)	0.012 (0.003)***	0.004 (0.003)
<i>STKDVLP</i>	?	0.010 (0.002)***	0.010 (0.002)***	0.009 (0.002)***	0.006 (0.002)***	0.007 (0.002)***
<i>PD</i> (H1)	-		-0.023 (0.003)***			-0.009 (0.004)**
<i>IGC</i> (H2)	-			-0.020 (0.002)***		-0.015 (0.002)***
<i>UA</i> (H3)	+				0.018 (0.002)***	0.009 (0.002)***
R <sup>2</sup>		0.10	0.14	0.17	0.14	0.19
n		2,251	2,251	2,251	2,251	2,251

\*\*\*, \*\*, \* Denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively (two-tailed).

This table presents the results based on weighted least squares (WLS) regressions where the weight is inversely proportional to the number of observations per country-year combination. In all models the dependent variable is *AIC*. All variables are defined in Appendix B.

Huber-White robust standard errors are in parentheses.

significantly negative ( $\beta = -0.020$ ;  $p$ -value  $< 0.01$ ), which suggests that auditors-in-charge from countries higher on collectivism seem to rely more on the social workings in the audit team (e.g., greater loyalty toward the in-group and its common goal), and therefore may find it less necessary to be actively involved. Finally, in support of H3, in Column (4) of Table 3, we find higher levels of auditor-in-charge involvement for higher uncertainty avoidant ( $\beta = 0.018$ ;  $p$ -value  $< 0.01$ ). The results of the full model, as presented in Column (5) of Table 3, reveal similar patterns as far as the relation between culture (as proxied by *PD*, *IGC*, and *UA*) and *AIC* is concerned.

The results regarding our engagement-level control variables remain relatively stable throughout the various analyses and seem to suggest that auditor-in-charge involvement is lower for engagements regarding financial institutions (banks, insurance companies, etc.). A possible explanation might be the total hours an audit team spends on these engagements is relatively large due to complexity, hence, lowering the percentage of the hours spent by the auditor-in-charge. Moreover, as expected *SIZE* and *AIC* are negatively associated. Finally, there is also some evidence that *RISK* and *PIE* are positively associated with *AIC*.

The results with respect to our country-level control variables are in line with results of prior studies. Specifically, the negative association between *INVP* and *AIC* seem to be in line with the view that investor protection and auditing are “substitutes” (e.g., Choi and Wong 2007; Choi et al. 2008; Ernstberger and Grüning 2013). Consistent with the idea that firms

in more wealthy countries are able to spend more on auditing (e.g., Choi and Wong 2007), we find evidence that economic development (*GDP*) and *AIC* are positively associated. In a similar vein, the positive association between *STKDVLP* and *AIC* is in line with prior research showing that in more equity-based or shareholder-based countries there is a stronger demand for auditing (e.g., Francis et al. 2003).

### Sensitivity Checks

In this section, we report the results of a number of sensitivity checks using alternative explanatory variables or estimation methods.

To test the sensitivity of the analysis to our choice of cultural variables, we consider Hofstede's (2001) cultural dimensions as alternatives to the cultural dimensions distinguished by House et al. (2004). His dimensions have been frequently used to examine the impact of culture on firm behavior in management (e.g., Kirkman et al. [2006] for an overview) as well as in accounting and auditing research (e.g., Chanchani and MacGregor 1999; Hope et al. 2008; Han et al. 2010; Kanagaretnam et al. 2014). Among other dimensions, Hofstede (2001) distinguished power distance (*PDH*), individualism (*INDH*),<sup>17</sup> and uncertainty avoidance (*UAH*). The results from these additional tests (untabulated) largely support our earlier conclusions, as they reveal similar patterns with respect to our hypotheses about the effects of culture on auditor-in-charge involvement.<sup>18</sup>

To alleviate the concern that the use of WLS regressions leads to inflated parameter estimators, we also re-estimated the models using ordinary least squares (OLS) regressions.<sup>19</sup> Untabulated results largely confirm our inferences regarding the effects of culture on auditor-in-charge involvement. The only exception is that *PD*, although it still has a negative sign, is no longer significant in the full model. We also verify the results using Hierarchical Linear Modeling (HLM, Raudenbush and Bryck 2002) as we deal with hierarchically structured data (i.e., we have audit engagements that are nested within countries).<sup>20</sup> This means that audit engagements within a country are more likely to be more alike, on average, than audit engagements from different countries, because they share the same institutional setting (i.e., national culture and/or legal rules) (e.g., Engelen and van Essen 2010).<sup>21</sup> The results (untabulated) generally reinforce our evidence regarding the idea that culture and auditor-in-charge involvement are associated.

## CONCLUSIONS, DISCUSSION, LIMITATIONS, AND FUTURE RESEARCH

Recently, regulators and professional accounting bodies identify auditor-in-charge involvement as one of the key indicators of audit quality. While the auditor-in-charge plays a pivotal role in performing a high-quality audit (e.g., Sundgren and Svanström 2014; Goodwin and Wu 2016), a potentially important, yet overlooked, issue is that auditor-in-charge involvement is affected by numerous contextual factors rendering such an audit quality indicator ineffective or even misleading. Based on unique, proprietary data from a Big 4 audit firm comprising time-record data regarding 2,251 individual audit engagements in 50 countries across the globe, the results of our study show that the extent of auditor-in-charge involvement differs across countries and that the differences in auditor-in-charge involvement are associated, as predicted, with power distance, individualism versus collectivism, and uncertainty avoidance. We find that average auditor-in-charge involvement is about 4.5 (6) percent in high (low) power distance countries, about 4 (6) percent in high (low) in-group collectivistic countries, and about 6 (4) percent in high (low) uncertainty avoidant countries. An overall implication of our

<sup>17</sup> While House et al. (2004) measure the level of collectivism, scores on Hofstede's (2001) individualism dimension expresses the opposite (i.e., higher scores indicate higher levels of individualism). To facilitate ease of interpretation we multiply Hofstede's (2001) individualism scores by  $-1$  to get *COLH*.

<sup>18</sup> Please note that we find a negative coefficient when using Hofstede's scores for uncertainty avoidance (*UAH*). This may seem to contradict the results reported in Table 3 based on House et al. (2004). However, this result actually supports the results presented in Table 3 as House et al.'s (2004) *UA* and Hofstede's (2001) *UAH* have been shown to correlate *negatively*. Specifically, House et al. (2004, 621) report a correlation of  $-0.62$  between their and Hofstede's (2001) uncertainty avoidance dimensions. Researchers are still debating the origins of this negative correlation (e.g., Maseland and van Hoom 2010; Brewer and Venaik 2010).

<sup>19</sup> We clustered standard errors by country (Gow, Ormazabal, and Taylor 2010) as it is likely that auditors-in-charge based within one country have similar engagement practices (i.e., there may be cross-sectional dependence), such that observations within a country are not treated as independent, but observations across countries are (cf. Doidge, Karolyi, and Stulz 2007).

<sup>20</sup> By using HLM, we can simultaneously estimate country and engagement-level coefficients without distorting the results. Furthermore, HLM ensures that uneven country representation in the sample does not lead to biased estimates of the parameters (Raudenbush and Bryck 2002). Our data set contains a hierarchical structure with two levels, each represented by its own regression equation. The Level-1 model estimates the relationship between the dependent variable (*AIC*) and firm characteristics (e.g., *RISK* and *PIE*). The Level-2 model estimates the effects of the country characteristics (including *PD*, *IGC*, and *UA*). Consistent with prior research (e.g., Engelen and van Essen 2010; Hooghiemstra et al. 2015), we apply hierarchical linear modeling with random intercepts and fixed coefficients (i.e., the effects are assumed to be the same across engagements and countries).

<sup>21</sup> Moreover, as our main interest is in the effects of the country-level variables on auditor-in-charge involvement we centered all lower level variables at the grand mean as this improves the interpretability of coefficients and reduces multicollinearity issues (Hofmann and Gavin 1998). Grand mean centering implies that the overall or grand mean of the Level-1 variables is subtracted from each Level-1 case (i.e.,  $X_{ijk} - XGM$ , where *XGM* is the overall or grand mean based on all  $X_{ijk}$ ).



study is that context matters when assessing auditor-in-charge involvement and, thus, that it is important to consider contextual factors, such as differences in power distance, individualism versus collectivism, and uncertainty avoidance, when interpreting audit quality indicators (e.g., the hours the auditor-in-charge has spent on an audit engagement). Accordingly, our findings have important implications for audit practice and firms' management, audit regulators and public policy, and academics.

For internationally operating audit firms it is important to understand the existence and nature of the effects of cultural differences on their audits (e.g., [Cohen et al. 1993](#); [Hurt et al. 2013](#); [Bik 2015](#)). Pursuing homogenization of worldwide audit practices and related policies to increase consistency of quality throughout their global organizations (e.g., [Jenkins et al. 2008](#)), audit firms "implicitly assume that through standardized firm-wide policies and knowledge sharing, all audits across practice offices and audit partners within an audit firm are uniform" ([Zermi 2012](#), 315). However, our study suggests that a uniform application of a global audit may remain an illusion (e.g., [Cohen et al. 1995](#); [Patel et al. 2002](#); [Leung et al. 2005](#)). The influence of culture on professional behavior is pervasive (e.g., [Bik 2010](#); [Hurt et al. 2013](#)), adds to the complexity of organizational control in multinational audit firms ([Cohen et al. 1993](#)), and needs to be acknowledged in the local execution of global strategies (cf. [Barrett et al. 2005](#)).

More specifically, the findings of this study indicate that it may be important to consider region-specific or country-specific thresholds rather than a globally standardized requirement regarding auditor-in-charge involvement. Requiring a firm-wide minimum level of auditor-in-charge involvement may even be counterproductive in certain cultures. For example, given that auditors-in-charge from different countries have different cultural inclinations in terms of what is considered to be an effective level of auditor-in-charge involvement, what would happen if global firm management requires an auditor-in-charge in a certain country that averages 4 percent (6 percent) on auditor-in-charge involvement to be 6 percent (4 percent) involved on all engagements? What other mechanisms may be in place that work effectively in a given country, such as team composition or auditor-in-charge and audit manager interaction that may unintendedly be negatively affected by increased auditor-in-charge involvement? While we document an association between auditor-in-charge involvement and cultural differences, we do not know which mechanisms are in play that affect or perhaps could compensate for seemingly reduced auditor-in-charge involvement. Furthermore, given the cultural diversity of audit teams, it is not only relevant to look at the auditor-in-charge's cultural background, but also at the cultural diversity of the audit team. For example, what would happen in a U.S.-based team comprising various nationalities (and, hence, involving different cultural backgrounds) led by an American auditor-in-charge? Or similarly, how would an American auditor-in-charge lead an audit team based in say, China? How and to what extent do the auditor-in-charge and the audit team members draw from and assimilate to the different local contexts and value systems?

An issue that currently is drawing regulatory attention is that audit firms should measure and report "key indicators of audit quality" ([Francis 2011](#); [CAQ 2014](#); [IAASB 2014](#); [PCAOB 2015](#)); one of them being the extent of auditor-in-charge involvement. The findings of our study show that only if certain conditions are taken into consideration, then such a metric actually may be an effective indicator of audit quality across the globe. While it seems crucial to disclose this information, if professional accounting bodies and regulators are interested in suggesting or setting a minimum threshold on auditor-in-charge involvement or a reporting requirement on such information, then they need to take culture into account and may want to consider different thresholds for different countries in the world. In other words, unless the role of culture is well understood such a key quality indicator could be uninformative or even misleading. For example, what could happen if a certain level of auditor-in-charge involvement would be required that does not match engagement or office-specific factors, whether due to cultural differences or broader contextual differences such as size, riskiness, or industry? Furthermore, just looking at the extent of auditor-in-charge involvement may be not fully informative about audit quality (e.g., [Knechel et al. 2013a](#), 394). The nature and timing of her involvement may have a more profound impact on audit quality, for example, the specific approach or style of the auditors-in-charge, the interaction between the auditor-in-charge and the senior manager or review partner, or the involvement in the early planning stages of an audit engagement?

Despite an emerging number of studies in accounting and auditing that consider the impact of national culture on various key drivers of audit quality, much remains unknown about the impact of differences in national culture on auditors' professional behavior (e.g., [Chanchani and MacGregor 1999](#); [Nolder and Riley 2014](#)). Future research may focus on exploring how cultural norms influence auditors' behavior, especially in those areas that can be expected to be value and context driven in nature including, but not limited to, professional skepticism, audit team dynamics, and audit-client conflict behavior. Furthermore, and as discussed in the "Methods" section, despite the frequent use of cultural taxonomies as those of [Hofstede \(1980, 2001\)](#) and [House et al. \(2004\)](#), they inevitably have their limitations, for instance, including that they have been gathered in a sample that does not focus on audit practitioners. Therefore, measuring the existence of cultural differences in a specific research setting potentially adds to the in-depth understanding of the role of culture in shaping professional behaviors. Finally, we were not able to link the individual audit engagements to specific firms and had no access to engagement-level information related to future misstatements, going concern opinions, or accruals quality. Consequently, we were unable to assess the auditor-in-charge involvement to audit quality relation and test whether cultural dimensions moderate or strengthen this relation. Future research at a more micro-level, relying on archival or survey-based data or in an experimental setting, may contribute to identifying possible levers to build on or mitigate the possible adverse effect of cultural difference on auditors' behavior in global audits or in multicultural audit teams.

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**APPENDIX B**  
**Variable Definitions**

Variable	Description
<b>Dependent Variable</b>	
<i>AIC</i>	Percentage of the number of auditor-in-charge hours relative to the total audit engagement hours as registered per audit engagement.
<b>Country-Level Explanatory Variables</b>	
<i>PD</i>	Raw country-level power distance score for each individual country based on House et al. (2004). A higher score (on a 1 to 7 scale) reflects a culture in which hierarchical and power differences are accepted to a larger extent.
<i>IGC</i>	Raw country-level in-group collectivism score for each individual country based on House et al. (2004). A higher (lower) score (on a 1 to 7 scale) reflects a culture that is relatively more collectivistic (individualistic).
<i>UA</i>	Raw country-level uncertainty avoidance score for each individual country based on House et al. (2004). A higher score (on a 1 to 7 scale) reflects a culture that is relatively more uncertainty avoidant.
<i>INVP</i>	Country-level measure of the extent to which shareholders' rights are protected. Specifically, it is the product of the "strength of minority investor protection" and the "rule of law" indices by the World Bank. Higher values indicate better protection.
<i>STKDVL</i>	A dummy variable assuming the value of 1 if in 2005 (or 2006) the value on the composite measure was equal or greater than the (year) median of composite measure of all countries. The composite measure was calculated as the sum of the standardized values of (1) the market capitalization of listed companies (as percentage of GDP), (2) the total value of shares traded during the period (as percentage of GDP), and (3) the number of domestically incorporated companies listed on the country's stock exchanges at the end of the year.
<i>LOGGDP</i>	The logarithm of GDP per capita (in \$US). It is a measure of economic development in a country.
<b>Engagement-Level Explanatory Variables</b>	
<i>RISK</i>	A dummy variable assuming the value of 1 if the engagement was assessed by the audit firm to meet certain predefined criteria indicating an engagement's possible higher risk to the reputation of the firm, and 0 otherwise.
<i>PIE</i>	A dummy variable assuming the value of 1 if the engagement involves a firm classified as a "public-interest-entity," and 0 otherwise.
<i>YEND</i>	A dummy variable assuming the value of 1 if it involves an engagement regarding financial statements that have a year-end of December 31, and 0 otherwise.
<i>Y2005</i>	A dummy variable assuming the value of 1 if it involves an engagement regarding fiscal year 2005 financial statements, and 0 otherwise.
<i>SIZE</i>	The natural logarithm of the total number of hours spent on the engagement by all audit team members.
<i>ICGS</i>	A dummy variable assuming the value of 1 if the engagement involves a firm active in the industrial and consumer goods and services sector, and 0 otherwise.
<i>FI</i>	A dummy variable assuming the value of 1 if the engagement involves a firm that can be considered a financial institution (e.g., bank or insurance company), and 0 otherwise.
<i>ITEC</i>	A dummy variable assuming the value of 1 if the engagement involves a firm active in the information, technology, entertainment, and communication sector, and 0 otherwise.
<i>POB</i>	A dummy variable assuming the value of 1 if the engagement involves a privately owned business, and 0 otherwise.

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## APPENDIX A

### Illustration of Countries Higher and Lower on Each of the Three National Culture Dimensions Taken into Consideration in This Study

Illustration of higher and lower scoring countries on the [House et al. \(2004\)](#) cultural practices scores. For a complete overview of the 62 societies included in the GLOBE study please see [House et al. \(2004\)](#).

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**Power Distance** (or power concentration versus decentralization): the degree to which members of an organization or society expect and agree that power should be stratified and concentrated at higher levels of an organization or government.

**Higher**

Argentina (and other Latin American countries), Germany, Thailand, and India (and other Southern Asian countries), Russia, Italy, France, and China.

**Lower**

The Netherlands, Australia, Sweden (and other Nordic European countries), and the U.S. (and other Anglo-Saxon countries).

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**In-Group Collectivism:** the degree to which individuals express pride, loyalty, and cohesiveness in their organizations or families.

**Higher**

Philippines and India (and other Southern Asian countries), Brazil (and other Latin American countries), China and Taiwan, Russia and Poland (and other Eastern European countries), and Turkey and Morocco (and other Middle-East countries).

**Lower**

Denmark (and other Nordic European countries), The Netherlands and Germany (and other Germanic European countries), the U.S., Australia, and the U.K. (and other Anglo-Saxon countries), and France.

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**Uncertainty Avoidance:** the extent to which members of an organization or society strive to avoid uncertainty of future events by relying on established social norms, rituals, and bureaucratic practices.

**Higher**

Germany (and other Germanic European countries), Sweden (and other Nordic European countries), Singapore, China, The Netherlands, Australia, and the U.S.

**Lower**

Russia (and other Eastern European countries), Argentina and Brazil (and other Latin American countries), Russia, Korea, and Italy.

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