WORKING PAPER

Well-Calibrated Professional Skepticism: Its Benefits on Auditor Responsiveness to the Risk of Material Misstatement and Its Roots in Culture Controls and Auditor Values

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KEY TAKE-AWAYS

Using a multi-method approach, we first introduce the construct of well-calibrated professional skepticism and identify how it facilitates auditors' response to heightened risk of material misstatement without also raising costly false alarms. We then draw on the management and management accounting literatures to identify several audit firm "soft" culture controls and auditor-specific characteristics that we predict, and find evidence consistent with being, antecedents of well-calibrated professional skepticism. We position well-calibrated professional skepticism as an internalized value and connect it to the psychology literature on calibration. We discuss how audit firms can improve the portion of their audit professionals who are well-calibrated professional skeptics by improved selection during recruitment of human talent and by investment in culture controls that credibly reveal a commitment to "walking the talk" when it comes to audit quality

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Abstract: Using a multi-method approach, we first introduce the construct of well-calibrated professional skepticism and identify how it facilitates auditors' response to heightened risk of material misstatement without also raising costly false alarms. We then draw on the management and management accounting literatures to identify several audit firm "soft" culture controls and auditor-specific characteristics that we predict, and find evidence consistent with being, antecedents of well-calibrated professional skepticism. We position well-calibrated professional skepticism as an internalized value and connect it to the psychology literature on calibration. We discuss how audit firms can improve the portion of their audit professionals who are well-calibrated professional skeptics by improved selection during recruitment of human talent and by investment in culture controls that credibly reveal a commitment to "walking the talk" when it comes to audit quality.

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I. INTRODUCTION

In recent decades, numerous audit studies have examined the audit quality effects of "hard" controls such as post-SOX legislation and regulation, including new rules prohibiting public-company audit firms' from setting their own "generally accepted audit standards" and from simply inspecting one another's work (Francis 2011; DeFond and Zhang 2014). While "hard" controls can mitigate inherent incentive conflicts that auditors face (Aobdia and Petacchi 2019; Christensen et al. 2016; Dodgson et al. 2020), the management and management accounting literatures have long argued that the addition of "soft" controls enables higher organizational performance (see e.g., Ouchi 1979, 1980; Langfield-Smith 1995; Simons 1995). One of the most important "soft" controls is the strength of the connection between an organization's cultural values, as expressed by top management, and the cultural values that the organization's employees internalize and use to guide their daily professional judgments and behaviors (e.g., Booth and Schulz 2004).[1] While extant research reveals several factors that moderate the strength of this connection in non-audit firms (e.g., Tesser and Otley 2012), there is hardly any research on the extent to which individual auditors embrace or reject their audit firms' organizational values (Nelson 2009). Related, there is limited work on what auditors' internalized cultural values are or should be (but see, e.g., Cohen, Pant and Sharp 2001; Gendron, Suddaby and Lam 2006; Cheffers and Pakaluk 2007) and on whether and how auditors' internalized values improve or impair their performance on audit tasks (Nelson and Tan 2005; Nelson 2009).

To address these gaps, we take a two-step approach. Our first step is to develop and test how two auditor-specific cultural values affect auditors' task performance: *well-calibrated professional*

[1] By values we mean fundamental virtues or life-guiding principles that inform individuals' thinking and decision processes as well as organization's strategies (see, e.g., Cheffers and Pakaluk 2007).

skepticism and *professional pride*. Well-calibrated professional skepticism is a new construct that builds on a formidable body of prior work on professional skepticism (Nelson 2009). Well-calibrated professional skepticism entails auditors calibrating (fine tuning) the extent to which they heighten their misstatement risk judgments and plans to collect more evidence of the objective risk of material misstatement. Thus, well-calibrated skeptics do not collect particularly persuasive audit evidence on objectively lower-risk engagements due to having presumptive doubt or distrusting client management (Cohen et al. 2017). Collecting persuasive audit evidence when objective indicators suggest that this risk is low is not only costly but also threats the audit effectiveness on higher-risk audits (Brewster et al. 2021). The second cultural value is *auditor pride*, which received unremarkable emphasis in the academic or practitioner literature during the past three decades until very recent years, in which auditor pride has been extensively promoted by the auditor profession. While theory holds that greater auditor pride will fortify auditors' commitment to objectivity, integrity and truth-telling, the conditions, if any, under which promoting auditor pride actually improves auditor task performance is an open question.

We examine the impact of well-calibrated professional skepticism and auditor pride on the quality of auditors' performance in an asset impairment task where they assess and address the risk of material misstatement associated with management's revenue growth forecasts. We manipulate revenue growth rate reasonableness at two levels: less reasonable due to being overly aggressive or more reasonable due to being neutral. We identify the extent to which auditors are well-calibrated professional skeptics by using post-test measurement questions. These questions ask about auditors' real-world behaviors: To what extent do they push back, ask more questions, become more vigilant, and ask for more expert help when warranted in the field? We predict and examine whether the risk assessments and planned actions of auditors who are more well-

calibrated professional skeptics reflect objectively higher misstatement risk when management's revenue growth rate forecast is less reasonable as compared to when it is more reasonable.

We examine the impact of auditor pride using a manipulated prime as well as a measured variable. The prime describes how a hero auditor of the past demonstrated courage and integrity by standing up for accounting quality on behalf of investors. We randomly assigned some auditors to the prime condition and others to a control condition omitting the prime. We also measure variation in auditors' latent pride in the audit profession using a series of post-test questions. We predict that the extent to which auditors' risk assessments and planned actions reflect objectively higher misstatement risk when management's revenue growth rate forecast is less reasonable versus more reasonable will be greater for auditors with higher pride in the audit profession.

As predicted, auditors who are more well-calibrated professional skeptics render assessments and plans to gather additional evidence that reflect an objectively higher risk of material misstatement in the presence of an aggressive growth rate. That is, in the aggressive growth rate condition, auditors reporting higher well-calibrated professional skepticism indeed choose more conservative judgments and actions. For the neutral revenue growth forecast, better-calibrated professional skeptics avoid false positives by being no more conservative in assessing and planning to address the risk of material misstatement than worse-calibrated professional skeptics. However, we observe no evidence that greater professional pride helps auditors to better assess and address to misstatement risk.

In the second part of our research, we examine the cultural determinants of auditors who are better-calibrated professional skeptics. We examine whether organizational communication stressing audit quality enhances auditors' calibrated skepticism. Prior research highlights the importance of organizational communication of values in fostering employee dedication to

product/service quality as well as to fairness or other ethical principles (Merchant and Van der Stede, 2007; Carpenter et al. 1994; Bol and Loftus 2022). Research also shows, however, that explicit communication of organizational values is not enough, as communicated values can go dormant quickly or never be taken seriously by employees (Landekich 1989; KPMG 2013; Westphal 2020). Our prediction about the effect of organizational communication of values that stress audit quality on auditors' calibrated skepticism is therefore non-directional. We next examine a *facilitating culture,* which we define as an organizational culture that auditors perceive as not only communicating the importance of deeply understanding client management's financial statements but also providing auditors ample resources, including budgetary support, to do so. We predict that a facilitating culture makes auditors better-calibrated skeptics. We also predict that auditors will be better-calibrated skeptics when their organizations' leadership demonstrates independence from their clients. Finally, because mutual selection of auditors and audit firms facilitates cohesive culture, we predict that better-calibrated professional skeptics will be among auditors who value contributing meaningfully to society as well as those who value truth-seeking.

Our results provide evidence of several determinants of calibrated skeptics. A facilitating culture, valuing personally contributing to society, and commitment to truth-seeking are positively associated with the extent to which auditors are well-calibrated skeptics. Consistent with prior studies showing that auditor competence, driven by their underlying knowledge and skills, improves other facets of audit task performance (Libby and Luft 1993; Nelson and Tan 2005), we find a positive association between auditor competence and better-calibrated skepticism. At the same time, however, we find no evidence of an association between auditors' perceptions of their organization's leadership commitment to independence and better-calibrated skepticism. Finally, we observe that organizational communications that stress the importance of audit quality have no

positive association with better-calibrated skepticism; indeed we find the opposite, a significant negative association between organizational communications that stress audit quality and the extent to which auditors are better-calibrated skeptics.

This paper contributes to the literature in several ways. First, we introduce the values of well-calibrated professional skepticism to the academic literature. We show that more well-calibrated skepticism helps auditors more accurately assess and plan to address the risk of material misstatement. This contribution is important in part because prior research has demonstrated how critical it is for auditors to assess and address the risk of material misstatement appropriately to ensure higher audit quality (Bell et al. 2005; Nelson and Tan 2005; Nelson 2009; Christensen et al. 2016). Second, we show how a simple measurement, based on a small set of action-oriented questions that ask auditors the extent to which they push back, are vigilant, question management or seek expert help when situations warrant doing so, captures variation in well-calibrated professional skepticism. While numerous longer, more complicated scales exist that might improve how cleanly we capture variation in auditors' well-calibrated professional skepticism, an advantage of our questions is the focus on auditors' self-reported history of undertaking skeptical actions when warranted. By contrast, most of the extant individual-difference scales discussed in the audit literature focus more heavily on auditors' belief formation and revision or their analytical processing rather than on their action plans (e.g., Hurt Trait Skepticism as in Hurtt 2007; Need for Cognition as in Griffith, Kadous and Young 2021).

A third contribution is that we show that better-calibrated professional skeptics do not assess or address misstatement risk in conservative ways across the board, but only when the underlying evidence calls for it. Their ability to distinguish between audits featuring objectively lower versus higher risk of material misstatement is of theoretical importance because prior research shows that

humans, including auditors, have substantial difficulty discriminating alternative states of the world (Kachelmeier et al. 2014; Brewster et al. 2021). The ability to identify lower-risk audits and to decide not to collect additional evidence is also of significant practical importance. Auditors cannot track down every false positive, as auditors have limited financial and cognitive resources that are easily depleted (Hurley 2019), well-calibrated skeptics therefore make more efficient resource allocation decisions. A fourth contribution that distinguishes our study from much of the work on auditors' exercise of professional skepticism is that calibrated professional skepticism is action-oriented. Prior research historically has focused on auditors' judgments, often under the assumption that more conservative judgments invariably result in more conservative actions (Nelson 2009; Nolder and Kadous 2018). There is, however, research that shows that the link between higher assessments of the risk of material misstatement and planning subsequent actions to address this heightened risk can be a weak link. Shaub and Lawrence (1999, 2002) were among the first to point out that audit experience tends to weaken the link between more skeptical judgments and more skeptical actions. Some auditors who recognize there is heightened misstatement risk might not understand what audit procedures are diagnostic of different kinds of misstatements (Hammersley, Johnstone, and Kadous 2011), or simply assume there is an over-testing "cushion" built-in to audit programs (Asare and Wright 2004).

A fifth contribution to the audit literature is that we introduce and provide the first empirical examination of the role of auditor pride in improving auditor judgment and decision-making. Our findings provide no discernible evidence that greater pride in the audit profession helps auditors to better discriminate when the underlying evidence objectively warrants a heightened assessment of the risk of material misstatement and attendant actions planned to address heightened misstatement risk. Thus, cultural controls at audit firms or individual auditor attributes that are

positively associated with auditor pride are unlikely an ideal substitute for factors that enhance the extent to which an audit firms' auditors are well-calibrated professional skeptics. Of course, this conclusion does not mean that the substantial financial resources that audit firms recently have invested into the promotion of the auditor pride value has been wasteful, as there may well be other important benefits of stronger pride in the audit profession in terms of human capital recruiting and retention as well as in marketing audit services to prospective and current audit clients.

As a seventh contribution, we also advance the management and managerial accounting literature by demonstrating that cultural controls aimed at increasing value alignment can have both negative and positive associations with auditors' internalization of key organizational values. In doing so, we extend the management literature that discusses perils of simply talking about cultural values rather than walking that talk (Cianci et al. 2014; Westphal 2022). Specifically, we find that organizational communication emphasizing audit quality can be ineffectual at promoting well-calibrated auditor skepticism, and even *reduce* it. At the same time, however, a facilitating culture that emphasizes the importance of understanding the true quality of the financial statements but also provides the resources for auditors to act upon these objectives, fosters greater well-calibrated professional skepticism. This shows that it is important for organizations to pay attention to what leadership communicates about organizational values; messages that are not backed up by actions might do more harm than good.

Last, our study also provides some insights for practice. Our study suggests that a set of cultural controls used by audit firms is likely a key to ongoing efforts to improve audit quality. We show that higher levels of the internalization of the value of well-calibrated professional skepticism will likely benefit auditors' judgment and actions. Importantly, our results not only show the importance of well-calibrated professional skepticism, but they also provide insight into how to

increase auditors' well-calibrated skepticism. Our results suggest that creating a facilitating culture and hiring auditors who care about society and those that are committed to truth-seeking will lead to better-calibrated skeptics.

II. THEORY AND HYPOTHESIS DEVELOPMENT

Ensuring audit quality has long been a challenge for the audit profession. The well-known conflict of interest where the client of record, which is the audit committee, is comprised of persons who are often socially close to and financially rewarded by top management,[2] the very persons whose financial statements are being audited, has been well studied and there is strong agreement that this structure is far from ideal (Magilke, Mayhew and Pike 2009; Nelson and Tan 2005; DeFond and Zhang 2014). However, alternative structures like making the auditing of publicly traded companies a government responsibility have their own share of disadvantages. Consequently, regulators like the SEC in the US and the AFM in the Netherlands are closely watching the audit profession and putting pressure on the audit firms to improve audit quality.

Considering the complications of providing auditors with timely, explicit incentives for audit quality (Francis 2011; Dekeyser et al. 2021), audit firms have recently focused on improving auditors' professional judgment by building a stronger organizational culture. Organizational culture is the shared organizational purpose and values that guide employee decisions in domains where explicit rules and policies are difficult to define (Campbell and Sandino 2019). Organizational cultures thus influence employee behavior by promoting and reinforcing values where we define values as shared beliefs among employees regarding "the right way" to conduct oneself in the organization. In the first part of this study, we examine two values that we predict,

[2] Audit committees even receiving compensation in the form of common shares or options to purchase these shares (Campbell et al. 2015; Cullinan et al. 2010).

when internalized (i.e., employees act in accordance with the value) will likely lead to higher audit quality by means of a more critical assessment and addressment of clients' questionable estimates.

Calibrated Professional Skepticism

Although professional skepticism has been an integral part of audit education, research, and standards for decades, there are different perspectives about what professional skepticism entails.[3] An influential review article defines professional skepticism as "judgments and decisions that reflect a heightened assessment of the risk that an assertion is incorrect, conditional on the information available to the auditor (Nelson 2009, 1). A more recent conceptualization adds that professional skepticism is both a mindset that entails critical thinking about evidence, as discussed in audit standards (see, e.g., IAASB 315, 330, 540; AS 1105, AS 2110, AS 2301 in PCAOB 2010a, 2010b, 2010c, respectively), and an attitude that includes auditors' intended and actual actions (Nolder and Kadous 2018). Our calibrated skepticism construct overlaps substantially with these conceptualizations but differs in two respects. One difference is that we position calibrated professional skepticism as reflecting audit firms' organizational values that their individual auditors internalize to varying degrees. A second, more nuanced difference is that calibrated professional skepticism pragmatically emphasizes audit efficiency, recognizing steep costs of chasing down too many false positives.[4] As such, calibrated professional skepticism embraces the absence of a heightened assessment of the risk that an assertion is incorrect when available evidence objectively indicates that the risk of misstatement is low. Calibrated professional skepticism thus edges back from the "presumptive doubt" emphasis in Nelson's (2009) definition,

[3] In line with extant audit standards, most academic authors focus on auditors' skepticism about the veracity of management's assertions or about facets of audit evidence, but some also focus on auditors' skepticism of their own judgment quality (see, e.g., Bell et al. 2005; Grenier 2017).

[4] These costs include not only the financial outlay on wasteful audit procedures and impaired relationships with client management, but also a depletion in auditors' limited cognitive capacity to be more vigilant when it's really needed (see, e.g., Hurley 2019).

which some audit regulators advocated for shortly after passage of the U.S. Sarbanes-Oxley legislation (Bell, et al. 2005), towards a more "neutral" orientation.

This pragmatic shift to a neutral orientation connects well with the foundational calibration literature in psychology. This literature examines how well people's likelihood judgments about states of the world correspond to different actual relative frequencies of those states (e.g., Koehler, Brenner, and Griffin 2002). To elaborate, imagine three meteorologists whose job it is to warn their listeners to take an umbrella to work based on the likelihood of rainstorms. The first meteorologist's umbrella warnings seem almost random and lack any discernible correspondence to whether or not rainstorms occur. This meteorologist is poorly calibrated. The second meteorologist fine-tunes her issuance of umbrella warnings to when and only when rainstorms occur, resulting in perfect calibration. The third is imperfect but warns listeners substantially more often when rainstorms occur than when they do not occur; this meteorologist is well-calibrated.

We analogize this thinking to auditors' response to the presence or absence of factors objectively understood to increase the risk of material misstatement, arguing it is key to the exercise of well-calibrated professional skepticism.[5] A major takeaway of the psychological calibration literature is that lay people and professionals often are poorly calibrated (Koehler et al. 2002). A primary cause of poor calibration is the difficulty that humans have in discriminating between different states of the world (Yaniv, Yates, and Smith 1991). Auditors are no exception, as they often fail to discriminate whether or not an assertion is materially misstated due to overlooking or miss-weighting indicators of misstatement (e.g., Zimbelman 1997; Brown,

[5] On might argue that the ideal analogue to the presence versus absence of thunderstorms would be the presence versus absence of a material misstatement. However, whether or not a material misstatement exists in the field often is uncertain and a matter of professional judgment not amenable to objectively determination. By contrast, the presence versus absence of factors that are understood to be an indicator of heightened misstatement risk is objectively determinable, especially in our experimental setting. To make the analogy stronger, one could alter the weather analogue by shifting away from outcomes such as thunderstorms to the presence or absence of factors known to increase the likelihood of thunderstorms (e.g., a strong vertical wind shear).

Peecher, and Solomon 1999; Waller and Zimbelman 2003; Nelson 2009; Kachelmeier, Majors, and Williamson 2014; Nolder and Kadous 2018). However, we posit that some auditors both discriminate between different states of the world by pushing back on management's assertions to a greater degree when they objectively present with symptoms of a higher risk of material misstatement. [6] We call these auditors well-calibrated skeptics, and formally posit the following:

> *H1: Auditors who more strongly value well-calibrated professional skepticism will think and act more critically while assessing and addressing the risk of material misstatement in management's accounting estimates.*

Before proceeding we our hypothesis spans skeptical assessments of risk and skeptical planned actions. Shaub and Lawrence (1999) is among the first to point out that a worrisome disconnect can arise between skeptical judgments and actions. As auditors gain experience, the willingness of many to follow through on their skeptical judgments wanes, making them reluctant skeptics. One recent study examines social presence as a new determinant, besides experience, that moderates the strength of the connection between auditors' skeptical judgments and skeptical actions (Hawkins 2017). We posit that auditors who internalize the value of well-calibrated professional skepticism align their skeptical judgments and actions.

Auditor Pride

Nearly 25 years ago, J. Michael Cook, a well-known and influential Chairman of Deloitte Haskins & Sells, extolled the vital connection between professional pride and investor trust in the audit profession while reflecting on the 100th anniversary of the American Institute of Public Accountants (Cook 1987). Auditors who take pride in their work, Cook implies, are more apt to maintain their professional commitment to truth-seeking and truth-telling, even when it hurts. In

[6] We examine several determinants of which auditors are versus are not well-calibrated professional skeptics in the second part of this study, but we acknowledge other determinants likely exist, including auditor's sensitivity to negative evidence (McMillan and White 1993), fluid intelligence (Brown et al. 1999), personal virtues (Melé 2005), and wise-thinking dispositions (Brewster et al. 2020). We leave examination of such determinants to future research.

the two decades following Cook's reflection piece, explicit reference to auditor pride largely disappeared.[7] This, however, changed during the past five years; recently the auditing profession has overtly and extensively promoted the value of auditor pride. The profession has spent a lot of money and time trying to foster pride in its audit professionals. There have been extensive #AuditorProud videos and campaigns in the USA, The Netherlands, and globally. For example a Google search on June 1, 2022, on Auditor Proud returns over 31 million web page results and over 600,000 videos. This magnitude of search results is indicative of substantial investment of financial and human resources to put out and market the Auditor Proud theme. However, there has been no empirical investigation on the impact of higher levels of auditor pride on the quality of auditors' professional judgment, nor on other proxies of audit quality.

Pride is closely related to the concepts of self-respect and entails emotions of self-esteem and sets "in motion and maintains intrinsic motivation and inner passion (Jansen, Kole, van den Brink 2010). Pride is closely related to honor in that people who take pride in their professional craft are more likely (generally speaking) to be honored by and recognized by select others for their dedication (ibid 2010). Pride and honor at high levels are thought to explain why some dedicated professionals seemingly work – even in trying circumstances – for lower financial compensation than others (e.g., public administrators, teachers, police and peace officers, etc, ibid 2010).

> *"Most people want to accomplish something significant in their work, and they take pride in doing their jobs well. People who achieve financial success without satisfying these other aspirations may end up feeling barren and dispirited." (Gardner, et al. 2010, p. 46).*

[7] For three exceptions see Scott (2004), who links pride to auditor integrity, Libby and Thorne (2004) who characterize auditor pride as a noble virtue that, along with other noble virtues like dignity and honor, make an auditor an aspirant model for other auditors, and Anonymous (2011) which emphasizes the importance of auditors having pride in their profession for the long-term sustainability of the CPA credential.

By highlighting the public interest facet of auditor pride, auditors are reminded that they are part of a profession that serves the best interest of investors and society at large. That is, auditors play a critical role in building and maintaining healthy financial markets. We posit that when auditors embrace the profession and are proud of it, they will want to act consistent with the sources of the pride, facilitating the smooth functioning of the financial markets by ensuring that financial statements can be relied upon. As a result, we predict that auditors who take pride in the profession will likely do a better job assessing the risk of material misstatement and do a better job planning actions to address this risk, which ultimately will have a positive effect on audit quality.

There are two interrelated aspects of pride; enduring latent pride, and primed pride. The first is an engrained value or virtue (Cook 1987, Libby and Thorne 2004), while the second is more of a visceral 'in the moment' emotional state that we expect to affect auditors' judgment and actions, as in Hurwitz-Michaely (2021). We examine whether pride as a value and whether pride as an emotion have the hoped effect on auditors. This leads to the following formal hypotheses.

> *H2a: Auditor pride as a value increases the extent to which auditors think and act more critically while assessing and addressing the risk of material misstatement in management's accounting estimates.*
>
> *H2B: Pride in the auditing profession as an emotion increases the extent to which auditors think and act critically while assessing and addressing the risk of material misstatement in management's accounting estimates.*

III. RESEARCH METHOD PART I

To test our hypotheses, we use a mixed-method approach including interviews, an experiment, and a survey. To understand the auditing setting, have a precise idea of the theoretical constructs we want to investigate and get insights into the terminology used across auditing firms, we first conducted semi-structured interviews. We interviewed 34 auditors, including partners, directors, managers, and (junior) staff. We conducted these interviews at two Big 4 auditing firms and one

non-Big 4 auditing firm across several of the firms' geographical locations in the Netherlands. Based on the interviews, we designed a combined experiment and survey.[8]

Our experiment- and survey instruments were administered with the assistance of the Foundation for Auditing Research (FAR) in the Netherlands. Audit practitioners and representatives from the FAR provided extensive feedback on the instruments to ensure their clarity. The participants were employed by two Big 4 auditing firms and three so-called "next 5" auditing firms. The majority of participants completed the instrument online (hosted by Qualtrics), but we also provided a pen-and-paper version of the survey.[9] In total, 548 participants started the instrument, of which 436 completed the questions related to our main dependent variables, and 399 completed the full instrument. Of the latter, about 71% are employed by a Big 4 auditing firm. Participants are on average 31 years old and are employed as partners (12%), senior (directors or managers, 54%), or junior (staff, assistants, 34%) auditors. The median time spent on the instrument is 29 minutes. Table 1 summarizes of our data collection and participants across firms.

Experiment

Case

In our experiment, participants complete an audit case about impairment analyses, based on the Chatsworth Cheddar Tradebook case developed by Backof, Martin and Thayer (2020). The case describes that participants are part of the audit engagement team of Heerlijke Kaas (HK, *delicious cheese* in English), one of the largest cheese companies in the Netherlands. Participants' task is to assess the reasonableness of management's assumption about future revenue growth for its flagship cheese, Glorious Gouda. After the case introduction, participants receive two knowledge check questions. Next, the case materials informed participants about the future growth

[8] Our research instrument received IRB approval.
[9] Twenty-three participants completed the pen-and paper version of our survey.

rate assumptions of HK's management. In the materials, participants could further read about a look-back analysis of assumptions management used about revenue growth rates in the prior two years, including a comparison of those assumptions to actual revenue growth rates that later occurred. The last part of the case materials describes additional evidence provided by an independent industry expert from the valuation department of the participants' audit firm.

After reading the case materials, we ask participants to provide their professional opinion as an auditor by rating eleven questions on a 7-point Likert scale (see Panel A of Table 2 for the full details on these questions and construct validity tests for these multi-dimensional constructs). The first five questions relate to the auditor's judgment. Specifically, we ask how (un)comfortable participants are with management's assumed revenue growth rate, whether they believe the growth rate assumption is conservative or aggressive, how (un)reasonable management's assumed revenue growth rate is, how they rate the overall quality of evidence provided by management, and how they rate management's interpretation of the look-back evidence. These five questions load on one factor, which we label *Judge*. A lower value on *Judge* implies participants are more conservative (skeptical) in their judgment. Considering the potential disconnect between skeptical judgments and actions (Shaub and Lawrence 1999), we also ask six questions related to actions that participants would take. For example, refusing to issue a clean opinion if management refuses to lower its growth rate assumptions. These questions load on one factor, which we label *Action*. Again, a lower value implies more conservative actions. Our experiment ends with several post-experimental questions related to the case, for example, how participants rated the quality of evidence provided by the independent industry expert, and three manipulation check questions.

Manipulated Factors

We use a 2 × 2 experimental design that manipulates the presence of a pride prime (PP) (absent vs. present) and the growth rate as described in the case (neutral growth rate vs. aggressive growth rate). Participants in the PP present condition started the experiment by reading a passage about pioneers who helped establish the modern audit profession. The text exemplified how the auditing profession can create tremendous value for society by being a courageous champion of integrity, objectivity, and honesty.[10] At the end of the passage, participants were asked to describe their key takeaways in one or two sentences. Participants then moved to the main case materials as described above. In the PP absent condition, participants did not receive the pride prime and immediately started with the case. We expect our PP manipulation to affect auditors' judgment and actions related to management's estimates and assumptions.

Considering that we are interested in well-calibrated professional skepticism, not conservatism, we examine whether auditors are critical only when necessary by manipulating the growth rate. To ensure our dependent measures of auditor judgments and planned actions capture the appropriate exercise of professional skepticism we manipulate the underlying evidence. Our growth rate manipulation varies the look-back analysis of assumptions management used about revenue growth rates in the prior two years. Specifically, we manipulate the reasonableness of management's forecasted revenue growth rate; management has either a less reasonable, relatively aggressive revenue growth rate (aggressiveGR =1) or a more reasonable, relatively neutral revenue growth rate (aggressiveGR =0).

Particularly, we describe the look-back analysis in such a way that management's assumptions is objectively less reasonable in the aggressive growth rate condition than in the neutral growth

[10] We provided different versions of the PP, of which some tailored to the auditors' current employer. Specifically, the participants of the two Big-4 firms each received a prime in which an auditor of their own firm created tremendous value for society.

rate condition. For example, while half of the participants read that the actual growth rate in revenue has been lower than assumed, the other half of participants read that the actual growth rate in revenue has been at least as high as assumed, respectively.

Survey

After completing the case, participants continue with the survey.[11] We include an extensive survey because the interviews already revealed that there are significant differences in the extent to which auditors value well-calibrated professional skepticism and feel auditor pride, and we want to examine on a larger scale what the drives of these individual differences are in part 2 of our study. Our survey measures well-calibrated professional skepticism, pride as an engrained value (as opposed to primed pride), and control variables that we use to test H1 and H2. Our interviews played an important role in developing the questionnaires and several of the measures. For example, we aimed to apply the terminology used across auditing firms and focus on constructs that auditors identified as important.

Measures and construct validity

Most of the variables are latent constructs measured by multiple indicators on 7-point Likert-type scales ranging from 1 to 7. Table 2 presents all the measurement scales as well as the construct validity indicators. Panel A reports statistics on the key variables used in Part I of our study, Panel B addresses the additional key variables used in Part II, and Panel C captures all control variables used in Part I and Part II. To support construct validity, we examined the confirmatory factor loadings, Cronbach's α, and the variance extracted that demonstrated unidimensionality of all

[11] Participants that completed the instrument via pen and paper received different, numbered envelopes that contained the various parts of the instrument. They could only continue with the next envelope (part) once they completed and ceiled the previous envelope (part).

reflective survey constructs used in the main analyses. We arrive at our variables using the factor scores for reflective constructs and calculating averages across all items for formative constructs.

Independent variables

To measure variation in the extent to which auditors value well-calibrated professional skepticism in the field, we purpose-developed a construct using a revealed value approach. In particular, we ask participants to indicate agreement with the following four items on a Likert scale (1 = never, 7 = always): How often do you ensure high audit quality by (1) pushing back to e.g., colleagues, your supervisor, the client (2) following up with the client when appropriate (3) being vigilant about things that are in the grey zone (4) getting expert help if necessary. Confirmatory factor analysis confirms the unidimensionality of the reflective construct *calibrated skeptic*.

Recall that H2 focuses on two aspects of pride: as a value and as an emotion. We capture pride as an emotion through one of our manipulations and we capture pride as a value through several questions in our survey. Our survey questions are based on the pride concept in Suddaby et al. (2009). Specifically, we measure auditors' pride by asking about their extent of agreement with the following statements along a Likert scale (1 = strongly disagree, 7 = strongly agree): (1) I am proud to be an auditor, (2) I am especially proud to work for [company name], (3) I care deeply about the future of the audit profession, (4) I am proud to tell my friends that I am an auditor, (5) I am extremely happy that I chose the audit profession over others I was considering at the time I joined, and (6) I consider being an independent auditor a significant professional accomplishment. Responses to these questions reflect the unidimensional and reliable construct *measured_pride*.

Control variables

To isolate the effect of calibrated skepticism and auditor pride, we control for a set of auditor and firm characteristics that prior literature suggests may be associated with these auditor

characteristics of interest. We discuss these variables in detail in Part II of the paper when we investigate the determinants of calibrated skepticism.

IV. RESULTS PART 1

Descriptive statistics

Table 3 reports descriptive statistics on both our key dependent and independent variables for the full sample (Panel A), as well as the subsamples for the aggressive (Panel B) and neutral (Panel C) growth rate respectively. Regarding professional judgment, on average our respondents report to be quite conservative as the median for both judge and action is rather low (2.5 for action and 3 for judge on a scale from 1 to 7). While the full range of possible values is not exploited on the upper end, there is still sufficient variation in auditors' professional judgment. Likewise, auditors also report relatively high levels of calibrated skepticism and auditor pride (both medians above 5). In line with expectations, professional judgment in terms of judge and action is significantly more conservative in the aggressive growth rate condition as compared to the neutral growth rate ($p>0.001$). Finally, there are no significant differences in calibrated skepticism and auditor pride between the subsamples, lending support to our assumption that both variables are auditor traits, and thus randomly assigned to the experimental conditions.

Hypothesis tests

For completeness, we first report base models that use experimental treatment variables only.

$$[OUTCOME] = \alpha_0 + \alpha_1 aggresiveGR + \alpha_2 primed_pride + \varepsilon.$$

$$[OUTCOME] = \alpha_0 + \alpha_1 aggresiveGR + \alpha_2 primed_pride + \alpha_3 aggresiveGR * primed_pride + \varepsilon.$$

where *OUTCOME* is either *judge* or *action.*

In line with expectations, the results in Table 4 report more conservative professional judgment, both in terms of judgment and action, in the aggressive growth rate manipulation as compared to the neutral growth rate. Interestingly, we do not find differences in professional

judgement or actions between the primed_pride versus no primed_pride condition. Also, the interaction between the two manipulated variables is not significant. In the next step, we add our two key measured variables: calibrated skepticism and auditor pride.

$$[OUTCOME] = \alpha_0 + \alpha_1 aggresiveGR + \alpha_2 primed_pride + \alpha_3 aggresiveGR * primed_pride + \alpha_4 calibrated_skeptic + \alpha_5 measuresd_pride + \varepsilon$$

where *OUTCOME* is either *judge* or *action.*

While auditors who report higher calibrated skepticism seem to show, on average, more conservative professional judgment, measured auditor pride is not associated with our professional judgment variables. However, recall that our definition of professional judgment quality implies that auditors think critically while assessing the risk of material misstatement in management's accounting estimates and while planning actions to address this risk. In our study, this translates into a need for action only in the aggressive growth rate condition. In other words, we expect that calibrated skepticism and auditor pride will be associated with a more conservative professional judgment under conditions when the underlying assessments of management are questionable. Thus, to test our hypotheses, we use the following empirical specification using separate OLS regressions for the aggressive and neutral growth rate subsamples, respectively.

$$[OUTCOME] = \alpha_0 + \alpha_1 calibrated_skeptic + \alpha_2 measured_pride + \alpha_3 primed_pride + CONTROLS + \varepsilon.$$

where *OUTCOME* is either *judge* or *action.*

Regarding hypothesis 1, we expect α_1 to be negative and significant in the aggressive growth rate sample, and more negatively significant as compared to the neutral growth rate sample. Correspondingly, hypothesis 2a (2b) predicts negative and significant coefficients for α_2 (α_3) in the aggressive growth rate sample, and less negative coefficients in the neutral growth rate sample.

To isolate the effect of calibrated skepticism and auditor pride, we control for a set of auditor and firm characteristics that prior literature suggests may be associated with these auditor characteristics of interest. We discuss these variables in detail in Part II when we investigate the determinants of calibrated skepticism.

The results, reported in Table 5, support for H1. In line with our prediction, for both judge and action, the coefficients α_1 for calibrated_skeptic are negative and significant in the aggressive growth rate samples (Columns I and II), and not significant in the neutral growth rate samples (Columns III and IV). Further, the difference in coefficients between the subsamples is also significant in the expected direction for both variables (p=0.061, one-tailed for action and p=0.097, one-tailed for judge). The fact that we find significant results for both judge and action suggests that better-calibrated skeptics are beneficially aligned in their judgments and their actions.

Regarding our second hypothesis, we do not find evidence for either pride as a value (measured pride) or pride as an emotion (primed pride). In fact, both variables are not associated with professional judgment in any of the models. Thus, we do not find support that auditor pride influences professional judgment and need to reject H2a and H2b.

V. DETERMINANTS OF WELL-CALIBRATED PROFESSIONAL SKEPTICISM

In part one of our study, we show that those auditors who have more strongly internalized the value of well-calibrated professional skepticism, think more critically while assessing and addressing the risk of material misstatement in management's accounting estimates, which prior research has shown ultimately results in higher audit quality (see, e.g., Bell et al. 2005; Nelson and Tan 2005). In part two of our investigation, we draw on managerial accounting theory to predict the determinants of auditors' internalization of this value. That is, we examine how the management control system, specifically the organizational culture, promotes and engrains the value of well-calibrated professional skepticism.

As discussed above, we define the organizational culture as the shared organizational purpose and values that guide employee decisions in domains where explicit rules and policies are difficult to define" (Campbell and Sandino 2019). Like other elements of the management control system, the organizational culture needs to be carefully designed. The organizational culture is a multi-faceted control that is constructed through the combination of four elements: Selection of personnel, reinforcement systems, accountability and feedback systems, and training and coaching (Campbell and Sandino 2019). It is by means of these elements that a collective understanding of the purpose of the organization and its values is developed.

The content of the organizational culture, i.e., the collective understanding of what the purpose is and what the shared values are, is unique to each organization, just like the organizational mission and strategy. In a similar vein, not every organization's culture is equally strong. That is, some organizations have a strong culture which leads to a good understanding of what the organization stands for and an internalization of its values, other cultures are weak and consequently, many employees will lack an understanding of the purpose, and values are not shared.[12] Finally, the way the organization constructs its culture is different for each organization. That is, the way the different control elements (selection of personnel, reinforcement systems, accountability and feedback systems, and training and coaching) are combined to share and engrain the culture will be different for each organization. For example, some organizations might communicate their purpose and values very explicitly and work with feedback and accountability systems to ensure there is a collective understanding. Other organizations might focus on shared values in their hiring and reinforce these values implicitly through storytelling and symbolism. Notwithstanding the uniqueness of each organizational culture, we posit that there are elements

[12] Note that organizations might have a strong culture which leads to engrained values, but if these values do not align with the strategy of the organization, a strong organizational culture could impair organizational success.

that if part of the content of the organizational culture will positively affect the internalization of the value of well-calibrated professional skepticism. That is, in the following sections we discuss elements that if part of the collective understanding of the organizational culture will lead to higher levels of well-calibrated professional skepticism.

Audit Quality Emphasized as Organizational Value

An effective management control system does not only activate effort but also directs the activated effort to the organizational goals (Bol and Loftus 2022). Part of effectively directing effort is creating employee understanding; employees must understand the organizational objectives and values, what actions contribute to the organizational objectives, and how to prioritize different actions (Merchant and Van der Stede 2007). We, therefore, posit that to enhance audit quality audit firms need to communicate that the organization, represented by audit leadership, values audit quality. That is, we predict that effective communication that creates employee understanding of the importance of audit quality, for example through the communication of the organization's strategy, objectives, values, and priorities, will increase the extent to which employees act in ways consistent with this value; it positively affects the extent of well-calibrated professional skepticism. Prior research shows that using controls that create understanding (e.g., mission statements, etc.) is especially important when management does not have complete information on how employees should act to contribute to the organization's values and objectives (Prendergast 2008; Grabner 2014; Abernethy and Brownell 1997), which is clearly the case for actions that enhance audit quality.

This expectation, however, is not without tension. Research on symbolic management theory posits that symbolic decoupling, i.e., the separation between external appearances and actual practice in organizations, is quite common (Westphal and Park 2020; Crilly, Hansen, and Zollo

2016; Crilly, Zollo and Hansen 2012; Marquis and Qian, 2014). Organizations make socially desirable claims to strengthen their legitimacy but this might not indicate that they are actually pursuing these values and purposes (Kaplan 2022). Prior research also shows that rhetorical oversimplification, in which leaders downplay the trade-offs and hard choices involved in the organization's objectives, is a longstanding element of symbolic management (Westphal 2022). Although the majority of the literature on decoupling has focused on organizations in relationship to shareholders and stakeholders, these findings can also be applied to the audit profession. In auditing the incentive conflict between auditors, audit clients, and society at large, and the resulting trade-offs are well known but rarely addressed in the communication of values and priorities, like mission statements, strategic objectives, etc. We posit that if there is a symbolic decoupling between the actual importance of audit quality in practice and the communication of the values of the organization, explicitly emphasizing the importance of audit quality can backfire and negatively impact the extent to which auditors are willing to engage in well-calibrated professional skepticism. Given these countervailing theoretical views, we make a non-directional prediction:

> *H3: Explicit communication of the importance of high audit quality by audit firm leadership in value, mission, and strategy statements is associated with auditors' internalization of the value of well-calibrated professional skepticism.*

Facilitating Culture

We also posit that in order for the organizational culture to instill the value of well-calibrated professional skepticism, auditors must perceive that audit firm leadership is interested in understanding the true quality of the financial statements. This starts with open communication in which management actively wants to learn about concerns regarding the clients' financial statements from subordinates, and auditors feel they can speak up about their concerns without worrying about any consequences. Moreover, auditors need to feel that they are provided with the

resources needed to get to the bottom of things when this is called for. Perhaps most importantly, the budget needs to reflect sufficient time, but there also needs to be proper support to examine complex matters, like experts and in-house consultation opportunities (Salterio and Koonce 1997). If audit leadership does not provide these resources audit leadership is indirectly saying that they are not interested in getting to the bottom of a concern. The auditors must feel that being skeptical when called for is something that is embraced throughout the organization, not just something that is told to the more junior members. Our argument is very much in line with what Besharov and Khurana (2015) refer to as infusing meaning into organizational life by connecting members' activities with the organization's values and purpose which they consider one of the four ways of embedding organizational values.

Thus, we predict that if auditors perceive that management is truly interested in understanding the real quality of the clients' financial statements this will positively affect the instilment of the value of well-calibrated professional skepticism.

> *H4: An organizational culture where auditors perceive that audit firm leadership truly values auditors getting a deep understanding of the client's financial statements is positively associated with auditors' internalization of the value of well-calibrated professional skepticism.*

Culture of Independence

Applying professional skepticism often comes at a personal cost (Brazel et al. 2016; Brazel et al. 2019), and consequently, in order for auditors to consider well-calibrated professional skepticism a shared value of the organization, they need to perceive that firm leadership is also willing to take on personal costs to achieve audit quality. That is, auditors need to believe that once they have identified indicators of low-quality financial statements, like misstatements by the client, their audit leadership will do something with that information. That is, auditors must perceive that

the partners of the audit firm are independent of the client and that they are willing to make tough choices, like pushing back on bad estimates or firing clients when the quality of deliverables is too low, even if this negatively impacts the profitability of the partner responsible. Thus, we predict that if auditors do not believe that audit leadership will take these actions, they will not consider well-calibrated professional skepticism to be a shared organizational value, and consequently, they are less likely to internalize the value.

> *H5: An organizational culture where auditors perceive that audit firm leadership is independent of clients is positively associated with auditors' internalization of the value of well-calibrated professional skepticism.*

As discussed above, part of building the organizational culture is the selection of personnel (Campbell and Sandino 2019). An effective strategy to build a strong culture is to hire employees that have closely related personal values or characteristics because this will facilitate the development of the desired collective understanding of the organizational purpose and shared values (Campbell 2012; Abernethy, Dekker, and Schulz 2015). Specifically, if employees already have values or characteristics that closely align with the organizational values, getting these employees to internalize the organizational values will be a lot easier.

Contributing to Society

First, we predict that those auditors who personally value contributing to society will be more likely, all else equal, to internalize the value of professional responsibility. The auditing of financial statements plays an important role in society; it allows the users of the financial statement to trust and rely on the financial statements which again results in a healthy financial market (IAASB 2014). For financial audits to have this benefit to society, it is important though, that there is high audit quality (Knechel et al. 2013, IAASB 2014). Considering that engaging in well-calibrated professional skepticism often comes at some personal costs, we posit that those who

value the contribution that high audit quality provides to society, will be willing to endure more personal costs to provide this benefit. Thus, we argue that auditors who personally value contributing to society will more likely internalize the value of well-calibrated professional skepticism. Formally stated;

> *H6:Auditors who put more value on societal interest are more likely to internalize the value of well-calibrated professional skepticism.*

Truth-Seeking

Cheffers and Pakaluk (2007), in discussing virtues that are indispensable to audit professionals, emphasize the language of audit pioneers Dicksee and Montgomery (1905, 13) that the auditors' main duty to audit clients and the investing public is "…to disclose to him or for him the truth, the whole truth, and nothing but the truth so far as his abilities and special training to that end enable him to ascertain it." We, therefore, examine how auditors' commitment to truth-seeking (cf., Anderson and Shudson 2019) influences value internalization. The idea is that those who are more strongly committed to truth-seeking will, all else equal, more strongly pursue the value of professional skepticism. As mentioned before, well-calibrated professional skepticism is about being critical of information provided by client management. Understanding client management's incentives and how they might potentially embellish the truth. We predict that auditors that personally put importance on getting to the correct answer will be more inclined, all else equal, to question and push back which again, all else equal makes it easier to internalize the value of well-calibrated professional skepticism. Formally stated:

> *H7: Auditors that personally care about truth-seeking are more likely to internalize the value of professional skepticism.*

VI. RESEARCH METHOD PART II

The combined instrument and survey as described in Part I of our study also measure the variables used to test H3-H7 in Part II of our study. The new variables we introduce here are potential determinants of calibrated_skeptic and are all measured on a Likert scale (1 = strongly disagree, 7 = strongly agree). Recall that variable descriptions and construct validity statistics can be found in Panel B of Table 2.

Our first measure captures whether audit quality is emphasized as an organizational value and communicated throughout the organization. We ask auditors to think about their company's corporate culture and to write down the answer to the following question: " What are [company name]'s key cultural values; what does [company name] stand for? We create the variable "quality" and code it +1 if participants' answer contains the word "quality", and -1 otherwise. In order to ensure that auditors did not just write down something but feel they have a good understanding of what the organization communicates as its values, we multiply "quality" with the variable "understanding", which is a factor based on the following indicators: Rate your understanding of (1) [company name]'s values, (2) [company name]'s objectives, (3) [company name]'s priorities (see Table 2). The product of quality and understanding is labeled *Culture message* and takes on higher positive (negative) values for auditors that have a good understanding of the culture and think quality is (not) an important part of it.

Next, we capture whether the auditing firm has an organizational culture where auditors perceive that leadership truly values auditors getting a deep understanding of the client's financial statements. We capture this with two separate constructs. First. we ask participants to indicate the extent to which they agree with the following statements: (1) Through tone at the top, open communication is promoted, (2) [Company name]'s culture gives me the feeling that I do not have to hide my mistakes, (3) There are many resources (like the partner, the specialists, etc.) to help

when I have questions, (4) I feel like my supervisors, including the audit partner, truly appreciate learning when I have serious concerns about the quality of management's accounting estimates or disclosures. These four questions load on one factor, which forms the reflective construct *Supportive leadership*. Second, we measure *Budget pressure*, where lower values represent a more facilitating culture as the budget is set by audit leadership and not enough time in the budget really prevents auditors from getting a deep understanding of the client's financial statements. We ask participants to think about all audit engagements they have worked on in the busy season, and to indicate on what percentage of these engagements (on a scale from 0-100%) each of the following statements would apply - especially in the last days of the audit engagement: (1) The budget allows for sufficient time for our audit team members and me to think critically about the information provided by the client, (2) The budget allows for sufficient time for our audit team members and me to be critical about client management's estimates that are in the grey zone, (3) The budget allows for sufficient time to involve experts if it is beneficial to audit quality. Responses to these questions are reverse-coded and load on a reflective construct that we label Budget pressure.

Another important aspect of the auditing firms' organizational culture relates to independence. We measure whether participants perceive that audit firm leadership truly values being independent of clients with the following 4 statements: (1) I feel like the partners take on too many clients, (2) I feel like the partners would fire a client when its deliverables threaten audit quality, (3) [Company name] ensures that we do not have clients from whom we cannot be independent, (4) I feel like the partners do not distinguish between strategic and non-strategic clients in the services that they offer. Responses to these questions form a formative construct that we label Independence culture.

The final two determinants relate to participants' personalities or personal values. First, we measure the extent to which auditors put more value on societal interest by asking participants to rate their agreement with the following single-item construct: Contributing to society is very important to me. We label this variable *Importance society*. Second, we measure whether auditors personally are committed to truth-seeking. Specifically, we as participants to indicate the extent to which they agree with the following statements: (1) I really like to get to the bottom of things, (2) I cannot stand it when something is not exactly correct. These two questions can be combined into a formative construct, which we label *Truth-seeking*.

Control variables

While our main variables of interest are "soft" cultural controls, organizational management control systems generally also have a good number of "hard" controls that incentivize effort and guide behavior (Merchant and Van der Stede, 2007; Bol and Loftus 2022). Our first control variable, *performance_conflict*, captures incentives provided by formal controls that might stand in the way of audit quality and therefore also potentially negatively influence auditors' internalization of the value of well-calibrated professional skepticism. Specifically, we create a factor based on the following questions: To what extent do you feel that prioritizing audit quality harms performance on other KPI's that are important for: (1) Your annual performance rating, (2) Your next promotion, (3) Opportunities within [company name] (see Table 2).

Our second control variable, competitive_environment, captures the perceived competitiveness of the environment. In a competitive environment auditors often feel pushed to deliver results which likely negatively influences the internalization of the well-calibrated profession skepticism value because auditors likely feel they do not have the time to push back, ask more questions, become more vigilant and ask for more expert help when warranted. We ask

participants to rate the following question: "A competitive culture keeps me from collaborating/asking colleagues for help".

Third, we control for auditor competence. In order for auditors to be well-calibrated professional skeptics they do not only have to value pushing back, asking questions and being vigilant, they also need to feel competent enough to do so. For example, to push back on clients' estimates, auditors need to feel they have the ability to question the estimate and to provide good argumentation to client management as to why the estimate is unreasonable. We posit that calibrated skepticism requires both technical knowledge and tacit knowledge as pushing back and questioning requires knowledge on the technical reason why e.g., estimates are unreasonable but also the insight on when this behavior is appropriate (Bol, Estep, Moers and Peecher 2018) We capture auditor competence by asking the auditor participants to rate their agreement with the following statements (1) I have the technical accounting and audit knowledge to competently do the tasks that are asked of me, (2) I have the soft skills (e.g., communication skills, management skills) to confidently do the tasks that are expected of me. These questions are combined into a formative construct, which we label *auditor_competence*. We expect auditor_competence to positively affect audit quality.

Our next set of control variables takes into account that the conflict between profitability and audit quality is very much a conflict between short-term interests and long-term interests. When audit firms consistently fail to provide audit quality, stock markets will lose their confidence in the audit statement provided by the firms, and consequently, the audit firms' services will have no value to client organizations. Audit firms therefore need to ensure that desire for short-term profitability does not reduce audit quality to the extent where long-term profitability is jeopardized. We expect that those auditors that envision their future to be with the audit firm for the long run

will caution on the side of protecting the audit firm's long-term opportunities over any short-term gain. Since well-calibrated professional skepticism also emphasizes a long-term view we control for auditors who are committed to the audit profession for the long term. We do so with the variables *long_tenure*, *leave,* and *aim_partner*, which are all dummy variables. Specifically, *long_tenure* takes on a value of 1 if auditors work for their firm for more than 5 years and 0 otherwise. *Leave* equals 1 if auditors rate the following question with 1-5 (based on a scale from 1 Extremely unlikely to 7: Extremely likely): What is the likelihood of you still working for {Company Name} a year from now? If participants rate this question 6 or 7, *Leave* equals 0. *Aim_partner* is a dummy variable with a value of 1 if participants answer 6 or 7 to the question "I have the ambition to become a partner", and 0 otherwise. Finally, we include the dummy *Big4* (1 if auditors work for a Big 4 firm and 0 otherwise), as earlier research shows that the emphasis on audit quality might be higher for Big 4 firms (Lawrence et al. 2011).

VII. RESULTS PART II

Table 6 reports descriptive statistics on all independent and control variables. As can be seen, most variables exploit the full range of possible values, and exhibit reasonable means (medians). To test our second set of hypotheses, we rely on the following OLS regression specification.

$$calibrated_skeptic = \alpha_0 + \alpha_1 culture_message + \alpha_2 facilitating_culture + \alpha_3 budget_pressure + \alpha_4 independence_culture + \alpha_5 importance_society + \alpha_6 truthseeking + CONTROLS + \varepsilon.$$

Given our non-directional prediction for H3, we have no specific expectation for α_1. Regarding H4, we expect that auditors who perceive to be exposed to an environment that facilitates audit quality, proxied by a stronger supportive leadership ($\alpha_2 > 0$) and less budget pressure($\alpha_3 < 0$) will report higher calibrated skepticism. H3 assumes a positive association between calibrated skepticism and exposure to a stronger independence culture ($\alpha_4 > 0$). Regarding auditor

characteristics, H5 expects that auditors who attach more importance to contributing to society ($\alpha_5 > 0$) will report higher calibrated skepticism. Likewise, we expect that the more auditors value truth-seeking, the higher their reported calibrated skepticism is ($\alpha_6 > 0$).

As reported in Table 7, the coefficient on α_1 is negative and significant. Thus, auditors who indicate that audit quality is emphasized in the organizational culture actually report lower calibrated professional skepticism. Further, our results provide strong evidence for H4. The coefficients on both proxies for an audit quality facilitating environment are significant and in the expected direction. We do not find support for H5, as the relation between independence culture and calibrated skepticism is not significant. Finally, regarding auditor personal values, we find strong support for H6 and H7, providing evidence that auditors who aim to contribute to society and are committed to truth-seeking also exhibit better calibrated professional skepticism.

Regarding the control variables, we find that experience in the audit profession increases calibrated skepticism. In particular, auditors reporting higher competence or firm tenure of more than 5 years in the current company claim to exhibit better calibrated professional skepticism. Interestingly, auditors' future career ambitions are not associated with calibrated skepticism, as neither a high ambition to become partner nor a high likelihood of leaving the firm have a significant association with the variable. Finally, auditors working in BIG4 audit firms, on average, report higher calibrated skepticism.

VIII. CONCLUSION

This paper examines how two auditor-specific values, *well-calibrated professional skepticism* and *auditor pride* affect task performance in an asset impairment setting in which we manipulate whether management's assumptions about future revenue growth are overly aggressive or neutral in light of prevailing economic and industry conditions. Auditors who are better-calibrated skeptics appropriately become more skeptical, both in terms of judgments (how highly they assess the risk

of material misstatement) and planned actions (how they want their firm to address the assessed risk of material misstatement) when management's growth rate assumptions objectively heighten misstatement risk. Auditors who have greater pride in the audit profession, however, are no better than those who have lesser pride in the audit profession in responding to whether or not management's future revenue growth rate objectively heightens misstatement risk.

These results motivate part two of our study, improving our understanding of the organizational-level and the individual-level antecedents of well-calibrated skepticism. We draw on management and management accounting literatures to predict that cultural controls matter. One cultural control that is not positively associated with more well-calibrated skepticism but rather is negatively associated with it, is the audit firm's communication that audit quality is a core value to the point that their auditors identify audit quality as an expressed firm value. Talking about commitment to audit quality does not matter as much as actually walking this talk. Along those lines, we predict and find that auditor perceptions that their firms provide supportive leadership and ample budgetary resources to thoroughly test management's assertions are all associated with more well-calibrated skepticism. In addition to these important audit-firm characteristics, auditor perceptions that they are themselves more committed to truth-seeking and who more strongly desire to make a meaningful contribution to society are also more well-calibrated skeptics.

By shedding new light on these antecedents and effects of better-calibrated skepticisms our study advances the state of the audit literature on professional skepticism by revealing a pragmatic way to address concerns about auditors' failure to address cases in which misstatement risk is objectively heightened without also increasing the instances in which audit firms incur steep costs by chasing down false positives. The welfare of the investing public hinges on the ability of audit firms to deploy more investigatory resources when warranted, as does the reputation of the audit

profession for strengthening the trustworthiness of capital markets across the globe. A key theoretical implication is that the addition of soft cultural controls is crucial if audit firms are to succeed in developing well-calibrated professional skeptics who not only assess misstatement risk to be higher when conditions objectively warrant but who also plan to take actions that will address this heightened risk. A key practical implication of our study includes the possibility of audit firms improving the extent to which their audit professionals are well-calibrated skeptics by using selection during initial recruitment and promotion to favor truth-seekers and those who want to make a societal contribution (Nelson 2009). Audit firms also can invest in cultural controls to support their auditors by championing learning opportunities and deploying ample budgets.

Our study raises numerous future research opportunities. For example, what are the indicators of and the most promising labor markets for selecting auditors who are truth seekers and who want to make a societal contribution? Are business schools the best place to cultivate new audit professionals or are there other majors that firms can begin to tap? If one were to sample randomly from the population of former auditors, would they be more committed, less committed or equally committed to truth-seeking and societal contributions as current auditors? Does audit firm leadership have a good grasp of calibrated-skepticism implications of tighter budgets, and pushes for auditors to "just get it done" (Bonner and Majors 2019) rather than also focusing on the need to support auditor learning? We leave pursuit of these questions to future research.

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Table 1
Data Collection Overview

Method	Participants (n)	Firm (n per firm)	Position (n)
Interviews	34	Big 4 A (10) Big 4 B (15) Non-Big 4 A (9)	Junior (14) Senior (17) Partner (3)
Experiment and survey	399	Big 4 A (114) Big 4 B (170) Non-Big 4 A (20) Non-Big 4 B (71) Non-Big 4 C (24)	Junior (24) Senior (113) Partner (46)

Juniors are Junior Staff/Auditors, Senior Auditors and Junior Managers.
Seniors are Mangers, Senior Managers and Directors.

TABLE 2
Construct measurement and factor analysis [a]

Panel A: Part I
Dependent variables

Judge (EV: 2.46; Cronbach's Alpha: 0.72)	Factor (0.49)
How comfortable are you, as an auditor, with management's assumed revenue growth rate of 8%	**.757**
Do you believe that management's 8% growth assumption is neutral or that it is biased? And, if you believe it is biased, would you say it is conservatively or aggressively biased? (R)	**-.687**
How reasonable or unreasonable is management's 8% revenue growth assumption?	**.831**
How would you rate the overall quality of evidence provided by management?	**.588**
How would you rate management's interpretation of the look-back evidence?	**.614**

Action (EV: 2.91; Cronbach's Alpha: 0.76)	Factor (0.49)
In this situation, should the audit partner "sign off" and grant a clean audit opinion on HK's financial statements if HK management refuses to lower its revenue growth assumption so that it does not need to record an impairment loss on its trademark?	**.728**
In this situation, if management refuses to lower its revenue growth assumption, the highest integrity, most appropriate action for the auditor would be to refuse to issue a clean opinion, even if that potentially means a loss of audit fee revenue from HK	**-.728**
quality of products depends on employees' identification with task/product (R)	
In this situation, I would be proud of my firm and its culture if the engagement partner took a stand and refused to sign off on management's financial statements unless management first decided to use a lower revenue growth assumption and take an impairment loss on their trademark. (R)	**-.782**
The most realistic action for my firm's engagement auditor would be to issue a clean opinion this year. That way, we collect all of the related audit fees. We could quietly tell the audit committee and management that, in the future, an impairment likely will be needed unless actual revenue growth rates increase.	**.491**
Although a lower growth rate assumption appears to be more appropriate, it is acceptable for HK to assume 8% as its revenue growth rate for determining its balance sheet's carrying value, provided that their notes to the financial statements disclosed a sensitivity analysis that reveals what impairment loss would occur if a lower revenue growth were assumed.	**.670**
How much risk exists that HK's financial statements are materially overstated because of a material overstatement of the Glorious Gouda trademark asset and related understatement of an impairment loss? (R)	**-.743**

Independent variables

Calibrated skeptic (EV: 2.23; Cronbach's Alpha: 0.72)	Factor (0.56)
How often do you ensure high audit quality by…	
Pushing back to e.g., colleagues, your supervisor, the client	**.727**
Following up with the client when appropriate	**.773**
Being vigilant about things that are in the grey zone	**.813**
Getting expert help if necessary	**.669**

Auditor pride as a value (Measured pride) (EV: 3.52; Cronbach's Alpha: 0.86)	Factor (0.59)
I am proud to be an auditor	**.827**
I am especially proud to work for [Company name]	**.716**

I care deeply about the future of the audit profession	**.756**
I am proud to tell my friends that I am an auditor	**.805**
I am extremely happy that I chose the audit profession over others I was considering at the time I joined	**.804**
I consider being an independent auditor a significant professional accomplishment	**.673**

Panel B: Part II

Independent variables

Culture understanding as input to culture message variable (EV: 2.16; Cronbach's Alpha: 0.80)	Factor (0.72)
Rate your understanding of:	
[Company name]'s values	**.822**
[Company name]'s objectives	**.868**
[Company name]'s priorities	**.858**

Supportive leadership (EV: 2.10; Cronbach's Alpha: 0.70)	Factor (0.52)
Through tone at the top, open communication is promoted	**.664**
[Company name]'s culture gives me the feeling that I do not have to hide my mistakes	**.804**
There are many resources (like the partner, the specialists, etc.) to help when I have questions	**.752**
I feel like my supervisors, including the audit partner, truly appreciate learning when I have serious concerns about the quality of management's accounting estimates or disclosures	**.685**

Budget pressure (EV: 2.10; Cronbach's Alpha: 0.91)	Factor (0.86)
Please think about all audit engagements you have worked on in the busy season: On what percentage of these engagements would each of the following statements apply. Think especially about the last days of the audit engagement (scale from 0-100%).	
The budget allows for sufficient time for our audit team members and I to think critically about the information provided by the client (R)	**.946**
The budget allows for sufficient time for our audit team members and I to be critical about client management's estimates that are in the grey zone (R)	**.947**
The budget allows for sufficient time to involve experts if it is beneficial to audit quality (R)	**.884**

Independence culture (formative construct)
I feel like the partners take on too many clients (R)
I feel like the partners would fire a client when its deliverables threaten audit quality
[Company name] ensures that we do not have clients from whom we cannot be independent

Importance society (single item construct)
Contributing to society is very important to me

Truth seeking (formative construct)
I really like to get to the bottom of things
I cannot stand it when something is not exactly correct

Panel C: Control Variables (both parts)

Performance conflict (EV: 2.81; Cronbach's Alpha: 0.97)	Factor (0.94)
To what extent do you feel that prioritizing audit quality harms performance on other KPI's that are important for:	
Your annual performance rating	**.966**
Your next promotion	**.978**
Opportunities within [Company name]	**.960**

Competitive environment (single item construct)
A competitive culture keeps me from collaborating/asking colleagues for help

Auditor competence (formative construct)
I have the technical accounting and audit knowledge to competently do the tasks that are asked of me
I have the soft skills (e.g., communication skills, management skills) to confidently do the tasks that are expected of me

a This table reports the results of the confirmatory factor analyses by construct. The variance extracted for each factor analysis is reported in parentheses in the top line of each table. Factor loadings > 0.400 used in the final measurement of constructs are highlighted in bold. Reverse coded items are identified with (R).

TABLE 3
Descriptive statistics Part I

Panel A: Full sample

	n	Mean	St.Dev	min	max
judge	399	2.96	0.69	1.20	5.40
action	399	2.62	0.84	1.00	6.50
calibrated_skeptic	399	5.28	0.77	3.00	7.00
measured_pride	399	5.18	0.94	1.00	7.00

Panel B: Aggressive growth rate sample

judge	204	2.77	0.69	1.20	5.20
action	204	2.49	0.75	1.00	4.33
calibrated_skeptic	204	5.26	0.81	3.50	7.00
measured_pride	204	5.17	0.95	1.50	7.00

Panel B: Neutral growth rate sample

judge	195	3.15	0.63	2.00	5.20
action	195	2.77	0.91	1.17	6.50
calibrated_skeptic	195	5.30	0.73	3.00	7.00
measured_pride	195	5.18	0.94	1.00	6.83

This table presents the descriptive statistics for the key variables used for our analysis in Part I.
See Table 2 for the measurement of all multi-item constructs.

TABLE 4
Baseline Models

VARIABLES	(1) judge	(2) action	(3) judge	(4) action	(5) judge	(6) action
aggressiveGR	-0.57***	-0.32***	-0.51***	-0.28*	-0.51***	-0.28*
	(0.10)	(0.10)	(0.16)	(0.16)	(0.15)	(0.15)
primed_pride	0.08	-0.08	0.13	-0.04	0.13	-0.04
	(0.10)	(0.10)	(0.14)	(0.14)	(0.14)	(0.14)
aggressiveGR×primed_pride			-0.10	-0.07	-0.11	-0.08
			(0.20)	(0.20)	(0.19)	(0.19)
calibrated_skeptic					-0.17***	-0.20***
					(0.05)	(0.05)
measured_pride					0.00	-0.05
					(0.05)	(0.05)
constant	0.20**	0.18**	0.17	0.16	0.17	0.17
	(0.09)	(0.09)	(0.11)	(0.11)	(0.11)	(0.11)
Observations	399	399	399	399	399	399
R-squared	0.08	0.03	0.08	0.03	0.11	0.08

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1, two-tailed

TABLE 5
Hypothesis tests Part I

		Aggressive GR		Neutral GR	
VARIABLES	*Expected sign*	(I) judge	(II) action	(III) judge	(IV) action
calibrated_skeptic	H1 (-)	-0.23***	-0.24***	-0.07	-0.02
		(0.08)	(0.07)	(0.09)	(0.10)
measured_pride	H2a (-)	0.04	0.06	0.03	-0.10
		(0.08)	(0.07)	(0.08)	(0.09)
primed_pride	H2b (-)	0.03	-0.13	0.13	-0.01
		(0.14)	(0.12)	(0.14)	(0.15)
culture_message		-0.02	-0.00	-0.01	-0.01
		(0.01)	(0.01)	(0.01)	(0.01)
supportive_leadership		0.13	0.10	-0.14*	-0.06
		(0.09)	(0.08)	(0.08)	(0.09)
budget_pressure		-0.20**	-0.11	0.05	0.10
		(0.08)	(0.07)	(0.08)	(0.09)
independence_culture		-0.22**	-0.12	-0.03	-0.05
		(0.09)	(0.08)	(0.08)	(0.09)
importance_society		0.03	-0.04	0.11*	0.19***
		(0.06)	(0.05)	(0.06)	(0.07)
truth_seeking		-0.10	-0.03	0.03	-0.14*
		(0.08)	(0.07)	(0.07)	(0.08)
performance_conflict		0.20**	0.11	-0.01	-0.01
		(0.08)	(0.07)	(0.07)	(0.08)
competitive_environment		0.05	0.02	-0.05	-0.12**
		(0.04)	(0.04)	(0.04)	(0.05)
auditor_competence		-0.05	-0.10	-0.06	-0.16*
		(0.08)	(0.07)	(0.08)	(0.09)
long_tenure		-0.00	-0.07	-0.20	-0.28*
		(0.15)	(0.13)	(0.14)	(0.16)
leave		-0.04	-0.07	0.18	0.31*
		(0.17)	(0.15)	(0.16)	(0.18)
aim_partner		-0.04	0.05	0.14	0.17
		(0.17)	(0.15)	(0.17)	(0.19)
big4		-0.09	-0.07	-0.07	-0.17
		(0.16)	(0.14)	(0.17)	(0.18)
constant		0.94	0.84	-0.24	0.72
		(0.66)	(0.58)	(0.59)	(0.66)
Observations		204	204	195	195
R-squared		0.18	0.15	0.13	0.18

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1, two-tailed

TABLE 6
Descriptive statistics Part II

	n	Mean	St.Dev	min	max
culture_message	399	-0.89	5.73	-7.00	7.00
supportive_leadership	399	5.35	0.85	2.25	7
budget_presssure	399	-61.43	23.56	-100.00	0.00
indepenence_culture	399	4.58	0.98	1.00	7.00
importance_society	399	4.88	1.29	1.00	7.00
truth_seeking	399	5.55	0.98	1.00	7.00
performance_conflict	399	3.48	1.61	1.00	7.00
competitive_environment	399	3.38	1.73	1.00	7.00
auditor_competence	399	5.86	0.51	4.00	7.00
long_tenure	399	0.46	0.50	0.00	1.00
leave	399	0.26	0.44	0.00	1.00
aim_partner	399	0.27	0.45	0.00	1.00
big4	399	0.71	0.45	0.00	1.00

This table presents the descriptive statistics for the key variables used for our analysis in Part II.
See Table 2 for the measurement of all multi-item constructs.

TABLE 7
Hypothesis tests Part II

VARIABLES	*Expected sign*	(I) calibrated_skeptic	(II) calibrated_skeptic
culture_message	H3 (+/-)	-0.02***	-0.02***
		(0.01)	(0.01)
supportive_leadership	H4 (+)	0.12**	0.11**
		(0.05)	(0.05)
budget_pressure	H4 (-)	-0.27***	-0.27***
		(0.05)	(0.05)
independence_culture	H5 (+)	-0.07	-0.08*
		(0.05)	(0.05)
importance_society	H6 (+)	0.10***	0.09**
		(0.03)	(0.03)
truth_seeking	H6 (+)	0.12***	0.11**
		(0.04)	(0.04)
performance_conflict		0.01	0.01
		(0.04)	(0.04)
competitive_environment		-0.02	-0.02
		(0.02)	(0.02)
auditor_competence		0.29***	0.29***
		(0.04)	(0.04)
long_tenure		0.23***	0.22**
		(0.09)	(0.09)
leave		-0.02	-0.00
		(0.10)	(0.10)
aim_partner		0.13	0.12
		(0.10)	(0.10)
big4		0.41***	0.41***
		(0.09)	(0.09)
measured_pride			0.06
			(0.05)
Constant		-1.16***	-1.03***
		(0.35)	(0.37)
Observations		399	399
R-squared		0.41	0.41

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1, two-tailed.