

Market reaction to narcissistic audit partners*

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Abstract

We explore whether the market perceives audit partners' narcissism, as measured by the size of their signatures, by analyzing the reaction to their client firms listed on the Shanghai Stock Exchange. Our results indicate that client firms audited by more narcissistic review audit partners experience heightened cumulative abnormal returns, suggesting a positive market response to their involvement. Furthermore, we find that this market response is more pronounced in situations where the audit partner's work is likely influenced by narcissistic traits, specifically in cases of reduced auditor independence, increased audit complexity, and extended audit client negotiation periods. This evidence supports the view that the market recognizes and responds to the influence of such traits. Our findings contribute to the literature on narcissism and international accounting by providing stock-market evidence from a major emerging market. They also have implications for corporate boards, investors, and policymakers.

JEL classification: M40, M42, M48

Keywords: Market Reaction, Auditor Narcissism, Auditor Independence, Engagement Complexity, Negotiation

Declaration of interest: None

*We are grateful to the Editor-in-Chief, Stergios Leventis, and the Associate Editor, Stephen Owusu-Ansah, as well as the Co-Editor and two anonymous reviewers, for their insightful comments and constructive suggestions throughout the review process. We thank Yufeng Xie for assistance with collecting and cleaning the signature data and for providing valuable comments on earlier drafts of this paper. We also thank Dr. Julie Steiff for her professional proofreading and editorial assistance. Any remaining errors are our own.

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1 Introduction

Narcissism reflects an individual’s deep self-appreciation, elevated self-perception, pursuit of excellence, desire for admiration, and a unique focus on personal goals ([American Psychiatric Association, 2013](#)). Over the past decade, research delving into the impact of narcissism on the work performance of various individuals has expanded into the broader economic sphere. However, the outcomes of this influence seem to vary across different professions. For example, some studies have demonstrated that narcissism can positively affect CEOs’ decision-making ([Chatterjee & Hambrick, 2007](#); [Kim, 2018](#)), whereas other studies have found that it has a negative impact ([Ham et al., 2018](#)). Notably, in the case of auditors, who are guided by professional standards and regulations, empirical evidence consistently reveals a positive influence of narcissism on audit quality ([Chou et al., 2021](#); [Church et al., 2020](#)).¹ These studies suggest that narcissistic audit partners enhance audit quality through greater independence in the face of potential compromises, higher levels of competence, and a stronger willingness to negotiate with clients. Despite these insights, the reaction of stock market participants to firms audited by narcissistic audit partners remains an unexplored area. This gap in the literature presents an opportunity for further investigation. Our study addresses this by examining whether market participants respond to audit partner narcissism.

It is well established that disclosures related to firms’ audit activities, including opinions on financial reports ([S. Chen et al., 2020](#); [Pei & Hamill, 2013](#)), audit firm rotation ([Reid & Carcello, 2017](#)), and auditor ratification vote tallies ([Tanyi & Roland, 2017](#)), attract significant attention from market participants, as they provide valuable insights into audit quality and firm performance. Extending beyond

¹We use the terms “audit partner”, “auditor”, and “partner” interchangeably to denote individual audit partners who are responsible for signing the audit reports.

these firm-level disclosures, prior research shows that market participants also react to auditor-specific characteristics, such as industry experience (Knechel et al., 2007) and prior involvement with sanctioned firms (Gul et al., 2019), which convey additional information about the credibility and reliability of the audit process. Recent studies further show that market participants respond to non-traditional information cues, such as the personality traits of key corporate agents, which shape managerial behavior and corporate outcomes and, in turn, influence investment decisions (Aktas et al., 2019; Chatterjee & Hambrick, 2007; Ham et al., 2017; Malmendier & Tate, 2005; Rijssenbilt & Commandeur, 2013). Building on this work, we posit that if a sufficient number of market participants, even if not all, recognize the potential advantages of narcissism for audit quality—and by extension, for firm value—they are more likely to respond positively to disclosures indicating the involvement of more narcissistic audit partners in annual audits. This expectation is consistent with signaling theory and the importance of information accuracy in shaping investment behavior (Aobdia et al., 2015; Titman & Trueman, 1986).

In line with prior research, we employ the handwritten signature size of an audit partner to measure their narcissism, as it provides a robust and valid proxy supported by ample experimental evidence (Chou et al., 2021; Church et al., 2020; Ham et al., 2017, 2018). While we rely on handwritten signature size as our proxy, we do not suggest that market participants who respond to auditor narcissism assess this trait based solely on this specific cue. These participants are likely attentive (sophisticated) investors who typically conduct detailed analyses and due diligence using public information. It is therefore plausible that they may interpret signature size as one possible signal of narcissism, given the well-established link in psychology and accounting research between larger handwritten signatures and narcissistic traits

(Ham et al., 2018; Zweigenhaft & Marlowe, 1973).² Beyond signature-based cues, investors may also infer auditors' narcissistic tendencies indirectly from auditors' historical professional conduct and prior decision-making behaviors, which are known to correlate with underlying personality traits (Church et al., 2020). Moreover, these investors may possess superior capabilities in directly assessing auditors' narcissistic tendencies through prior personal interactions with the auditor, auditors' industry reputation, and informal communication within investor or professional networks.³

To measure the market response, we follow the literature (e.g., S. Chen et al., 2020; Myers et al., 2018; Pei & Hamill, 2013) to calculate the cumulative abnormal returns (CARs) surrounding the announcement dates of annual audit reports. The rationale for concentrating on these dates is that they are most likely to represent the initial public disclosure of the *exact* auditors' identity for the *majority* of investors, even the sophisticated ones. Precise information about the auditors' identification is not widely or easily accessible from public sources other than the annual audit reports.

We collect audit partner handwritten signatures from annual audit reports of firms listed on the Shanghai Stock Exchange (SSE), sourced from the CNINFO website for the calendar year spanning 2013 to 2021, corresponding to the fiscal years from 2012 to 2020. For firms possessing legible annual audit reports, we extract trading data and firm-level characteristics from the China Stock Market and Accounting Research (CSMAR) database. Our choice of China as the research context, beyond the fact that

²Indeed, prior research documents that sophisticated market participants frequently leverage various other forms of soft information indicative of personality traits and behavioral tendencies, including managerial linguistic tone (Davis et al., 2015), physical indicators such as facial expressions during corporate communications (Mayew & Venkatachalam, 2012), and the use of first-person pronouns (Patelli & Pedrini, 2014; Zhu & Chen, 2015).

³It is not surprising that attentive investors can infer personality traits from observable cues. Prior research finds that markets respond to auditor characteristics such as industry expertise (Knechel et al., 2007), captured by the proportion of total client assets audited within a specific industry, and audit quality (Aobdia et al., 2015), often proxied by discretionary accruals. These findings suggest that investors can interpret and react to subtle signals reflecting auditor attributes.

it has emerged as the second-largest stock market globally (S. Chen et al., 2020), is motivated by a unique institutional requirement. Both review and engagement audit partners must sign audit reports, and their names and handwritten signatures are publicly disclosed. This requirement enables the measurement of auditors' narcissism. Moreover, in the absence of a formal system for evaluating audit partner quality in China, investors are more likely to rely on indicators such as narcissism as signals of audit quality. For these reasons, this large emerging market is an informative setting for international accounting research.

In China, the audit process typically involves a more experienced senior auditor (also known as a review auditor) and a less experienced junior auditor (also known as an engagement auditor). The review auditor provides guidance to the engagement auditor and evaluates their work (Nelson & Tan, 2005).⁴ Both the review and the engagement auditors are required to sign the audit reports; the signature of the former is placed above that of the latter (Lennox et al., 2014). Our analysis centers on the review auditor, who oversees the job and bears the ultimate responsibility for it (Chen et al., 2016).⁵

Our main analysis is based on a final sample of 7,009 firm-year observations. The results show that firms audited by more narcissistic review auditors exhibit higher CARs around the announcement dates of their annual audit reports. This effect re-

⁴In China, audit partners are internally appointed by audit firms based on their professional qualifications and experience. They play a central role in audit execution and review and are prohibited from engaging in external business activities that could compromise their independence. In addition, they are subject to a comprehensive regulatory framework, including mandatory rotation every five years followed by a two-year cooling-off period, periodic quality inspections, strict licensing and disciplinary procedures, and transparency requirements. Together, these appointment practices and regulatory mechanisms are designed to safeguard audit quality and independence (Chen et al., 2016; Firth et al., 2012).

⁵This focus aligns with the work of Church et al. (2020), who find that review audit partners tend to be more narcissistic than engagement partners and that only the former significantly affect audit outcomes. In many other markets such as the United States, however, only the engagement partner signs the audit report and bears primary responsibility (Doxey et al., 2021). This distinction further underscores the relevance of the Chinese setting for exploring the role of audit partner traits.

mains robust after we control for a range of confounding factors, including firm-level financial characteristics, other significant announcements, and audit quality indicators. Importantly, including the latter set of controls highlights that narcissism captures unique dimensions of auditor behavior not reflected in traditional measures (e.g., industry expertise and audit experience), yet it still significantly influences audit quality and market reaction. Regarding the economic impact, on average, a one-standard-deviation increase in signature size per character (about 0.83 square centimeters) is associated with an augmentation in three-day CARs of 0.12%, or 0.07% after adjustments for confounding variables. This outcome lends empirical support to our hypothesis.

To alleviate concerns that the observed effects are merely statistical and not causal, we undertake several additional analyses. These analyses are designed to determine whether the positive market reaction is more pronounced in scenarios where narcissistic traits play a discernible role. Previous findings in the field of auditing ([Chou et al., 2021](#); [Church et al., 2020](#)) suggest that auditors with narcissistic tendencies are more likely to exhibit increased independence, show superior competence, and engage in prolonged negotiations. Thus, we categorize our sample according to these attributes. Audit independence (engagement complexity) is measured using three individual proxies—client importance, non-audit services, and audit changes (the ratio of current assets, the number of subsidiaries, and the number of business segments)—as well as a composite index constructed from these proxies. The negotiation period is measured by the number of days between the fiscal year-end and the audit report issuance date. Our results reveal that the positive market response is more pronounced in cases of reduced auditor independence, increased audit complexity, and extended audit-client negotiation periods. These findings strengthen our assertion that the documented positive market reaction can be directly attributed to the

influence of review auditor narcissism.

Moreover, we find no evidence of significant market reaction either before or after the announcement of the annual audit report. This suggests that investors are generally unaware of the auditor's identity prior to the announcement and do not exhibit a delayed response afterwards. These findings support the view that most market participants are likely encountering and reacting to the auditor's identity for the first time at the point of disclosure. Finally, our main results remain robust after we address potential endogeneity concerns, as confirmed by analyses using propensity score matching (PSM), the Heckman two-stage selection model, and the control function approach.

Our study makes several contributions to the international accounting and auditing literature. First, by presenting evidence from the Chinese stock market, we extend the literature on narcissism, which has previously concentrated on the impact of senior executives' and audit partners' narcissism on corporate and auditor performance (Aktas et al., 2016; Chou et al., 2021; Ham et al., 2018). Our findings delve into the market perceptions of review auditor narcissism, revealing a positive and significant response. Such insights into investor reaction offer valuable information for different agents, such as boards, regulators, and other stakeholders (Reid & Carcello, 2017). Additionally, we contribute to the literature on market reaction to audit-related activities and auditor attributes. Although some studies suggest that investors may overlook these activities (Czerney et al., 2019; Doxey et al., 2021; Lennox et al., 2023), a substantial body of evidence contradicts this view, underscoring how such factors can significantly sway investor perceptions and trigger market reaction (Aobdia et al., 2015; S. Chen et al., 2020; Eichenseher et al., 1989; Gul et al., 2019; Knechel et al., 2007). By examining a major emerging-market setting in which partner signatures are mandated, we also add international evidence on how institutional

features influence the information content of auditor characteristics. We provide empirical evidence that investors are concerned with the identity of the auditors and that disparities in their levels of narcissism matter. Importantly, narcissistic traits represent a distinct factor, differing from conventional ability-based characteristics such as technical expertise and audit experience (Ferguson et al., 2003; Gul et al., 2013; Knechel et al., 2015; Krishnan, 2003; Lee et al., 2019). Thus, we respond to calls for research on auditor behavior at the individual partner level (DeFond & Francis, 2005; Francis, 2011) and contribute to the international auditing literature on partner-level attributes. While prior research has predominantly focused on the audit firm level (Reid & Carcello, 2017), evidence suggests that individual partners exhibit distinct behaviors that extend beyond the firm level (Chen et al., 2016; Gul et al., 2013; Knechel et al., 2015; Lee et al., 2019), underscoring the need for more detailed investigation in this area.

The remainder of the paper is organized as follows. Section 2 reviews the related literature and develops our main hypothesis. Section 3 describes the research design, including the sample and data collection, variable construction, and research models. Section 4 presents our descriptive statistics and baseline results. Section 5 delves into further analyses, and Section 6 concludes the paper.

2 Related literature and hypothesis development

2.1 Narcissism and performance

In the field of psychology, narcissism has attracted significant scholarly attention.⁶ While narcissism was initially labeled as a clinical disorder in early research (and still

⁶The term “narcissism” originates from the Greek myth of a youth who became infatuated with his own reflection. It was first introduced by Ellis (1898) to describe a clinical condition of excessive self-love and was later incorporated into Freud’s psychoanalytic theory to characterize individuals who display self-admiration and self-aggrandizement (Freud, 1916).

maintains this meaning in healthcare investigation), another strand of research has viewed it as a personality trait (Campbell et al., 2004; Raskin & Terry, 1988). The narcissistic personality is characterized by a sense of entitlement, self-centeredness, attention seeking, an excessively inflated self-perception, a need for constant affirmation of this self-conception through self-regulation, and a deficiency in empathizing with others (American Psychiatric Association, 2013).

Driven by the development of objective narcissism assessment techniques, such as signature size measurement, which eliminate the need for self-reported data, research on narcissism has expanded rapidly into corporate contexts. This growing literature examines how narcissistic corporate leaders influence various aspects of business practice and performance, including entrepreneurship (Liu et al., 2021), social media use (Casale & Banchi, 2020), organizational culture (Braun, 2017), and corporate innovation (Cragun et al., 2020), among others. Within this domain, researchers have focused on the narcissism of CEOs, given its profound impact on corporate decision-making and culture (Campbell et al., 2004; Chatterjee & Hambrick, 2007; Ham et al., 2018; Zhang et al., 2017). Prior research shows that narcissistic CEOs are more likely to pursue bold strategies (Chatterjee & Hambrick, 2007), foster innovation (Zhang et al., 2017), take greater risks (Campbell et al., 2004), and engage in overinvestment that ultimately diminishes financial performance (Ham et al., 2018).

Unlike CEOs, who regularly prescribe corporate policies verbally and face less scrutiny, auditors perform services that are required to strictly adhere to established accounting standards and auditing regulations (Chou et al., 2021). Previous research examining narcissistic tendencies within the auditing profession has demonstrated that auditors exhibiting pronounced narcissistic traits are associated with higher audit quality, as reflected in reduced discretionary accruals and a lower likelihood of financial restatements among their clients (Chou et al., 2021; Church et al., 2020).

This relationship has been attributed to the inherent characteristics of narcissism, such as assertiveness, a perception of high competence, and a willingness to engage in confrontation (Church et al., 2020; Maccoby et al., 2004). In particular, research shows that the observed improvement in audit quality arises from narcissistic auditors' increased independence, their enhanced competence (though the evidence for competence is relatively weak), and extended audit-client negotiations (Chou et al., 2021; Church et al., 2020). These patterns also align with agency theory (Jensen & Meckling, 1976), which posits that greater auditor independence and assertiveness can help counteract managerial pressure, reduce agency conflicts, and ultimately improve audit quality (Gul et al., 2003).

It is worth noting that narcissistic traits in audit partners differ from other well-established conventional factors known to influence audit quality, such as ability-based characteristics like technical expertise and audit experience (Ferguson et al., 2003; Gul et al., 2013; Knechel et al., 2015; Krishnan, 2003; Lee et al., 2019).⁷ These factors typically enhance audit quality by strengthening auditors' technical judgment, improving risk assessment accuracy, and increasing effectiveness in detecting material misstatements. In contrast, narcissism is not developed through training or professional experience but reflects stable, inherent personality traits (Raskin & Terry, 1988). Moreover, narcissistic traits function through a distinct behavioral channel marked by confidence, assertiveness, and a greater willingness to challenge clients. As discussed above, these behaviors can promote auditor independence and judgment, particularly in high-stakes or judgment-intensive settings (Chou et al., 2021; Church et al., 2020; Maccoby et al., 2004).⁸

⁷We refer interested readers to Christensen et al. (2016), DeFond & Zhang (2014), and Tepalagul & Lin (2015) for comprehensive reviews of audit-quality determinants and for discussions of how narcissism differs from these established dimensions.

⁸Narcissistic traits also differ from other personality-based characteristics known to influence audit quality, such as trait homogeneity, professional skepticism, and conscientiousness (Asare et al., 2024; Hurtt, 2010; Samagaio & Felício, 2022), which typically enhance audit quality through cautious,

Despite their potential benefits, narcissistic traits may also carry drawbacks. According to the behavioral theory of the firm (Cyert & March, 1963), cognitive biases such as overconfidence and inflated self-esteem, commonly associated with narcissism, can impair judgment, increase risk-taking, weaken team collaboration, lead to poor long-term decision-making, and lead partners to overlook critical audit details (Braun, 2017; Campbell et al., 2002; Grijalva & Newman, 2015). These effects could, in theory, diminish audit quality. Therefore, the observed positive association between narcissistic traits and audit quality may reflect a net effect whereby the benefits outweigh the potential costs. Additionally, it remains unclear how external stakeholders, particularly investors, interpret these traits in the auditing context. From the perspective of stakeholder theory (Freeman, 1984), different stakeholders may form varied perceptions of such personality characteristics. We therefore address this important gap by examining whether and how investors recognize and respond to narcissistic traits in auditor partners.

2.2 Market response to audit-quality indicators

It is unsurprising that investors are attentive to the disclosure of audit-related activities and auditor attributes, given that these disclosures often convey crucial information. Although some research suggests that investors might disregard these activities (Czerney et al., 2019; Doxey et al., 2021; Lennox et al., 2023), a substantial body of evidence presents a contrasting view (Aobdia et al., 2015; S. Chen et al., 2020; Eichenseher et al., 1989; Gul et al., 2019; Knechel et al., 2007). This evidence demonstrates that such disclosures can significantly influence investor perceptions of the client firm and provoke market reaction. For example, when investors encounter firms with modified audit opinions, they typically assimilate and comprehend this in-

compliance-oriented behavior.

formation accurately, which often results in a negative response towards the company (S. Chen et al., 2020; Pei & Hamill, 2013). In addition, Eichenseher et al. (1989) report a favorable market reaction when firms switch auditors from a non-Big 8 audit firm to a Big 8 one. Knechel et al. (2007) find a positive market reaction to companies when the successor auditor has specialized industry expertise. Collectively, investors care about these characteristics as they often indicate the auditor’s work quality and the firm’s prospects.

We emphasize that audit quality is multifaceted and can be reflected through various indicators. Building on this understanding, we extend prior research by examining how Chinese stock market investors respond to firms audited by narcissistic auditors, as narcissism has been shown to reliably signal audit quality (Chou et al., 2021; Church et al., 2020). Because this trait differs from conventional ability-based characteristics, our analysis offers a distinct contribution to the existing literature and adds evidence on how investors in a major emerging market incorporate behavioral auditor attributes into their decisions.

Investors may incorporate signals of audit quality into their decision-making through two primary channels: signaling and information accuracy (Aobdia et al., 2015; Titman & Trueman, 1986). The signaling channel suggests that hiring a high-quality auditor sends a positive signal to the market, especially to less informed investors, indicating that the firm is likely performing well or has favorable information (Dye, 1993). This is because high-quality auditors are believed to offer more precise insights into the firm’s value; therefore, their presence is an indicator of the firm’s overall quality and reliability. Furthermore, the information accuracy channel posits that high-quality auditors provide more accurate financial information, thereby narrowing the gap in information asymmetry between firms and investors. Together, these channels highlight the critical role of the signals of audit quality in the invest-

ment decision-making process, enabling investors to make more informed decisions based on reliable and transparent financial information (S. Chen et al., 2020).

The literature and theory discussed above suggest two competing mechanisms through which auditors' narcissism may shape market perceptions. On the one hand, traits such as overconfidence and inflated self-views can impair judgement, weaken team coordination, and increase risk-taking, which may undermine audit quality and lead to adverse investor reactions. On the other hand, narcissism is associated with confidence and assertiveness, which can enhance independence, support skepticism in complex engagements, and strengthen auditor-client negotiations. Investors may interpret these attributes as signals of higher audit quality. In the Chinese auditing setting, we expect that the positive mechanism is more likely to dominate. Because there is no formal system for evaluating audit partner quality, and information about auditors is limited, investors are more likely to rely on salient cues when forming beliefs about audit quality. Audit partners are required to sign the audit report with handwritten signatures, which makes their personal imprint visible to investors. This visibility conveys accountability and confidence, which can be interpreted as an assurance of quality (Chou et al., 2021; Church et al., 2020). Compared with the negative effects of narcissism, whose potential costs are indirect and less immediately visible at the time of disclosure, confidence and assertiveness provide clearer cues that investors can interpret as signals of quality. As a result, attentive investors are more likely to view narcissistic traits in audit partners as credible indicators of audit quality and respond positively, consistent with the signaling and information-accuracy arguments (Aobdia et al., 2015; Titman & Trueman, 1986). Additionally, given that the review audit partner is responsible for ensuring engagement quality, planning audit procedures, evaluating audit evidence, and forming the audit opinion (J. Chen et al., 2020), we focus on this role in our analysis. Prior research also

shows that review audit partners tend to exhibit higher levels of narcissism than engagement partners, and that the positive link between narcissism and audit quality is observed only for review partners (Church et al., 2020). Therefore, we develop our main hypothesis as follows:

H1: Firms audited by more narcissistic review auditors are more likely to experience heightened CARs around the date of the audit report announcements.

3 Research design

3.1 Data and sample

We start from the full list of firms provided by the CNINFO website, which is authorized by the China Securities Regulatory Commission (CSRC). Then, we filter the sample to include only non-financial A-share firms listed on the SSE, which results in a total of 1,556 firms. Subsequently, we download 9,171 annual audit reports with handwritten auditor signatures from this sample. We use reports that were publicly released in the calendar year 2013, when handwritten signatures first become available, through the calendar year 2021. These reports correspond to fiscal years 2012 through 2020. Note that we exclude 1,011 illegible audit reports, which leaves 8,160 audit reports associated with 1,498 unique firms.⁹ Finally, we gather data on trading information and firm-level characteristics from CSMAR for these firms. Our final sample is further refined to 7,009 firm-year observations, contingent upon the availability of necessary data for constructing the CARs and other explanatory variables.

⁹An audit report is identified as illegible and consequently eliminated if it meets any of the following conditions: (i) it is signed by more than two audit partners (390 reports); (ii) the signature is hard to see, unclear, or illegible (313 reports); (iii) it is not scanned or captured in standard A4 paper size, or the edges of the paper are unclear (308 reports).

3.2 Variable construction

3.2.1 Audit partner narcissism

The measurement of individual narcissism typically falls into one of two categories: obtrusive measures and unobtrusive measures (Brunzel, 2021). Obtrusive measures involve asking participants to complete Narcissistic Personality Inventory (NPI) questionnaires to obtain a self-reported score on a narcissism scale (Ames et al., 2006; Raskin & Terry, 1988). However, this method often faces challenges such as a low response rate and the potential for participants' self-assessment bias (Brunzel, 2021). Conversely, another strand of research opts for unobtrusive measures. These studies derive individual narcissism tendencies from indicators such as the size of handwritten signatures, the prominence of photographs, or the use of first-person pronouns (Chatterjee & Hambrick, 2007; Ham et al., 2017).

Following the literature on audit partner narcissism (Chou et al., 2021; Church et al., 2020), we use the size of handwritten signatures to gauge narcissism among audit partners.¹⁰ Psychological studies have long recognized signatures as significant symbolic representations of oneself. The correlation between the size of a signature and narcissistic tendencies is well-documented in psychological research (Jorgenson, 1977; Zweigenhaft & Marlowe, 1973). This correlation is also supported by experimental evidence that links larger signatures with a greater narcissistic self-view, as larger signatures often reflect a heightened sense of self-importance, a common trait in narcissism (Cragun et al., 2020; Ham et al., 2017).

We collect signatures from annual audit reports available on the CNINFO website. Notably, an institutional feature in China mandates that audit partners personally

¹⁰Although indicators such as photographs and the use of first-person pronouns have been applied in other fields, data for these measures are rarely publicly available for individual audit partners. Therefore, handwritten signatures serve as a practical proxy for narcissism.

sign their names on these reports, which enables our collection and analysis.¹¹ All audit partners provide the same attestation for the same purpose, using the same form; moreover, the layout of the form does not substantially constrain the space available for the signature. This consistency suggests that signatures are comparable across auditors, across clients, and over time (Chou et al., 2021; Ham et al., 2017).

We measure the size of the handwritten signatures by drawing a rectangle around each signature, with each side of the rectangle touching the most extreme endpoint of the signature (Chou et al., 2021; Ham et al., 2018). To minimize human errors and ensure consistency, we use ImageJ software to draw the rectangles and quantify their digital sizes. Subsequently, we implement an image size calibration process to convert the digital size (in squared pixels) into the physical size (in square centimeters) (Pride et al., 2020). Specifically, for each signature, we first quantify the digital size of the A4 page that hosts this signature (in squared pixels). We then divide the signature’s digital size by that of the full page and multiply the result by the physical size of an A4 page ($21 \times 29.7 = 623.7$ square centimeters).¹² By implementing this procedure, we aim to mitigate the impact of resolution variability on signature size measurements, thereby enhancing the reliability and comparability of the data across different audit reports.

Next, we follow Chou et al. (2021) to calculate the average size of signatures for

¹¹According to regulations of the CSRC (<http://www.csrc.gov.cn>), auditors of A-share listed firms are generally required to provide handwritten signatures accompanied by an official stamp on annual audit reports. Given the regulatory significance of these reports, in practice, audit firms typically adopt a cautious approach and insist on handwritten signatures with official stamps. Exceptions have been rare. For example, during the COVID-19 pandemic, temporary logistical constraints led to the limited use of electronic signatures, which were usually followed by handwritten ones (Ministry of Finance, 2020). To maintain consistency, we include only handwritten signatures in our analysis, and our findings remain robust when we exclude data from 2021 (fiscal year 2020).

¹²For example, ImageJ records the digital size of a signature (A4 paper) as $1,654 \times 2,339$ (20,000 \times 40,111) pixels, equal to 3,858,706 (802,225,779) square pixels. The ratio of the signature’s pixel area to the page’s total pixel area ($3,858,706 / 802,225,779$) is multiplied by the A4 paper area (623.7 square centimeters), yielding an approximate physical size of 3 square centimeters.

each audit partner by using all signatures from them within our dataset; thus, their narcissism level is measured by the average signature size.¹³ Next, we take a final step to account for variation in the length of audit partners' names: each signature's size is normalized by dividing it by the number of characters in the corresponding name. This yields an area-per-character metric for each signature (Chou et al., 2021; Ham et al., 2017).¹⁴

3.2.2 Market reaction

To measure the market response to firms audited by narcissistic partners, we compute the CARs around the announcement dates of annual audit reports. Our analysis rests on the premise that these dates likely represent the initial instance when the auditors' *exact* identities become known to the *majority* of the public; thus, they serve as the event dates for our analysis. However, investors might access the auditors' identities from other sources prior to the annual audit reports, such as private sources or announcements by a limited number of companies regarding their decision to retain or switch audit firms.¹⁵ We contend that access to private sources is not widespread among the general public, even sophisticated investors. In addition, prior to 2020, such change announcements did not specify individual auditors by name.¹⁶ Further-

¹³Our use of the average signature size is based on the rationale that the trait of narcissism is consistently exhibited in an individual's behavior over time (Raskin & Terry, 1988). Accordingly, the measure aims to capture differences across auditors rather than temporal variations within the same auditor. Moreover, using the average signature size helps further reduce noise in the narcissism measure (Chou et al., 2021).

¹⁴The vast majority of Chinese names comprise either two or three characters. To further minimize the impact of inherent differences in character sizes, we also quantify signature size by constructing a convex hull around each character, ensuring that each side of the hull touches the character's most extreme endpoint. The results remain qualitatively similar.

¹⁵It is also possible that some investors assume the auditor remains unchanged, since auditors often continue with the same client firm for years. This raises the question of when, or even whether, these investors would respond. It is likely that any reaction would still occur when the auditors' *exact* identities are disclosed in the official annual audit report. Nevertheless, our analysis captures the response of the *majority* of investors to the *exact* identity of the auditors.

¹⁶In early 2020, SSE implemented new regulations that enhanced the transparency requirements, specifically encouraging the disclosure of the auditor's name when changes of audit firm occur.

more, it is common for companies to change their auditors at the last minute (Wang et al., 2024), which complicates efforts to ascertain the auditor’s identity before the official report. Nevertheless, to address potential concerns that the annual audit report’s announcement might not be the first instance of such disclosure, we conduct further analyses in Section 5.4. These analyses reveal no significant investor reaction before (or after) the annual audit report’s announcement. Our findings thus support the argument that for a *majority* of investors, this announcement likely serves as the initial opportunity to learn the auditors’ *exact* identities.

We obtain the specific announcement dates of annual audit reports from the CS-MAR database. Under Chinese disclosure regulations, audit reports are released concurrently with annual reports and financial statements.¹⁷

Following Bruno et al. (2018), we calculate both the cumulative market-adjusted abnormal returns (*CMAR*) and the cumulative market-model-adjusted abnormal returns (*CAR*) for each event. If an event date falls on a non-trading day, it is replaced with the next trading day within the same week. Specifically, the market-adjusted abnormal return for firm i on day t is calculated by the difference between $R_{i,t}$ and $R_{m,t}$:

$$MAR_{i,t} = R_{i,t} - R_{m,t}, \quad (1)$$

and the market-model-adjusted abnormal return for firm i on day t is calculated using the market model:

$$AR_{i,t} = R_{i,t} - (\hat{\alpha}_i + \hat{\beta}_i \times R_{m,t}), \quad (2)$$

Despite this regulation, the practice of disclosing auditor names upon changes remains relatively uncommon, and instances of last-minute auditor changes persist (Wang et al., 2024). Nevertheless, our results remain robust when we exclude data from 2021 (fiscal year 2020).

¹⁷This concurrent timing may raise concerns about isolating the market reaction to audit partner traits. We address this issue by using extensive controls, fixed effects, and robustness checks, while acknowledging that completely separating these effects remains a limitation inherent in studies of this nature.

where $R_{i,t}$ represents the simple return of firm i on day t , and $R_{m,t}$ is the value-weighted return of the SSE on day t (sourced from CSMAR). The parameters $\hat{\alpha}_i$ and $\hat{\beta}_i$ are derived from the market model over an estimation window of 50 trading days prior to the event, i.e., from day -60 to day -11 (Czerney et al., 2019). Finally, CAR and $CMAR$ for firm i in calendar year j within an event window are calculated as follows:

$$CMAR_{i,j} = \sum_{t=t_1}^{t_2} MAR_{i,t}, \quad (3)$$

$$CAR_{i,j} = \sum_{t=t_1}^{t_2} AR_{i,t}, \quad (4)$$

where t_1 and t_2 represent the number of trading days before and after the event. Consistent with the prior literature (Czerney et al., 2019; Doxey et al., 2021; Reid & Carcello, 2017), we use a three-day window, i.e., $t_1 = t_2 = 1$, to capture the immediate market reaction to the auditors' identity disclosure.

3.3 Models and control variables

To investigate whether firms audited by more narcissistic auditors receive a more favorable market response, we estimate the following regression models:

$$CMAR_{i,j} = \alpha + \beta_1 REV_NAR_{i,j} + \beta_2 ENG_NAR_{i,j} + \gamma X_{i,j} + \epsilon_{i,j} \quad (5)$$

$$CAR_{i,j} = \alpha + \beta_1 REV_NAR_{i,j} + \beta_2 ENG_NAR_{i,j} + \gamma X_{i,j} + \epsilon_{i,j} \quad (6)$$

where $CMAR_{i,j}$ ($CAR_{i,j}$) denotes the three-day CARs for firm i in calendar year j , adjusted by market (market-model-adjusted) returns as described in Section 3.2.2. $REV_NAR_{i,j}$ and $ENG_NAR_{i,j}$ measure the signature size of the review and engagement audit partners for firm i in calendar year j . While our analysis focuses on the narcissism of the review audit partner, the engagement audit partner's narcissism

may also influence market reactions. We therefore include it in all specifications as an important control variable.

Moreover, our analysis incorporates a set of other control variables ($X_{i,j}$) that the literature suggests may influence market reaction around the announcement of annual audit reports (Aobdia et al., 2015; Gul et al., 2019; Pei & Hamill, 2013; Shen et al., 2023; Yekini et al., 2016). These variables are categorized into three groups. (1) Firm-level characteristics, as audit reports are released concurrently with annual reports and financial statements: These include firm size (*SIZE*), market-to-book ratio (*MTB*), leverage (*LEV*), return on total assets (*ROA*), and institutional ownership (*INS*). These variables are measured at the end of the fiscal year to which the respective annual report pertains. (2) Confounding event announcements: This category accounts for other announcements that overlap with the audit report announcement, such as changes in dividends (*DIV*), shifts in controlling shareholders (*CTL*), executive management changes (*EXEC*), and mergers or acquisitions (*MA*). (3) Audit quality indicators: These factors include whether the review auditor is recognized as an industry specialist (*INDSP*), whether the review auditor works for a Big 4 audit firm (*BIG4*), and the review auditor’s audit tenure with the client firm (*TENURE*). Moreover, we control for the impact of audit opinions on financial reporting quality by considering whether the client firm receives modified audit opinions (*MAO*). Finally, we consider additional controls at the audit firm and audit partner levels in some specifications, as these factors may affect audit outcomes and market reactions (Dekeyser et al., 2024; Goodwin & Wu, 2016; He et al., 2024; Kerckhofs et al., 2024; Perry et al., 2023). Specifically, we control for whether the client firm receives a going-concern opinion (*GCO*), the audit firm’s total audit fees (*FEE*) and office size (*OFFICE*), whether the review audit partner is busy (*BUSY*), whether the partner is female (*FEMALE*), the number of clients the partner oversees (*CLIENT*), and the

total audited assets in the partner’s portfolio (*PORTFOLIO*). All these variables are defined in Appendix A. We winsorize all continuous variables at the 1st and 99th percentiles.

In our analysis, we include industry and year fixed effects to account for unobserved heterogeneity across industries and years, consistent with prior literature on auditor narcissism and on market reaction (e.g., Chou et al., 2021; Church et al., 2020; Czerney et al., 2019). The standard errors are always clustered at both the firm and calendar year level to address potential cross-sectional dependencies and autocorrelation within the error term, $\epsilon_{i,j}$ (Petersen, 2009).¹⁸

4 Results

4.1 Descriptive statistics and correlation

Table 1 presents the descriptive statistics of the variables for the final sample used in our main analysis: the number of observations, the mean, standard deviation, 25th percentile, median, and 75th percentile values. The average *CMAR* (*CAR*) in our sample is -0.38 (-0.39)%, reflecting an overall negative market reaction to the announcement of annual audit reports. The mean signature size per character for the review auditor (*REV_NAR*) is 1.74 square centimeters, notably larger than that of the engagement auditor (*ENG_NAR*), which is 1.40 square centimeters. This noticeable difference implies that review auditors exhibit stronger narcissistic tendencies than

¹⁸We measure auditor narcissism using the average signature size, which remains constant for each auditor over time. Consequently, audit partner fixed effects are not appropriate. Additionally, limited auditor turnover within firms results in insufficient within-firm variation, making firm fixed effects unsuitable. Given these considerations and our primary focus on cross-firm differences, i.e., whether client firms audited by more narcissistic review audit partners receive a more favorable response, we do not include audit partner and firm fixed effects in our model. To address potential concerns about omitted variable bias, including unobserved factors, we provide additional analyses in Section 5.5. The results remain robust. We also find that our conclusions are unchanged when audit firm fixed effects are included and when standard errors are clustered at either the firm or the audit partner level.

engagement auditors (Church et al., 2020), which supports our decision to focus on review auditors. Moreover, 26% of the review auditors are industry specialists, and 10% of them work in Big 4 audit firms. On average, the tenure of review auditors with their current client firms is approximately 2.4 years (the exponential value of 1.23 minus 1). Additionally, around 5% of the firms receive modified audit opinions for a given year.

[Insert Table 1 about here]

Table 2 presents the Pearson’s pairwise correlation coefficients for the final sample used in our main analysis. *CMAR* (*CAR*) is positively correlated with *REV_NAR*, indicating that the market reacts more favorably to firms audited by more narcissistic review auditors. Additionally, *CMAR* (*CAR*) exhibits significant correlations with some firm-level characteristics, announcement variables, and auditor quality indicators, including *SIZE*, *ROA*, *MA*, *INDSP*, *BIG4*, *TENURE*, and *MAO*.

[Insert Table 2 about here]

4.2 Baseline results

In our baseline analysis, we estimate Equations (5) and (6) both with and without the inclusion of other control variables. Table 3 reports the results. When estimating Equation (5) without other explanatory variables (column 1), we observe that the coefficient on *REV_NAR* is positive and statistically significant at the 5% level (column 1). After we control for firm-level financial and governance characteristics, potential confounding event announcements, and audit quality indicators (column 2), as well as additional audit firm and audit partner level controls (column 3), the results remain significant at the 5% level. Notably, our results remain significant after we control for *INDSP* and *TENURE*, demonstrating that narcissism captures unique dimensions of auditor behavior not reflected in these traditional measures, yet it still

influences audit quality and market reaction. Our results indicate a clear pattern: in the cross-section, firms audited by review auditors with higher levels of narcissism tend to experience a more favorable market response at the time of annual audit report announcements. Economically, a one-standard-deviation increase in the narcissistic reviewer’s signature size per character (around 0.83 square centimeters) is associated with an increase in three-day *CMAR* by 0.12 ($=0.15 \times 0.83$)%, or 0.07 ($=0.09 \times 0.83$)% after adjustments for the main confounding variables. These effects correspond to approximately 2.3% and 1.3% of one standard deviation in *CAR* (5.23%), respectively. The statistical and economic significance of the results remains similar when we estimate Equation (6), i.e., when we employ *CAR* as the measure for market reaction (columns 4 to 6). Collectively, these outcomes are consistent with our expectations and support our main hypothesis, suggesting a significant association between the review auditor’s narcissism and positive market reaction. In addition, our findings do not indicate a significant market response to the narcissism of engagement auditors.

[Insert Table 3 about here]

The results for the control variables are mostly consistent with prior literature: Market reaction is more favorable for larger firms (*SIZE*) and those with higher leverage (*LEV*). There is a positive (negative) market reaction to announcements of mergers and acquisitions (dividend changes). An industry specialized review auditor (*INDSP*) is associated with a negative market response, and a longer tenure of review auditors (*TENURE*) at the client firm is met with a positive response.¹⁹ Moreover, a modified audit opinion is associated with a negative reaction. Finally, when the review auditor is busy (*BUSY*) or female (*FEMALE*), the market reacts more positively.²⁰

¹⁹When we estimate specifications with only *INDSP* as the explanatory variable, the coefficient is positive and significant. This result suggests that the market reacts more positively to review auditors who are recognized as industry specialists.

²⁰While not all control variables are expected to be statistically significant, we acknowledge that theoretically relevant variables such as *ROA*, *MTB*, and *BIG4* remain insignificant in our baseline

While we try to isolate the impact of auditor narcissism on market reaction by controlling for various confounding factors, we adopt a cautious stance regarding the documented effects. The correlations identified in this section, though statistically significant and economically meaningful, may not necessarily imply causality. Consequently, in the next section, we conduct additional analyses designed to reinforce the interpretation that the observed positive market reaction could, to a large extent, be attributed to the narcissistic tendencies of the review auditors. These analyses aim to ascertain whether the positive market response is more pronounced when narcissistic characteristics are likely to have a significant impact, as in situations where auditor independence is threatened, the complexity of the engagement increases, and audit-client negotiations are extended (Chou et al., 2021; Church et al., 2020). Furthermore, given that both *CMAR* and *CAR*, as measures of market reaction, yield broadly consistent results, and these two variables have a correlation coefficient of 0.97 (see Table 2), we choose to report *CMAR* as our measure in subsequent sections for brevity. *CMAR* also has the advantage of being independent of the estimation-window assumptions in Equation (4), which reduces potential distortions from significant events during that period (Bruno et al., 2018). Our findings remain qualitatively similar when we use *CAR*.

5 Further Analyses

5.1 Independence threat

In this section, we examine whether the positive market reaction to narcissistic audit partners varies in contexts where their independence may be compromised. Narcis-

models. However, their coefficient signs are consistent with prior studies, and their t-statistics (above 1.70) are close to conventional significance thresholds. As shown in Table 2, these variables are highly correlated with *SIZE*, which likely absorbs much of their explanatory power. When *SIZE* is excluded, *ROA*, *MTB*, and *BIG4* become significant.

sistic auditors often exhibit traits such as an inflated sense of self-importance and a strong desire for recognition. In theory, these characteristics can have opposing effects on their professional behavior. On one hand, narcissistic auditors may be more likely to compromise their independence in pursuit of a larger client base, seeking affirmation of their success and admiration from peers (Chou et al., 2021). On the other hand, traits such as grandiosity, a sense of superiority, and the desire for recognition may motivate them to adhere closely to professional standards in order to build a strong reputation and stand out in the audit market (Judge et al., 2006; Chou et al., 2021). Empirical evidence from Chou et al. (2021) shows that the influence of narcissism on audit quality is more pronounced when auditor independence is likely to be compromised, suggesting that in practice, the beneficial aspects of narcissistic traits tend to dominate in such settings. Therefore, we expect that when the independence of review auditors is at risk, they are more likely to maintain high professional standards and deliver better audit quality. As a result, the positive market reaction should be more pronounced in these cases.

To measure the potential threats to review auditor independence, we adopt three commonly used proxies from the existing literature (Chen et al., 2010; Chou et al., 2021; Fiolleau et al., 2013): (1) client importance, defined as the ratio of the natural logarithm of a client’s total assets to the sum of the natural logarithms of total assets for all clients audited by the same audit partner within a given year; (2) non-audit service, measured as the ratio of a client’s non-audit service fees to a client’s total audit fees; (3) review auditor continuity (*UNCHANGE*), indicated by a variable set to 1 if the review auditor remains the same as in the previous year, and 0 otherwise.²¹

²¹We acknowledge that auditor tenure is another commonly used proxy for social bonding that may impair independence. However, evidence from the Chinese market (Deng et al., 2021) suggests that longer tenure can improve audit quality by lowering communication costs, challenging the view that it necessarily undermines independence. Consistent with this, our baseline results show a positive association between tenure and market reaction.

The rationale is that auditor independence is more likely to be compromised when the client is economically important, pays higher non-audit service fees, or is audited by the same review auditor as in the previous year.

To directly examine market response in scenarios where the auditor independence threat is high and low, we follow [Pittman et al. \(2023\)](#) to employ a split-sample approach. We split the sample at the median value within specific industries and years to mitigate variations across industries and time. Specifically, we define an indicator variable, *CLIP (NAS)*, which takes a value of 1 for clients exceeding the industry median of importance (non-audit fees) in a given year, and 0 otherwise. Thus, a value of 1 for *CLIP*, *NAS*, or *UNCHANGE* signals a heightened threat to auditor independence. In addition to employing these three individual proxies, we follow [Atilgan et al. \(2020\)](#) in developing a composite index to reduce potential noise associated with any single measure. While each proxy captures a specific aspect, the composite index integrates multiple dimensions, offering a more comprehensive and reliable representation of the threat to auditor independence ([Beattie et al., 1999](#); [Meuwissen & Quick, 2019](#)). Specifically, this composite index aggregates the values of *CLIP*, *NAS*, and *UNCHANGE*. It ranges from 0 to 3, where higher scores indicate a greater threat to auditor independence. Based on this index, we introduce an indicator variable, *COMBINE*, which equals 1 if the index is 2 or higher, and 0 otherwise. This threshold identifies cases where at least two of the three components signal a meaningful threat to independence.²²

We re-estimate Equation (5) separately for scenarios of high versus low threat to

²²We also attempt to define *COMBINE* with a value of 1 for instances where index scores reach 3, indicating significant risk to independence for all three situations, and 0 otherwise. The results align with expectations but are not statistically significant due to the limited number of such cases (approximately 500 observations). To allow for more robust analysis, we adopt a less stringent definition, assigning a value of 1 when any two or more conditions are met. This comment also applies to the analysis in Section 5.2.

auditor independence, using *CLIP*, *NAS*, *UNCHANGE*, and *COMBINE* as indicators. Table 4 presents the results. We observe that the coefficients on *REV_NAR* are positive and significant at conventional levels when clients are economically important (column 2) and the review auditor remains unchanged from the previous year (column 6). While the coefficient for *REV_NAR* remains positive for clients with higher non-audit fees (column 4), it lacks statistical significance.²³ Importantly, when the threat to auditor independence is high, as indicated by the composite index (column 8), we find that the coefficient on *REV_NAR* is positive and statistically significant at the 5% level.²⁴ In contrast, we find insignificant (and mostly non-positive) coefficients in the low-threat scenarios (columns 1, 3, 5, and 7). These results show that the positive market reaction occurs only when the threat to auditor independence is high. Additionally, the coefficient magnitudes in the low-threat scenarios are noticeably smaller than those in the high-threat scenarios. To formally assess these differences, we employ Fisher’s permutation tests (Cleary, 1999) to compare the *REV_NAR* coefficients between the high- and low-threat scenarios. We find these differences are statistically significant at the 1% level across all indicators. This result, consistent with our predictions, underscores that the positive market reaction is more pronounced when the threat to auditor independence is high.

[Insert Table 4 about here]

²³We also test an alternative measure of *NAS* by creating a dummy variable equal to 1 if non-audit service fees exceed 30% of total fees (approximately the top quartile), indicating a higher threat to auditor independence, and 0 otherwise. The results are supportive: a significantly positive market reaction occurs only when *NAS* exceeds 30%, with a significantly larger coefficient than in cases where it does not. However, given the somewhat arbitrary nature of the 30% cutoff, we report results using the industry-year median as the benchmark.

²⁴Our practice of aggregating individual proxies to construct a composite index is well established in the literature (e.g., Lisic et al., 2016; Lo & Shiah-Hou, 2022). We also follow Chou et al. (2021) and Pittman et al. (2022) to construct a Principal Component Analysis (PCA)-based composite measure by extracting the first component from client importance, non-audit services, and audit changes. We define *COMBINE* as 1 if the component score exceeds the industry median for a given year, and 0 otherwise. Our results remain consistent when we re-estimate columns 7 and 8 in Table 4 using this PCA-based *COMBINE* variable.

Together, our findings show that the positive market reaction is predominantly observed and more pronounced in situations where the independence of review auditors is likely compromised. This supports the view that the market response is indeed attributable to narcissistic traits.

5.2 Engagement complexity

In this section, we examine whether the positive market reaction to narcissistic audit partners varies with the level of engagement complexity, as higher complexity places greater demands on auditor competence. Narcissistic auditors tend to be self-focused and confident in their own judgments and may be less easily misled by fraudulent or ambiguous information (Byrne & Worthy, 2013). These traits can foster heightened professional skepticism, which may translate into greater audit competence in complex settings. However, the link between narcissism and competence is not straightforward. Narcissists are also prone to low empathy and may dismiss input from other team members, impairing communication and collaborative decision-making (Nevicka et al., 2011). Empirical evidence reflects this tension: Chou et al. (2021) find mixed and only marginally significant results suggesting that narcissism enhances audit quality through a competence channel. Despite the theoretical ambiguity and inconclusive evidence, we expect narcissistic traits to become more consequential in complex audit engagements, where higher levels of professional judgement and skepticism are required. In such settings, the tendency of narcissistic auditors to trust their own judgment and resist misleading information may play a more dominant role, thereby enhancing audit quality. As a result, the positive market reaction should be more pronounced when engagement complexity is high.

Following previous literature (Carson et al., 2012; Chou et al., 2021; Hay et al., 2006; Pittman et al., 2022), we use three proxies to measure scenarios indicative

of engagement complexity: the ratio of current assets (scaled by total assets), the number of subsidiaries, and the number of business segments. We adopt a split-sample method to directly assess market reaction in instances of higher versus lower engagement complexity (Pittman et al., 2023). We define an indicator variable, *CRAT* (*SUBS*, *NSEG*), assigning a value of 1 to cases when the ratio of current assets (number of subsidiaries, number of business segments) exceeds the industry median for the year, and 0 otherwise. An engagement is deemed more complex when *CRAT* (*SUBS*, *NSEG*) equals 1. Then, as in Section 5.1, in addition to using the three individual proxies, we also construct a composite index to mitigate the potential noise associated with each individual measure (Atilgan et al., 2020). This time, the index aggregates the values of *CRAT*, *SUBS*, and *NSEG*, spanning from 0 to 3, with higher scores indicating greater engagement complexity. Subsequently, we define an indicator variable, *COMBINE*, assigned a value of 1 for composite index scores of 2 or above, and 0 otherwise. This threshold ensures that *COMBINE* captures situations where at least two indicators suggest more complex engagements.

We re-estimate Equation (5) separately for scenarios indicative of high versus low engagement complexity, as indicated by *CRAT*, *SUBS*, *NSEG*, and *COMBINE*. Table 5 presents the results. Except for instances with a higher number of business segments (column 6), the coefficients on *REV_NAR* are positive and statistically significant at conventional levels in scenarios where client firms possess higher current assets (column 2) and a larger number of subsidiaries (column 4), as well as when complexity is measured with the composite index (column 8).²⁵ In contrast, we find no significant coefficients in low-complexity scenarios (columns 1, 3, 5, and 7), and their magnitudes are noticeably smaller. Fisher’s permutation tests confirm that the differences in

²⁵We also construct a PCA-based composite measure for audit complexity using the individual proxies: the ratio of current assets, the number of subsidiaries, and the number of business segments. Our results remain consistent when we re-estimate columns 7 and 8 in Table 5 using this PCA-based *COMBINE* variable.

REV_NAR coefficients between high and low complexity scenarios are statistically significant at the 5% level (except in the context of business segments). Hence, our findings indicate that the positive market reaction is stronger in situations of elevated engagement complexity. This supports the view that the market response is indeed attributable to narcissistic traits.

[Insert Table 5 about here]

5.3 Length of audit-client negotiations

In this section, we examine whether the positive market reaction to narcissistic audit partners varies with the length of the audit-client negotiation period, as narcissistic characteristics may contribute to longer negotiations. Narcissistic auditors tend to be assertive and aggressive, often engaging in forceful arguments and employing contentious negotiation tactics (Furnham & Crump, 2014; K ufner et al., 2013). These behaviors can prolong the resolution of accounting issues and delay audit completion. Consistent with this view, Church et al. (2020) find that narcissistic auditors, driven by a strong need to dominate negotiations, significantly lengthen the audit-client negotiation process. We therefore expect that the positive market reaction is more pronounced when audit-client negotiations are delayed, as such delays may reflect the narcissistic auditor’s willingness to challenge management and insist on their own professional judgement.

Following Church et al. (2020), we use audit delay, measured as the number of days between the fiscal year-end and the audit report date, to proxy for the length of audit-client negotiations. Consistent with Pittman et al. (2023), we adopt a split-sample approach to examine market reactions under conditions suggestive of long versus short negotiations. Specifically, we construct an indicator variable, *DELAY*, which equals 1 if the audit delay exceeds the industry median for that year, and 0

otherwise. A value of 1 is interpreted as evidence of an extended negotiation period between the auditor and the client.

We re-estimate Equation (5) separately for scenarios reflecting longer versus shorter delays. Table 6 presents the results. We find a positive and statistically significant coefficient on *REV_NAR* only in the context of audit report delays (column 2), suggesting prolonged auditor–client negotiations. The empirical p-value (0.057) from Fisher’s permutation tests indicates that the difference in coefficients between short and long delays (0.05 and 0.16) is statistically significant at the conventional level. Thus, consistent with our expectations, the significant positive market reaction is more pronounced when review auditors are likely engaged in prolonged negotiations, suggesting that narcissistic traits are more likely to be at play. This supports the view that the market response is indeed attributable to narcissistic traits.

[Insert Table 6 about here]

5.4 Pre- and post-announcement reaction

It is possible that some investors become aware of auditors’ identities prior to the release of the annual audit report. To address this concern, we follow [Czerney et al. \(2019\)](#) and calculate long-run CARs for the window from 201 to 2 days before the announcement. This allows us to detect any pre-emptive market reaction and assess whether the market responds to auditor identity prior to its formal disclosure. We also examine CARs for the post-announcement window from 2 to 201 days, following [S. Chen et al. \(2020\)](#), to test for any delayed market response. If no significant reaction is observed after the announcement, it suggests that the immediate response captures the full effect of the new information. This would further imply that the initial announcement marks the first point at which *most* investors become aware of the auditor’s *exact* identity, when the information is most salient ([Wang & Li, 2016](#)).

We re-estimate Equation (5) using *CMAR* constructed from both pre- and post-announcement windows, with and without control variables. The results, reported in Table 7, show no significant effect for *REV_NAR* in either window. This finding mitigates concerns that investors had prior knowledge of the auditor’s *exact* identity or that the market response is delayed. It also supports the interpretation that the annual audit report represents the first salient disclosure of this information to *most* investors, triggering the observed reaction.

[Insert Table 7 about here]

5.5 Endogeneity

While the event study method is relatively less susceptible to endogeneity concerns (Chhaochharia & Grinstein, 2007) and is particularly effective in addressing reverse causality (Cordeiro & Tewari, 2015), it is not entirely immune. In this study, we analyze the immediate market response to the disclosure of a narcissistic review auditor in the annual audit report. We find that the market reaction occurs only within the short event window, with no significant reaction before or after the announcement (see Section 5.4), suggesting that reverse causality is unlikely to drive our results. However, endogeneity concerns such as selection bias and omitted variable bias may still be present. In this section, we examine these potential issues and provide evidence to support the robustness of our findings.

Selection bias is a potential concern, as firms with stronger financial performance may be more likely to engage narcissistic auditors, who are often perceived as higher-quality professionals. According to the signaling and information accuracy theories, firms may strategically select such auditors to convey positive signals to investors, potentially introducing endogeneity into the assignment process. Additionally, omitted variable bias remains a concern despite the inclusion of a comprehensive set of

firm- and auditor-level controls, as well as industry and year fixed effects to account for unobservable factors. Because auditors' reports are released alongside annual reports and financial statements, which contain a broad range of information, isolating the specific impact of the auditor's disclosure is challenging. This issue is further exacerbated by the absence of firm fixed effects due to our research focus and minimal within-firm variation. To mitigate these concerns, we employ three complementary approaches: propensity score matching (PSM), the Heckman two-stage selection model, and the control function approach.

PSM mitigates selection bias by pairing firms with similar observable characteristics but differing levels of review auditor narcissism. Specifically, we first estimate the likelihood of engaging a narcissistic auditor using a logit model, where the dependent variable is an indicator set to one if the review auditor's signature size exceeds the industry median in a given year. The independent variables include firm-level characteristics from Equation (5), as auditor selection is influenced by firm performance. Next, we use the estimated propensity scores to match firms that employ high-narcissistic auditors with those that do not, applying nearest-neighbor matching with a caliper value of 0.05%. Finally, we re-estimate our main regression models from Equation (5) using the matched sample to assess the robustness of our findings. The results, presented in Column 1 of Table 8, show that the coefficient on *REV_NAR* remains positive and significant, reinforcing our main analysis.

[Insert Table 8 about here]

To further address potential sample selection bias, we employ the Heckman two-stage selection model. The first stage, identical to the logit model used in PSM, estimates the likelihood of a firm selecting a high-narcissistic auditor. From this model, we extract the predicted probabilities to compute the inverse Mills ratio (*IMR*) as a correction term. In the second stage, we incorporate *IMR* into our baseline regression

to account for the non-random selection of narcissistic auditors, thereby addressing potential sample selection bias. Column 2 of Table 8 presents the results from re-estimating Equation (5) with the inclusion of *IMR*. The coefficient on *REV_NAR* remains positive and significant, reinforcing the robustness of our baseline findings.

Finally, to address omitted variable bias stemming from unobserved factors, we apply the control function approach. Unlike the PSM and Heckman methods, which require classifying the continuous *REV_NAR* variable into a binary indicator for logit model estimation, this approach allows us to retain its continuous nature in an OLS regression, capturing finer variations in auditor narcissism. Specifically, we first regress *REV_NAR* on firm-level characteristics using OLS and extract the residuals (*RESIDUAL*), which capture unobserved influences on auditor selection. These residuals are then included as an additional control variable in our baseline regression to mitigate omitted variable bias arising from unobserved factors that may affect both auditor selection and market reaction. Column 3 of Table 8 presents the results from re-estimating Equation (5) with the inclusion of *RESIDUAL*. The coefficient on *REV_NAR* remains positive and significant, further supporting the robustness of our baseline findings.

Collectively, the results from PSM, the Heckman two-stage selection model, and the control function approach align with our baseline findings, reinforcing their robustness and mitigating concerns related to endogeneity.

6 Conclusion

While prior studies document a positive impact of audit partners' narcissism on audit quality, we extend this literature by examining how markets react to such personality traits. Specifically, we investigate whether investors respond more favorably to dis-

closures involving more narcissistic audit partners. Consistent with our expectation, we find that firms audited by more narcissistic review auditors exhibit higher CARs around the announcement of their annual audit reports, which likely represent the first public disclosure of the auditors' exact identity. This effect remains statistically significant and economically meaningful after we account for various confounding factors. Additional analyses reveal that the positive market reaction is more pronounced in settings where auditor narcissism is likely to matter most: when auditor independence may be compromised, engagement complexity is high, or auditor-client negotiations appear prolonged. These findings reinforce our conclusion that the observed market response is driven by review auditor narcissism.

Our findings contribute to the international accounting and auditing literature on how individual personality traits, particularly the net benefits associated with narcissism, influence audit outcomes. By providing stock market evidence from a large emerging market, we offer new insights into how auditor characteristics shape investor perceptions and affect firm value across different institutional environments. These results also have practical implications for auditor selection, highlighting the economic relevance of auditor-specific traits. In addition to providing managerial implications, our findings inform ongoing policy debates regarding the scope and format of audit partner disclosures. In the United States, for example, the Public Company Accounting Oversight Board (PCAOB) introduced Form AP in 2017, requiring audit firms to disclose the name of the engagement partner and any component auditors responsible for at least 5% of total audit work. While prior research, such as [Doxey et al. \(2021\)](#), finds limited market reaction to name disclosures under Form AP, our results suggest that more behaviorally informative disclosures (e.g., handwritten signatures) can elicit stronger investor responses. This contrast underscores the importance of both the type and richness of disclosure in enabling markets to assess auditor-specific

attributes. Given that signature size serves as a reliable proxy for narcissism, and by extension, audit quality, our results support further consideration of such disclosures in future regulatory frameworks. This aligns with the broader view that incorporating individual auditor characteristics into disclosure policy may enhance both transparency and audit oversight effectiveness (Carcello & Li, 2013). Taken together, our evidence enriches international accounting research on audit quality signals by highlighting that investors can price personality-driven auditor attributes when institutional arrangements make such traits observable.

Our paper is subject to several limitations. First, we use handwritten signature size as a proxy for narcissism, which is appropriate in our setting where digital signatures are extremely rare due to regulatory practices. While a future transition to digital signatures may challenge the reliability of this measure, such a shift has not yet occurred and is expected to involve a prolonged transition period (IAASB, 2021). Even after the transition, our findings may remain relevant, as narcissistic traits are relatively stable over time (Raskin & Terry, 1988), and historical handwritten signatures could continue to serve as valid proxies. Moreover, digital signature size may also reflect narcissistic tendencies, as narcissistic auditors might prefer larger digital formats. Future research could explore these possibilities, including comparisons between handwritten and digital signature preferences during transitional phases.

Second, although signature size is currently the most practical and reliable proxy for auditor narcissism in our context, some degree of measurement error may be unavoidable despite our rigorous procedures. Future work could explore alternative proxies (e.g., facial features and linguistic cues) if the data become more widely available.

Third, while our findings suggest that the aggregate market responds to auditor narcissism traits, we cannot directly observe how investors infer these traits or de-

termine which investor groups are driving the reaction. Additionally, narcissism may be correlated with other unobserved personality traits. Future research could use experimental or survey-based methods to validate these mechanisms and clarify the underlying channels.

Lastly, there may be confounding effects due to the concurrent release of the audit report and the annual report. Although we apply multiple empirical strategies to mitigate this concern and remain confident in our conclusions, fully isolating the market response to audit partner narcissism is inherently challenging. Future research could examine alternative settings or disclosure environments where the influence of audit partner traits can be more cleanly disentangled from broader firm-level information.

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Table 1
Descriptive statistics

	N	Mean	SD	P25	Median	P75
<i>CMAR</i>	7009	-0.38	5.23	-3.12	-0.51	2.16
<i>CAR</i>	7009	-0.39	5.28	-3.18	-0.48	2.22
<i>REV_NAR</i>	7009	1.74	0.83	1.16	1.56	2.08
<i>ENG_NAR</i>	7009	1.40	0.64	0.94	1.25	1.73
<i>SIZE</i>	7009	15.85	1.01	15.11	15.71	16.47
<i>LEV</i>	7009	47.80	20.98	31.84	47.56	63.45
<i>ROA</i>	7009	3.24	6.28	1.17	3.21	6.23
<i>MTB</i>	7009	0.36	0.50	0.14	0.23	0.38
<i>INS</i>	7009	41.71	22.68	25.21	43.78	58.52
<i>DIV</i>	7009	0.00	0.01	0.00	0.00	0.00
<i>MA</i>	7009	0.05	0.21	0.00	0.00	0.00
<i>CTL</i>	7009	0.00	0.03	0.00	0.00	0.00
<i>EXEC</i>	7009	0.02	0.13	0.00	0.00	0.00
<i>INDSP</i>	7009	0.26	0.44	0.00	0.00	1.00
<i>BIG4</i>	7009	0.10	0.30	0.00	0.00	0.00
<i>TENURE</i>	7009	1.23	0.51	0.69	1.10	1.61
<i>MAO</i>	7009	0.05	0.21	0.00	0.00	0.00

Note. This table displays the descriptive statistics for the variables used in the main analysis. All variables are as defined in Appendix A.

Table 2
Correlation matrix

	<i>CMAR</i>	<i>CAR</i>	<i>REV_NAR</i>	<i>ENG_NAR</i>	<i>SIZE</i>	<i>LEV</i>	<i>ROA</i>	<i>MTB</i>	<i>INS</i>	<i>DIV</i>	<i>MA</i>	<i>CTL</i>	<i>EXEC</i>	<i>INDSP</i>	<i>BIG4</i>	<i>TENURE</i>	<i>MAO</i>
<i>CMAR</i>	1.00																
<i>CAR</i>	0.97***	1.00															
<i>REV_NAR</i>	0.02	0.02	1.00														
<i>ENG_NAR</i>	-0.00	0.00	0.30***	1.00													
<i>SIZE</i>	0.11***	0.11***	0.09***	0.06***	1.00												
<i>LEV</i>	0.01	0.01	0.00	-0.01	0.10***	1.00											
<i>ROA</i>	0.10***	0.09***	0.02	0.02	0.24***	-0.40***	1.00										
<i>MTB</i>	-0.00	-0.00	-0.03*	-0.01	-0.08***	0.11***	-0.04***	1.00									
<i>INS</i>	0.03*	0.04**	0.02*	-0.00	0.25***	0.07***	0.05***	-0.10***	1.00								
<i>DIV</i>	-0.00	-0.00	-0.01	-0.02	-0.00	0.01	-0.00	-0.00	0.01	1.00							
<i>MA</i>	0.03*	0.03*	-0.01	-0.01	0.01	0.05***	-0.02	-0.01	-0.02	-0.00	1.00						
<i>CTL</i>	-0.01	-0.01	0.00	0.02	-0.02	0.02	-0.01	-0.01	-0.02	-0.00	0.12***	1.00					
<i>EXEC</i>	-0.01	-0.01	0.01	-0.01	0.03**	0.01	-0.00	-0.02	0.02	-0.00	0.02	-0.00	1.00				
<i>INDSP</i>	0.04**	0.03**	0.12***	0.06***	0.54***	0.25***	0.03*	-0.17***	0.17***	-0.01	0.02	-0.02	0.02	1.00			
<i>BIG4</i>	0.05***	0.04***	0.17***	0.10***	0.38***	0.07***	0.06***	-0.10***	0.14***	-0.00	0.00	-0.01	0.02	0.31***	1.00		
<i>TENURE</i>	0.03*	0.03*	0.02*	0.00	0.01	0.01	0.01	-0.02	-0.00	-0.01	0.00	0.01	-0.00	0.01	-0.04***	1.00	
<i>MAO</i>	-0.10***	-0.08***	-0.02	-0.01	-0.14***	0.18***	-0.38***	0.26***	-0.04***	-0.00	0.01	-0.01	-0.01	-0.06***	-0.04***	-0.02	1.00

Note. This table reports Pearson's pairwise correlation coefficients. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 3

Regression results on the market reaction to narcissistic auditors

	(1)	(2)	(3)	(4)	(5)	(6)
	CMAR	CMAR	CMAR	CAR	CAR	CAR
<i>REV_NAR</i>	0.15** (3.13)	0.09** (2.33)	0.12** (2.62)	0.14** (3.25)	0.09* (2.21)	0.12** (2.58)
<i>ENG_NAR</i>	-0.08 (-1.03)	-0.10 (-1.51)	-0.14* (-2.05)	-0.06 (-0.77)	-0.08 (-1.17)	-0.13* (-1.90)
<i>SIZE</i>		0.39*** (3.93)	0.43** (2.75)		0.38*** (4.14)	0.41** (2.63)
<i>LEV</i>		0.01** (2.38)	0.01* (2.11)		0.01* (2.07)	0.01 (1.70)
<i>ROA</i>		0.06 (1.72)	0.06 (1.78)		0.05 (1.77)	0.05 (1.83)
<i>MTB</i>		0.23 (1.71)	0.26 (1.50)		0.21 (1.40)	0.26 (1.33)
<i>INS</i>		0.00 (0.16)	-0.00 (-0.16)		0.00 (0.78)	0.00 (0.49)
<i>DIV</i>		-2.06*** (-13.46)	-1.84*** (-4.76)		-1.88*** (-10.67)	-1.74*** (-4.66)
<i>MA</i>		0.79*** (3.49)	0.69*** (3.57)		0.74** (2.59)	0.62** (2.97)
<i>CTL</i>		-3.33 (-1.61)	-3.14 (-1.55)		-3.22 (-1.18)	-3.01 (-1.13)
<i>EXEC</i>		-0.46 (-0.99)	-0.55 (-1.30)		-0.64 (-1.48)	-0.73 (-1.74)
<i>INDSP</i>		-0.24* (-2.15)	-0.21* (-1.98)		-0.26** (-2.41)	-0.25* (-2.14)
<i>BIG4</i>		0.15 (0.76)	0.27 (1.12)		0.15 (0.88)	0.28 (1.21)
<i>TENURE</i>		0.26** (2.61)	0.29** (2.77)		0.28** (2.82)	0.31** (3.02)
<i>MAO</i>		-1.84** (-3.21)	-1.43** (-2.61)		-1.48** (-2.47)	-1.17* (-2.01)
<i>GCO</i>			-0.98* (-1.99)			-0.69 (-1.43)
<i>FEE</i>			-0.16 (-0.99)			-0.17 (-1.14)
<i>OFFICE</i>			0.03 (0.36)			0.02 (0.31)
<i>BUSY</i>			0.67** (2.42)			0.55* (2.14)
<i>FEMALE</i>			0.26* (2.03)			0.26* (1.86)
<i>CLIENTS</i>			0.00 (0.01)			-0.06 (-0.43)
<i>PORTFOLIO</i>			0.01 (0.25)			0.04 (0.74)
Industry FEs	Yes	Yes	Yes	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.01	0.03	0.03	0.01	0.03	0.03
N	7009	7009	6780	7009	7009	6780

Note. The dependent variable is the three-day cumulative abnormal return, adjusted using market returns (columns 1 to 3) and the market model (columns 4 to 6). All variables are defined in Appendix A. The sample period is from 2013 through 2021. The t-statistics, presented in parentheses, are based on standard errors clustered by firm and year with finite-sample adjustment. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 4

Market reaction to narcissistic auditors: A comparison of high vs. low independence threat

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	CLIP	CLIP	NAS	NAS	UNCHANGE	UNCHANGE	COMBINE	COMBINE
<i>REV_NAR</i>	0.05 (0.59)	0.32* (1.87)	-0.05 (-0.54)	0.18 (1.31)	-0.11 (-0.75)	0.19** (3.06)	-0.10 (-1.69)	0.24** (2.48)
Independence Threat	Low	High	Low	High	Low	High	Low	High
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.03	0.06	0.03	0.04	0.04	0.03	0.03	0.05
N	4414	1872	3219	3000	2487	4406	2983	2530
Empirical P-value		0.000		0.004		0.005		0.000

Note. The table reports regression estimates from subsamples defined by four indicators of threats to auditor independence: *CLIP* (columns 1 and 2), *NAS* (columns 3 and 4), *UNCHANGE* (columns 5 and 6), and *COMBINE* (columns 7 and 8). Each indicator equals 1 when the client exhibits a heightened perceived independence risk and 0 otherwise. The dependent variable in all specifications is the three-day cumulative market-adjusted abnormal return (*CMAR*). The control variables are the same as those used in Equation (5). All variables are defined in Appendix A. The t-statistics, presented in parentheses, are based on standard errors clustered by firm and year with finite-sample adjustment. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 5

Market reaction to narcissistic auditors: A comparison of high vs. low engagement complexity

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	CRAT	CRAT	SUBS	SUBS	NSEG	NSEG	COMBINE	COMBINE
<i>REV_NAR</i>	0.01 (0.16)	0.15* (2.07)	0.02 (0.21)	0.16** (2.66)	0.12 (1.04)	0.11 (1.11)	0.07 (0.48)	0.19* (1.92)
Engagement Complexity	Low	High	Low	High	Low	High	Low	High
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.02	0.04	0.02	0.05	0.03	0.03	0.02	0.04
N	3510	3499	3582	3325	3665	2621	3281	2910
Empirical P-value		0.032		0.024		0.486		0.047

Note. The table reports regression estimates from subsamples defined by four indicators of engagement complexity: *CRAT* (columns 1 and 2), *SUBS* (columns 3 and 4), *NSEG* (columns 5 and 6), and *COMBINE* (columns 7 and 8). Each indicator equals 1 when the client exhibits a heightened engagement complexity and 0 otherwise. The dependent variable in all specifications is the three-day cumulative market-adjusted abnormal return (*CMAR*). The control variables are the same as those used in Equation (5). All variables are defined in Appendix A. The t-statistics, presented in parentheses, are based on standard errors clustered by firm and year with a finite-sample adjustment. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 6

Market reaction to narcissistic auditors: A comparison of long vs. short reporting delays

	(1)	(2)
	DELAY	DELAY
<i>REV_NAR</i>	0.05	0.16*
	(0.51)	(2.15)
Delay	Short	Long
Controls	Yes	Yes
Industry FEs	Yes	Yes
Year FEs	Yes	Yes
Adj. R-squared	0.02	0.04
N	3690	3319
Empirical P-value		0.074

Note. The table reports regression estimates from subsamples defined by an indicator of negotiation likelihood, *DELAY*. The variable equals 1 when the client releases its annual audit report later than the industry median in a given year, indicating a heightened negotiation likelihood, and 0 otherwise. The dependent variable in all specifications is the three-day cumulative market-adjusted abnormal return (*CMAR*). The control variables are the same as those used in Equation (5). All variables are defined in Appendix A. The t-statistics, presented in parentheses, are based on standard errors clustered by firm and year with a finite-sample adjustment. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 7

Market reaction to narcissistic auditors: Long-run windows before and after the announcement dates

	(1)	(2)	(3)	(4)
	(-201, -2)	(-201, -2)	(2, 201)	(2, 201)
<i>REV_NAR</i>	-0.02	-0.04	-0.22	-0.24
	(-0.30)	(-0.82)	(-1.17)	(-1.02)
<i>ENG_NAR</i>	0.01	-0.04	0.53	0.52
	(0.22)	(-0.43)	(0.81)	(0.87)
Controls	No	Yes	No	Yes
Industry FEs	Yes	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes	Yes
Adj. R-squared	0.01	0.01	0.13	0.14
N	6713	4764	7009	7009

Note. The table reports regression estimates based on the long-run 200-day cumulative market-adjusted abnormal return (*CMAR*) measured before (columns 1 and 2) and after (columns 3 and 4) the annual audit report date. The control variables are the same as those used in Equation (5). All variables are defined in Appendix A. The t-statistics, presented in parentheses, are based on standard errors clustered by firm and year with a finite-sample adjustment. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 8

Market reaction to narcissistic auditors: Endogeneity

	(1)	(2)	(3)
	PSM	Heckman	Control Function
<i>REV_NAR</i>	0.20** (3.35)	0.10* (2.30)	5.32** (3.34)
<i>IMR</i>		3.67 (0.36)	
<i>RESIDUAL</i>			-5.23** (-3.25)
Controls	Yes	Yes	Yes
Industry FEs	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes
Adj. R-squared	0.04	0.03	0.02
N	5373	7009	7009

Note. The table reports regression estimates from three alternative approaches: the PSM matched sample (column 1), the Heckman correction (column 2), and the control function approach (column 3). The dependent variable in all specifications is the three-day cumulative market-adjusted abnormal return (*CMAR*). *IMR* denotes the inverse Mills ratio from a logit model predicting the likelihood of selecting a highly narcissistic auditor, and *RESIDUAL* is the residual from regressing *REV_NAR* on firm-level characteristics. The control variables are the same as those used in Equation (5). All other variables are defined in Appendix A. The t-statistics, presented in parentheses, are based on standard errors clustered by firm and year with a finite-sample adjustment. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Appendix

A Definition of variables

Variable	Definition
<i>Variables used in baseline regressions</i>	
<i>CMAR</i>	Three-day cumulative market-adjusted abnormal returns over the (-1,1) window surrounding the annual audit report announcement (in %).
<i>CAR</i>	Three-day cumulative market-model-adjusted abnormal returns over the (-1,1) window surrounding the annual audit report announcement (in %).
<i>REV_NAR</i>	Signature size per character of the review auditor.
<i>ENG_NAR</i>	Signature size per character of the engagement auditor.
<i>SIZE</i>	Natural logarithm of a client firm's market capitalization at the end of the fiscal year corresponding to the annual report.
<i>LEV</i>	Ratio of total liabilities to total assets at the end of the fiscal year (in %).
<i>ROA</i>	Ratio of net income to average total assets at the end of the fiscal year (in %).
<i>MTB</i>	Ratio of shareholder's equity to market capitalization at the end of the fiscal year (in %).
<i>INS</i>	Percentage of total shares held by institutional investors at the end of the fiscal year.
<i>DIV</i>	Indicator variable equal to 1 if a client firm announces a dividend change within the event window, and 0 otherwise.
<i>MA</i>	Indicator variable equal to 1 if a client firm announces a merger or acquisition within the event window, and 0 otherwise.
<i>CTL</i>	Indicator variable equal to 1 if a client firm announces a change in controlling shareholder within the event window, and 0 otherwise.
<i>EXEC</i>	Indicator variable equal to 1 if a client firm announces a change in top executive within the event window, and 0 otherwise.
<i>INDSP</i>	Indicator variable equal to 1 if the review auditor is classified as an industry specialist in the audit year, and 0 otherwise. An auditor qualifies as an industry specialist if the total assets of their audited firms fall within the highest quartile of aggregated total assets for all clients managed by the auditor within that industry.
<i>BIG4</i>	Indicator variable equal to 1 if the client firm is audited by a Big Four audit firm, and 0 otherwise.
<i>TENURE</i>	Natural logarithm of one plus the number of years the review auditor has served the client firm in the audit year.
<i>MAO</i>	Indicator variable equal to 1 if a client firm receives a modified audit opinion in the respective annual report, and 0 otherwise.
<i>Additional control variables</i>	
<i>GCO</i>	Indicator variable equal to 1 if a client firm receives a going-concern opinion in the respective annual report, and 0 otherwise.
<i>FEE</i>	Natural logarithm of the audit fee received by the audit firm in the audit year.
<i>OFFICE</i>	Natural logarithm of the total assets of all clients handled by the audit firm in the audit year.

Variable	Definition
<i>BUSY</i>	Indicator variable equal to 1 if the review auditor is among the top 20% based on the number of audit assignments in the audit year, and 0 otherwise.
<i>FEMALE</i>	Indicator variable equal to 1 if the review auditor is female, and 0 otherwise.
<i>CLIENT</i>	Natural logarithm of the total number of clients handled by the review auditor in the audit year.
<i>PORTFOLIO</i>	Natural logarithm of the total assets of clients handled by the review auditor in the audit year.
<i>Audit independence measures</i>	
<i>CLIP</i>	Indicator variable equal to 1 if a client firm exceeds the industry median in importance within a given year, and 0 otherwise. Client importance is measured as the ratio of the natural logarithm of a client's total assets to the sum of the natural logarithms of total assets for all clients audited by the same audit partner in that year.
<i>NAS</i>	Indicator variable equal to 1 if a client firm pays above the industry median in non-audit fees in a given year, and 0 otherwise. Non-audit service fees are measured as the ratio of a client's non-audit service fees to total audit fees.
<i>UNCHANGE</i>	Indicator variable equal to 1 if the review auditor for a client firm remains the same as in the previous year, and 0 otherwise.
<i>COMBINE</i>	Indicator variable equal to 1 if the composite index score is 2 or higher, and 0 otherwise. The composite index aggregates the values of <i>CLIP</i> , <i>NAS</i> , and <i>UNCHANGE</i> , ranging from 0 to 3, with higher scores indicating a greater threat to auditor independence. A threshold of 2 ensures that <i>COMBINE</i> captures cases where at least two out of three indicators signal a significant threat to auditor independence.
<i>Engagement complexity measures</i>	
<i>CRAT</i>	Indicator variable equal to 1 if a client firm's current assets, scaled by total assets, exceed the industry median in a given year, and 0 otherwise.
<i>SUBS</i>	Indicator variable equal to 1 if a client firm's number of subsidiaries exceeds the industry median in a given year, and 0 otherwise.
<i>NSEG</i>	Indicator variable equal to 1 if a client firm's number of business segments exceeds the industry median in a given year, and 0 otherwise.
<i>COMBINE</i>	Indicator variable equal to 1 if the composite index score is 2 or higher, and 0 otherwise. The composite index aggregates <i>CRAT</i> , <i>SUBS</i> , and <i>NSEG</i> , ranging from 0 to 3, with higher scores indicating greater engagement complexity. A threshold of 2 ensures that <i>COMBINE</i> captures cases where at least two of the three indicators signal higher engagement complexity.
<i>Audit-client negotiations measure</i>	
<i>DELAY</i>	Indicator variable equal to 1 if the length of negotiation, measured as the number of days between the audit report issuance date and the fiscal year-end, exceeds the industry median in a given year, and 0 otherwise.