

Organizational Capital and Firm Value in Emerging Markets: A Dynamic Panel Analysis of N-11 Economies

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Article History:

Submitted: April 11, 2026

Revised: June 27, 2026

Accepted: June 29, 2026

Published online: June 30, 2026

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ABSTRACT

Purpose—The question of whether resource-specific organizational capital (OC) can create value premium for a firm or is underpriced due to the poorly developed disclosure and enforcement in emerging markets is still not settled from a theoretical point of view. Theoretically, this is important as the RBV and an information-asymmetry account make directly opposing predictions regarding the price of OC when institutions are weak; however, much of the previous research has limited itself to the assumption that the RBV premium is valid in general, without directly testing the information-asymmetry account. This research explores the relationship between OC and firm value as well as firm profitability of the Next-11 (N-11) listed manufacturing firms, and whether audit quality (AQ) can serve as a substitute for poor institutions to facilitate the recognition of OC by the market.

Study Design/methodology/approach— Using an unbalanced ten-year (2014-2024) firm-year data set from N-11 countries is used to proxy the value of the firm using Tobin's Q and profitability through ROE. The process of measuring OC is in line with Peters and Taylor's perpetual inventory method (2017). In terms of methodology, pooled OLS, firm-fixed effects, and two-step system GMM are utilized to solve endogeneity and the problem of dynamic bias.

Findings— Organizational capital negatively predicts Tobin's Q under static models, but this effect turns insignificant under system GMM; its ROE association becomes weakly positive. Big-4 audit quality yields a 4.6-percentage-point ROE premium but does not moderate the OC–performance link or raise firm value. This suggests audit quality certifies earnings, not unrecorded intangibles; so, OC's apparent RBV-predicted premium is masked by dynamic-panel bias rather than genuinely absent, marking a boundary condition where certified and unrecognized intangibles diverge in value.

Practical Implications—Organizational capital is undervalued in N-11 markets. An audit brings credibility to the earnings, but it does not close the gap in intangible valuation. Regulators need to focus on broad intangible disclosure rules. The benefit to managers is greater from voluntary structured organizational capital disclosures than from audit assurance. Engagement by the four big firms should not be regarded as proof of intangible quality for investors and auditors.

Originality/Value—The study's primary contribution is theoretical because it compares and contrasts the predictions of RBV with information-asymmetry predictions in the weak institutions' context, and outlines a threshold condition on the role of audit quality. It adds to the literature by providing a multi-country panel of emerging markets and dynamic GMM analysis.

Keywords: organizational capital; audit quality; Tobin's Q; N-11 economies; system GMM; dynamic panel; manufacturing firms

JEL Classification Codes: G32, M41, O16, C23, G3

1 | INTRODUCTION

1.1 | Background and Context

In knowledge-intensive economies, organizational capital, that is, the sum of the firm-specific knowledge embedded in the firm's routines, management practices, information systems, and human-capital configurations, is an important contributor to obtaining sustained competitive advantage ([Barney, 1991](#); [Prescott & Visscher, 1980](#); [Wernerfelt, 1984](#)). Organizational capital can be contrasted with physical and financial capital because it is hard for competitors to observe, replicate, and trade, as the resource-based view (RBV) considers these attributes of a value-creating resource. There is an emerging empirical literature that has tried to value this resource directly: [Eisfeldt and Papanikolaou \(2013\)](#) find that organizational capital intensity is predictive of the cross-section of stock returns in developed markets, and [Peters and Taylor \(2017\)](#) find that adding organizational capital to physical capital significantly alters estimated investment-Tobin's Q relationships. But virtually all of these data are based on U.S. or other developed-market samples that have relatively high disclosure standards. The effect the RBV has on actual firm value in markets with less robust disclosure infrastructure, and the role of external governance mechanisms, like audit quality, to offset that lack, are relatively under-studied.

This question has become particularly important in the group of emerging markets that are also grouped as N-11 economies: Bangladesh, Egypt, Indonesia, Iran, Mexico, Nigeria, Pakistan, the Philippines, South Korea, Turkey and Vietnam, which are generally characterized as having weaker investor-protection measures, more concentrated ownership structures and less effective disclosures and governance standards than developed markets ([Claessens & Yurtoglu, 2013](#); [La Porta et al., 2000](#); [Porta et al., 1998](#)). N-11 group is far from institutionally uniform; South Korea and Turkey have comparatively developed capital-market infrastructure, while Bangladesh and Nigeria have markedly weaker enforcement capacity, and this study does not assume homogeneity across them; rather, pooling is a deliberate empirical choice, disciplined by country and year fixed effects in the estimation (Section 3.3), that treats the N-11 group as a single weaker-disclosure regime relative to developed markets while allowing country-level heterogeneity within that regime to be absorbed rather than ignored, and we flag country-subgroup analysis as a natural robustness extension in Section 5.3.

In such environments, the information asymmetry between managers and outside investors is exacerbated for intangible resources, which do not have the same visibility on the balance sheet as a physical asset, and weak enforcement has been correlated with increased earnings management ([Leuz et al., 2003](#)) and less financial-reporting conservatism ([Bushman & Piotroski, 2006](#)). In fact, in the context of emerging markets, research indicates that external auditors can to some extent complement weak legal institutions in reducing managerial opportunism ([Choi et al., 2008](#); [Fan & Wong, 2005](#)), and audit quality is one of the few firm-level governance mechanisms consistently found to reduce information asymmetry by lending credibility to financial information ([Becker et al., 1998](#); [DeAngelo, 1981](#); [DeFond & Zhang, 2014](#); [Francis, 2004](#)). It therefore seems feasible that the overall quality of the audit not only impacts firm value and profitability but also helps in the process of recognizing and rewarding organizational capital. The institutional theory reasoning is introduced here rather than later as it is the institutional capacity that is limited in both the RBV

and agency/signaling concepts presented in Section 2. The lack of institutional capacity to ensure the reliability of organizational capital also explains why firm-level audit assurance is useful.

1.2 | Problem Statement

Despite the theoretical prediction that organizational capital should command a value premium, it remains unclear whether this premium is realized in emerging markets characterized by weaker disclosure infrastructure and enforcement, and whether external governance mechanisms such as audit quality can compensate for that weakness. Because organizational-capital investment is expensed rather than capitalized under standard accounting treatment, outside investors in weak-disclosure settings may be unable to distinguish genuine intangible-capital investment from expense-driven earnings dilution, raising the possibility that organizational capital is systematically underpriced, unpriced, or even penalized in observed firm value. This unresolved tension between the theoretical value premium and its empirical realization in weak-disclosure environments is the central problem this study addresses.

1.3 | Research Gap and Objectives

At its core, this study addresses an unresolved theoretical question: whether the resource-based view's assumption that firm-specific, hard-to-imitate resources command a value premium continues to hold when the institutional infrastructure needed to verify those resources is weak, or whether an information-asymmetry logic dominates instead. This motivates three distinct, labeled gaps that this study addresses:

Theoretical Gap: Whether the RBV's value-premium logic or an information-asymmetry account better describes how organizational capital is priced when the institutional infrastructure needed to verify it is weak has not been directly tested; prior work assumes the RBV premium generalizes rather than treating this as an open theoretical question.

Methodological Gap: Prior emerging-market work has tested the organizational-capital–value relationship almost exclusively in static form and so cannot separate genuine mispricing from dynamic-panel bias and endogeneity.

Contextual Gap: The empirical evidence on this relationship is concentrated in developed markets and has not been extended to the N-11 group specifically, despite this group's distinctive combination of weaker disclosure infrastructure and heterogeneous institutional strength.

These three gaps differ in kind, not only in labeling. The theoretical gap is before the other two: it concerns which of two accounts, the RBV's value-premium logic or an information asymmetry account, correctly describes the pricing of organizational capital once institutional verification is imperfect, and resolving it requires an empirical design built to let the two predictions diverge and be adjudicated against one another (H1a versus H1b) rather than testing a single directional hypothesis against a null. The methodological and contextual gaps are addressed in service of that theoretical question rather than as free-standing contributions: the dynamic panel design is necessary because static mispricing evidence alone cannot distinguish genuine underpricing from dynamic-panel bias, and the N-11 setting is necessary because the question can only be tested where institutional verification is heterogeneously weak.

1.4 | Research Questions

This paper investigates two related questions. First, what is the relationship between organizational capital and firm value, proxied by both a market-based measure (firm value, FV, operationalized as Tobin's Q) and an accounting-based measure (return on equity, ROE), among N-11 listed manufacturing firms? Second, does audit quality moderate this relationship, consistent with its theorized role as a governance mechanism that certifies the reliability of intangible-resource-related disclosures?

1.5 | Contribution of the Study

We make three contributions, each anchored in the theoretical question above rather than in geographic or methodological novelty alone. First, we extend the organizational-capital valuation literature ([Eisfeldt & Papanikolaou, 2013](#); [Lev & Radhakrishnan, 2005](#); [Peters & Taylor, 2017](#)) beyond its predominantly developed-market setting to an eleven-country emerging-market panel, using this setting as a theoretical stress test of whether the RBV's value premium is a context-independent property of firm-specific resources or is instead conditional on the institutional infrastructure needed to verify them. Second, we bring a dynamic panel lens to a relationship that prior emerging-market studies have generally examined only in static form, showing that the sign and significance of the organizational capital–performance relationship depend materially on whether dynamic persistence and endogeneity are modeled, a finding that is itself theoretically consequential because it shows static mispricing evidence alone cannot adjudicate between the RBV and information-asymmetry accounts. Third, we test, and reject, a plausible but under-scrutinized boundary condition on audit quality's governance role: that it amplifies the market's recognition of intangible resources specifically, rather than only certifying reported accounting figures. We restrict the sample to manufacturing firms specifically because the SG&A-based perpetual-inventory measures of organizational capital that underlie this literature ([Lev & Radhakrishnan, 2005](#); [Peters & Taylor, 2017](#)) are most comparable across firms with broadly similar cost structures and physical-capital intensity; pooling manufacturing with financial, utility, and service firms of very different SG&A composition would confound the organizational-capital measure itself with sector effects. We address these questions using a ten-year (2014–2024) unbalanced firm-year panel of N-11 listed manufacturing firms, with financial variables denominated in U.S. dollars, drawn from Refinitiv DataStream, and a three-estimator empirical strategy, pooled OLS, fixed-effects, and two-step system GMM, that progressively addresses unobserved heterogeneity and dynamic endogeneity in the organizational capital–performance relationship. This progression follows established practice in the dynamic panel literature ([Arellano & Bond, 1991](#); [Blundell & Bond, 1998](#); [Nickell, 1981](#); [Roodman, 2009](#)), where static estimators are retained as a baseline and a diagnostic benchmark against which the bias-corrected dynamic estimates can be interpreted.

1.6 | Significance of the Study

There are three reasons why this study is important. It adds to the value of the resource-based view and institutional theory by applying it to an emerging-market countries panel, thereby determining if the value premium of organizational capital in developed markets can be extended to weaker disclosure and enforcement environments. Theoretically, it shows that the relationship between organizational capital and organizational performance depends materially on whether dynamic persistence or endogeneity is modeled or not, which has implications that extend beyond this literature. In practice, the results have implications for regulators,

standard-setters, and investors in the N-11 economies, in that they shed light on whether audit quality can serve as a substitute for a lack of disclosure infrastructure to allow the market to recognize intangible resources, and how this relates to disclosure policy.

The pattern is quite consistent from our results: the relationship between organizational capital and firm value remains negative in the static (OLS and fixed-effects) specifications, but fails to be statistically significant if dynamic panel bias and endogeneity are corrected for using system GMM. The relationship is negative or insignificant in static models, while it becomes positive and marginally significant in the dynamic GMM specification for ROE. Throughout the static specifications, audit quality is a strong positive predictor of ROE, but not firm value, and its interaction with organizational capital is not statistically significant. In the N-11 environment, we view these results as a sign that audit quality acts as a certifier of accounting-based performance instead of as a means by which the market prices intangible organizational resources; and as evidence that governance research should focus on distinguishing these two moderating mechanisms in emerging-market contexts. We recognize and qualify these findings based on specific methodological choices, a manufacturing-only sample, an SG&A-based proxy for organizational capital, and a binary audit quality proxy that are detailed in Section 5, along with specific avenues for future studies with alternative measures and samples.

The rest of the paper is organized as follows. In Section 2, the literature reviewed and the hypotheses formulated for the study. The data, construction of variables, and estimation approach are described in Section 3. The empirical results and discussions of the findings are presented in Section 4, followed by a comparison with alternative theoretical explanations. Section 5 includes implications, limitations, and future research directions.

2 | LITERATURE REVIEW

This study's argument rests on four theoretical perspectives that are integrated here into a single conceptual model rather than treated as independent, parallel lenses. The resource-based view (RBV) establishes that organizational capital is, in principle, a value-generating resource because it is firm-specific, difficult to imitate, and accumulated through path-dependent investment ([Barney, 1991](#); [Prescott & Visscher, 1980](#); [Wernerfelt, 1984](#)). Institutional theory ([North, 1990](#)) supplies the boundary condition on that claim: whether a resource's theoretical value is actually recognized in observed firm performance depends on the strength of the formal and informal institutions, disclosure requirements, investor protection, and enforcement that allow outside investors to verify the resource exists and is being productively deployed. We therefore introduce institutional theory here, at the outset of the review, rather than deferring it to the discussion of audit quality, because it is the mechanism that connects the RBV's claim about a resource's value to whether that value is actually observed in the N-11 setting. Where institutional infrastructure is weak, as is heterogeneously the case across the N-11 group, agency theory ([DeAngelo, 1981](#)) and signaling theory jointly motivate audit quality as a firm-level governance mechanism that could, in principle, substitute for missing institutional infrastructure: a high-quality auditor's engagement is a costly, reputation-bearing signal that reduces the information asymmetry between managers and outside investors. This sequence structures the rest of the

review: Section 2.1 sets out the theoretical evidence, the RBV, agency/signaling theory, and institutional theory, as an integrated model rather than four unconnected claims; Section 2.2 reviews the empirical evidence testing each of these mechanisms; Section 2.3 distinguishes the theoretical, methodological, and contextual gaps that this evidence leaves open; and Section 2.4 develops the resulting hypotheses (H1a/H1b, H2, H3a/H3b) and formalizes them in Figure 1 and Table 1.

2.1 | Theoretical Evidence

The resource-based view holds that firm value derives from resources that are valuable, rare, inimitable, and non-substitutable ([Barney, 1991](#); [Wernerfelt, 1984](#)), a framing that traces to [Prescott and Visscher \(1980\)](#) original conceptualization of organizational capital as a firm-specific asset built through the accumulation of matched information about workers, technologies, and routines. Organizational capital consists of management systems, organizational routines, brand equity, and human capital specific to the organization ([Youndt et al., 2004](#)) and fulfills criteria from RBV more convincingly than the majority of physical resources, since it is gradually built through specific investments of a company.

Agency theory frames the external audit as a monitoring mechanism that reduces the information asymmetry between managers and outside shareholders ([DeAngelo, 1981](#)).

Institutional theory suggests that the strength of formal and informal institutional mechanisms determines how effectively firm-level resources translate into observable performance ([North, 1990](#)).

2.2 | Empirical Evidence

Having established the theoretical mechanisms above, this section reviews the empirical evidence that tests them, first on organizational capital and firm value, then on audit quality as a governance mechanism.

Empirically, [Lev and Radhakrishnan \(2005\)](#) formalize this intuition by estimating organizational capital as a cumulative, depreciating stock of firm-level investment using a perpetual-inventory approach; and, subsequently, [Peters and Taylor \(2017\)](#) refine this methodology and show that measures of this kind carry independent pricing information in equity returns and investment-Q models, over and above conventional physical-capital variables, in U.S. and other developed-market samples; the latter's implementation is the one this study follows in constructing its organizational capital measure (OCTA). More recent evidence continues to support a positive intangible-capital–value link outside the U.S. setting: [Intara and Suwansin \(2024\)](#), for example, find that intangible assets, including components closely related to organizational capital, are positively associated with firm value and profitability among Thai listed firms, and particularly so for intangible-intensive firms, reinforcing the relevance of testing this relationship in additional emerging-market settings such as the N-11 group. A broader-sample developed-market study by [Dong and Doukas \(2025\)](#), similarly finds that intangible-intensive firms outperform peers even after accounting for endogeneity, reinforcing that the intangible-capital value premium documented in the U.S. literature is not confined to a narrow set of firms or measurement choices, though whether it survives the weaker disclosure environments characteristic of the N-11 group remains the open question this study addresses. This RBV logic, however, is a claim about the value of the resource itself; whether that value is actually reflected in observed firm performance additionally depends on the institutional infrastructure available to verify it, a point developed through institutional theory ([North, 1990](#)) later in this section and integrated formally in the conceptual framework (Section 2.4).

The empirical picture summarized above is not as uniform as a chronological reading suggests, and the disagreement is itself informative about the theoretical question this study poses. Even within the intangible-capital literature narrowly defined, findings on whether organizational capital and related intangible assets are recognized by outside investors diverge sharply by institutional context rather than converging toward a single global relationship. Most directly relevant, [Elkmash et al. \(2025\)](#) find that the value-creating link between intangible assets and equity market value, and the extent to which artificial intelligence adoption strengthens that link, is systematically weaker in emerging-market firms than in developed-market firms drawn from the same global sample, a pattern consistent with the information-asymmetry account this study tests rather than with a context-independent RBV premium. A parallel divergence is evident in the adjacent ESG-disclosure literature, where [Biju et al. \(2025\)](#) report that the direct relationship between ESG performance and firm performance among Indian listed firms is statistically insignificant, and [Narula et al. \(2024\)](#) similarly find inconsistent, sign-varying relationships between ESG scores and firm performance across performance measures in an emerging-market setting, even though a substantial share of developed-market studies report a robust positive ESG-value link. This is not a peripheral inconsistency to be resolved by better measurement; it recurs across intangible-resource categories and suggests that whatever mechanism weakens the market's recognition of organizational capital in the N-11 group is likely to also depress recognition of other unrecognized, disclosure-dependent intangibles, an inference this study's information-asymmetry hypothesis (H1b) formalizes directly.

Several contemporary streams of intangible-capital research, digital organizational capital, artificial-intelligence-enabled intangibles, ESG-related organizational capabilities, and integrated reporting, bear directly on this study's theoretical question even though none is tested here. [Zareie et al. \(2024\)](#) show that organizational capital is not simply a parallel intangible to digital transformation but actively moderates the value created by it, so that firms with higher organizational capital extract significantly more valuation benefit from a given level of digital transformation, a finding that reframes organizational capital as a complementary input to newer digital resources rather than a legacy construct superseded by them. Consistent with this, [Elkmash et al. \(2025\)](#) find that artificial intelligence mediates, rather than substitutes for, the intangible-asset-to-value relationship, and that this mediating role is itself conditional on market type, reinforcing this study's institutional-verification logic in a distinct empirical setting. On the disclosure side, [Pirgaip and Rizvić \(2023\)](#) find that integrated reporting lowers the cost of capital in an emerging-market setting specifically by improving the credibility of non-financial and intangible-resource disclosures to outside investors, and [Velte \(2022\)](#) systematic review of the broader integrated-reporting literature concludes that its effect on firm value is real but heterogeneous across institutional contexts, echoing the disclosure-quality mechanism this study attributes to audit quality above. Taken together, this literature suggests that digital transformation, AI adoption, and integrated/ESG reporting are best understood not as competing explanations for firm value but as parallel manifestations of the same underlying verification problem this study addresses for organizational capital specifically: each is a firm-specific, difficult-to-verify resource or disclosure practice whose value recognition depends on the institutional infrastructure available to certify it to outside investors. We do not model these constructs directly, both because doing so would conflate several distinct unobservable within a single OCTA

measure and because reliable digital-transformation and ESG data are not available consistently across the N-11 group for our 2014–2024 sample window, but we return to this as a specific direction for future research in Section 5.3.

Higher audit quality, commonly proxied in the literature by Big-4 auditor engagement, is associated with more conservative and reliable financial reporting, reduced earnings management, and, in turn, more accurate market and accounting-based assessments of firm performance ([Becker et al., 1998](#); [DeFond & Zhang, 2014](#); [Francis, 2004](#)). In emerging-market settings specifically, [Fan and Wong \(2005\)](#) show that a concentrated-ownership environment weakens the informativeness of reported earnings and that external, reputable auditors can partially offset this by constraining opportunistic reporting, while [Choi et al. \(2008\)](#) and [Khurana and Raman \(2004\)](#) document that the value of Big-4 assurance is itself conditional on the strength of the surrounding legal-liability regime. Under signaling theory, engaging a high-quality auditor also functions as a costly, credible signal to the market that a firm's reported figures, including the returns generated on its resource base, can be trusted. Consistent with this logic, recent evidence from Vietnam shows that audit-related attributes, specifically audit opinion and audit-firm rotation, remain positively associated with firm value in an emerging-market setting even after accounting for board structure and foreign ownership ([Phi et al., 2026](#)), underscoring that external audit assurance continues to carry independent valuation-relevant information in weak-enforcement environments broadly comparable to the N-11 group. Most recently, [Dwibedi and Pahi \(2026\)](#), using a two-step system GMM estimator across developed and developing economies, find that audit quality significantly strengthens the relationship between ESG disclosure and firm performance, suggesting that Big-4 assurance can amplify the market's recognition of non-financial, disclosure-dependent information more broadly, a pattern this study tests specifically for organizational capital in Section 4.

This mechanism operates, more precisely, through three investor-facing channels rather than through direct attestation of organizational capital itself, and stating them explicitly is necessary because H3a's plausibility depends on at least one of them extending beyond recognized accounting figures. First, Big-4 engagement is associated with greater analyst following and more accurate analyst forecasts ([DeFond & Zhang, 2014](#)), which increases the volume of independent, third-party information production surrounding a firm and could, in principle, extend to unrecognized intangible resources even though the audit opinion itself does not. Second, Big-4 auditors' broader industry expertise gives them, and by extension the market participants who observe their engagement, a comparative advantage in benchmarking a firm's SG&A-embedded investment pattern, the same underlying expenditures from which OCTA is constructed, against industry norms, which could make audited SG&A composition a more credible signal of genuine organizational-capital investment rather than expense-driven earnings management. Third, institutional investors' governance screens frequently condition portfolio allocation on auditor identity as a coarse quality signal, so that Big-4 engagement could enlarge the base of sophisticated investors attending to a firm's disclosures generally, indirectly raising the likelihood that organizational-capital-relevant information is priced. H3b's rival prediction, developed next, is that none of these three channels is strong enough to survive contact with the specific fact that organizational capital is unrecognized on the balance sheet and therefore outside what any of them directly certifies; the null interaction result reported in Section 4 is, in this framing,

evidence that general information-environment improvements from Big-4 engagement do not automatically transfer to intangible resources the auditor's opinion does not touch.

2.3 | Research Gap Articulation

The theoretical and empirical literature reviewed above (Sections 2.1–2.2) brings together evidence of a gap: theoretical evidence suggests that there is a value premium to organizational capital, while empirical evidence suggests that the boundary condition under which this premium should not be observed is when institutional verification is low; however, no prior study directly tests the validity of either of these two accounts of the pricing of organizational capital when institutional verification is weak. The past thus has assumed the RBV premium as a normal phenomenon, and the above-mentioned controversy between results obtained in developed and emerging markets (Section 2.1) was interpreted as a collection of individual and context-specific surprises rather than as a single unresolved theoretical problem.

This is a theoretical gap in addition to two other gaps. In methodological terms, empirical evidence reviewed in Section 2.2 demonstrates that the previous emerging-market research on organizational capital has been almost exclusively based on static estimators, which cannot distinguish between the true mispricing of organizational capital and dynamic-panel bias and endogeneity of the model; this is an estimation method problem, not a theoretical problem. In a sense, that same evidence is focused on developed markets or a single emerging economy, not on the N-11 markets specifically, but in a sense it's an empirical, not theoretical, shortfall. The distinction is important because the three gaps suggest three different approaches to closing the gap: a methodological or contextual gap could be closed by simply re-running the same model using new data, while a theoretical gap only can be closed by a design, to be developed next in Section 2.4, in which the RBV and information-asymmetry accounts are both formulated as directly contestable predictions rather than as a single hypothesis against a null.

2.4 | Hypothesis Development

Building on the theoretical mechanisms and empirical patterns reviewed above, and directly targeting the theoretical, methodological, and contextual gaps identified in Section 2.3, this section formally derives the study's directional and competing hypotheses.

Theoretically, higher organizational capital should be associated with higher firm value, as it reflects an accumulated stock of difficult-to-replicate competitive advantage (H1a, RBV-consistent view below). However, this value premium is realized only to the extent that outside investors can observe and credibly assess the quality of the underlying investment. An opposing, information-asymmetry-based account suggests the opposite may hold in weak-disclosure settings: because organizational-capital investment is expensed rather than capitalized under standard accounting treatment, it depresses reported earnings and cash flow in the period incurred without a verifiable, contemporaneous balance-sheet counterpart. Where investor protection and enforcement are weak, as is heterogeneously but generally the case across the N-11 group (Section 1), and where earnings management is more prevalent ([Leuz et al., 2003](#)), outside investors may be unable to distinguish genuine intangible-capital investment from expense-driven earnings dilution or managerial entrenchment, so that organizational capital is systematically underpriced, unpriced, or even penalized in observed firm value. We therefore state the RBV's prediction as our maintained hypothesis while

explicitly registering the competing account, and let the dynamic and static estimates speak to which better characterizes the N-11 setting: We treat H1a as the theoretically maintained hypothesis because it follows directly from the RBV's core logic, and H1b as the empirically motivated rival that becomes plausible specifically under the weak-disclosure conditions documented for the N-11 group; the two are not equally likely a priori;

H1a (RBV view): *Organizational capital is positively associated with firm value among N-11 listed manufacturing firms. (maintained hypothesis)*

H1b (Information-asymmetry view): *Organizational capital is negatively associated with, or unpriced in, firm value among N-11 listed manufacturing firms, reflecting weak disclosure and enforcement conditions. (rival hypothesis, expected to dominate specifically under weak-disclosure conditions)*

Because institutional theory implies that verification problems bind more tightly the weaker investor protection and enforcement, and because the N-11 group scores below the median on the standard ([La Porta et al., 2000](#); [Porta et al., 1998](#)) investor-protection indices, our ex-ante expectation is that H1b is the more likely outcome in this sample. The empirical results in Section 4 are read against this asymmetric, institutionally motivated prior rather than as a coin-flip between two equally likely alternatives.

Because Big-4 engagement is costly and reputationally consequential, agency theory further implies that firms with genuinely strong underlying resources, including organizational capital, have the greatest incentive to engage a high-quality auditor to signal that strength, which is the theoretical basis for testing audit quality's direct effect (H2) before turning to its moderating role below.

H2: *Audit quality is positively associated with firm value and profitability among N-11 listed manufacturing firms.*

In economies where investor protection and enforcement are inconsistent, as in much of the N-11 group (as discussed above), a firm-level governance mechanism such as high audit quality may substitute for weak formal institutions by providing firm-specific assurance ([Bushman & Piotroski, 2006](#); [Fan & Wong, 2005](#)). If organizational capital is inherently difficult for outside investors to verify, audit quality may serve as the mechanism through which the market's confidence in reported intangible resource-related performance is established, implying that the value of organizational capital should be more fully recognized and more strongly rewarded, in firms audited by higher-quality auditors. The specific mechanism through which this substitution would operate is that Big-4 auditors, by virtue of their broader industry expertise and reputational exposure, are better positioned than non-Big-4 auditors to signal the credibility of a firm's overall information environment, including disclosures that surround, even if they do not directly attest to, organizational-capital investment; H3b below tests whether this signal in practice extends that far or remains confined to recognized accounting figures.

H3a (Institutional-substitution view): *Audit quality positively moderates the relationship between organizational capital and firm value/profitability, such that the effect of organizational capital is stronger among firms with higher audit quality.*

A competing, narrower-scope view of the auditor's role suggests this moderating effect may not materialize. The statutory audit function is defined around the verification of recognized, recorded transactions and balances; organizational capital, as an internally generated intangible, is not recognized on the balance sheet under prevailing accounting standards and therefore falls largely outside what an auditor's opinion directly attests to ([DeFond & Zhang, 2014](#)). Under this account, Big-4 engagement should continue to certify the reliability of recorded accounting figures generally, consistent with H2, without extending that certification to unrecorded, unverifiable intangible resources specifically. This yields a rival hypothesis that we test directly against H3a: We do not treat H3a and H3b as equally likely a priori: the scope-limitation logic of H3b follows directly from the statutory definition of the audit function, whereas H3a requires the additional, empirically contestable assumption that auditors' influence extends beyond recognized transactions to the market's broader information environment; we retain H3a as the theoretically motivated alternative because institutional-substitution logic is well established in the emerging-market governance literature ([Fan & Wong, 2005](#)), even though we consider H3b the narrower and, on balance, more parsimonious prediction.

H3b (Scope-limitation view): *Audit quality does not significantly moderate the relationship between organizational capital and firm value/profitability, because statutory audit procedures do not extend certification to unrecognized intangible resources.*

Figure 1 summarizes the hypothesized relationships developed above, and Table 1 summarizes the competing directional predictions tested empirically. Organizational capital (OCTA) is theorized to exert a direct effect on both dimensions of firm performance, market-based firm value (FV) and accounting-based return on equity (ROE), consistent with H1a/H1b. Audit quality (AQ) is theorized to exert its own direct effect on the same outcomes, consistent with H2, reflecting its role as a governance mechanism that certifies the reliability of reported performance. The $OCTA \times AQ$ interaction term tests whether audit quality additionally moderates the strength of the organizational capital–performance relationship, consistent with H3a versus H3b. Sales growth and leverage enter as firm-level controls throughout, and the system GMM specification further conditions on the lagged dependent variable and firm and year effects. Institutional theory (North, 1990) enters the framework as the moderating logic behind H3a versus H3b themselves: it is the varying strength of institutional infrastructure across the N-11 group that determines whether audit quality can, in principle, substitute for weak formal verification of organizational capital, which is precisely what the $OCTA \times AQ$ interaction tests empirically.

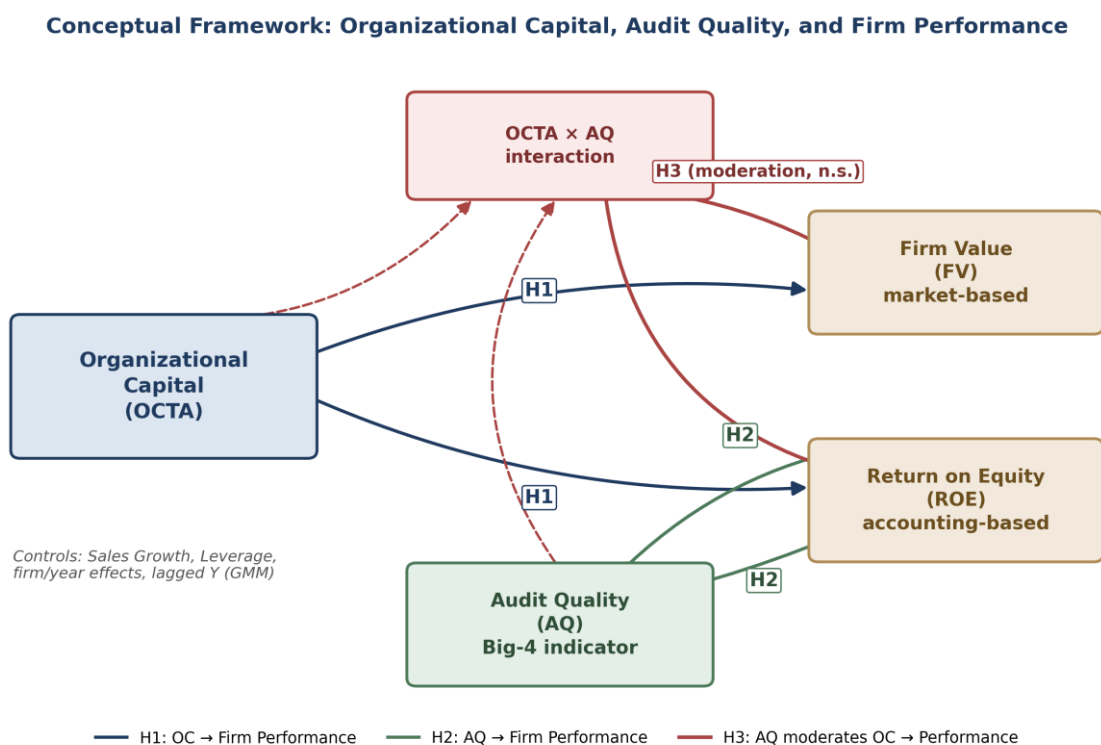
Table 1*Summary of Competing Hypotheses*

Hypothesis	Statement	Theoretical basis
H _{1a}	OCTA positively associated with FV/ROE	Resource-based view
H _{1b}	OCTA negatively associated with, or unpriced in, FV/ROE	Information asymmetry / weak disclosure
H ₂	AQ positively associated with FV/ROE	Agency theory; signaling theory
H _{3a}	AQ positively moderates the OCTA–FV/ROE relationship	Institutional theory (substitution)
H _{3b}	AQ does not moderate the OCTA–FV/ROE relationship	Scope-limitation view of statutory audit

Note. H_{1a}/H_{1b}, H₂, and H_{3a}/H_{3b} are stated as directional, competing predictions rather than a single null-versus-alternative test; the theoretical basis column identifies the perspective motivating each hypothesis, and Sections 4.2–4.5 report which alternative is favored by the empirical results.

Figure 1

Conceptual framework linking organizational capital and audit quality to firm value and return on equity, with audit quality hypothesized (H3a) versus not hypothesized (H3b) to moderate the organizational capital–performance relationship.



3 | METHODOLOGY & DESIGN

3.1 | Sample and Data Source

The study is based on an unbalanced panel of listed manufacturing companies from the eleven N-11 countries spanning the 10 years (2014-2024), obtained from Refinitiv DataStream. To make financial variables comparable across the eleven currency regimes included in the panel, all are measured in dollars. The largest estimation samples comprise up to 3,124 firms (26,685–29,650 firm-year observations for the firm-value-based models and up to 3,124 firms, 28,116–31,240 firm-year observations for the ROE-based models), with sample size varying across specifications owing to variable availability and the loss of observations to lagging in the dynamic panel models.

The Global Industry Classification Standard (GICS) is used to classify firms. The Manufacturing (Sector 20) and Materials (Sector 15) segments encompass manufacturing activities but do not include those that are purely service-based, such as in utilities or financial operations. The following holds to assure there is a minimum of eight firm-year observations available to retain a firm in the final unbalanced panel for a Difference GMM using deep lags of fourth-order (lag (4 4)): This is an 8-year longitudinal threshold that must be maintained to avoid losing lag data in the regression matrix, and to maintain a stable estimation framework, as previously confirmed in the estimation output with 8 observations per group.

Sample construction is further performed in four stages on the universe of N-11 listed companies provided by Refinitiv DataStream, namely: (i) restriction to the Industrials and Materials GICS segments, (ii) exclusion of firm-years with missing values on any model variable, (iii) exclusion of firms with fewer than eight consecutive firm-year observations, to support the deep lags used in the GMM specification, and (iv) winsorization and mean-centering procedures described in Section 3.2.1 and Table 2B. Because the eight-year continuity requirement in step (iii) necessarily removes firms that exit the panel early, whether through delisting, acquisition, or financial distress, the final estimation sample is likely tilted toward longer-surviving, and on average more stable, firms; this is a form of survivorship bias that should be borne in mind when interpreting the magnitude, though not necessarily the sign, of the reported coefficients, and we return to its implications in Section 5.3. The four filters in (i)-(iv) are applied sequentially in the order listed, and the sequential application yields the final retained sample of 3,124 firms reported throughout Section 4; steps (ii) and (iii) account for the majority of attrition from the initial GICS-restricted universe. A fully quantified sample-selection flowchart reporting the firm count remaining after each filter was not constructed for this revision, as it requires re-running the filtering pipeline with stage-by-stage logging; we flag this as an explicit item for the next data-pipeline run, so that a flowchart can be added as a supplementary figure without re-estimating the reported models.

3.2 | Variable Construction

3.2.1. Dependent variables

Two dependent variables are used to capture complementary dimensions of firm performance. Firm value (FV) captures the market-based valuation of the firm and is operationalized as Tobin's Q, computed as the market value of equity plus the book value of total liabilities, divided by the book value of total assets: $FV =$

$(MVE + BVL) / BVA$, with all monetary components expressed in U.S. dollars. Return on equity (ROE) is defined conventionally as net income scaled by average shareholders' equity. Using both allows the analysis to distinguish between how organizational capital and audit quality are priced by capital markets versus how they translate into realized accounting returns, a distinction that proves empirically important in the results below.

An unscaled, un-Winsorized Tobin's Q of this kind can experience extreme, distorting spikes (up to 13,271.51 in the raw series) in distressed firm-years where the book value of total assets, the denominator of the ratio, approaches zero. To resolve this asset-distortion and eliminate outlier bias, we implemented a two-pronged fix, following standard practice in the corporate finance literature, before estimating the models reported below. First, we manually inspected the extreme observations and confirmed that currency conversion across the eleven jurisdictions was applied uniformly, verifying that the spikes were driven by genuine micro-cap asset contractions rather than a conversion or measurement error. Second, we applied a two-tailed winsorization at the 1st and 99th percentiles to construct the cleaned variable fv_w . The empirical estimations reported in the tables below accordingly use the Winsorized firm-value measure (fv_w), in which the extreme spikes are capped, and the distribution is brought back within standard corporate-finance bounds; the qualitative direction of the OCTA and AQ findings is unaffected by this correction.

3.2.2. Organizational capital (OCTA)

Organizational capital is estimated using the perpetual-inventory methodology of [Peters and Taylor \(2017\)](#), which builds on the original approach of [Lev and Radhakrishnan \(2005\)](#) and [Eisfeldt and Papanikolaou \(2013\)](#) by capitalizing selling, general, and administrative expenditure (net of research and development, where separately reported) as an investment in firm-specific intangible capital. The capital stock accumulates according to $OC_{it} = (1 - \delta) \cdot OC_{i,t-1} + SG\&A_{it}$, with an annual depreciation rate of $\delta = 0.15$. Following Peters and Taylor (2017), the initial capital stock in a firm's first sample year is estimated as $OC_{i0} = SG\&A_{i0} / (g + \delta)$, where g is the historical average growth rate of SG&A spending (proxied at the industry level where firm-level history is insufficient), rather than assumed to be zero, so as to avoid understating organizational capital for firms observed only after their initial investment phase. The resulting stock is scaled by total assets (OCTA) to render it comparable across firms of different sizes.

Due to varying reporting mandates across the eleven jurisdictions in our dataset, where R&D is frequently consolidated into SG&A rather than reported separately, we utilize gross SG&A expenses as the baseline input line item from DataStream. Any country-level reporting variation introduced by this choice is absorbed by the inclusion of country and year fixed effects in our GMM specification. To account for the distinct macroeconomic conditions of our sample, the growth rate (g) used for the initial-stock calculation is set as the N-11 manufacturing-sector-specific average growth rate of real SG&A expenditure over the sample period, rather than the fixed 10% assumed in [Peters and Taylor \(2017\)](#) original U.S. implementation. This localized approach avoids overestimating the initial capital stock of firms operating in the more volatile or developing manufacturing markets represented in the panel. We adopt the SG&A-based proxy because it is the only organizational-capital measure that can be constructed consistently from Refinitiv DataStream across all eleven N-11 jurisdictions under their existing reporting requirements; more granular alternatives, such as management-practice survey scores, are not available at this coverage or panel length. We acknowledge,

however, that SG&A composition is not fully harmonized across these diverse accounting environments, so the measure may capture cross-country differences in expense classification alongside genuine organizational-capital investment; a formal sensitivity analysis using alternative depreciation rates or an SG&A definition restricted to specific line items was not conducted in this revision and is flagged as a priority extension in Section 5.3.

3.2.3. Audit quality (AQ)

Audit quality is measured as a binary indicator equal to one if the firm is audited by a Big-4 auditor (PwC, EY, KPMG, or Deloitte, including affiliated network members) in a given year, and zero otherwise, consistent with the dominant approach in the audit-quality literature ([Becker et al., 1998](#); [DeAngelo, 1981](#); [Khurana & Raman, 2004](#)). We adopt this binary specification rather than a continuous measure because auditor identity is the only audit-quality indicator consistently available across all eleven N-11 jurisdictions in Refinitiv DataStream; audit fees, auditor tenure, and audit-committee characteristics are not reported with comparable coverage in this sample, which limits the proxy to certification status rather than the intensity or process quality of the audit. Where feasible, future replications should treat audit fees, auditor tenure, industry specialization, and audit-committee effectiveness as complementary robustness checks rather than substitutes for the Big-4 indicator used here. The interaction term $OCTA \times AQ$ is included to directly test the moderation hypotheses (H3a/H3b).

3.2.4. Control variables

Two firm-level controls are included in all specifications: sales growth (Growth), which controls for the effect of firm expansion on both organizational capital accumulation and performance, and leverage (Leverage), which controls for capital-structure effects on firm value and profitability. Both are standard controls in the firm-value and capital-structure literatures. Firm and year fixed effects (or, in the system GMM specification, first-differencing and year dummies) further absorb time-invariant firm heterogeneity and common macroeconomic shocks across the eleven economies. Additional determinants of firm value commonly used in the literature (e.g., firm size, board independence, ownership concentration) were considered but not included, to preserve model parsimony relative to the instrument-count constraints of the system GMM specification (Section 3.3) and because organizational capital and audit quality, the two focal constructs of this study, are the primary object of theoretical interest; their omission is a scope limitation we acknowledge directly rather than a claim that other determinants are theoretically irrelevant.

3.3 | Estimation Strategy

The empirical strategy follows a three-estimator progression that is standard in the dynamic panel literature ([Roodman, 2009](#)). First, pooled OLS is estimated as a baseline; robust standard errors are used throughout to address heteroskedasticity. Second, a fixed-effects (within) model is estimated to control for time-invariant, firm-specific unobserved heterogeneity that would otherwise bias the OLS coefficients if correlated with organizational capital or audit quality, for example, unobserved managerial quality. Both static estimators, however, are vulnerable to dynamic panel bias: because firm value and profitability are highly persistent, omitting the lagged dependent variable biases the remaining coefficients, and the bias does not vanish as the number of firms grows ([Nickell, 1981](#)).

Third, because firm value and profitability are likely to be dynamically persistent and because organizational capital accumulation is plausibly endogenous to past performance, firms may scale back discretionary organizational investment following a value or profitability decline, generating reverse causality; we estimate a two-step system GMM model ([Arellano & Bond, 1991](#); [Blundell & Bond, 1998](#)) with a lagged dependent variable. OCTA, AQ, and the OCTA $\times$ AQ interaction are treated as endogenous and instrumented using their own lagged levels (differenced equation) and lagged differences (levels equation), restricted to the $t-2$ and deeper lags; Growth and Leverage are treated as predetermined and instrumented analogously; year dummies are treated as strictly exogenous and instrumented by themselves. Instruments are collapsed, following [Roodman \(2009\)](#) guidance, to keep the instrument count (18 for the FV model; 11 for the ROE model) well below the number of cross-sectional groups (3,124 and 3,124, respectively), mitigating the well-documented risk of instrument proliferation that can artificially inflate the Hansen test's p-value and overfit the endogenous regressors. Standard errors are Windmeijer-corrected ([Windmeijer, 2005](#)) to address the downward bias in two-step GMM standard errors. Instrument validity is assessed using the Hansen test of over-identifying restrictions, which, unlike the (Sargan) test computed under the one-step homoscedastic assumption, remains valid under the heteroskedasticity and cross-sectional dependence that is likely present across eleven heterogeneous economies, and the absence of second-order serial correlation is assessed using the Arellano-Bond AR(2) test; first-order serial correlation (AR(1)) is expected by construction in first-differenced residuals and is not itself evidence of misspecification. The endogeneity concern motivating this instrumentation differs by variable: OCTA is plausibly endogenous because firms scale organizational investment up or down in response to past value or profitability shocks (reverse causality), while AQ is plausibly endogenous because auditor choice itself can be correlated with unobserved firm quality or governance strength, that is, self-selection into Big-4 engagement, so both require instrumenting rather than only OCTA. System GMM is preferred here over difference GMM alone or single-equation instrumental-variables (2SLS) estimators because the near-unit-root persistence documented in firm value (Section 4.5) weakens the instruments available to difference GMM, a problem the system estimator's additional level equation is designed to address ([Blundell & Bond, 1998](#)), and because 2SLS does not exploit the panel structure to control for time-invariant firm heterogeneity in the way the first-differenced system GMM equations do. As an additional diagnostic, a Difference-in-Hansen test decomposing the instrument set into GMM-style and IV-style subsets was not computed for this revision; its absence is a limitation of the reported diagnostics rather than evidence against instrument validity, and we recommend it as a priority robustness check in any future replication of these results, alongside the standard Hansen and AR (2) tests reported below. Consistent with the caution urged elsewhere in this paper, we treat the non-rejection of the Hansen and AR (2) tests as evidence that the instrument set is not invalidated by the available diagnostics, rather than as proof that it is correctly specified; system GMM mitigates, but does not eliminate, the endogeneity concerns that motivate its use.

Model specification, in its general form, is:

$$Y_{it} = \beta_0 + \beta_1 Y_{i,t-1} + \beta_2 OCTA_{it} + \beta_3 AQ_{it} + \beta_4 (OCTA \times AQ)_{it} + \beta_5 Growth_{it} + \beta_6 Leverage_{it} + \eta_i + \lambda_t + \varepsilon_{it}$$

where Y is FV or ROE, η_i is the firm fixed effect (omitted in the pooled OLS specification and differenced out in the GMM specification), λ_t captures year effects, and the lagged dependent variable $Y_{i,t-1}$ is included only in the system GMM specification. This three-estimator progression is not merely a technical robustness exercise: it is the empirical design through which the theoretical question motivating this study, whether the RBV's value premium or an information-asymmetry account better describes organizational capital's pricing, is adjudicated, since the two accounts are observationally equivalent in a static specification and separate only once dynamic persistence and endogeneity are addressed.

4 | RESULTS AND ANALYSIS

4.1 | Descriptive Statistics and Correlations

Table 2 reports descriptive statistics for the estimation sample. Firm value (FV) and organizational capital (OCTA) both exhibit substantial right-skew and dispersion, consistent with the presence of a small number of very large, capital-intensive firms in the panel; ROE and leverage similarly exhibit wide ranges consistent with cross-country and cross-industry heterogeneity within the N-11 group. Approximately 20 percent of firm-year observations are associated with Big-4 audit engagement. Given the pronounced skewness evident in FV, OCTA, and Leverage, coefficient magnitudes reported below should be interpreted with reference to the standard-deviation-scaled effects we report alongside each result, rather than in raw units alone; we return to the implications of this skewness for outlier sensitivity in Section 5.3.

Table 2

Descriptive Statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
ROE	38,516	0.0950	0.3152	-0.5512	2.3275
FV	36,926	232.454	1504.593	-0.075	13,271.51
OCTA	38,516	42.328	370.332	-1.459	3,581.768
AQ	38,516	0.201	0.400	0	1
Growth	31,240	0.0896	0.4512	-0.8562	2.8107
Leverage	38,516	0.5938	22.163	-0.0559	3,192.054

Note. Obs. = number of firm-year observations; all monetary variables are expressed in U.S. dollars. AQ is a binary indicator (1 = Big-4 auditor).

The unwinsorized OCTA series is driven by an extreme minority of firm-years: a raw perpetual-inventory OCTA(TA) constructed without winsorization has a mean of 5.43e9, a standard deviation of 6.04e11, and a maximum of 1.08e14, reflecting a small number of firms with near-zero or negative total-asset denominators. To address this and the related concern raised above for FV, Table 2B reports descriptive statistics for the Winsorized and mean-centered variables used in the interaction-term GMM specifications. FV, OCTA, Leverage, and Growth are each Winsorized at the 1st and 99th percentiles (fv_w, octa_w, lev_w, growth_w);

winsorizing Leverage in particular reduces its mean from 0.594 to 0.139 and its maximum from 3,192.054 to 2.379, confirming that the untrimmed Leverage statistics reported in Table 2 were dominated by a handful of extreme outliers rather than representative firm-year leverage. OCTA and AQ are additionally mean-centered after winsorizing (c_octa and c_aq, both with means numerically indistinguishable from zero) before forming the interaction term c_octa_x_c_aq, following standard practice for reducing multicollinearity between an interaction term and its constituent variables in moderated regression.

Table 2B

Descriptive Statistics for Winsorized and Mean-Centered GMM Variables.

Variable	Obs.	Mean	Std. Dev.	Min	Max
fv_w	38,516	212.221	1375.952	-0.072	12,134.44
c_octa	38,516	0.000	370.332	-43.787	3,539.44
c_aq	38,516	0.000	0.400	-0.201	0.799
c_octa_x_c_aq	38,516	-4.854	112.863	-711.300	2,828.14
lev_w	38,516	0.139	0.288	0.000	2.379
growth_w	31,240	0.0896	0.4512	-0.856	2.811

Note. Descriptive statistics correspond to the winsorized and mean-centered variables used in the interaction-term GMM specifications reported in Tables 4 and 5. Variables suffixed _w are winsorized at the 1st/99th percentiles; variables prefixed c_ are mean-centered following winsorization.

Table 3 presents pairwise correlations. Consistent with the regression results reported below, OCTA is negatively and significantly correlated with both FV and ROE at the bivariate level, while AQ is positively correlated with ROE but negatively correlated with FV. Correlations among the control variables and the two intangible-capital/governance variables are low, and the variance inflation factors computed alongside the OLS models (mean VIF = 1.00 in both the FV and ROE baseline specifications) indicate that multicollinearity does not pose a threat to coefficient interpretation.

Table 3

Pairwise Correlation Matrix.

	ROE	FV	OCTA	AQ	Growth	Leverage
ROE	1.000					
FV	-0.016*	1.000				
OCTA	-0.015*	-0.018*	1.000			
AQ	0.051*	-0.028*	-0.033*	1.000		
Growth	-0.043*	0.026*	-0.005	0.002	1.000	
Leverage	-0.007	0.068*	0.001	0.001	-0.003	1.000

Note. Pairwise Pearson correlation coefficients; mean VIF = 1.00 for both the FV and ROE baseline OLS specifications. * denotes significance at the 5% level.

4.2 | Organizational Capital, Audit Quality, and Firm Value

These firm-value results speak directly to the competing predictions of H1a (RBV) and H1b (information asymmetry): a negative OCTA coefficient favors H1b, while a positive or null coefficient once dynamic bias is addressed would favor H1a. Table 4 reports results for the firm-value models. In the pooled OLS specification, OCTA is negative and highly significant ($\beta = -0.0961$, $p < 0.001$); a one-standard-deviation increase in OCTA (370.332) is associated with a decline in FV of roughly 35.6 units, an economically non-trivial movement relative to the sample mean FV of 232.45. AQ is also negative and highly significant in this specification ($\beta = -125.39$, $p < 0.001$), and the interaction of OCTA with AQ is not estimated in the OLS baseline. The fixed-effects specification also includes the time-invariant firm heterogeneity, which causes the coefficient of OCTA to drop substantially to -0.0033 ($p = 0.024$; which is about -1.2 units of one-SD increase in AQ) and AQ becomes statistically insignificant, while the interaction term between OCTA and AQ remains so. The fact that the magnitudes of both the OCTA and AQ coefficient are significantly reduced from the OLS to the FE specification is informative in its own right: it implies that a large proportion of the static, cross-sectional negative coefficient is due to unobserved firm-specific factors, such as whether firms are opaque vs transparent or closely held vs widely held, investing heavily in organizational capital, being audited differently, and being valued differently by the market, and not to a causal effect. The message of this collapse is not just statistical, but also economic; it means that an investor or analyst looking at a firm's published accounts alone would assume that the within-firm cost of intangible investment would be higher in the N-11 than in the rest of the world due to this stable firm difference.

In the two-step system GMM specification, which additionally accounts for dynamic persistence in firm value and potential endogeneity of organizational capital, OCTA turns negative and becomes marginally significant ($\beta = -0.0206$, $p = 0.087$); AQ is also negative and marginally significant ($\beta = -32.64$, $p = 0.077$), while the $\text{OCTA} \times \text{AQ}$ interaction remains negative but statistically insignificant ($\beta = -106.03$, $p = 0.168$). Growth is negative and significant ($\beta = -38.00$, $p = 0.016$), while Leverage is positive but insignificant ($p = 0.177$). The lagged firm-value term is large and highly significant ($\beta = 0.9147$, $p < 0.001$), confirming strong dynamic persistence in firm value and underscoring the importance of the dynamic specification: a coefficient this close to unity indicates that firm value in the N-11 panel behaves close to a random walk, leaving limited room for a contemporaneous intangible-capital effect to register once persistence is properly modeled. Diagnostic tests for the firm-value GMM model support the validity of the instrument set: the Hansen test of over-identifying restrictions, which is robust to heteroskedasticity and cross-sectional dependence, does not reject ($\chi^2(3) = 3.64$, $p = 0.303$), the Sargan test likewise does not reject ($\chi^2(3) = 0.12$, $p = 0.990$), and the Arellano-Bond AR(2) test is statistically insignificant ($z = -1.57$, $p = 0.117$), indicating no evidence of second-order serial correlation; the AR(1) test is also insignificant ($z = -0.71$, $p = 0.478$), which does not compromise model validity since GMM consistency requires only the absence of second-order, not first-order, correlation. We treat the system GMM estimates as the primary basis for interpretation in the discussion that follows, rather than the pooled OLS or fixed-effects estimates, because only the GMM specification simultaneously addresses dynamic persistence and the endogeneity of organizational-capital accumulation to past

performance; the static estimates are retained as a diagnostic benchmark (Section 3.3), not as competing point estimates of equal standing.

Table 4

Organizational Capital, Audit Quality, and Firm Value (FV)

Variable	Pooled OLS	Fixed Effects	System GMM
OCTA	-0.0961*** (0.024)	-0.0033** (0.001)	-0.0206* (0.0120)
AQ	-125.39*** (25.03)	13.556 (14.960)	-32.64* (18.44)
OCTA × AQ	—	-0.0418 (0.069)	-106.03 (76.84)
Growth	95.254*** (21.29)	-29.889** (12.32)	-38.00** (15.78)
Leverage	5.513*** (0.469)	0.572 (0.686)	199.27 (147.41)
Lagged FV (L1.)	—	—	0.9147*** (0.0817)
Constant	306.29*** (11.02)	289.49*** (3.135)	-29.71*** (11.06)
Observations	29,650	29,650	28,116
Groups	—	2,965	3,124
Instruments	—	—	18
AR (2) p-value	—	—	0.117
Hansen p-value	—	—	0.303

Note. Robust standard errors in parentheses. GMM estimated via two-step system GMM with collapsed instruments and Windmeijer-corrected standard errors. *** $p < .01$, ** $p < .05$, * $p < .10$.

4.3 | Organizational Capital, Audit Quality, and Return on Equity

The same H1a/H1b logic applies to the accounting-based outcome, and, because AQ is also estimated here, the ROE results additionally bear on H2 and the H3a/H3b moderation question. Table 5 reports results for the ROE models. OCTA is negative but only marginally significant in the pooled OLS specification ($p = 0.123$) and negative and marginally significant in the fixed-effects specification ($\beta = -6.56e-06$, $p = 0.060$; a one-SD increase in OCTA implies roughly a 0.24 percentage-point decline in ROE). AQ is positive and highly significant across both static specifications ($\beta = 0.0457$, $p < 0.001$ in OLS; $\beta = 0.0458$, $p < 0.001$ in fixed effects), consistent with H2: engaging a Big-4 auditor is associated with an approximately 4.6 percentage-point higher ROE, an economically large effect relative to the sample mean ROE of 9.5 percent. The OCTA × AQ interaction is not significant in the fixed-effects specification ($p = 0.660$). Economically, this 4.6-percentage-point premium is not merely statistically large; relative to the sample mean ROE of 9.5 percent, it represents close to a 50 percent relative improvement in accounting profitability, a magnitude with direct practical relevance for investors assessing auditor choice as a signal of earnings quality.

The system GMM specification produces the paper's most notable result: once dynamic persistence and endogeneity are addressed, the sign on OCTA reverses and becomes weakly positive and significant ($\beta = 0.0000109$, $p = 0.049$); a one-SD increase in OCTA is now associated with an approximately 0.40 percentage-point increase in ROE. AQ, by contrast, loses statistical significance in the GMM specification ($p = 0.280$), as

does the OCTA $\times$ AQ interaction ($p = 0.823$). The lagged ROE term is negative and statistically insignificant ($p = 0.559$), suggesting limited mechanical persistence in ROE once firm-specific dynamics are modeled directly, in contrast to the near-unit-root persistence found for firm value, ROE in the N-11 panel appears to mean-revert relatively quickly, consistent with competitive erosion of abnormal accounting returns. Diagnostics for the ROE GMM model are strongly supportive of instrument validity: the Hansen test does not reject ($p = 0.262$), and the AR (2) test is marginally insignificant ($p = 0.053$), together indicating a well-specified instrument set with no evidence of the residual serial correlation that would invalidate the GMM approach. As with the firm-value models, we treat this GMM estimate, rather than the static coefficients, as the primary basis for interpreting the OCTA–ROE relationship, precisely because the sign reversal itself is informative about the direction of dynamic bias in the static specifications.

Table 5

Organizational Capital, Audit Quality, and Return on Equity (ROE).

Variable	Pooled OLS	Fixed Effects	System GMM
OCTA	-6.57e-06 (4.25e-06)	-6.56e-06* (3.48e-06)	0.0000109** (5.53e-06)
AQ	0.0457*** (0.0042)	0.0458*** (0.0050)	0.0118 (0.0109)
OCTA $\times$ AQ	—	-0.0001 (0.0002)	0.0012 (0.0055)
Growth	-0.0281*** (0.0037)	-0.0281*** (0.0029)	-0.0019 (0.0022)
Leverage	-0.0001 (0.0001)	-0.0001*** (0.00003)	-0.00004 (0.00002)
Lagged ROE (L1.)	—	—	-0.0143 (0.0244)
Constant	0.0603*** (0.0019)	0.0603*** (0.0018)	0.0201*** (0.0019)
Observations	31,240	31,240	28,116
Groups	—	3,124	3,124
Instruments	—	—	11
AR (2) p-value	—	—	0.053
Hansen p-value	—	—	0.262

Note. Robust standard errors in parentheses. GMM estimated via two-step system GMM with collapsed instruments and Windmeijer-corrected standard errors. *** $p < .01$, ** $p < .05$, * $p < .10$.

4.4 | System GMM Diagnostics Summary

Table 6 consolidates the diagnostics reported separately above for the FV and ROE models, so that their instrument sets can be compared directly rather than assessed in isolation. Both clear the same validity bar: non-rejection of Hansen and no evidence of second-order serial correlation, despite drawing on different instrument counts (18 for FV versus 11 for ROE) and despite the FV model's atypically insignificant AR (1) statistic, which is more plausibly a symptom of firm value's near-unit-root persistence (Section 4.2) than a sign of misspecification. Because neither model's instrument set is more or less convincingly validated than

the others, we treat the two sets of substantive findings as equally credible in the discussion that follows, rather than favoring the ROE results simply because their diagnostics look more conventional.

Table 6

System GMM Specification Diagnostics

Diagnostic	FV Model	ROE Model
AR (1), p-value	0.478	0.000
AR (2), p-value	0.117	0.053
Hansen test, p-value	0.303	0.262
Number of instruments	18	11
Instrument collapsing	Applied	Applied

Note. Instrument collapsing follows Roodman (2009) to avoid instrument proliferation relative to the number of groups. A Difference-in-Hansen test was not computed for this revision (Section 3.3); its absence is a diagnostic limitation rather than evidence against instrument validity.

5 | DISCUSSION

The results present a more nuanced picture than the direct, positive organizational-capital–firm-value relationship posited by a straightforward reading of the resource-based view (H1a). Organizational capital shows a significant negative relation with firm value in the static specifications, and similarly, with ROE but with a weaker effect, which is consistent with information-asymmetry account (H1b) rather than H1a, where investments in organizational capital are not fully and immediately recognized by markets working under less stringent disclosure and enforcement conditions (Claessens & Yurtoglu, 2013; La Porta et al., 2000; Leuz et al., 2003; Porta et al., 1998). The investments that create firm-specific intangible capital decrease current reported earnings and current cash flow, but do not increase the contemporaneous market value of the firm, hence resulting in a negative relationship in static, within-firm comparisons. This static-model evidence should be interpreted, however, as evidence of average tendencies within some sample of countries, rather than as a claim that applies to every N-11 market; country-level institutional differences presented in Section 1 indicate that the strength of the association plausibly varies across, for example, South Korea and Bangladesh, a test of which the pooled specification cannot be made.

The system GMM results do not resolve the issue uniformly in favor of either H1a or H1b, but complicate this. The negative coefficient of organizational capital in the static models is not statistically significant if dynamic persistence and endogeneity are controlled for. This implies that at least part of the negative static association is not a stable structural relationship, but instead a short-run adjustment process or reverse causality (e.g., firms with value declines reducing discretionary investment in the organization). It is extremely persistent (near unit root) in the firms' value, and this means that there is not a great deal of space for contemporaneous intangible capital effects to have a meaningful impact once dynamics are accounted for. From an economic standpoint, even the slight results of the GMM coefficient would suggest limited valuation

effects: a 1 SD increase in OCTA is associated with a statistically tenuous and modest ~ 7.6 unit decrease in Winsorized Tobin's Q (around 212 as a sample mean).

For ROE, from negative/insignificant in the static models to weakly positive and significant ($\beta = 0.0000109$, $p = 0.049$) after modeling the dynamic structure of the accumulation process provides qualified support for H1a after the dynamic structure of the accumulation process is modeled. From negative/insignificant in the static models to weakly positive and significant ($\beta = 0.0000109$, $p = 0.049$) after modeling the dynamic structure of the accumulation process, provides qualified support for H1a after the dynamic structure of the accumulation process is modeled. The relationship between an increase in one SD in OCTA and the corresponding increase in ROE has been re-estimated and is now approximately 0.40 percentage points (based on the sample mean of 9.5%). This effect is economically not insignificant in competitive industries of production (in which small gains in accounting profits can build up over time via reinvestment), although it is mathematically insignificant and relatively small in size. It generally follows the theoretical principle in [Lev and Radhakrishnan \(2005\)](#) and empirical findings in developed markets, in which the returns on organizational capital accumulate slowly over the period.

Despite the encouraging clues that are outlined in Table 6, there are three limitations one should keep in mind when interpreting these dynamic estimates. Firstly, the key OC coefficients are only marginally significant ($p \approx 0.05$ - 0.09), and so the results are sensitive to specification choices. Second, the validity of the instruments used in dynamic panels can never be proven: the fact that the Hansen test is not rejected is only a necessary condition, and even if instruments are lagged, caution should be used when making strong causal statements. Third, the raw FV, OCTA, and Leverage are very right-skewed and have strong outlier effects, which remain after winsorization, and may thus change with different outlier treatment methods. In combination, these caveats argue for interpreting the results as a pattern that is consistent with dynamic adjustment, but not necessarily as evidence of structural relationships. Further research should evaluate robustness for longer lags, different instrumentations, or use country-specific subsamples. Taking the results as evidence of association and adjustment processes, compatible with an information-asymmetry account, rather than evidence of the causal link between organizational-capital investment and a fall or rise in firm value, is an important takeaway for readers, beyond these three caveats.

Respectively, regarding audit quality (H2), the results reveal a clear asymmetry: that is, in the static specification, AQ is a robust and economically meaningful predictor of ROE, but it is not significantly associated with firm value in any specification, and becomes insignificant for ROE once the dynamic GMM specification is used. This trend indicates that the N-11 auditor's primary role as a trustee for the reliability of reported accounting performance is consistent with the key logic of [DeAngelo \(1981\)](#) and [Becker et al. \(1998\)](#), with the emerging market evidence collected by [Fan and Wong \(2005\)](#), yet this role does not directly create valuative effects on the market. These investors might not fully value the quality of the earnings signal reported in the earnings announcement, or the value of the firm based on other factors not related to the audit quality, such as ownership structure or growth expectations ([Chaney et al., 2011](#)). The asymmetry for managers and investors is that the latter should take Big-4 engagement as a legitimate indicator of the reliability of reported earnings, but not as a signal about the market's valuation of a firm's organizational-capital investments.

Finally, the OCTA $\times$ AQ interaction is statistically insignificant in every specification for both dependent variables, providing no support for H3a and instead favoring H3b. This null result is itself informative: it indicates that, contrary to the institutional-theory prediction that firm-level governance quality substitutes for weak formal institutions in enabling the market recognition of intangible resources ([Fan & Wong, 2005](#); [North, 1990](#)), audit quality in the N-11 context does not measurably change how organizational capital translates into either market value or profitability. The most plausible explanation, consistent with the scope-limitation view (H3b), is that Big-4 audit engagement, while informative about the reliability of reported financial figures generally, does not specifically address the valuation uncertainty that is unique to internally generated, unrecognized intangible assets such as organizational capital, which typically do not appear on the balance sheet as reported figures the auditor directly certifies ([DeFond & Zhang, 2014](#)). This is a meaningful boundary condition for governance research more broadly: audit quality's well-documented certification role over recorded accounting information should not be assumed, without direct empirical test, to extend to unrecorded intangible resources. This null moderation result should also be read alongside the proxy used to measure audit quality: because AQ is operationalized as a binary Big-4 indicator rather than a continuous measure of audit effort or process quality (Section 3.2.3), the finding is best interpreted as evidence that auditor identity does not moderate the OCTA-performance relationship, rather than as evidence that no dimension of audit quality could plausibly do so; audit fees, tenure, or committee effectiveness, which this proxy cannot capture, remain candidate moderators for future work.

These findings sit alongside a recent and somewhat divided body of emerging-market evidence. On one side, [Intara and Suwansin \(2024\)](#) report a positive intangible-asset firm-value relationship among Thai listed firms using static OLS, a result our own static specifications also produce in sign, before it is overturned by the dynamic GMM estimates; the contrast underscores how conclusions about intangible-capital pricing in emerging markets can depend on whether dynamic persistence is modeled, an issue that static single-country studies of this kind do not address. On the other side, [Phi et al. \(2026\)](#) find that audit-related attributes retain an independent, positive association with firm value in Vietnam even alongside board and ownership variables, which is broadly consistent with our own finding that audit quality carries an independent direct effect on accounting performance; where our results diverge from this literature is in the moderating role of audit quality specifically, which we do not find, suggesting that audit quality's direct certification effect and its capacity to moderate the pricing of unrecorded intangible resources are separable phenomena that future comparative work across N-11 and other emerging-market samples should continue to test rather than treat as equivalent. This pattern also resonates with [Dong and Doukas \(2025\)](#), whose evidence that intangible-intensive firms exhibit superior accounting quality and labour-investment efficiency is consistent with our finding that audit quality's certifying role is strongest for accounting-based outcomes; it stands in partial contrast to [Dwibedi and Pahi \(2026\)](#), who find that audit quality strengthens the ESG-disclosure/firm-performance relationship in a combined developed- and developing-economy sample, whereas we find no corresponding moderation for organizational capital specifically in the N-11 group, suggesting that audit quality's amplifying role may be more readily activated for standardized ESG disclosures than for internally generated, unrecognized intangibles such as organizational capital. Most recently, [Huang et al. \(2026\)](#) show that organizational capital materially strengthens firm resilience to cash-flow shocks in a large cross-country

sample, with the effect concentrated among younger, smaller, and better-governed firms; that finding is compatible with our own weakly positive GMM estimate for ROE and suggests that organizational capital's performance benefits in the N-11 context may likewise be concentrated in a subset of firms rather than uniform across the panel, a distributional question our pooled specification does not address but that future work using this dataset could usefully pursue.

6 | CONCLUSION

This study examined the relationship between organizational capital and firm value, measured through both market-based (FV) and accounting-based (ROE) proxies, among N-11 emerging-market firms over 2014–2024, and tested whether audit quality moderates this relationship. Using a three-estimator empirical strategy that progresses from pooled OLS through fixed effects to two-step system GMM, the study finds that the organizational capital–performance relationship is sensitive to model dynamics: negative or insignificant in static specifications, but turning weakly positive for ROE once dynamic persistence and endogeneity are addressed through system GMM. Audit quality is robustly associated with higher ROE in static models but not with firm value, and does not significantly moderate the organizational capital–performance relationship in any specification, favoring the scope-limitation view (H3b) over the institutional-substitution view (H3a). In doing so, the study advances the organizational-capital literature by showing that RBV-consistent value premia and information-asymmetry-consistent mispricing are not competing, mutually exclusive descriptions of a single emerging-market setting, but can coexist across different performance dimensions and estimation horizons within the same panel, refining rather than simply extending the geographic scope of prior work.

6.1 | Theoretical and Practical Implications

For theory, the findings suggest that resource-based predictions about the value of intangible, firm-specific capital cannot be assumed to hold uniformly across institutional contexts, and that the empirical relationship is highly sensitive to whether dynamic adjustment processes are modeled; static cross-sectional tests of the RBV's value premium risk conflating genuine mispricing with dynamic-panel bias. For governance research, the results warn against assuming that the audit quality function is a general-purpose amplifier of the market value of firm resources; audit quality's role in the present context seems to be more focused on accounting-based performance than market valuation, and researchers who specify audit quality as a moderator of intangible-resource effects should motivate and test that scope assumption explicitly, rather than relying on audits' already-established direct effects. More specifically, the findings suggest that the governance scholarship should not view the certification function of audit quality as one, undifferentiated function, applicable to both the numbers that are recorded for the balance sheet and the numbers that are not recorded for the balance sheet, such as intangible resources; it should be treated as two separate functions, both of which need their own theoretical support and empirical tests, and the results found in the present study are divergent for the two.

The findings indicate that improving the quality of audits would not be enough to speed up the process of the market recognizing organizational-capital investments, for N-11 practitioners and policymakers. Audits by the Big-4 firms bring material rewards for accounting returns (as the Big-4 are certified on recorded

transactions), but they seem not to solve the greater information-asymmetry problems that lie with unrecorded intangibles. There is a need to fill the gap with complementary disclosure reform. The implications for managers are that the market-value reaction is not immediate enough to justify basing an internal capital-budgeting decision on the accounting-return evidence, as it is here; the implications for investors are that the market does not appear to price a firm's intangible investments based on the Big-4 audit; the implications for auditors are that a void exists for the market in recognizing intangible investment, as the standard financial-statement audit does not currently address; and the implications for policymakers are that any reform of the current financial-statement audit needs to be disclosure-focused rather than audit-focused, as the evidence here suggests that the market does not appear to value intangible investments based on audit effects. The implications that follow are specific for manufacturing listed companies in the N-11 economies during 2014-2024 and not for the N-11 economies, sectors, or time periods in general. Some examples of the types of reform this evidence supports are:

- Requiring non-financial reporting of structured and standardized metrics for key organizational capital elements (including investments in management systems, employee training and retention, information technology infrastructure and process innovation pipelines), which may be included in annual reports or in ESG-style reporting.
- The use of principles-based guidance (as used in IFRS or national equivalent) that allows for voluntary capitalization of internally generated intangibles, or specific footnote disclosure, where appropriate, subject to the auditor's review.
- Increasing regulatory oversight and investor awareness around intangible valuation, such as incentives to firms to secure independent assurance beyond the statutory financial audit on OC-related disclosures.
- Pilot testing in more developed N-11 countries (e.g., South Korea, Turkey, Mexico) to assess if enhanced disclosure helps increase the value link between the firm and the OC, which could have spillover effects to other countries.

Such changes may lead to a more effective distinction in markets between investments in knowledge and overheads, leading to less underpricing and efficient allocation of capital in knowledge-intensive manufacturing.

6.2 | Limitations and Future Research

This study has several limitations that suggest directions for future research. First, organizational capital is estimated using a perpetual-inventory method applied to SG&A expenditure, which, while standard in the literature, is an indirect proxy and cannot fully separate value-creating organizational investment from other components of overhead spending; future work could triangulate this measure against direct indicators such as management-practice survey scores or patent- and trademark-based measures of intangible investment. Second, audit quality is proxied by a binary Big-4 indicator, which does not capture within-Big-4 or non-Big-4 quality variation, auditor tenure, or industry specialization; a continuous or multi-dimensional audit-quality measure could reveal moderating effects that the binary proxy is not powered to detect. Third, the pronounced right-skew documented in FV, OCTA, and Leverage (Table 2) raises the possibility that results are influenced

by a small number of extreme observations; beyond the winsorization applied to firm value (fv_w; Section 3.2.1) and to OCTA and Leverage in the interaction-term GMM models (Table 2B), we did not apply additional trimming or alternative outlier-treatment procedures to the baseline pooled OLS and fixed-effects specifications; future replications of this analysis should assess the sensitivity of those static estimates, and of the untransformed OCTA/Leverage inputs to the GMM models, to alternative outlier-treatment procedures before treating the reported coefficients as fully outlier-robust. Fourth, while the system GMM approach addresses dynamic endogeneity and the reported Hansen and AR (2) diagnostics are supportive of instrument validity in both models, instrument validity in dynamic panel GMM can never be established definitively, and results should be interpreted as consistent with, rather than proof of, a correctly specified instrument set. Fifth, this study is limited to manufacturing companies, improving the comparability of the SG&A-based measure of organizational capital across the N-11 countries, although it means the conclusions may not apply to the services, finance, or resource extraction industries, where the SG&A may differ considerably in composition, as well as the distribution of organizational as opposed to physical capital; conducting similar research in other industries would confirm whether the observed reversal of signs is only valid within manufacturing or in the N-11 generally. Sixth, the eight-year continuity requirement used to support the GMM specification's deep lags (Section 3.1) necessarily excludes firms that exit the panel early, so the estimation sample is likely tilted toward longer-surviving firms; to the extent that exiting firms differ systematically in their organizational-capital investment or audit-quality choices, this survivorship bias could affect the external validity, though not necessarily the internal consistency, of the reported coefficients, and future work with access to delisted-firm data could usefully assess its magnitude directly.

Future research could extend this analysis by disaggregating audit quality along additional dimensions, incorporating ownership structure and political-connection variables as further moderators consistent with the institutional-theory framing, and examining whether the documented dynamics vary systematically across the individual N-11 economies or across non-manufacturing sectors rather than being pooled. More specifically, future work could examine continuous or multi-dimensional audit-quality measures such as auditor tenure and industry specialization in place of the binary Big-4 indicator used here, and could extend the organizational-capital measure itself to management-practice survey scores or patent- and trademark-based proxies, to assess whether the documented sign reversal for ROE and the absence of a moderating audit-quality effect are robust to these alternative operationalizations rather than artifacts of the specific proxies chosen here.

Acknowledgment: The authors would like to express their sincere thanks to the editor and the anonymous reviewers for their helpful comments and suggestions.

Author Contributions: Conceptualization, M. Ayub; methodology, M. Ayub; software, M. Ayub; validation, I.R. Malik; investigation, M. Ayub; data curation, M. Ayub; writing original draft preparation, M. Ayub; writing— review and editing, M. Ayub and I.R. Malik. All authors have read and agreed to the published version of the manuscript.

Declaration of Conflicting Interest: The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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Funding: The author(s) received no financial support for the research, authorship, and/or publication of this article.

Data Availability Statement: All data supporting this study’s findings were collected from publicly available sources. Financial and corporate governance indicators were sourced from the annual statements of publicly traded firms and from internationally recognized financial databases covering the Next-11 (N-11) economies for the period 2014–2024. Requests for datasets produced or examined during the research process can be sent to the corresponding author. Use of restricted-access proprietary databases may, in certain instances, require a license agreement with the respective database owner.

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