

“Effects of foreign subsidiaries’ complexity and reliability on the audit effort of group auditors: Evidence from Korea”

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EFFECTS OF FOREIGN SUBSIDIARIES' COMPLEXITY AND RELIABILITY ON THE AUDIT EFFORT OF GROUP AUDITORS: EVIDENCE FROM KOREA

Abstract

Foreign subsidiaries operate in legal and institutional environments different from those of the parent company, which raises the complexity and risk of group audits. This study examines the effect of the complexity arising from foreign subsidiaries on the audit effort of group auditors and the moderating role of the institutional reliability of the subsidiaries' host countries, proxied by the World Bank Rule of Law indicator. Regressions of audit hours and audit fees are estimated on 1,667 firm-year observations of non-financial firms listed on the Korea Composite Stock Price Index in 2014–2017, the last years before Korea's standard audit hours regime took effect, where engagement-level audit hours are publicly disclosed. Complexity is positively associated with audit effort (coefficient 0.127, $t = 4.48$ for audit hours; 0.138, $t = 4.21$ for audit fees), and the result is robust to firm-clustered standard errors. The interaction between complexity and host-country institutional reliability is negative for audit hours (-0.136 , $t = -2.21$): the simple slope of complexity declines from 0.168 when no subsidiary is located in a country with a stronger rule of law than Korea to an insignificant 0.032 when all subsidiaries are. This attenuation is concentrated among groups whose foreign subsidiaries are financially significant (interaction -0.415 , $t = -3.13$), where it is robust to firm clustering and differs significantly from the low-significance group. Because subsidiary structures vary little within firms over the sample window, the evidence is cross-sectional in nature. Overall, group auditors calibrate their effort to both the complexity of foreign subsidiaries and the institutional quality of their host countries.

Keywords

auditing, complexity, institutional reliability, rule of law, foreign subsidiaries, multinationals, Korea

JEL Classification

M42, F23, M41

INTRODUCTION

The worldwide economy has been rapidly globalizing over the past few decades. According to the interim results of the corporate activity survey announced by Statistics Korea, the number of foreign subsidiaries of Korean companies increased from 6,754 in 2011 to 9,156 in 2018, an increase of 2,402 (about 35.6%) (Statistics Korea, 2019).

Although the economic importance of foreign subsidiaries continues to increase (Gunn & Michas, 2018; Beuselinck et al., 2019; Downey & Bedard, 2019), foreign subsidiaries require auditors' greater incremental effort than domestic subsidiaries because they are prone to be located in countries with different laws, systems, economics, and political environments from those of the parent company (Downey & Bedard, 2019; Hanes, 2013; Sunderland & Trompeter, 2017; Gunn & Michas, 2018; Zhu & Phang, 2024), which in turn raise greater complexity and audit risk to global group auditors (GGAs, hereafter). Should the group auditor inadequately engage with the intricacies brought about

by the incorporation of foreign subsidiaries into group audits, it might lead to a substantial underestimation of audit risk within the comprehensive audit evaluation.

As the economic importance of foreign subsidiaries and their audit risk are high, concerns about the audit of foreign subsidiaries are great as well (IFAC, 2015; PCAOB, 2016; IFIAR, 2017). Regulatory bodies are demanding stronger audits of foreign subsidiaries (Gunn & Michas, 2018; Downey & Westermann, 2021; Gold & Trotman, 2026; Gunny et al., 2025), and the International Standards on Auditing (ISA) also require that the nature and scope of audit procedures for foreign subsidiaries be different from those of domestic ones (IAASB, 2009, ISA 600, para. A34). However, research in global group audit is nascent, especially on whether GGAs reinforce and conduct audits of foreign subsidiaries abiding by the regulations of the country where parent companies are incorporated (Downey & Westermann, 2021). There is a lack of empirical evidence on the effect of foreign subsidiaries on the GGAs' behavior, especially through adjusting audit effort, in circumstances of global group audits.

Accordingly, the scientific problem addressed here is twofold: whether the complexity associated with including foreign subsidiaries in group audits is related to the audit effort of global group auditors (GGAs), and whether the institutional reliability of the countries hosting those subsidiaries – captured by the strength of the host country's rule of law – moderates that relationship. Throughout the paper, "reliability" refers to this country-level institutional environment rather than to the reporting quality of any individual subsidiary, which is not observable in public data. The Korean setting is informative for studying this problem, given the prevalence of large business groups with extensive foreign subsidiary networks and the public disclosure of engagement-level audit hours alongside audit fees under a uniform audit regime, which allows the notion of "audit effort" to be examined with precision.

Korean multinational firms operate subsidiaries across highly diverse institutional environments, so cross-border heterogeneity in group audits is substantial even though Korea itself is a developed economy with strong legal enforcement. In addition, unlike most jurisdictions, Korea publicly discloses engagement-level audit hours together with audit fees, which allows auditors' resource adjustments to engagement risk to be observed directly rather than inferred from fees alone. Whether and how group auditors adjust their effort to the complexity and reliability of foreign subsidiaries is therefore a question of scientific and practical importance for regulators, audit firms, and users of consolidated financial statements.

This study contributes to the group-audit literature in three ways. First, it provides direct evidence, based on audit hours rather than fees alone, that group auditors respond to the complexity created by foreign subsidiaries. Second, it shows that this response depends on the institutional environment of the host countries, and it does so with an internally consistent set of moderation analyses (interaction estimates, simple slopes, and a graphical illustration all based on the same variables). Third, it establishes the boundaries of the evidence: the moderating effect is concentrated among groups whose foreign subsidiaries are financially significant, is formally tested for differences across subsamples, and is examined under firm-clustered standard errors and firm fixed effects. The remainder of the paper reviews the literature and develops the hypotheses, describes the data and methods, reports the results, discusses them in light of prior research, and concludes.

1. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

This section reviews prior research on group audits and on the institutional determinants of financial reporting reliability to develop the hy-

potheses. The review proceeds from the theoretical basis of auditor monitoring to the complexities introduced by foreign subsidiaries, and finally to the role of host-country legal institutions.

From an agency-theoretic perspective (Jensen & Meckling, 1976), including foreign subsidiaries intensifies agency conflicts between headquarters

and subsidiary managers, as well as between shareholders and management. Geographic distance, legal heterogeneity, and information asymmetry increase monitoring costs and reduce observability of subsidiary operations. Under common agency settings, group auditors function as monitoring mechanisms that mitigate opportunistic behavior and information asymmetry (Kornish & Levine, 2004). Therefore, greater foreign-subsidiary complexity is expected to increase monitoring demand, leading to higher audit effort.

When an entity has subsidiaries in multiple foreign locations, the auditor would determine that the entity has a complex structure (IAASB, 2012, ISA 315 (Revised), para. A31). The complexity derived from conducting audit procedures for subsidiaries in multiple geographically dispersed locations has an impact on GGAs' audit effort (Graham et al., 2018; PCAOB, 2010, AS 2110, para. .10). This is also the reason why concerns about global group audits persist (IFAC, 2015; PCAOB, 2016; IFIAR, 2017).

Given that foreign subsidiaries are established in countries with distinct languages, cultures, standards, and legal frameworks divergent from those of the parent company, comprehending the operational intricacies becomes challenging, potentially leading to inaccuracies in financial statements. Consequently, companies might resort to selective disclosure of information or leverage their foreign subsidiaries as instruments for earnings management (Dyreng et al., 2012). Such intricacy increases the types and amounts of information (Campbell, 1988; Zhu & Phang, 2024), and makes the preparation of financial reports more complicated (R. Hoitash & U. Hoitash, 2018).

This complexity could extend to GGAs, for whom understanding these diverse environments is not straightforward, rendering the detection of discrepancies arduous. In particular, legal, regulatory, and cultural differences, timeliness issues, understanding of specific local audit standards, and language barriers are issues that GGAs face when coordinating global group audits (Hanes, 2013; Downey & Bedard, 2019; Carson et al., 2022; Krishnan & Li, 2023). GGAs must put more effort in collecting audit evidence when the subsidiaries are located abroad. Access to information is

also relatively more difficult because the right to collect information from foreign subsidiaries is not always guaranteed by law. In line with this, Sunderland and Trompeter (2017) state that global group audits tend not to be adequately planned and supervised by the GGA and therefore on many occasions are not suitable for forming an audit opinion on the consolidated financial statements.

In short, including foreign subsidiaries raises the complexity of group audits. When companies are geographically dispersed, geographical restrictions, cultural differences, and differences in legal systems and languages occur, which increase the audit risk that GGAs face (Hanes, 2013; Downey & Bedard, 2019; Carson et al., 2022). The GGAs should spend more audit effort to reduce the increased audit risk due to complexity. Consistent with agency theory, increased information asymmetry and monitoring difficulty associated with foreign subsidiaries raise the demand for audit monitoring. Group auditors respond by allocating more resources to mitigate agency costs.

However, agency costs are not uniform across institutional settings. When subsidiaries operate in countries with a strong rule of law, enforcement mechanisms substitute for auditor monitoring by constraining managerial opportunism. Strong legal institutions reduce agency risk and information asymmetry, thereby decreasing the incremental monitoring effort required from group auditors. Thus, the institutional reliability of the host country moderates the complexity-effort relationship, and the effect of complexity on the audit effort of GGAs is not expected to be uniform. Since a reliable institutional environment enhances the quality of accounting information and reduces audit risk (Srinivasan et al., 2015; Ewert & Wagenhofer, 2019; Saiewitz & Wang, 2020), the additional audit effort that GGAs devote to complexity should decrease as the institutional reliability of the countries hosting the foreign subsidiaries increases. In other words, GGAs' audit effort will vary according to the institutional environment of the subsidiaries' host countries, even if the level of complexity is identical.

Prior studies reported that earnings management using foreign subsidiaries differs depending on the characteristics of the country where the for-

foreign subsidiaries are located (Leuz et al., 2003; Dyreng et al., 2012; Durnev et al., 2017; Beuselinck et al., 2019). National laws and regulations play an important role in shaping corporate financial reporting behavior by influencing audit effort, investor protection, and earnings management for private gain (Srinivasan et al., 2015; Saieewitz & Wang, 2020). More specifically, strong regulation improves the reliability of financial reporting (Brown et al., 2014; Ewert & Wagenhofer, 2019; Knowles & Pacheco Paredes, 2023). This is because under a strong legal system, the expected penalty is large, which in turn provides a large incentive for entities to improve their accounting reliability. Conversely, when the expected penalty is low under a weak legal environment, the reliability of accounting information would be low. In short, the legal environment of the country where a foreign subsidiary is located is crucial to the reliability of the company's accounting information (Chambers & Payne, 2011; Ashraf et al., 2020; Krishnan et al., 2023).

As such, even if global group audits become complicated due to the inclusion of foreign subsidiaries, if the foreign subsidiaries are located in countries with strong legal environments, the audit risk would be relatively low, which should make GGAs adjust their audit effort accordingly. In other words, the institutional reliability of host countries is expected to attenuate the positive relationship between the complexity that arises from the inclusion of foreign subsidiaries in global group audits and the audit effort of GGAs.

In summary, prior research indicates that foreign subsidiaries increase the complexity and audit risk of group audits, and that the legal environment of the host country shapes the reliability of the accounting information produced there. However, direct evidence on how these two forces jointly affect the actual audit effort of group auditors remains scarce.

The purpose of this study is to examine the effect of the complexity arising from the inclusion of foreign subsidiaries on the audit effort of group

auditors and the moderating role of the institutional reliability of the subsidiaries' host countries. Based on the reviewed literature, the following hypotheses are proposed:

- H1: *The complexity caused by the inclusion of foreign subsidiaries in global group audits increases the audit effort of global group auditors.*
- H2: *The institutional reliability of the countries hosting foreign subsidiaries attenuates the positive relationship between the complexity of global group audits and the audit effort of global group auditors.*

2. METHODS

The main variable of interest in this study is the complexity caused by the inclusion of foreign subsidiaries in group audits. This study uses the proportion of foreign subsidiaries, which is calculated as follows, as a proxy representing the complexity that arises from the inclusion of foreign subsidiaries in group audits. Since a higher proportion of foreign subsidiaries increases the complexity of a consolidated entity relative to one comprised solely of domestic subsidiaries (Denis et al., 2002), including foreign subsidiaries in the group audit further amplifies this complexity.

The moderating variable of this study is the institutional reliability of the countries in which the foreign subsidiaries are located, measured by the Rule of Law dimension of the Worldwide Governance Indicators (WGI) published by the World Bank for about 200 countries since 1996 (Kaufmann et al., 2010). The Rule of Law has been widely used to represent a country's legal environment in prior studies (Dyreng et al., 2012; Gunn & Michas, 2018; Beuselinck et al., 2019). It is important to note that this is a country-level indicator: it proxies the institutional environment in which a subsidiary prepares its financial information, not the reporting reliability of any particular subsidiary, which cannot be observed in public data. We

$$Complexity = \frac{Total\ assets\ (TA)\ of\ foreign\ subsidiaries}{TA\ of\ domestic\ subsidiaries + TA\ of\ foreign\ subsidiaries} \quad (1)$$

$$Reliability = \frac{N \text{ of FS located in countries with higher Rule of Law than South Korea}}{\text{Number of foreign subsidiaries}}. \quad (2)$$

therefore label the variable Reliability for brevity but interpret it throughout as host-country institutional reliability. The variable is calculated as follows:

The strength of the legal environment of each host country is measured relative to Korea because, in our sample, the auditor of the Korean parent company is the GGA. Since institutional reliability is relative rather than absolute, it is more appropriate to use the country of the GGA as the reference. Reliability therefore lies in the [0, 1] interval; the closer it is to 1, the larger the share of a group's foreign subsidiaries that are located in countries with a stronger legal environment than Korea. This same variable is used in every moderation analysis reported below (Tables 4, 5, 7 and 8, and Figure 1).

Equation (3) is used to verify the effect of the complexity of foreign subsidiaries on the audit effort of GGAs (Hypothesis 1).

$$\begin{aligned} \text{Audit Effort} = & \beta_0 + \beta_1 \text{Complexity} \\ & + \beta_2 \text{SUB} + \beta_3 \text{PA} + \beta_4 \text{Size} \\ & + \beta_5 \text{Distance_Geo} + \beta_6 \text{Distance_Eco} \\ & + \beta_7 \text{abPMDA} + \beta_8 \text{ARINV} + \beta_9 \text{ROA} \\ & + \beta_{10} \text{LEV} + \beta_{11} \text{Loss} + \beta_{12} \text{BIG} + \beta_{13} \text{FIRST} \\ & + \beta_{14} \text{Tenure} + \sum \text{IND} + \sum \text{YEAR}, \end{aligned} \quad (3)$$

where *Audit Effort*; $AH = \ln(\text{Audit hour} + 1)$; $AF = \ln(\text{Audit fee} + 1)$; *Complexity* = The ratio of the total assets of foreign subsidiaries to the total assets of all (domestic and foreign) subsidiaries; $\text{SUB} = \ln(\text{Number of consolidated subsidiaries} + 1)$; PA = The ratio of parent company's separate total assets to consolidated total assets; $\text{SIZE} = \ln((\text{Consolidated total assets} + 1))$; $\text{Distance_Geo} = \ln(\text{Average geographic distance btw the parent company and FS} + 1)$; $\text{Distance_Eco} = 1$ if the stock market of a country where the foreign subsidiary is located is greater than that of Korea, 0 otherwise; abPMDA = Absolute value of performance-matched discretionary accruals (Kothari et al., 2005); ARINV = The ratio of trade receivables and inventories to total assets (based on consoli-

dated financial statements); ROA = Return on assets (the ratio of net income divided by total assets, based on consolidated financial statements); LEV = Total liabilities divided by total assets (based on consolidated financial statements); $\text{Loss} = 1$ if it is a company with a net loss, otherwise 0 (based on the consolidated financial statements); $\text{BIG} = 1$ if audited by a large accounting firm (Big 4), 0 otherwise; $\text{FIRST} = 1$ if the first audit, 0 otherwise; $\text{Tenure} = \ln(\text{Continuous audit period} + 1)$; $\sum \text{IND}$ = Industry dummy, $\sum \text{YEAR}$ = Year dummy.

We measure the audit effort of GGAs using audit hours and audit fees. H1 predicts that the complexity of including foreign subsidiaries in group audits has a positive association with the audit effort of GGAs, which is supported if β_1 has a statistically significant positive value. We incorporate the control variables (SIZE , LEV , abPMDA , ARINV , ROA , Loss , BIG , FIRST , Tenure) that are frequently utilized in auditing research, as exemplified by studies such as Simunic (1980), Caramanis and Lennox (2008), and Mayer and Zignago (2011). We add SUB , PA , Distance_Geo , and Distance_Eco variables to control for the effect of subsidiary characteristics on the consolidated audit. Finally, fixed effects by industry and year are included.

Equation (4) is used to verify whether the effects of foreign subsidiaries' complexity on the audit effort of group auditors are moderated according to the reliability of foreign subsidiaries.

$$\begin{aligned} \text{Audit Effort} = & \beta_0 + \beta_1 \text{Complexity} \\ & + \beta_2 \text{Reliability} + \beta_3 \text{Complexity} \cdot \text{Reliability} \\ & + \beta_4 \text{SUB} + \beta_5 \text{PA} + \beta_6 \text{Size} + \beta_7 \text{Distance_Geo} \\ & + \beta_8 \text{Distance_Eco} + \beta_9 \text{abPMDA} + \beta_{10} \text{ARINV} \\ & + \beta_{11} \text{ROA} + \beta_{12} \text{LEV} + \beta_{13} \text{Loss} + \beta_{14} \text{BIG} \\ & + \beta_{15} \text{FIRST} + \beta_{16} \text{Tenure} + \sum \text{IND} \\ & + \sum \text{YEAR} + \varepsilon. \end{aligned} \quad (4)$$

H2 predicts that the effect of complexity on the audit effort of GGAs is attenuated by the institutional reliability of the host countries. H2 is supported if the coefficient of the interaction term, β_3 ,

is negative and statistically significant, so that the simple slope of Complexity, $\beta_1 + \beta_3 \times \text{Reliability}$, declines as Reliability increases. In addition to the interaction coefficient, we report the simple slopes of Complexity at the minimum (0), mean, mean plus one standard deviation, and maximum (1) of Reliability, and we plot the corresponding predicted values of audit hours (Figure 1).

The sample of this study includes only non-financial firms with a settlement date of December 31 listed on the KOSPI, the Korea Composite Stock Price Index, from 2014 to 2017. The sample period is bounded by two regulatory changes in Korea. Audit hours became publicly available only from fiscal year 2014, when the Act on External Audit of Stock Companies began to require the disclosure of audit implementation details (including audit hours) in audit reports, and 2014 is also the first year in which the group auditor assumed sole responsibility for the audit of consolidated financial statements under the revised Korean Standards on Auditing 600; engagement-level audit hours that are comparable across group audits therefore exist only from 2014. The sample ends in 2017 because the standard audit hours regime (Article 16-2 of the amended Act on External Audit of Stock Companies) was phased in from fiscal year 2018. Under this regime, audit hours are no longer determined by the auditor's own assessment of engagement risk but are anchored to a regulatory minimum set by the Korean Institute of Certified Public Accountants according to the firm's size, industry, and listing status, and audit fees have risen mechanically with the mandated hours. Audit hours and fees observed from 2018 onward thus reflect the effect of the regulation rather than the auditor's discretionary response to the complexity and reliability of foreign subsidiaries, and pooling pre- and post-regime observations would contaminate the measure of audit effort with regulatory noise. The years 2014–2017 are accordingly the only window in which group auditors' effort can be observed as an unregulated response to engagement risk, which is why the analysis is confined to this period although the data are not recent. The sample includes only the companies that had issued consolidated financial statements and had at least one foreign subsidiary. Among these, companies with impaired capital or with

an audit opinion other than unqualified are excluded. Financial data, audit fee, and hours data are extracted from the TS-2000 database of the Korea Listed Companies Association and the Kis-Value database of NICE Information Service Co., Ltd. Samples exceeding the top and bottom 1% of each variable were winsorized to control the influence of extreme values (excluding dummy variables). The restriction to the 2014–2017 window ensures comparability of audit-effort measures prior to the structural reforms introduced by the 2018 New External Audit Act. This act (Act on External Audit of Stock Companies (KLRI, 2018)) introduced the periodic auditor designation system, the elevation of the internal control review to an audit, and the standardized audit hour system, all of which structurally affected audit hours; confining the analysis to the pre-reform period therefore avoids regime-driven structural breaks in the dependent variables.

Equations (3) and (4) are estimated by ordinary least squares with industry and year fixed effects. Because audit hours and fees are heteroskedastic across firms of different sizes, *t*-statistics in the main tables are based on heteroskedasticity-robust (White, 1980) standard errors. Since the same firm appears in up to four years, we also re-estimate the models with standard errors clustered by firm (Petersen, 2009). Industry and year fixed effects do not control for time-invariant firm-specific heterogeneity, so as a further robustness check we estimate firm fixed-effects (within) regressions with year effects; because complexity and reliability change little within a firm over a four-year window, this specification is demanding and is reported for transparency rather than as the main test. Finally, when the sample is divided by the financial significance of foreign subsidiaries, we do not rely on the significance of coefficients in separate subsamples. Instead, we test whether the coefficients differ between the two groups by estimating a pooled model in which every regressor, including the industry and year effects, is interacted with an indicator for the high-significance group; the coefficient on the interaction between the variable of interest and this indicator equals the difference between the two subsample coefficients, and its *t*-statistic provides the formal test of the difference.

3. RESULTS

Descriptive statistics for the variables included in this study are presented in Table 1. The averages of audit hours (AH) and audit fees (AF), the proxy variables for the group auditor's audit effort, were 7.549 and 11.866, respectively. The averages of the variables of interest, Complexity and Reliability, were 0.533 and 0.341, respectively. On average, foreign subsidiaries account for 53.3% of the total assets of all subsidiaries (Complexity), and about 34.1% of foreign subsidiaries are located in countries whose Rule of Law score is higher than Korea's (Reliability). Both variables of interest are bounded in the [0, 1] interval.

Table 2 shows the Pearson correlation matrix among the main variables. Contrary to our expectation, we observe a negative correlation between Complexity and AH (AF). Since these results are based on simple correlations that do not control for other determinants of audit effort, their relevance should be confirmed by multivariate regression analysis. Variance inflation factors (VIFs) in the main-effects model range from 1.072 (abPMDA) to 3.195 (Size), and in the interaction model from 1.076 (abPMDA) to 3.365 (Reliability), with a VIF of 3.191 for the Complexity×Reliability term, all well below the conventional threshold of 10 (Hair et al., 2010), indicating no problematic multicollinearity.

Table 1. Descriptive statistics of the variables (1,667 firm-year observations, 2014–2017)

Variable	N	Mean	Std. Dev.	Min	Max
AH	1,667	7.549	0.800	6.148	9.867
AF	1,667	11.866	0.868	10.309	14.463
Complexity	1,667	0.533	0.396	0.000	1.000
Reliability	1,667	0.341	0.321	0.000	1.000
SUB	1,667	2.192	1.000	0.693	5.136
PA	1,667	0.785	0.227	0.125	1.070
Size	1,667	27.554	1.664	23.231	33.341
Distance_Geo	1,667	8.028	0.703	6.863	9.312
Distance_Eco	1,667	0.561	0.496	0.000	1.000
abPMDA	1,667	0.043	0.052	0.000	0.301
ARINV	1,667	0.270	0.135	0.023	0.617
ROA	1,667	0.043	0.053	-0.111	0.205
LEV	1,667	0.484	0.197	0.097	0.925
Loss	1,667	0.211	0.408	0.000	1.000
BIG	1,667	0.719	0.449	0.000	1.000
FIRST	1,667	0.163	0.370	0.000	1.000
Tenure	1,667	1.742	0.666	0.693	3.434

Table 2. Pearson correlations among the variables

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) AH	1.000							
(2) AF	0.937 (0.000)	1.000						
(3) Complexity	-0.053 (0.030)	-0.025 (0.301)	1.000					
(4) Reliability	0.142 (0.000)	0.147 (0.000)	-0.152 (0.000)	1.000				
(5) SUB	0.680 (0.000)	0.655 (0.000)	-0.273 (0.000)	0.120 (0.000)	1.000			
(6) PA	0.161 (0.000)	0.107 (0.000)	0.425 (0.000)	-0.070 (0.004)	-0.544 (0.000)	1.000		
(7) Size	0.866 (0.000)	0.835 (0.000)	-0.189 (0.000)	0.177 (0.000)	0.751 (0.000)	-0.376 (0.000)	1.000	
(8) Distance_Geo	0.246 (0.000)	0.239 (0.000)	-0.022 (0.367)	0.591 (0.000)	0.222 (0.000)	-0.096 (0.000)	0.251 (0.000)	1.000
(9) Distance_Eco	1.000							

Table 2 (cont.). Pearson correlations among the variables

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(10) abPMDA	0.010 (0.692)	1.000						
(11) ARINV	0.126 (0.000)	−0.005 (0.830)	1.000					
(12) ROA	−0.078 (0.002)	−0.129 (0.000)	0.055 (0.025)	1.000				
(13) LEV	−0.121 (0.000)	0.062 (0.012)	0.078 (0.002)	−0.258 (0.000)	1.000			
(14) Loss	0.033 (0.178)	0.102 (0.000)	−0.037 (0.132)	−0.548 (0.000)	0.312 (0.000)	1.000		
(15) BIG	−0.093 (0.000)	−0.088 (0.000)	−0.097 (0.000)	0.164 (0.000)	0.067 (0.006)	−0.116 (0.000)	1.000	
(16) FIRST	−0.035 (0.159)	0.118 (0.000)	−0.065 (0.008)	−0.035 (0.157)	0.112 (0.000)	0.075 (0.002)	−0.096 (0.000)	1.000
(17) Tenure	0.048 (0.051)	−0.076 (0.002)	0.098 (0.000)	−0.001 (0.980)	−0.103 (0.000)	−0.066 (0.007)	0.142 (0.000)	−0.657 (0.000)

Note: p-values in parentheses.

Hypothesis 1 predicts that the complexity arising from the inclusion of foreign subsidiaries in group audits increases the audit effort of group auditors. The results are presented in Table 3. The coefficient of Complexity is 0.127 ($t = 4.48$) for audit hours (AH) and 0.138 ($t = 4.21$) for audit fees (AF), both significant at the 1% level. Moving from a group whose subsidiaries are all domestic (Complexity = 0) to one whose subsidiaries are all foreign (Complexity = 1) is associated with approximately 12.7% more audit hours and 13.8% higher audit fees, holding the other variables constant. These results support Hypothesis 1 and confirm that complexity is a factor that affects audit risk: auditors perceive audit risk from complexity and exert more effort in response (Simunic, 1980; Hay et al., 2006; Gul et al., 2018).

The coefficients of the control variables are aligned with prior research. The number of subsidiaries (SUB), the share of the parent company's assets in consolidated assets (PA), firm size (Size), performance-matched discretionary accruals (abPMDA), leverage (LEV), and Big 4 auditor (BIG) have significant positive coefficients for both AH and AF. The coefficient of the initial audit (FIRST) is positive and significant at the 10% level for AH, and the coefficient of auditor tenure (Tenure) is negative and significant at the 5% level for AH ($t = -2.15$). The coefficient of Loss is not significant for AH but is significantly positive for AF.

Table 3. Regression of audit hours (AH) and audit fees (AF) on the complexity of foreign subsidiaries (Equation 3)

Variable	Dependent variable: AH		Dependent variable: AF	
	Coeff.	t-stat	Coeff.	t-stat
Intercept	−3.701	−13.50***	−0.634	−2.07**
Complexity	0.127	4.48***	0.138	4.21***
SUB	0.169	11.10***	0.206	11.78***
PA	0.724	11.53***	0.987	13.84***
Size	0.351	35.32***	0.382	34.59***
Distance_Geo	0.010	0.83	−0.002	−0.13
Distance_Eco	0.010	0.54	0.021	1.03
abPMDA	0.576	3.05***	0.766	3.28***
ARINV	0.054	0.61	0.080	0.77
ROA	−0.225	−1.14	0.013	0.05
LEV	0.390	7.24***	0.507	8.01***
Loss	0.035	1.49	0.067	2.39**
BIG	0.286	13.09***	0.186	7.12***
FIRST	0.050	1.80*	0.044	1.29
Tenure	−0.033	−2.15**	0.013	0.76
Industry effects	Included		Included	
Year effects	Included		Included	
Adjusted R ²	0.851		0.826	
Observations	1,667		1,667	

Notes: ***, **, and * denote significance at the 1%, 5%, and 10% levels (two-tailed), respectively. t-statistics are based on heteroskedasticity-robust (White, 1980) standard errors. Estimates with firm-clustered standard errors and with firm fixed effects are reported in Table 8.

Hypothesis 2 predicts that host countries' institutional reliability attenuates the relationship between complexity and the audit effort of the

group auditor. Table 4 presents the results. For audit hours (AH), the coefficient of *Complexity* $\times$ *Reliability* is -0.136 ($t = -2.21$, $p = 0.027$), negative and significant at the 5% level, while the coefficient of *Complexity* itself (0.168 , $t = 4.87$) measures the effect of complexity when none of the foreign subsidiaries is located in a country with a stronger rule of law than Korea. For audit fees (AF), the interaction coefficient is negative but small and insignificant (-0.040 , $t = -0.53$), suggesting that audit hours respond more elastically than fees to the institutional environment of subsidiaries and that a change in hours does not translate one-for-one into fees. When standard errors are clustered by firm (Table 8, Panel A), the interaction coefficient for AH is unchanged but its t-statistic falls to -1.47 ($p = 0.142$), so the full-sample evidence for Hypothesis 2 should be regarded as moderate; as shown below, the attenuation is concentrated in, and statistically robust for, groups whose foreign subsidiaries are financially significant. Taken together, the results indicate that, while the inclusion of foreign subsidiaries increases the complexity of group audits,

auditors assess the associated audit risk as lower when subsidiaries operate in strong legal and institutional environments.

To illustrate the moderating effect, Table 5 reports the simple slopes of *Complexity* on audit hours implied by Equation (4), $\beta_1 + \beta_3 \times \text{Reliability}$, at four levels of *Reliability*, and Figure 1 plots the corresponding predicted values of $\ln(\text{AH})$ against *Complexity*. All quantities are computed from the same estimates as Table 4. The slope of *Complexity* is 0.168 ($t = 4.87$) when *Reliability* equals its minimum of 0, 0.122 ($t = 4.23$) at the sample mean of 0.341 , 0.078 ($t = 2.17$) at one standard deviation above the mean (0.662), and 0.032 ($t = 0.62$) at the maximum of 1. The slope therefore declines monotonically and loses statistical significance when all of a group's foreign subsidiaries are located in countries with a stronger rule of law than Korea, which is the pattern predicted by Hypothesis 2. The lines in Figure 1 fan out from a common origin near *Complexity* = 0, with the steepest line for the least reliable institutional environment.

Table 4. Moderating effect of host-country institutional reliability on the relation between complexity and audit effort (Equation 4)

Variable	Dependent variable: AH		Dependent variable: AF	
	Coeff.	t-stat	Coeff.	t-stat
Intercept	-3.956	-13.40***	-0.758	-2.36**
Complexity	0.168	4.87***	0.149	3.60***
Reliability	0.006	0.12	-0.014	-0.27
Complexity $\times$ Reliability	-0.136	-2.21**	-0.040	-0.53
SUB	0.168	11.00***	0.205	11.79***
PA	0.726	11.50***	0.988	13.80***
Size	0.354	35.54***	0.384	35.08***
Distance_Geo	0.031	1.80*	0.009	0.44
Distance_Eco	0.024	1.20	0.029	1.31
abPMDA	0.580	3.08***	0.769	3.29***
ARINV	0.054	0.61	0.082	0.78
ROA	-0.213	-1.08	0.014	0.06
LEV	0.386	7.13***	0.505	7.93***
Loss	0.035	1.51	0.067	2.41**
BIG	0.285	13.13***	0.185	7.13***
FIRST	0.051	1.82*	0.044	1.30
Tenure	-0.034	-2.20**	0.013	0.75
Industry effects	Included		Included	
Year effects	Included		Included	
Adjusted R ²	0.852		0.826	
Observations	1,667		1,667	

Notes: ***, **, and * denote significance at the 1%, 5%, and 10% levels (two-tailed), respectively. t-statistics are based on heteroskedasticity-robust (White, 1980) standard errors. Estimates with firm-clustered standard errors and with firm fixed effects are reported in Table 8.

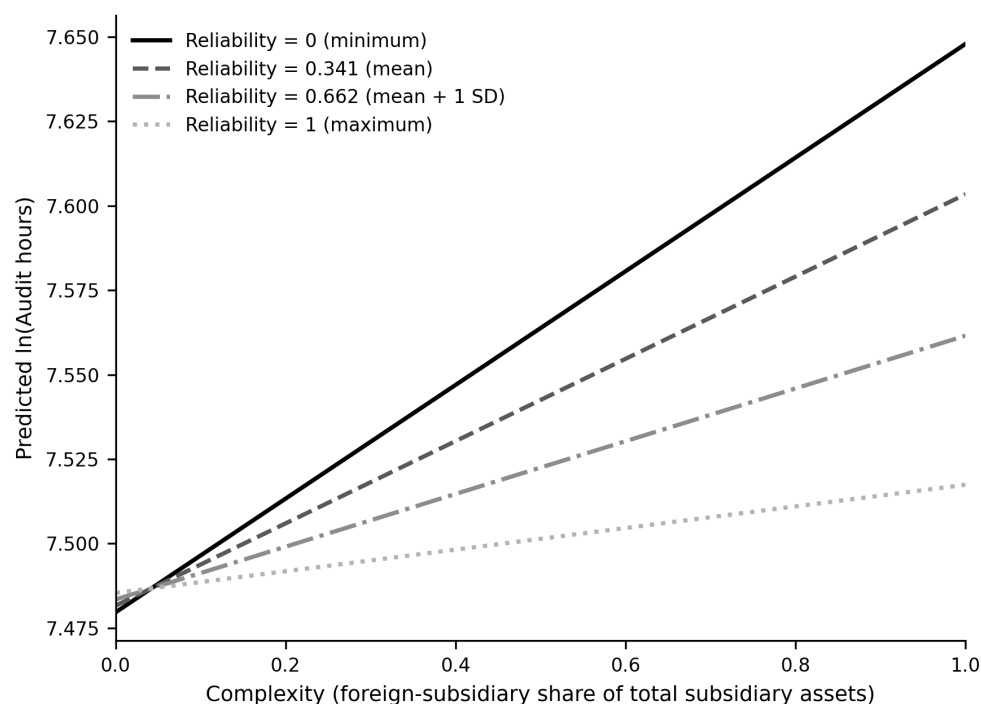
Table 5. Simple slopes of complexity on audit hours (ah) at selected levels of host-country institutional reliability

Level of Reliability	Slope	Std. error	t-statistic	p-value
0 (minimum)	0.168	0.035	4.87	< 0.001 ***
0.341 (sample mean)	0.122	0.029	4.23	< 0.001 ***
0.662 (mean + 1 SD)	0.078	0.036	2.17	0.030 **
1 (maximum)	0.032	0.051	0.62	0.533

Notes: Slopes equal $\beta_1 + \beta_3 \times \text{Reliability}$ from the audit-hours model in Table 4, where Reliability is the share of a group's foreign subsidiaries located in countries with a Rule of Law score above Korea's (mean = 0.341, SD = 0.321, range 0-1). Standard errors are obtained from the heteroskedasticity-robust covariance matrix of the estimates. ***, **, and * denote significance at the 1%, 5%, and 10% levels (two-tailed), respectively.

Incorporating foreign subsidiaries into a group audit may lead to differentiated effects on the GGA's audit efforts based on the financial significance of those subsidiaries. When the financial importance of foreign subsidiaries is high, the risk of material misstatement in the consolidated financial statements increases (KICPA, 2018, KSA 600, para. A5), thereby intensifying the critical role of the GGA. Moreover, Dyreng et al. (2012) indicate that higher financial significance of foreign subsidiaries is associated with lower quality of financial reporting. Additionally, Gunn and

Michas (2018) suggest that in situations of high financial significance, the negative impact of audit failures on overall audit quality is magnified. Consequently, under high financial significance, the complexity inherent in the group audit exerts a greater influence on the GGA's audit efforts. In contrast, when foreign subsidiaries' financial significance is low, auditors must still address the complexity these subsidiaries introduce; however, the risk of audit failure – and its impact on audit efforts – is relatively diminished. Similarly, the effect of subsidiary reliability on the relationship



Notes: Lines show the predicted natural logarithm of audit hours from the model in Table 4 as Complexity (the share of foreign-subsidiary assets in total subsidiary assets) rises from 0 to 1, with Reliability fixed at 0, its sample mean (0.341), one standard deviation above the mean (0.662), and 1. All control variables are held at their sample means, and industry and year effects at their sample frequencies.

Figure 1. Predicted audit hours (ln ah) as a function of complexity at four levels of host-country institutional reliability

between complexity and the GGA's audit efforts is likely to be minimal under conditions of low financial significance. Therefore, Hypotheses 1 and 2 will be more significant when foreign subsidiaries have greater financial significance.

To test the effect of the financial significance of foreign subsidiaries on Hypotheses 1 and 2, we divide the sample at the median of the financial significance of foreign subsidiaries, which yields a high-significance group of 833 and a low-significance group of 834 firm-year observations. Beuselinck et al. (2019) argue that a lower proportion of a foreign subsidiary's assets relative to consolidated total assets is associated with a higher incentive for the controlling company to adjust the subsidiary's reported figures. In line with this, we employ the assets of foreign subsidiaries as a proxy for their financial significance, as follows:

Financial Significance

$$= \frac{\text{Total assets (TA) of foreign subsidiaries}}{\text{TA of consolidated financial statements}} \quad (5)$$

Table 6 re-estimates Equation (3) in the two groups. In the high-significance group (Panel A), the coefficient of Complexity is 0.183 ($t = 3.53$) for AH and 0.172 ($t = 2.91$) for AF, both significant at the 1% level, whereas in the low-significance group (Panel B) it is 0.049 ($t = 1.20$) and 0.038 ($t = 0.79$), respectively, and insignificant. Because significance in separate subsamples does not establish that the coefficients differ, the last row of Panel B reports the formal test of the difference between the two groups obtained from the fully interacted pooled model described in the Methods section. The difference in the Complexity coefficient is 0.134 ($t = 2.04$, $p = 0.041$) for AH and 0.134 ($t = 1.76$, $p = 0.078$) for AF; that is, the effect of complexity on audit hours is significantly larger when foreign subsidiaries are financially significant, while the difference for audit fees is significant only at the 10% level.

Table 7 re-estimates Equation (4) in the two groups. In the high-significance group (Panel A), the coefficient of *Complexity* $\times$ *Reliability* is -0.415 ($t = -3.13$) for AH, significant at the 1% level, and -0.282 ($t = -1.77$) for AF, significant at the 10% level. The attenuating effect of host-country in-

stitutional reliability is thus considerably stronger than in the full sample when foreign subsidiaries are financially significant. Importantly, the AH result in Panel A remains significant at the 5% level when standard errors are clustered by firm ($t = -2.18$).

In the low-significance group (Panel B), the interaction coefficient is positive and insignificant for AH (0.051, $t = 0.68$) and positive and marginally significant for AF (0.165, $t = 1.73$). The formal test in the last row of Panel B shows that the interaction coefficient differs significantly between the two groups: the difference is -0.466 ($t = -3.06$, $p = 0.002$) for AH and -0.447 ($t = -2.41$, $p = 0.016$) for AF, and the AH difference remains significant with firm-clustered standard errors ($t = -2.17$).

Taken together, these findings imply that auditors take the complexity of foreign subsidiaries and the institutional reliability of their host countries into account when allocating audit effort, but that they do so primarily when the foreign subsidiaries are financially significant to the consolidated financial statements.

Table 8 examines the sensitivity of the main results to the treatment of the error structure and of unobserved firm heterogeneity. Panel A re-estimates Equation (4) with standard errors clustered by firm (467 firms). The coefficient of Complexity remains positive and significant for both AH ($t = 3.06$) and AF ($t = 2.24$), and the corresponding Equation (3) coefficients are also significant ($t = 2.77$ and 2.57), so Hypothesis 1 is robust to clustering. The coefficient of Complexity $\times$ Reliability for AH keeps its sign and magnitude but is no longer significant at conventional levels ($t = -1.47$); as reported in Table 7, however, it is significant under clustering in the high-significance group, and the between-group difference is likewise significant. Panel B replaces the industry effects with firm fixed effects, so that the coefficients are identified only from within-firm changes over 2014–2017. In this specification, Complexity is insignificant for both AH and AF; the interaction with Reliability is insignificant for AH ($t = -0.41$) and, for AF, positive and significant at the 5% level (0.173, $t = 2.01$), i.e., opposite in sign to the cross-sectional estimate. These within-

Table 6. Effect of complexity on audit effort in subsamples split by the financial significance of foreign subsidiaries (Equation 3)

Panel A. High financial significance (foreign-subsidiary assets above the sample median share of consolidated assets)				
Variable	Dependent variable			
	AH		AF	
	Coeff.	t-stat	Coeff.	t-stat
Intercept	-4.175	-10.76***	-1.678	-4.08***
Complexity	0.183	3.53***	0.172	2.91***
Control variables	Included		Included	
Adjusted R ²	0.883		0.861	
Observations	833		833	
Panel B. Low financial significance (foreign-subsidiary assets at or below the sample median share of consolidated assets)				
Variable	Dependent variable			
	AH		AF	
	Coeff.	t-stat	Coeff.	t-stat
Intercept	-3.343	-7.97***	-0.076	-0.15
Complexity	0.049	1.20	0.038	0.79
Control variables	Included		Included	
Adjusted R ²	0.817		0.796	
Observations	834		834	
Difference test: Complexity (Panel A – Panel B)	0.134	2.04**	0.134	1.76*

Notes: ***, **, and * denote significance at the 1%, 5%, and 10% levels (two-tailed), respectively. t-statistics are based on heteroskedasticity-robust (White, 1980) standard errors. Control variables, industry effects, and year effects are as in Table 3. The difference test reports the coefficient on the interaction between the variable of interest and an indicator for the high-significance group in a pooled model in which every regressor is interacted with that indicator; it equals the difference between the Panel A and Panel B coefficients, and its t-statistic tests whether the difference is zero.

Table 7. Moderating effect of host-country institutional reliability in subsamples split by the financial significance of foreign subsidiaries (Equation 4)

Panel A. High financial significance (foreign-subsidiary assets above the sample median share of consolidated assets)				
Variable	Dependent variable			
	AH		AF	
	Coeff.	t-stat	Coeff.	t-stat
Intercept	−4.872	−11.52***	−2.328	−5.58***
Complexity	0.305	4.59***	0.252	3.37***
Reliability	0.103	0.93	0.010	0.08
Complexity×Reliability	−0.415	−3.13***	−0.282	−1.77*
Control variables	Included		Included	
Adjusted R ²	0.885		0.863	
Observations	833		833	
Panel B. Low financial significance (foreign-subsidiary assets at or below the sample median share of consolidated assets)				
Variable	Dependent variable			
	AH		AF	
	Coeff.	t-stat	Coeff.	t-stat
Intercept	−3.271	−7.43***	0.200	0.37
Complexity	0.035	0.73	−0.006	−0.10
Reliability	0.001	0.02	0.019	0.32
Complexity×Reliability	0.051	0.68	0.165	1.73*
Control variables	Included		Included	
Adjusted R ²	0.817		0.797	
Observations	834		834	
Difference test: <i>Complexity × Reliability</i> (Panel A – Panel B)	−0.466	−3.06***	−0.447	−2.41**

Notes: ***, **, and * denote significance at the 1%, 5%, and 10% levels (two-tailed), respectively. t-statistics are based on heteroskedasticity-robust (White, 1980) standard errors. Control variables, industry effects, and year effects are as in Table 3. The difference test reports the coefficient on the interaction between the variable of interest and an indicator for the high-significance group in a pooled model in which every regressor is interacted with that indicator; it equals the difference between the Panel A and Panel B coefficients, and its t-statistic tests whether the difference is zero.

Table 8. Robustness of the moderation model (Equation 4) to firm-clustered standard errors and firm fixed effects

Panel A. OLS with industry and year effects; standard errors clustered by firm				
Variable	Dependent variable: AH		Dependent variable: AF	
	Coeff.	t-stat	Coeff.	t-stat
Intercept	−3.956	−8.56***	−0.758	−1.42
Complexity	0.168	3.06***	0.149	2.24**
Reliability	0.006	0.08	−0.014	−0.17
Complexity×Reliability	−0.136	−1.47	−0.040	−0.35
SUB	0.168	7.20***	0.205	7.16***
PA	0.726	6.70***	0.988	8.02***
Size	0.354	22.68***	0.384	20.88***
Distance_Geo	0.031	1.11	0.009	0.26
Distance_Eco	0.024	0.75	0.029	0.79
abPMDA	0.580	2.50**	0.769	2.61***
ARINV	0.054	0.38	0.082	0.47
ROA	−0.213	−0.75	0.014	0.04
LEV	0.386	4.35***	0.505	4.88***
Loss	0.035	1.26	0.067	2.07**
BIG	0.285	8.22***	0.185	4.36***
FIRST	0.051	1.70*	0.044	1.29
Tenure	−0.034	−1.45	0.013	0.50
Industry effects	Included		Included	
Year effects	Included		Included	
Adjusted R²	0.852		0.826	
Observations	1,667		1,667	

Panel B. Firm fixed-effects (within) regression with year effects; standard errors clustered by firm				
Variable	Dependent variable: AH		Dependent variable: AF	
	Coeff.	t-stat	Coeff.	t-stat
Complexity	0.011	0.17	−0.020	−0.31
Reliability	0.150	1.87*	0.037	0.50
Complexity×Reliability	−0.043	−0.41	0.173	2.01**
SUB	0.100	2.82***	0.132	3.93***
PA	0.066	0.39	0.171	0.80
Size	0.101	1.84*	0.046	0.71
Distance_Geo	−0.022	−0.58	−0.045	−1.26
Distance_Eco	0.003	0.08	0.031	1.10
abPMDA	0.131	0.75	0.065	0.34
ARINV	−0.066	−0.33	−0.202	−0.99
ROA	−0.310	−1.21	−0.038	−0.14
LEV	0.136	0.83	0.261	1.80*
Loss	0.015	0.77	0.007	0.46
BIG	0.334	5.47***	0.306	4.06***
FIRST	0.016	0.57	−0.019	−0.76
Tenure	−0.086	−2.92***	−0.065	−2.32**
Firm effects	Included		Included	
Year effects	Included		Included	
R² (overall)	0.970		0.977	
Observations	1,667		1,667	

Notes: ***, **, and * denote significance at the 1%, 5%, and 10% levels (two-tailed), respectively. In both panels, standard errors are clustered by firm (467 firms). Panel A corresponds to Table 4 except for the standard errors. Panel B includes a fixed effect for each firm in place of the industry effects, so the intercept is not reported, and the coefficients are identified from within-firm variation only; industry effects are absorbed by the firm effects. Variables are defined in the Methods section.

firm estimates should be interpreted with great caution: only about 9% of the total variation in Complexity and 6% of that in Reliability occurs within firms over the four-year window, so the within estimator discards more than nine-tenths of the identifying variation. The firm fixed-effects results therefore indicate that our inferences rest on cross-sectional differences between groups rather than on within-group changes over time, which we acknowledge as a limitation of the design rather than as evidence against the hypotheses.

4. DISCUSSION

The results can be interpreted through the lens of agency theory. The inclusion of foreign subsidiaries widens information asymmetry between headquarters and subsidiary managers and raises the demand for auditor monitoring, and group auditors respond by devoting more hours to the engagement and by charging higher fees. A strong legal environment in the subsidiary's host country partially substitutes for auditor monitoring, thereby reducing the incremental effort that complexity would otherwise require. We stress that our moderator captures the institutional environment of the host country and not the reporting reliability of an individual subsidiary; the mechanism we document is therefore that auditors condition their risk assessment on where subsidiaries operate, which is consistent with the emphasis of ISA 600 (IAASB, 2009) on the environment of components in group audit planning. These findings underscore the importance of considering the legal and institutional context when assessing the overall risk profile of global group audits.

These results both confirm and extend prior research. The positive association between foreign-subsidiary complexity and audit effort is consistent with the audit-fee literature showing that client complexity is priced by auditors (Simunic, 1980; Hay et al., 2006; Gul et al., 2018) and with evidence that geographic dispersion and cross-border coordination increase the difficulty of group audits (Hanes, 2013; Downey & Bedard, 2019; Carson et al., 2022). Whereas most prior studies infer auditor effort indirectly from audit

fees, the present study observes engagement-level audit hours directly and shows that hours respond to complexity at least as strongly as fees do.

The moderating role of host-country institutions is in line with international evidence that the legal environment shapes the quality and reliability of financial reporting (Leuz et al., 2003; Brown et al., 2014; Srinivasan et al., 2015; Ewert & Wagenhofer, 2019) and with findings that earnings management within multinational groups varies with the institutional characteristics of subsidiary locations (Dyreng et al., 2012; Beuselinck et al., 2019). The present results add to this literature by showing that group auditors incorporate such institutional differences into their effort decisions: the same level of complexity elicits less additional effort when subsidiaries operate under a stronger rule of law.

Three further patterns deserve comment. First, the attenuation effect is significant for audit hours but not for audit fees, suggesting that hours are the more elastic margin of the auditor's response and that changes in effort do not translate one-for-one into pricing (Caramanis & Lennox, 2008). Second, both the complexity effect and its moderation are concentrated among groups whose foreign subsidiaries are financially significant, and the formal difference tests in Tables 6 and 7 confirm that the coefficients differ between the high- and low-significance groups; this is consistent with the argument that the consequences of audit failure, and hence the auditor's risk response, increase with the financial importance of foreign operations (Dyreng et al., 2012; Gunn & Michas, 2018). Third, the evidence is cross-sectional in nature. Hypothesis 1 is robust to firm-clustered standard errors, whereas the full-sample interaction is only moderately significant under clustering and the hypothesized effects do not survive firm fixed effects, because complexity and host-country reliability are nearly time-invariant within a firm over the four-year window. The results therefore document how audit effort differs across groups with different subsidiary structures, rather than how it changes when a given group alters its structure; unobserved, time-invariant firm characteristics correlated with subsidiary structure cannot be ruled out as a partial explanation.

CONCLUSION

This study aimed to examine the effect of complexity arising from the inclusion of foreign subsidiaries on group auditors' audit effort and the moderating role of the institutional reliability of the subsidiaries' host countries. Using 1,667 firm-year observations of Korean listed firms for 2014–2017, a setting in which engagement-level audit hours are publicly disclosed, the analysis shows that foreign-subsidiary complexity significantly increases both audit hours and audit fees, and that this result is robust to firm-clustered standard errors. The effect on audit hours weakens as a larger share of subsidiaries is located in countries with a stronger rule of law than Korea, with the simple slope of complexity declining from 0.168 to an insignificant 0.032 across the range of the moderator. Both the complexity effect and its attenuation are concentrated among groups whose foreign subsidiaries are financially significant, where the moderation is robust to firm clustering and differs significantly from the low-significance group.

It follows from these findings that group auditors allocate their resources in a risk-responsive manner, treating foreign-subsidiary complexity as a source of audit risk and host-country institutional quality as a factor that mitigates it. For audit firms, measures of subsidiary complexity and host-country reliability should therefore be incorporated explicitly into group audit planning and supervision; for regulators, risk-based oversight of cross-border engagements should pay particular attention to financially significant subsidiaries located in weaker institutional environments.

The study has limitations that suggest directions for further research. The moderator is a country-level proxy for the institutional environment and does not capture the governance or reporting quality of individual subsidiaries; firm-level or component-level data could refine the measurement of subsidiary reliability. The identification is cross-sectional: because subsidiary structures change little within a firm over the sample window, firm fixed-effects estimates are uninformative, and longer panels or settings with exogenous changes in subsidiary structure would allow within-firm effects to be estimated. Finally, future work could test whether the patterns documented here extend to other jurisdictions as audit-hour disclosure becomes more widely available.

ETHICS STATEMENT

This study uses publicly available archival firm-level data and does not involve human participants. Therefore, institutional review board approval and informed consent were not required.

INFORMED CONSENT

Not applicable.

AUTHOR CONTRIBUTIONS

Conceptualization: Jongsoo Han.

Data curation: JungYun Kang.

Formal analysis: JungYun Kang, SoHyeon Kang.

Project administration: Jongsoo Han, Sangmi Kim.

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