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Importance of country factors for global differences in audit pricing: New empirical evidence

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In recent years, we have seen an increasing interest in the country-level differences in audit environments as they might have a pervasive impact on how financial statement audits are conducted around the world. We contribute to this emerging stream of research in three important ways. Firstly, we provide a comprehensive synthesis of country-level determinants that have been employed in previous multinational auditing research. Secondly, we document economically significant differences in the overall levels of audit pricing between countries, which we interpret as a compelling evidence that audits are conducted differently in different countries. Lastly, we explain these pricing differences between countries with a large set of country variables identified in our synthesis of prior multinational auditing research. We find not only that economic and regulatory characteristics explain the most of the differences in audit pricing between countries but also that differences attributable to sociological characteristics seem to be important in the conduct of audits. As auditing as a service and profession has become increasingly globalized, our study should be of interest to a wide range of readers including researchers, practitioners and regulators.

KEYWORDS

audit fees, auditing, country characteristics, cross-country research

1 | INTRODUCTION

Audit pricing lies at the heart of auditing research because audit fees are often used as a proxy for unobservables such as quality or risk or the degree of competitiveness in the market (DeFond & Zhang, 2014; Francis, 2004; Knechel et al., 2019; Simunic, 1980). Building on insights from prior studies on audit pricing (Hay et al., 2006; Simnett et al., 2016), we contribute to this literature by addressing the question of what drives potential differences in audit pricing and, thus, the financial statement audit generally around the world.

Our study is motivated by a gap in existing literature. To date, audit pricing research has primarily been examined in one country at a time, focusing usually on client and auditor characteristics as determinants of audit fees. These determinants of audit fees are relatively well-documented by now (Hay et al., 2006). However, we know little about country-level factors related to the environments in which audits are conducted. Yet, these environments seem to vary considerably across the world. Each country has its own unique combination of formal and informal institutional features, which potentially have an impact on the usefulness and value of a financial statement audit

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for investors and other users of financial reports (e.g., Choi et al., 2008; Knechel et al., 2019). Doing so, these institutional features are likely to influence the nature of audits, including their scope and the level of assurance provided.

An increasing interest in similarities but also differences in audit environments between different countries is at least partially attributable to the globalization of auditing (e.g., Carson, 2009). With ever more internationally integrated markets and more widespread use of international accounting standards, audit industry globalization continues to accelerate (Carson, 2013). In particular, Big4 auditors¹ are spread out across the entire globe and make use of harmonized auditing techniques, whereas the dissemination of International Standards on Auditing (ISAs) induces more comparable audit requirements (Ege et al., 2020; Lindberg & Seifert, 2011).

Parallel with the globalization of auditing standards and the auditing industry generally, international differences in audit pricing and the underlying country determinants have, during recent years, received increased attention in the auditing literature. We now know, for example, that audit fees reflect variations in legal regimes and auditors' exposure to litigation risk (Choi et al., 2008; Jaggi & Low, 2011; Srinidhi et al., 2009), rules on disclosure, 'regulatory burden' in general (Taylor & Simon, 1999), culture and particularly trust within society (Knechel et al., 2019), and economic development in any given country (Chung & Narasimhan, 2002). Additionally, the structure of the audit market seems very much related to audit fees (Choi et al., 2019).

However, we do not yet have any systematic synthesis of multinational auditing research. We lack a comprehensive overview of financial statement audits' country determinants. Due to differences in sample sizes, countries examined, time periods and settings, the previous cross-country studies are not completely comparable, and hence, the results cannot simply be aggregated together. Furthermore, multinational audit fee studies seldom consider a consistent set of country variables, making it difficult to assess the relative importance of country attributes. In essence, we still do not know the following: (1) which country-level factors have been considered in prior studies; (2) to what extent there are differences in the level of audit fees across countries; and (3) what is the relative importance of country factors as drivers for cross-country differences in audit pricing (i.e., how important are country-level factors generally relative to auditor and client attributes; and which country factors have the strongest impact). In looking at these questions, our main objective is to understand how institutional features define auditing. This leads to our overall research question: what drives differences in the levels of audit pricing around the world?

Our analysis consists of three steps. Firstly, to identify potential country-level determinants of the financial statement audit, we conduct a comprehensive literature search on the existing cross-country auditing research. We identify 50 different auditing studies applying an empirical archival, multinational approach, which consider 75 individual country variables. These variables cover a broad range of country characteristics such as economic situation, regulatory

environment, general characteristics of the national audit market and sociological attributes.

Secondly, using a set of panel data made up of 56,823 firm-year observations from 27 different countries for the period 2002–2017, we illustrate the magnitude of differences in audit fee levels among our sample countries. For instance, a US firm pays, on average, audit fees more than double those of a similar firm in Canada, Australia or the United Kingdom, and almost 20 times as much as a Pakistani company would pay.² This indicates that financial statement audits are conducted and perceived differently around the world.

Thirdly, on the basis of our cross-country data, we examine how important the identified country-level factors are as audit pricing determinants. To deal with the vast number of country-level factors that are correlated with each other and to facilitate the interpretation, we subject them to principal component analyses (PCAs). Before doing so, we preclassify country-level factors into economic, regulatory, audit market-related and sociological features. We then investigate the relative impact of the resulting latent factors on audit pricing and find that adding these factors to a basic client-/auditor-level model increases the adjusted R^2 by almost 11 percentage points, demonstrating the importance of country-level variables that represent institutional differences among countries. Regarding the relative importance of country features, we find that economic characteristics explain most of the cross-country audit fee variations, followed by the regulatory environment. Audit market factors and sociological differences also explain part of the fee variations but play a less important role.

Our study makes key contributions to current literature in several important ways. Firstly, we provide a comprehensive overview of the country determinants being considered in auditing literature. On the basis of these insights, we propose opportunities for future research. Secondly, we empirically document substantial variations in audit pricing across different institutional settings, suggesting that in spite of attempts to harmonize professional guidance (e.g., ISAs) on auditing, audits conducted in different environments are not the same. Thirdly, our results show the relative importance of wide-ranging country-level factors on audit pricing. Hence, our findings can serve as a framework for future cross-country auditing research in selecting an appropriate and coherent set of country control variables. Summarized, this study enhances our understanding of cross-country differences in auditing and their determinants, which is of particular interest at a time when auditing and markets for audit services are becoming increasingly globalized. Accordingly, our study entails significant implications for researchers and practitioners as well as regulators.

The remainder of our paper is organized as follows. In Section 2, we present our research questions. In Section 3, we explain our comprehensive literature search used in the identification and grouping of country-level determinants of audit pricing. Section 4 describes the data used in our empirical analyses. Section 5 presents the results, and Section 6 concludes the study.

2 | THEORY AND RESEARCH QUESTIONS

The following model based on Simunic's (1980) seminal work provides a general framework for identifying audit fee determinants and, thus, explaining differences in the level of audit pricing³:

$$p = P(q, g, h), \quad (1)$$

where p is the level of audit fees, q is the quantity of resources invested by the auditor in performing the audit (i.e., the audit effort), g represents the risk premium due to possible future losses for which the auditor might become responsible, and h is the competition in an audit market.

The quantity of resources invested into the financial statement audit (e.g., audit hours, experienced staff and specialists; Niemi et al., 2018), in turn, is a function of the general scope of the audit (k), client participation (s) and economies of scale (v) (fixed investments ignored):

$$q = Q(k, s, v). \quad (2)$$

This leads to the following comprehensive audit pricing framework:

$$p = P(k, s, v, g, h). \quad (3)$$

This model was the starting point for a vast amount of research that has been dedicated to the pricing of audit services. Considerable attention is being paid to the fee charged by the external auditor because it reflects many audit-related characteristics. Audit fees can serve as a proxy to investigate the evaluation by auditors of client-specific risk and the effort spent by the auditor (Simunic, 1980). Studying the pricing of audit services further helps to understand the competitiveness of audit markets and issues of contracting (e.g., low-balling; DeAngelo, 1981; Ghosh & Lustgarten, 2006) or independence (e.g., abnormally high audit fees; Asthana & Boone, 2012; Choi et al., 2010) related to the audit process (Hay et al., 2006). Because audit fees reflect the level of effort, they can even be interpreted as an input-based proxy for audit quality (DeFond & Zhang, 2014).

There has been considerable interest for a long time in the accounting literature in understanding variations in audit fees and their determinants. In the early stages, audit fee research has been primarily focused on individual audit markets of English speaking countries, particularly the United States (e.g., Francis & Simon, 1987; Gist, 1992; Palmrose, 1989; Simunic, 1980), Australia (e.g., Craswell & Francis, 1999; Francis, 1984; Gerrard et al., 1994) or the United Kingdom (e.g., Beattie et al., 2001; Brinn et al., 1994; Chan et al., 1993). In the next wave, audit fee studies were conducted in countries such as Canada (e.g., Anderson & Zéghal, 1994), Finland (Niemi, 2002), New Zealand (Firth, 1985) or Hong Kong (DeFond et al., 2000) as well as for developing countries like South Africa (Simon, 1995) or India (Simon et al., 1986). The majority of these studies investigate auditor and auditee attributes as determinants of audit fees. Based on a

qualitative literature review of international single-country audit fee research (Cobbin, 2002) and meta-analyses on determinants of audit fees (Hay, 2013; Hay et al., 2006), the most important client characteristics are client's size, risk and complexity of client's operations. Other important determinants include the auditor's size and whether the auditor's opinion is modified. Also, the length of client relationship and other engagement-related attributes such as the reporting date (busy season) affect audit fees. In sum, identified auditor/client determinants of audit fees explain most of the variation in audit fees.

However, in spite of call for research, much less has been done regarding the role of country-specific institutional and/or macroeconomic factors in external auditing (Choi et al., 2008; Simnett et al., 2016). We still lack a comprehensive analysis of multinational audit literature. Our study fills this void by synthesizing the existing cross-country auditing literature. Particularly, we aim to provide a comprehensive overview of the country-level variables employed in multinational empirical audit models. This leads to our first research question:

RQ1. Which country-level factors have been considered in the existing multinational auditing literature?

There are two opposite forces related to country-level differences in the way that audits are conducted and perceived. First, national audit markets are becoming more homogeneous due to globalization of auditing (Carson, 2009). This globalization should decrease idiosyncrasy between countries. With ever more internationally integrated markets and more widespread use of international accounting standards, audit industry globalization continues to accelerate (Carson, 2013). Moreover, as leading audit firms (especially Big4 auditors) are nowadays spread out across the globe, their audit methodologies and knowledge sharing within their global networks further harmonize the conduct of audits (Barrett et al., 2005; Ege et al., 2020). In Russia, for example, the demise of the planned economy not only resulted in a wide-scale entry of international auditors but also changed in the way that local audit firms conduct their audits (Alon & Dwyer, 2012; Mennicken, 2008, 2010; Samsonova, 2009). Furthermore, international networks of regulators and supervisors actively pursue the goal of global harmonization in auditing (Humphrey et al., 2009; Humphrey & Loft, 2009). In particular, dissemination of the ISAs developed by the International Auditing and Assurance Standards Board (IAASB) together with the convergence of ISAs with the United States generally accepted auditing standards is inducing more comparable audit requirements (Lindberg & Seifert, 2011).

Despite globalization of auditing, each country has its own unique combination of formal and informal institutional features (Francis, 2011). These differences between countries are likely to have an impact on the audit pricing (e.g., Choi et al., 2008; Knechel et al., 2019). As pointed out by Francis (2011, p. 321), even the largest international audit firms comprise networks of national firms in which each country constitutes a unique practice and audit market. Particularly, the work of an external auditor is largely subject to regulatory requirements, which also entail personal liability risks for the auditors.

As such, the stringency of legal institutions in a country should significantly determine the required audit effort and litigation risk, both affecting audit fees based on Simunic's (1980) audit pricing framework. Moreover, informal institutions such as the cultural background of a country are also likely to have an impact on how the financial statement audit is perceived within the society and conducted by the auditor. Institutional features are, therefore, likely to influence the nature of audits, including their scope and the level of assurance provided.

The existing cross-country auditing literature has investigated which country attributes might have an impact on audit pricing, but still little is known on whether—and to what extent—there actually are differences in financial statement audits and, consequently, in the pricing of these services around the world attributable to differences in institutional settings. Stemming from the discussion above, this leads to our second research question:

RQ2. To what extent are there differences in audit pricing around the world?

On the basis of our literature review of financial statement audits' country determinants, we further explore the relative importance for these country attributes in explaining potential differences in audit pricing around the world. Previous literature has examined country-level factors that might affect the financial statement audit. However, these studies mostly include a small number and inconsistent set of country variables in their empirical models. Moreover, there may be studies with varying results due to variations in sample size, time period, and setting of the study. Hence, it is still unclear which country factors are the dominant drivers for potential international differences in audit pricing and how important such country characteristics are generally in relation to client and auditor attributes. This is summarized in our final research question:

RQ3. What is the relative importance of country-level factors for audit pricing?

3 | POTENTIAL COUNTRY-LEVEL DETERMINANTS OF AUDIT FEES: REVIEW OF PRIOR CROSS-COUNTRY LITERATURE

We performed an exhaustive literature search via EBSCOhost, SSRN and other internet sources to identify possible country determinants of financial statement audits considered in empirical archival cross-country auditing research. We did not restrict our search to any specific journals or time periods but considered all available studies, including working papers. However, to be included in our literature analysis, studies are required to consider at least three different countries, a country-level factor as independent variable and an audit-related factor as dependent variable. Hence, while we focus on audit fees only in our subsequent empirical analyses as the arguably most comprehensive measure for the financial statement audit, we also

consider research on other audit-related factors for the literature review (e.g., audit fees, audit quality and auditor choice). These factors are relevant to understanding trends in cross-country research, which are discussed in this section. Moreover, it is useful to consider multinational studies with a focus on other audit-related variables in identifying potential country-level drivers of audits. For instance, a country factor for which has been documented a significant effect on the preferred auditor choice in a jurisdiction also most likely has an impact on audit pricing and the way audits are conducted. Accordingly, with our literature search strategy, we more comprehensively investigate audit determinants, and it enables us to expand the list of potentially important country determinants that have yet to be examined in multinational audit fee research.

Table 1 reports the list of cross-country studies identified, based on our literature research procedure. In total, we identified 50 studies, of which 25 directly examine audit fees (Panel A), whereas the remaining 25 focus on other audit-related factors (Panel B). These other factors mostly include audit quality followed by auditor choice, audit opinion and audit market concentration. However, 10 of the 25 audit fee studies also consider additional audit-related issues such as audit quality or auditor choice. On average, each study covers approximately 30 countries. The number of countries considered by each study has increased significantly over the last two decades (from average 21.2 before to 34.6 after 2010). In total, empirical studies consider a large range of 145 different countries, but a much smaller set of 27 countries has been analysed on a regular basis in at least half of the identified studies. Developing countries—with some exceptions such as Pakistan or the Philippines—are rather underrepresented. European data from jurisdictions such as the United Kingdom, Sweden or France have been most widely used. As these countries are likely to exhibit similar formal and informal institutional features such as regulatory requirements or cultural beliefs, one important recommendation for potential future research is, therefore, to consider more data from less-developed, smaller economies.

Table 2 summarizes the individual country factors considered by these 50 studies, which have assembled a broad range of variables that impact auditing in a diverse range of countries. On average, each audit fee study includes 6.9 individual country variables, whereas each of the other audit-related studies considers 8.8 variables.⁴ The number of country variables per study has increased considerably in recent decades from an average of 6.1 before 2010 to 8.6 thereafter.

In total, the studies identified consider 75 different country characteristics.⁵ Those can be categorized into four broad groups: economic, regulatory, audit market, and sociological.⁶ When distinguishing between audit fee and other auditing studies, we find that only 17 of these characteristics have been investigated solely by studies that do not focus on audit fees. Hence, the cross-country audit fee literature has already considered a broad range of potential country-level audit pricing determinants. Nevertheless, this comparison reveals potential opportunities for future research. Sociological features such as cultural attributes, social trust or religious norms have received increased attention in business and accounting literature

TABLE 1 Overview of cross-country auditing studies

Panel A. Cross-country studies using audit fees as dependent variable							
Authors	Date	Publication	Additional dep. variable(s)	Period	Sample size (firm-years)	Countries	Individual country factors
Alexeyeva and Mejia-Likosova	2016	IJA		2008–2013	814	24	6
Asthana, Raman, and Xu	2015	AH	Auditor choice; audit quality	2000–2012	5,164	49	15
Bakarich and Kerr	2016	WP	Audit quality	1993–2011	72,721	47	2
Bronson, Ghosh, and Hogan	2017	CAR		2000–2011	48,952	23	10
Choi, Kim, Kim, Lee, and Sunwoo	2019	WP		2004–2015	63,116	27	7
Choi, Kim, Liu, and Simunic	2008	CAR		1996–2002	21,559	15	9
Choi, Kim, Liu, and Simunic	2009	TAR		1996–2002	17,837	14	9
Chung and Narasimhan	2002	IJA		1989–1993	6,198	12	1
Fargher, Taylor, and Simon	2001	TIJA	Auditor choice	1994	796	20	3
Francis, Khurana, and Pereira	2003	APJAE	Audit quality; audit market	1990	30 (countries)	30	3
Goncharov, Riedl, and Sellhorn	2014	RAST		2001–2008	480	15	3
Gunn, Kawada, and Michas	2019	JAPP	Audit quality	2007–2013	29,179	28	7
Houqe, van Zijl, Karim, and Mahoney	2019	PMM		1998–2014	102,943	48	8
Kallunki, Sahlström, and Zerni	2007	IJA	Auditor change	1994–2003	12,379	10	2
Jaggi and Low	2011	TIJA		1996–2005	51,845	17	11
Kim, Liu, and Zheng	2012	TAR		2005–2008	11,912	14	8
Knechel, Mintchik, Pevzner, and Velury	2019	AJPT	Auditor choice	1997–2013	40,550	22	11
Kuo and Lee	2016	RAST		1996–2012	136,209	34	10
Kuo and Lee	2018	JIFMA		2005–2014	11,702	21	6
Persakis and Iatridis	2016	JIFMIM	Audit quality; auditor choice	2005–2012	137,091	17	8
Riccardi, Rama, and Raghunandan	2018	AJPT		2003–2013	102,211	33	3
Srinidhi, Lim, and Hossain	2012	JIFMA	Audit quality	1999–2004	19,064	12	10
Srinidhi, Lim, and Hossain	2009	JCAE		1993–2004	20,459	12	10
Taylor and Simon	1999	TIJA		1991–1995	2,333	20	3
Zhang, Xu, Tong, and Ye	2018	JBFA	Audit quality; audit opinion	1996–2013	75,910	8	7
Average:						22.9	6.9
Panel B. Other cross-country studies with audit-related dependent variable							
Ahn and Akamah	2018	WP	Audit opinion	2004–2013	39,855	38	9
Boolaky	2012	MAJ	Strength auditing standards	2010	41 (countries)	41	16
Boolaky, Krishnamurti, and Hoque	2013	AABJF	Strength auditing standards	2010	133 (countries)	133	10
Brooks, Cheng, Johnston, and Reichelt	2011	WP	Audit quality	1996–2009	104,758	26	2
Broye and Weill	2008	AFE	Auditor choice	2000	47,000	10	5
Chan, Lin, and Mo	2003	AJPT	Audit quality	1999	80 (firms)	15	3
Chen	2016	JBE	Audit quality	1996–2013	231 (firms)	33	3

(Continues)

TABLE 1 (Continued)

Panel B. Other cross-country studies with audit-related dependent variable							
Chen, Zhang, and Zhou	2017	JIFMA	Audit opinion	1994–2012	49,697	33	7
Choi and Wong	2007	CAR	Auditor choice	1993–1998	56,885	39	7
Chung, Firth, Kim, and Pang	2014	Book	Audit quality; auditor choice	1992–2007	108,504	36	21
Dinh and Piot	2014	WP	Audit market concentration	2001–2008	5,464	22	1
Duh, Ye, and Yu	2018	APJAE	Audit market concentration	2003–2012	14,114 (country-industries)	78	17
Ettredge, Kwon, and Lim	2009	JAAF	Auditor choice	1993–2005	39,053	29	12
Francis and Wang	2008	CAR	Audit quality	1996–2004	57,966	42	5
Francis, Khurana, Martin, and Pereira	2011	CAR	Voluntary audit	1999–2000	3,829	62	7
Francis, Michas, and Seavey	2013	CAR	Audit quality	1999–2007	55,408	42	11
Fung, Zhou, and Zhu	2016	JIBS	Audit opinion	1994–2012	41,192	33	13
Hope, Kang, Thomas, and Yoo	2008	JAPP	Auditor choice	1992–2004	91,030	37	8
Kleinman and Lin	2017	IJDG	Audit enforcement	2002, 2005, 2008	46 (countries)	46	13
Houqe, van Zijl, Dunstan and Karim	2015	RAR	Auditor choice	1998–2007	132,853	46	7
Kwon, Lim, and Tan	2007	AJPT	Audit quality	1993–2003	27,824	28	11
Michas	2011	TAR	Audit quality; auditor choice	2001–2005	5,432	15	9
Mohrmann, Stefani, and Hess	2017	WP	Audit quality; audit market	2002–2014	123,073	29	14
Van Tendeloo and Vanstraelen	2008	EAR	Audit quality	1998–2002	64,353	6	6
Vann and Presley	2018	JMI	Audit quality	2003–2009	22,438	25	2
Average:						37.8	8.8

Note: Table 1 presents information about the cross-country auditing studies identified in the literature search. Studies are considered only if they have a multinational, empirical approach (at least three different countries) with at least one country-level variable included as well as an audit-related dependent variable. In Panel A, we report a list of studies with audit fees as dependent variables. Panel B reports a list of cross-country studies with an audit-related dependent variable, which is not audit fees.

over the last decade (e.g., Ahern et al., 2015; Hartlieb et al., 2020; Kanagarethnam et al., 2015). However, from the five sociological factors identified in our literature analysis, only two (generalized trust and civic morality) have been considered by a cross-country audit fee study (Knechel et al., 2019). Some audit-related cross-country studies have also considered other sociological factors such as the impact of culture, ethical behaviour or religion on auditor choice (Hope et al., 2008; Houqe et al., 2015) or audit opinion (Chen et al., 2017). Although similar attributes have already been investigated in a single-country setting (e.g., Jha & Chen, 2015; Leventis et al., 2018), multinational audit fee studies should also place greater emphasis on such informal institutions as they should also influence the audit pricing function on a global scale. Moreover, some country-level educational features (e.g., percentage of people with a Bachelor's degree, literacy rate or training and development of staff), have yet to be considered, despite the likelihood that they will have an impact on cross-country variations in audit pricing, for instance by affecting the level of audit effort (Che et al., 2018).⁷

One of the most widely used country-level variables is the gross domestic product (GDP), which has been included in 26 studies (14 audit fee papers). These studies clearly indicate a positive relationship between GDP and the pricing of audit services, with 12 studies reporting a positive and significant effect, whereas only two documents an insignificant impact. Other frequently used measures representing a country's economic situation are the level of market capitalization (19 studies) and foreign direct investments (FDIs) (14 studies).

Furthermore, several regulatory features such as investor protection (e.g., Jaggi & Low, 2011; particularly in terms of the anti-director rights variable retrieved from La Porta et al. (1998)), disclosure requirements and quality (e.g., Bronson et al., 2017), the legal origin (e.g., Kim et al., 2012), the legal regime (e.g., Choi et al., 2008; also often referred to as litigation risk (Wingate, 1997)) or the rule of law (e.g., Srinidhi et al., 2009) are considered to influence the audit process and are thus included in empirical models regularly in 10 studies or more. Specifically, the rule of law (sometimes also referred to as

TABLE 2 Summary of country-level variables used in auditing research

Country variable	Audit fee studies					Other audit-related studies	Total
	Number of studies	Positive effect on audit fees	Negative effect on audit fees	Insignificant	Effect not reported/no direct effect	Number of studies	Number of studies
Economic							
Wage level (accountants)	3	2	1	0	0	0	3
Analyst coverage	1	0	1	0	0	1	2
Average assets (number firms)	1	1	0	0	0	1	2
Cost of living	1	1	0	0	0	0	1
Development level	1	1	0	0	0	1	2
Earnings management	1	0	0	0	1	1	2
FDI (scaled by GDP)	10	2	5	3	0	4	14
GDP (per capita)	14	12	0	2	0	12	26
GDP growth	2	1	0	0	1	5	7
Inflation	1	0	0	1	0	1	2
Importance equity market	2	0	2	0	0	3	5
Market capitalization (development) (scaled by GDP)	9	5	1	3	0	10	19
News circulation	3	2	1	0	0	0	3
Ownership concentration	1	1	0	0	0	5	6
Product market competition	3	3	0	0	0	0	3
Tax compliance	3	2	1	0	0	0	3
Education						2	2
Financial markets						2	2
Financial constraints						1	1
Literacy						1	1
Management professionalism						2	2
Staff development						1	1
Stock price co-movement						1	1
Regulatory							
Accounting standards quality	1	0	0	0	1	0	1
Anti-director rights	5	4	1	0	0	11	16
Anti-self-deal index	2	0	1	0	1	2	4
Audit profession development	1	0	1	0	0	1	2
Audit regulatory environment	3	2	0	0	1	2	5
Book-tax conformity	2	1	1	0	0	0	2
Complexity local GAAP	1	0	0	0	1	0	1
Control of corruption (corruption [perception] index)	4	2	0	0	2	6	10

(Continues)

TABLE 2 (Continued)

Country variable	Audit fee studies					Other audit-related studies	Total
	Number of studies	Positive effect on audit fees	Negative effect on audit fees	Insignificant	Effect not reported/no direct effect	Number of studies	Number of studies
Corporate governance (efficiency corporate boards)	3	1	1	0	1	2	5
Cost of entry	1	0	1	0	0	0	1
Difference IAS/IFRS	1	1	0	0	0	2	3
Disclosure level	9	8	1	0	0	4	13
Disclosure minority shareholders	1	1	0	0	0	0	1
Disclosure requirements	3	2	0	1	0	7	10
Economic policy uncertainty	1	0	1	0	0	0	1
Efficiency judicial system	7	5	0	0	2	6	13
Enforcement environment	2	1	0	0	1	0	2
Extent of regulation	2	2	0	0	0	0	2
Financial action task force	1	0	1	0	0	0	1
Government transparency	1	1	0	0	0	0	1
IFRS adoption	3	2	1	0	0	4	7
Investor protection	1	1	0	0	0	1	2
IOSCO	1	0	1	0	0	0	1
Judicial independence	2	2	0	0	0	1	3
Legal origin	5	1	1	0	3	13	18
Legal rights	1	1	0	0	0	0	1
Liability standard	4	2	0	2	0	7	11
Litigation risk (legal regime)	8	7	0	0	1	5	13
Property rights	1	1	0	0	0	0	1
Protection minority shareholders	1	1	0	0	0	1	2
(Public) enforcement	5	1	0	1	3	6	11
Regulatory quality	2	0	0	0	2	1	3
Risk of expropriation	1	0	1	0	0	1	2
Rule of law (law and order)	14	7	3	0	4	13	27
Size securities regulator	1	0	0	0	1	2	3
State ownership	1	0	1	0	0	1	2
Strength standards	2	1	0	0	1	2	4
Creditor rights						2	2
Efficiency legal framework						2	2
Insider trading						1	1
Judicial constraints						1	1
Openness						1	1

(Continues)

TABLE 2 (Continued)

Country variable	Audit fee studies					Other audit-related studies	Total
	Number of studies	Positive effect on audit fees	Negative effect on audit fees	Insignificant	Effect not reported/no direct effect	Number of studies	Number of studies
Tax alignment						2	2
Tax burden						1	1
Audit market							
Big4 share	3	2	0	1	0	3	6
Big4 market concentration	3	2	0	1	0	4	7
Big4 dominance	3	2	0	0	1	0	3
Sociological							
Generalized trust	1	1	0	0	0	1	2
Civic morality	1	1	0	0	0	0	1
Secrecy (culture)						6	6
Ethics						3	3
Religion						1	1

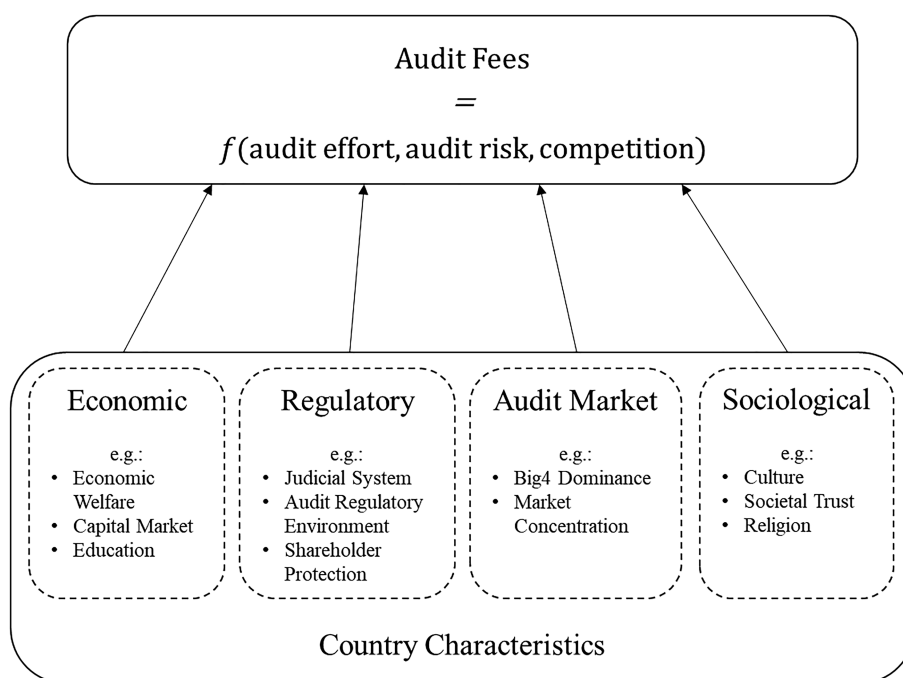
Note: Table 2 reports the individual country-level variables, which have been considered in the studies identified in Table 1. For the audit fee studies, we report the effect of the corresponding country variable on audit pricing. Variables are grouped into four categories presented in Panel A of Table 4. Abbreviations: FDI, foreign direct investment; GDP, gross domestic product; ISA, standards on auditing.

‘law and order’) is most widely used in empirical cross-country auditing research (27 studies). Based on the existing evidence, these regulatory features mostly exhibit a positive and significant impact on audit fees.

More contemporary research has also considered general audit market attributes and their impact on audit pricing (e.g., Asthana et al., 2015; Choi et al., 2008; Choi et al., 2019; Gunn et al., 2019). For

example, these studies find that the percentage of Big4 auditors in an audit market, Big4 dominance and market concentration tend to positively affect audit fees.

In general terms, empirical studies find a consistent impact on audit pricing for most of the country characteristics. However, for some variables such as FDI, news circulation, book-tax conformity or corporate governance, the literature analysis yields mixed results. This

FIGURE 1 Clusters of country-level audit fee determinants identified in literature review

might be attributable to differences in sample sizes, countries examined, time periods or specific empirical models. However, not all studies considered in our literature analysis aim to investigate the direct effect of institutional attributes on auditing. Instead, some examine the moderating role of such country factors on documented associations in audit practice (e.g., Alexeyeva & Meijka-Likosova, 2016; Kuo & Lee, 2018). These studies deepen our understanding of how country factors affect auditor behaviour and, in turn, audit pricing.

Following our review of prior empirical cross-country audit fee studies and other auditing-related studies, we have identified a broad range of country characteristics in the literature that are associated with audit fees and various proxies for audit quality. These country characteristics can be summed up under four broad categories (economic, regulatory, audit market, sociological), which might impact the audit pricing function, as visualized by Figure 1. This suggests that audits are conducted and perceived differently around the world. In the next sections, we extend our literature review by empirically examining which country factors are the dominant drivers for (potential) differences in audit fees worldwide.

4 | DATA

To examine empirically the relative importance of country-level factors identified in previous studies on audit pricing, we retrieve data on audit fees and other financial items in USD for the period 2002–2017 from Refinitiv (formerly: Thomson Reuters) Eikon, which also includes Worldscope data.⁸ We exclude financial firms and public utilities due to their specific regulatory environment and limited comparability. Additionally, each country is required to have a minimum of 100 firm-year observations with available data for all client-/auditor-level variables, resulting in a preliminary sample that comprises data from 31 different jurisdictions. We obtain data for the country variables from the sources mentioned in the respective cross-country studies.⁹ However, these sources seldom provide information for all countries. In fact, had we considered all available variables from the 75 country variables identified in the literature review, no single country would be covered by data for all these variables. For this reason, we select variables that have not only been extensively employed to explain country differences in audit pricing, but which are also covered by a broad range of countries. We consider all variables used in audit fee models for which data is publicly available and those that have been regularly used (i.e., at least three times) in other audit-related studies. Furthermore, we exclude country variables that provide information for less than 25 countries to ensure that our empirical analysis can be applied to a broad range of countries.

On the basis of this procedure, we consider 49 variables, which represent multiple country characteristics available for 27 countries. In most cases, the data sources provide time-invariant values, as country characteristics are perceived to be relatively constant over time. To deal with missing values in cases where time-series data are available, we use the average time-series value of the variables. Furthermore, to deal with differences in scale, we standardize all country

variables (Isidro et al., 2020). Accordingly, our final sample for the empirical analysis comprises 56,823 firm-year observations (based on 11,214 firms) from 27 different countries.¹⁰ The number of observations by country ranges from 12,951 (Japan) to 151 (New Zealand).¹¹

5 | EMPIRICAL ANALYSES

5.1 | Cross-country differences in audit pricing

As discussed earlier, on the one hand, each country has its own unique combination of formal and informal institutional features reflecting the environments in which audits are conducted; but on the other hand, international networks of audit firms, regulators and supervisors pursue the goal of global harmonization in auditing. It is unclear, therefore, how similar or different financial statement audits are in different countries. To shed light on this question, we start our analyses by examining audit pricing differences across the countries, which should also reflect differences in the ways audits are conducted and perceived. Building on well-established audit fee models (Hay, 2013; Hay et al., 2006), we control for firm-specific factors and calculate relative fee differences compared with the United States as a benchmark country.¹² Hence, we estimate the following log-log audit fee ordinary least squares regression model:

$$\ln(\text{audit_fees}) = \alpha_0 + \alpha_1 \ln(\text{total_assets}) + \gamma'X + fe + \varepsilon, \quad (4)$$

where the vector X consists of a wide range of client-/auditor-level variables identified in meta-analyses on audit fee determinants (Hay, 2013; Hay et al., 2006).¹³ These variables capture client-specific attributes such as complexity, inherent risk or reporting date as well as auditor-specific factors such as type, opinion or audit firm rotation (Hay et al., 2006).¹⁴ Additionally, we include industry (Fama/French 48-industry classification) and year fixed-effects to control for potential unobserved factors (fe).

For the calculation of relative audit fee differences, we augment this model 4 by country indicators.¹⁵ We estimate the model for each firm-year and the coefficients of the country indicators show the relative difference to our benchmark country—the United States, which is left in the intercept. Then, we translate the coefficients of these country dummies to percentages in order to interpret the values as percentages of audit fees at the US level.¹⁶

In Table 3, we report the relative differences for 27 countries. As Table 3 shows, after controlling for various client and auditor characteristics, there are substantial differences in the level of audit fees between countries. All estimates on the country indicators are highly significant (p value < 0.0001) and negative implying that the United States exhibits the highest level of audit fees. The countries with the largest differences compared with the United States are Pakistan and India, whereas we find the smallest difference for South Africa and France. Both South Africa and France are traditionally considered as among the most regulated jurisdictions (e.g., Cooke & Wallace, 1990), which is why clients in these countries are likely to incur high audit

TABLE 3 Audit pricing differences among countries

Country	#Obs.	(1) Relative differences		(2) Fees scaled by assets
		Score (in % of US fees)	Rank	Score (in %)
United States	9,825	—	1	0.159
South Africa	747	−35.99 [*]	2	0.107
France	1,619	−43.58 [*]	3	0.101
Switzerland	721	−46.73 [*]	4	0.088
Japan	12,951	−48.95 [*]	5	0.070
Ireland	402	−51.77 [*]	6	0.068
Netherlands	438	−52.14 [*]	7	0.072
Canada	2,201	−52.26 [*]	8	0.070
Australia	1,551	−57.16 [*]	9	0.080
United Kingdom	5,779	−63.11 [*]	10	0.112
Denmark	374	−63.38 [*]	11	0.077
Hong Kong	5,001	−63.78 [*]	12	0.084
Italy	524	−64.67 [*]	13	0.067
Germany	2,001	−65.25 [*]	14	0.073
Norway	495	−65.80 [*]	15	0.055
Sweden	1,249	−65.82 [*]	16	0.110
Singapore	335	−67.34 [*]	17	0.043
Belgium	306	−69.09 [*]	18	0.060
New Zealand	151	−70.08 [*]	19	0.055
Spain	421	−70.10 [*]	20	0.048
Finland	509	−73.20 [*]	21	0.060
Malaysia	714	−84.52 [*]	22	0.025
South Korea	3,227	−85.35 [*]	23	0.028
Taiwan	1,251	−85.55 [*]	24	0.037
Austria	204	−85.82 [*]	25	0.018
India	3,455	−89.81 [*]	26	0.020
Pakistan	372	−94.61 [*]	27	0.008
Average/total	56,823	−66.00		0.066

Note: Table 3 presents descriptive results concerning the differences in audit pricing for our 27 sample countries. Firstly, we calculate differences in audit fees compared with the United States by including country dummies (except for the United States) in the client-/auditor-level audit fee model 4 and translating the coefficients of country dummies to percentages (relative differences). Secondly, we compare the median level of audit fees scaled by total assets per country.

*Significance with a p value < 0.0001 (two-tailed).

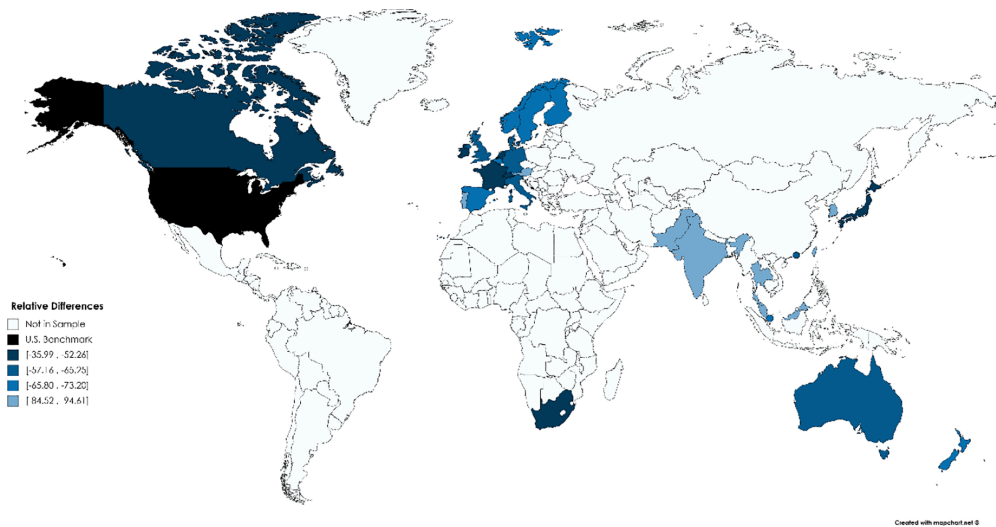
fees similar to firms in the high litigious US environment.¹⁷ However, even in South Africa, which has the smallest differences compared with the United States, clients still pay 36% lower audit fees than their counterparts in the United States.

In Table 3, we also compare the median fee per assets ratio for each country.¹⁸ Generally, results are in line with the relative audit pricing differences (Pearson correlation: 82%, untabulated). Nevertheless, our results also corroborate the importance of considering a wide range of client and auditor characteristics. For instance, Sweden is among the top three countries when considering only the level of audit fees deflated by total assets but is placed sixteenth according to the level of relative pricing differences after considering a comprehensive set of client-/auditor-level factors. On average, the auditors in

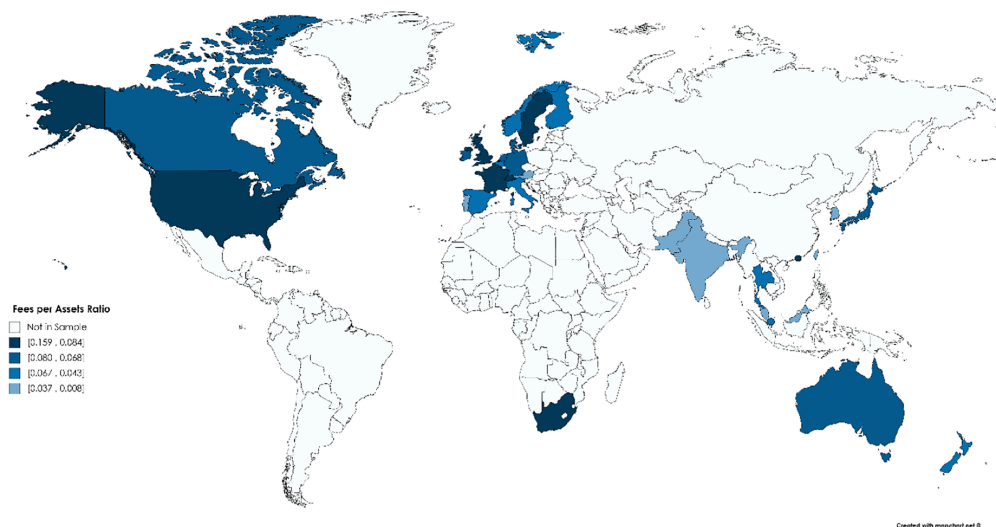
our sample charge median fees of 0.066% of the clients' total assets. However, the results again reveal significant differences among our sample countries. The level of fees to assets ranges from 0.159% (United States) to 0.008% (Pakistan). Hence, US firms pay almost 20 times the audit fees of a Pakistani company, after controlling for auditee size.

Figure 2 visualizes these results. It illustrates that the level of audit fees is generally higher in North America or Australia but lower in Southeast Asia. Figure 2 further demonstrates that the relative differences (Panel A), and the fees per assets ratio (Panel B) exhibit a similar geographical pattern. Nevertheless, we also find considerable differences (e.g., for Canada, the Netherlands and Finland), which provides evidence that it is important to consider

Panel A. Relative differences



Panel B. Fees per assets



Notes: This figure presents the distribution (quartiles) of relative differences (Panel A) and average fees per assets (Panel B). Higher (darker) values denote lower differences / higher fees.

FIGURE 2 Audit fee differences per country [Colour figure can be viewed at wileyonlinelibrary.com]

firm attributes when investigating cross-country variations in audit pricing.

5.2 | Relative importance of different institutional dimensions explaining cross-country differences in audit pricing

In Section 5.1, we estimated the differences in audit fees between countries based on the well-accepted fee model 4. The results show

substantial pricing differences, raising the question of what role country-level factors play in explaining the differences between countries. However, as we include as many country-factors as possible in our analyses, of which many are highly correlated, multicollinearity is a concern. There is, therefore, a need to condense the variables examined into the appropriate country factors. Accordingly, to address this potential multicollinearity problem and facilitate the interpretation of the results, we reduce the number of variables by performing PCAs. Following Isidro et al. (2020), we ex-ante categorize the 49 country variables based on four different dimensions of institutional settings

TABLE 4 Principal component analysis

Panel A. Categorization of individual country variables											
Economic		Regulatory			Audit market			Sociological			
Analyst coverage		Anti-director rights			Big4 dominance			Civic morality			
Average total assets		Anti-self-deal index			Big4 market concentration			Ethics			
Cost of living		Audit regulatory environment			Big4 share			Generalized trust			
Development level		Book-tax conformity						Secrecy			
Earnings management		Control of corruption									
Foreign direct investments		Corporate governance									
GDP growth		Cost of entry									
GDP per capita		Disclosure minority shareholders									
Importance equity market		Disclosure quality									
Inflation		Disclosure requirements									
Market capitalization		Efficiency judicial system									
Ownership concentration		Enforcement environment									
Wage level		Government transparency									
		IFRS adoption									
		Investor protection									
		IOSCO									
		Judicial independence									
		Legal origin									
		Legal rights									
		Liability standard									
		Litigation risk									
		Property rights									
		Protection minority shareholders									
		Regulatory quality									
		Risk of expropriation									
		Rule of law									
		Size securities regulator									
		State ownership									
		Strength standards									
Cronbach's alpha measure of reliability: 0.837		Cronbach's alpha measure of reliability: 0.946			Cronbach's alpha measure of reliability: 0.800			Cronbach's alpha measure of reliability: 0.853			
Panel B. Factor loadings											
Country variable	EF1	EF2	EF3	EF4	RF1	RF2	RF3	RF4	RF5	AF	SF
Cost of living	0.895										
Development level	0.870										
GDP per capita	0.864										
Wage level	0.585			0.606							
Importance equity market	0.494		0.598								
Average total assets	0.463	0.814									
GDP growth	−0.647	−0.470									
Inflation	−0.770										
Analyst coverage		0.787									
Earnings management		−0.502									
Foreign direct investments			0.861								

(Continues)

TABLE 4 (Continued)

Panel B. Factor loadings											
Country variable	EF1	EF2	EF3	EF4	RF1	RF2	RF3	RF4	RF5	AF	SF
Market capitalization			0.849								
Ownership concentration				0.799							
Property rights					0.947						
Judicial independence					0.937						
Corporate governance					0.932						
Strength standards					0.915						
Protection minority shareholders					0.907						
Government transparency					0.904						
Control of corruption					0.896						
Rule of law					0.857						
Efficiency judicial system					0.838						
Regulatory quality					0.822				0.472		
Risk of expropriation					0.678		0.423				
Disclosure quality					0.638						
Legal rights					0.620	0.520					
Audit regulatory environment					0.485		0.737				
Cost of entry					−0.754						
Investor protection						0.897					
Disclosure minority shareholders						0.896					
Legal origin						0.757					
Anti-self-deal index						0.642					
Disclosure requirements						0.562		0.568			
Anti-director rights						0.495		0.631			
Size securities regulator						0.478			0.474		
Enforcement environment							0.814				
Litigation risk							0.760				
IOSCO							0.726				
Book-tax conformity							−0.542				
Liability standard								0.873			
State ownership									0.666		
IFRS adoption									0.543		
Big4 dominance										0.923	
Big4 share										0.825	
Big4 market concentration										−0.777	
Generalized trust											0.910
Ethics											0.874
Civic morality											0.667
Secrecy											−0.875
Eigenvalue	4.410	2.147	2.123	1.362	10.757	4.347	3.554	2.410	2.074	2.137	2.804
Variance (%)	33.92	16.52	16.33	10.48	37.09	14.99	12.25	8.31	7.15	71.23	70.10
Cumulative	77.25				79.79					71.23	70.10
KMO criterion:	0.677				0.729					0.698	0.791

identified in the literature review.¹⁹ As reported in Panel A of Table 4, these four different dimensions are (1) economic development and conditions (*Economic*) such as GDP per capita, FDI or market capitalization, (2) regulatory dimension (*Regulatory*) including features such as investor and creditor rights, general audit regulatory environment (e.g., mandatory audit [partner] rotation, auditor license requirements) or litigation risk, (3) audit market (*Audit Market*), which considers characteristics such as the Big4 share, dominance and market concentration within national audit markets, together with (4) sociological dimensions (*Sociological*) including attributes such as culture or social trust.

We test the reliability of our classification using Cronbach's alpha, which is a test for the internal consistency of variables (i.e., how closely related a set of variables is as a group). Although our preclassification scheme is logical, not empirical, the reported values for each category exceed 0.8, corroborating that variables within the defined groups measure a similar concept.

On the basis of this classification, we perform PCAs within each category. Panel B of Table 4 reports the results. For parsimony, we present factor loadings higher than 0.4 only. We identify 11 latent factors with a significant eigenvalue larger than one: four economic factors (EF), five regulatory factors (RF), one audit market factor (AF) and one sociological factor (SF). These factors collectively explain more than 70% of the total cross-country variation in attributes for each category. Furthermore, the Kaiser–Meyer–Olkin (KMO) criterion again supports the consideration that our classification is suited for PCA.²⁰

In Table 5, we report the relative importance of country characteristics that affect the pricing of audit services. In Column 1 of Panel A, we initially present the audit fee model 4 without country factors for our multinational data set. Our results for the individual client-/auditor-level variables are generally consistent with prior audit fee studies (cf., Hay, 2013; Hay et al., 2006).²¹ The adjusted R^2 for this basic model amounts to 72.98%, confirming that client and auditor factors already explain a significant portion of audit fee variance. However, this figure is considerably lower compared with single-country audit fee studies reporting adjusted R^2 values over 80% (e.g., United States: Bentley et al., 2013; Jha & Chen, 2015; Japan: Kim & Fukukawa, 2013). When we estimate our client-/auditor-level regression model 4 only for United States or Japanese observations, the adjusted R^2 also increases substantially (85.30% for the United States and 83.52% for Japan). These results indicate that considering only client/auditor factors is insufficient to explain fully audit fee variations within a multinational sample, and hence country factors also need to be taken into consideration.

Adding latent country factors for cross-country differences to the basic client-/auditor-level model (Column 2) corroborates their

important impact on audit pricing. The adjusted R^2 increases by more than 11 percentage points to 84.12%.²² This increase is statistically highly significant (p value < 0.0001).²³ Our analysis highlights the importance of considering country-level variables in order to understand international differences in audit pricing.²⁴

Regarding the effect of country factors, we find that all EF exhibit positive estimates, significant at the 5% level or better. This is in accordance with prior studies suggesting that firms in economically more developed countries pay higher audit fees (e.g., Chung & Narasimhan, 2002). In particular, the first two economic factors EF1 and EF2 have a very strong effect on the level of audit fees. EF1 exhibits high loadings of variables such as cost of living, development level or GDP and, thus, represents the economic welfare of a country. EF2 reflects variables that characterize the size of companies in a country (e.g., average total assets and analyst coverage).

For the regulatory category, factors RF2, RF3 and RF4 have positive and significant coefficients, whereas RF1 is statistically not significantly different from 0. The first factor extracted from the PCA (RF1) captures correlated variables such as property rights, judicial independence, rule of law, government transparency or efficiency judicial system that are related to a country's general legal environment. RF2 comprises variables that represent the level of shareholder protection in a country. Both RF3 and RF4 are characterized by high positive loadings on variables representing the strength of an auditor's regulatory environment or, more specifically, the risk of doing business as an auditor within a given jurisdiction. Hence, a stricter regulatory environment is positively associated with the fees charged by an auditor. To comply with more or stricter investor protection requirements involves greater audit effort (e.g., if more disclosures are required which need to be audited), which, in turn, increases the level of audit fees. Furthermore, a more litigious environment might result not only in a risk premium being charged by the auditor but also in greater effort being expended to prevent the risk of being sued. However, for the last regulatory factor RF5, we find a strong negative impact on audit fees. This factor captures a country's level of IFRS adoption, state ownership, and regulatory quality. Hence, regulatory characteristics, such as whether or not the government is able to formulate and implement sound policies and regulations that are easy to follow (regulatory quality), are associated with reduced effort and lower audit fees.

The coefficient estimate for the AF, which considers variables such as Big4 dominance in a country, is positive and significant at the 5% level. This follows prior cross-country research, which finds a positive relation between Big4 dominance or Big4 share and audit pricing (Asthana et al., 2015; Choi et al., 2008).

Finally, the estimate on the SF, which represents attributes such as generalized trust or secretive behaviour, is negative and significant.

Note. Panel A of Table 4 reports the preclassification of our single country variables into four categories (economic, regulatory, audit market and sociological) similar to Isidro et al. (2020). Panel B reports the results of four principal component analyses (PCA) on these 49 single country variables based on the preclassification (Panel A). The PCA is performed using varimax rotation. We select 11 latent country factors with an eigenvalue > 1 (Kaiser, 1974). The categories *economic* (EF1–EF4) and *regulatory* (RF1–RF5) are represented by four and five latent country factors, respectively, and the categories *audit market* (AF) and *sociological* (SF) are represented by one latent factor. For clarity, we only report factor loadings > 0.4. The reliability of the factor analyses is tested with the Kaiser–Meyer–Olkin (KMO) criterion. All variables are defined in the Appendix A.

TABLE 5 Effect of country factors on audit fees

Panel A. Incremental effect of country factors compared to firm level determinants				
Variables	(1) Firm variables		(2) Firm variables and country factors	
Client/auditor variables	Coefficient	t statistic	Coefficient	t statistic
ln(<i>total_assets</i>)	0.430***	(57.66)	0.410***	(69.53)
Big4	0.451***	(23.27)	0.286***	(21.28)
Change_Fyear	0.061	(1.42)	−0.105***	(−3.28)
Aud_Change	−0.148***	(−10.22)	−0.069***	(−6.34)
Acquis	0.149***	(16.06)	0.077***	(10.74)
Loss	0.047***	(2.95)	0.078***	(6.40)
Invrec	0.136**	(2.52)	0.164***	(4.18)
RoA	−0.597***	(−13.29)	−0.106***	(−2.97)
Lev	0.165***	(4.62)	0.144***	(5.57)
NBS	0.166***	(8.54)	0.113***	(7.61)
NGS	0.071***	(3.81)	0.112***	(7.58)
MB	0.002	(0.90)	0.006***	(4.30)
Litrisk	0.093***	(3.08)	0.010	(0.46)
Opinion	−0.026	(−1.42)	−0.017	(−1.21)
Busy_Season	−0.131***	(−7.59)	0.029**	(2.09)
Cross_List	0.555***	(28.10)	0.046***	(2.70)
ADR	0.051	(1.50)	0.291***	(9.42)
Quick	−0.001*	(−1.70)	−0.002***	(−4.24)
Accr	0.028***	(7.05)	0.010***	(3.14)
Issue	−0.017	(−1.46)	0.019**	(2.27)
Foreign	0.189***	(7.58)	0.250***	(12.79)
Special	−0.038**	(−2.58)	0.131***	(11.06)
Employ	0.003***	(16.33)	0.003***	(20.65)
Intangible	0.321***	(7.39)	0.198***	(5.19)
Country Factors				
EF1			0.489***	(21.05)
EF2			0.408***	(26.35)
EF3			0.072***	(2.90)
EF4			0.031**	(1.97)
RF1			0.014	(0.55)
RF2			0.121***	(8.96)
RF3			0.030*	(1.80)
RF4			0.193***	(13.30)
RF5			−0.245***	(−12.40)
AF			0.038**	(2.57)
SF			−0.058***	(−3.03)
Industry/year indicators				
Adj R^2 (in %)	Included		Included	
	72.98		84.12	
Mean VIF	3.49		4.21	

Panel B. Comparison of the effect on audit fees between country factor categories

Country factors	(1) Economic	(2) Regulatory	(3) Audit Market	(4) Sociological
EF1	0.298*** (32.68)			
EF2	0.353*** (43.61)			
EF3	0.147*** (14.36)			
EF4	−0.180*** (−16.29)			
RF1		0.307*** (37.80)		
RF2		−0.146*** (−15.75)		
RF3		0.401*** (36.88)		
RF4		0.124*** (13.39)		
RF5		0.030*** (2.86)		
AF			0.320*** (33.04)	
SF				0.277*** (28.30)
Firm variables	Included	Included	Included	Included
Industry/year indicators	Included	Included	Included	Included
Adj R^2 (in %)	82.27	80.41	76.28	75.31
Increase in adj R^2 (compared with client/auditor-level model)	9.29 [†]	7.43 [†]	3.30 [†]	2.33 [†]

Note. Panel A of Table 5 reports the regression output for two different models. In Column 1, we report the fee model containing only firm variables. In Column 2, the natural log in audit fees is regressed on both client-/auditor-level variables and the latent country factors retrieved from PCA. The increase in adjusted R^2 between both models is significant based on Vuong (1989) test (p value < 0.0001). Panel B reports outputs from regressing the natural log in audit fees on our categories of country factors, separately. We use heteroskedasticity-robust standard errors clustered by firm. t statistics are reported in parentheses. All regression models are based on 56,823 firm-year observations from 27 countries. All variables are defined in the Appendix A.

***Significant at 0.01.

**Significant at 0.05.

*Significant at 0.1.

[†]Significance between the adjusted R^2 based on Vuong (1989) test (p value < 0.0001).

Knechel et al. (2019) also consider SFs (generalized trust and civic morality) and find a positive effect on audit fees. They argue that there are inconclusive theories on how these attributes might affect audit pricing. For example, following agency theory, a higher level of trust reduces agency conflicts between managers and stakeholders, which might attenuate the audit risk and need for an external audit in society, leading to less demand for audit services and lower prices. Conversely, social trust can also influence the relationship between stakeholders and auditors. For instance, in high trust societies, stakeholders might place a higher value on the audit function because they are more likely to trust the auditor and believe that the auditor will act on investors' behalf, which would suggest a positive association. Accordingly, there might be different effects for such SFs on audit pricing, depending on the setting, sample and model, which explains why it is essential to consider an appropriate and consistent set of country controls.

Our results reported in Panel B examine which of the four different clusters of country attributes—economic (1), regulatory (2), audit market (3) and sociological (4)—have the most significant impact on audit pricing. Economic attributes have the strongest effect on audit fee variations. Adding these factors to the client-/auditor-level model significantly increases the adjusted R^2 by almost 10 percentage points (p value < 0.0001). Including RFs significantly increases the adjusted

R^2 by 7.43 percentage points. AFs also significantly increase the adjusted R^2 , although by a relatively smaller amount compared with the first two clusters (3.30 percentage points). Finally, the sociological environment has the least important impact but still explains a significant portion of the variance in audit pricing with an increase in adjusted R^2 of 2.33 percentage points.

Summarized, although these results corroborate the important role of country-level factors in explaining cross-country variations in audit pricing, the degree of influence varies significantly among country attributes. Economic and regulatory characteristics are the most important factors for understanding international differences in audit fees. Nevertheless, it is also essential for a more complete picture to consider other country attributes, such as the sociological environment.

5.3 | Relative importance of individual country variables

In Section 5.2, by employing PCAs and using the latent factors in fee models as independent variables, we analysed how various dimensions of institutional features explain audit fee differences by reducing the number of country-level variables. In this section we analyse

TABLE 6 Effect of single country variables on audit fees

Country variable (v_i)	(1) Country factors excluded	(2) Country factors included	(3) Country factors excluded	(4) Country factors included
	t statistic		Adjusted R^2	
Analyst coverage	51.64*	3.11	4.63*	0.01
Anti-director rights	13.68*	3.26*	0.44*	0.02
Anti-self-deal index	-25.65*	2.16	1.90*	0.01
Audit regulatory environment	51.93*	9.87*	7.11*	0.16*
Average total assets	41.99*	0.70	4.94*	0.00
Big4 dominance	24.33*	7.68*	1.61*	0.09*
Big4 market concentration	-31.46*	1.76	3.00*	0.00
Big4 share	23.06*	6.51*	1.61*	0.06*
Book-tax conformity	-28.82*	-14.12*	2.16*	0.50*
Civic morality	26.80*	3.51*	2.31*	0.02
Control of corruption	31.01*	2.52	3.09*	0.02
Corporate governance	36.30*	16.03*	3.56*	0.45*
Cost of entry	-26.82*	5.37*	1.97*	0.05*
Cost of living	30.97*	7.24*	2.88*	0.10*
Development level	34.10*	4.82*	3.67*	0.05*
Disclosure minority shareholders	-5.48*	-7.73*	0.06*	0.09*
Disclosure quality	20.15*	-5.66*	1.17*	0.05*
Disclosure requirements	16.71*	9.98*	0.74*	0.16*
Earnings management	-41.30*	-13.51*	4.33*	0.32*
Efficiency judicial system	34.87*	3.31*	3.72*	0.02
Enforcement environment	24.82*	-15.67*	1.46*	0.40*
Ethics	23.99*	1.38	1.57*	0.00
Foreign direct investments	-10.43*	3.89*	0.22*	0.03*
GDP growth	-47.86*	-9.77*	5.45*	0.21*
GDP per capita	35.54*	1.71	5.79*	0.01
Generalized trust	9.78*	4.59*	0.26*	0.04*
Government transparency	15.35*	-0.38	0.50*	0.00
IFRS adoption	-14.51*	-3.24*	0.57*	0.02
Importance equity market	18.13*	-3.97*	0.84*	0.03*
Inflation	-36.65*	-10.43*	4.05*	0.21*
Investor protection	13.72*	-3.19	0.45*	0.03*
IOSCO	12.37*	8.00*	0.45*	0.10*
Judicial independence	21.07*	11.60*	0.96*	0.27*
Legal origin	-4.50*	-1.57	0.05*	0.01
Legal rights	10.20*	-1.56	0.23*	0.00
Liability standard	24.46*	3.32*	1.57*	0.02
Litigation risk	50.91*	-2.67	4.92*	0.02
Market capitalization	-4.87*	6.58*	0.04*	0.10*
Ownership concentration	-32.68*	8.08*	2.85*	0.11*
Property rights	24.82*	5.11*	1.64*	0.05*
Protection minority shareholders	22.21*	1.12	1.08*	0.00
Regulatory quality	27.00*	-9.78*	2.32*	0.19*
Risk of expropriation	34.49*	-5.67*	5.47*	0.06*

(Continues)

TABLE 6 (Continued)

	(1) Country factors excluded	(2) Country factors included	(3) Country factors excluded	(4) Country factors included
Country variable (v_i)	t statistic		Adjusted R^2	
Rule of law	28.74*	-7.68*	3.42*	0.10*
Secrecy	-18.60*	9.50*	0.80*	0.20*
Size securities regulator	0.98	0.76	0.00	0.01
State ownership	12.38*	3.76*	0.47*	0.02
Strength standards	16.04*	5.32*	0.59*	0.06*
Wage level	-13.99*	1.37	0.49*	0.00

Note. Columns 1 and 2 of Table 6 report t statistics for the coefficients of our single country variables. The dependent variable is the natural log in audit fees. Independent variables are, in addition to the corresponding single country variable, all client-/auditor-level variables (Column 1) or client and auditor variables plus the latent country factors derived from PCA after excluding the corresponding single country variable (Column 2). Columns 3 and 4 report the increase in adjusted R^2 (in percent) for our single country variables. In Column 3, we report the increase in adjusted R^2 if we add the corresponding single country variable to the audit fee model without country factors (1). In Column 4, we report the increase in adjusted R^2 if we add the corresponding single country variable to model 1 plus the country factors derived from PCA after excluding the corresponding single country variable. Each model includes Fama-French 48-industry and year indicator variables. We use heteroskedasticity-robust standard errors clustered by firm. All variables are defined in the Appendix A.

*Significance with a p value < 0.0001.

which individual country variables are most important, using a similar approach to Isidro et al. (2020). Firstly, we extend the basic client-/auditor-level audit fee model 4 by including each of the individual country variables (v_i) separately. This allows us to examine the incremental effect of each individual country variable beyond client and auditor characteristics. Secondly, we investigate the incremental effect of each individual country variable compared with the remaining 48 variables. We augment regression model 4 by including the individual country variables v_i plus the latent country factors identified in PCAs (after excluding the respective individual country variable v_i).

In Columns 1 and 2 of Table 6, we document t statistics for each individual country variable v_i obtained from estimating both models (latent factors excluded vs. latent factors included). The reported effects of country variables on audit fees generally coincide with the findings of prior cross-country audit fee studies, as summarized in Table 2. Regarding the models without latent country factors (Column 1), each individual country variable exhibits a highly significant (p value < 0.0001) estimate, except for the securities regulator size.²⁵ However, the t statistics change significantly when using the model where we additionally consider latent country factors for country differences (after excluding the respective individual country variable v_i ; Column 2). The t values are considerably lower and only 33 coefficients remain significant at p value < 0.0001. More importantly, there are many changes concerning the general effect of individual variables. Less than half (23) of the coefficients in this model remain unchanged in terms of sign and statistical significance compared with the model without latent country factors. For the other country variables, either we find a change in sign or the estimates become insignificant using a p value > 0.0001. This demonstrates high collinearity among country variables, revealing that some variables measure similar underlying concepts. For instance, the

investor protection variable coefficient is positive and significant with a high t value (13.72) for the model without additional country factors. However, the coefficient becomes negative (t value = -3.19) when we include the 11 latent factors, five of which represent regulatory features and, thus, similar concepts compared with the investor protection measure (e.g., because they involve the anti-director rights or anti-self-dealing indices). These results highlight the importance of using a coherent set of country-level controls in empirical auditing research to ensure comparable results.

In Columns 3 and 4, we report the increase in adjusted R^2 after adding individual country variable v_i to the client-/auditor-level audit fee model 4 (Column 3) or to the model including the latent country factors obtained from PCA after excluding the respective individual country variable v_i (Column 4). In Column 3, we find only one country variable (size securities regulator) that does not significantly (p value < 0.0001) increase the adjusted R^2 compared with the model where only client and auditor factors are considered. This shows the importance of country attributes for explaining cross-country variations in audit pricing. The strongest effect on adjusted R^2 is produced by the audit regulatory environment variable developed by Brown et al. (2014), which considers, for instance, whether audit firm/partner rotation is required or to what extent an auditor is exposed to litigation risk. Adding this variable only to the audit fee model without country factors 4 increases the model's explanatory power by more than 7 percentage points. Other variables that produce a considerable effect on adjusted R^2 are average total assets, GDP per capita as well as GDP Growth, level of litigation risk and risk of expropriation; all increase the explanatory power by approximately 5 percentage points. These results indicate that variables classified as economic or regulatory attributes have the strongest effect on adjusted R^2 , whereas audit market or sociological features seem to be relatively less important.

When we consider the model with other country factors included (Column 4), only 29 individual country variables significantly increase the adjusted R^2 . It is noticeable that certain variables which have a very strong effect in the model without other country factors, such as the GDP per capita or Wingate's (1997) litigation risk, do not significantly increase adjusted R^2 for this model. Again, this is attributable to our consideration of other variables in the latent factors, which represent similar concepts. Development level explains a country's economic welfare similarly to the GDP per capita; and the litigation risk index forms part of the audit regulatory environment variable. Consequently, audit market and sociological features such as the cultural secrecy measure or Big4 dominance in a national audit market, which have been given much less consideration in audit fee research, explain relatively more cross-country variations in audit pricing for this model. These results reveal important implications for future empirical auditing research. It is not vital to include the highest possible number of country control variables in empirical models, but rather to include the 'appropriate' set of country controls. Empirical auditing studies should consider variables that strongly impact audit fees, such as the audit regulatory environment or the GDP per capita. However, the selected control variables should cover not only regulatory or economic attributes but also a broad range of country features such as informal institutional factors, which have high incremental impact (e.g., a country's secretive culture).

6 | CONCLUSION

Our study increases the scarce understanding of differences in financial statement audits around the world. We first conduct a comprehensive literature search on cross-country auditing research and provide a list of the country-level determinants considered in prior audit literature. Next, we estimate the pricing differences in audit services between different institutional settings, and, after controlling for client/auditor characteristics, document a substantial variation in audit fees indicating that audits indeed differ around the world. Then, we turn to an explanation of these differences with the country-level factors identified in our literature search. We find that audit fee variations are attributable to a wide range of country characteristics. Economic factors and the regulatory environment have the strongest impact, but sociological attributes also significantly contribute to explaining cross-country variances in audit pricing. Regarding the individual variables, particularly the audit regulatory environment and GDP explain a significant portion of the variance in audit fees, whereas other variables such as the size of the securities regulator have a negligible impact. Taken together, our findings suggest that the way audits are conducted and perceived is jointly shaped by various formal and informal institutions, which should be considered when we want to understand international differences in financial statement audits. Our study therefore contributes to an emerging stream of cross-country auditing literature by providing a more comprehensive view and new insights into the extent and the nature of differential effects of institutional features on financial statement audits.

On the basis of our comprehensive literature search and empirical analyses, we have the following recommendations for future research. Firstly, cross-country audit fee research should place a greater emphasis on informal institutions such as culture or religion, which are currently receiving increased attention in the accounting literature. Secondly, emphasis on economically less developed countries with divergent regulatory and sociological environments, such as countries in Africa or South America, could lead to more far-reaching implications for international differences in financial statement auditing. Thirdly, because some frequently used country indices were developed some time ago, there is a need for an update of country variables or indices to enhance our understanding of cross-country differences in auditing and accounting. Finally, the moderating roles of institutional features on documented associations in auditing presents another opportunity for future research. For instance, the relationship between audit risk and audit fees (Niemi, 2002) might be moderated by informal institutions such as the level of generalized trust within a given country.

Consistent with these recommendations, the empirical part of our study is also subject to certain caveats. Our analysis is based on data from a considerable number of different countries, 27 in all, but geographical areas such as South America or Africa, which might exhibit particular institutional features, are underrepresented. Furthermore, some of our empirical measures for institutional features are based on rather outdated indices. Next, even if we consider a large number of potential country-level drivers identified in the existing cross-country literature, it is still possible that some factors are not considered in our analysis. The same applies to our selection of client-/auditor-level control variables. We include a large set of firm variables, but for reasons of data availability, we are for example not considering corporate governance or internal control that are found to have an impact on audit fees (e.g., Bedard & Johnstone, 2004; Hogan & Wilkins, 2008).

Despite these limitations, our results show substantial differences in audit pricing across the world. Moreover, our analyses on the relative importance of institutional features help us to understand how the institutional setting of a country influences on the audit effort and value of a financial statement audit. These insights are of interest at a time when auditing and markets for audit services are becoming more globalized. A qualitative literature review on the existing cross-country auditing research is warranted. Furthermore, recent regulatory changes expanding the scope of auditor reporting and responsibilities in general are likely to have an impact on the pricing of audit services, providing new opportunities to explore global differences and similarities in financial statement audits. Given the scarcity of empirical evidence, further research into this issue would be fruitful and hopefully our study will motivate future research into further exploration of international differences in auditing.

DATA AVAILABILITY STATEMENT

All data are publicly available from sources identified in the text.

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ENDNOTES

¹ We use Big4 as a generic term throughout this study comprising the Big6, Big5 and Big4 to reflect the consolidation of these firms.

² After controlling for firm size and other client characteristics.

³ Our notation is adopted from the discussion in Niemi (2000) on Simunic's (1980) theoretical model of audit pricing.

⁴ Some studies employ aggregate measures based on several individual country variables; e.g., Francis and Wang (2008) create an investor protection measure including five individual country characteristics. In such cases, we consider each underlying individual variable separately.

⁵ Some studies label the same variables differently (e.g., legal regime or litigation risk for the same measure from Wingate, 1997). Moreover, some studies employ slightly different measures, which basically represent the same country characteristic (e.g., basic GDP and GDP per capita or aggregate cultural measure for secretiveness from Hope et al., 2008, and individual cultural dimensions from Hofstede, 1980). We consider such variables as one country characteristic. In these cases, we report alternative labels in parentheses.

⁶ This categorization is similar to that used in Isidro et al. (2020).

⁷ Kallunki et al. (2019) find, in a similar vein, that an individual auditor's cognitive ability is positively related to audit fees.

⁸ We directly retrieve all monetary items in USD from Eikon/Worldscope, which converts the items based on an annual exchange rate. Alternatively, we have calculated mean exchange rates for the period under investigation and recalculated the results, which remain robust. We use Eikon/Worldscope data because it allows us to investigate the largest possible number of countries, consistent with other cross-country auditing literature (e.g., Choi et al., 2009; Knechel et al., 2019). We have tested the accuracy of the data by comparing the data for our US firms between Audit Analytics and Eikon, and we have also manually compared the disclosed audit fee data in financial statements with those retrieved from Eikon for a small random sample, and they correspond. Hence, we believe that Eikon/Worldscope is a reliable and well accepted data source, but as with every database, especially for a large cross-country sample as ours, we cannot entirely rule out data errors.

⁹ We report the sources and definitions for each variable used in our empirical analysis in Appendix A. In some cases, different sources have been used by prior literature to measure the same country factor. In

these cases, we consider factors such as data availability, timeliness of data and country availability for selecting an appropriate source for our analyses. For example, we do not use the accountants' wages per hour employed by Knechel et al. (2019) from the NBER database because it is only available for a small list of less than 20 countries. Instead, we use the average level of labor costs in a country following Kallunki et al. (2007).

¹⁰ All continuous client-/auditor-level variables are winsorized at 1% tails. Because our panel data are strongly unbalanced, we have conducted an additional test to rule out that this affects our results. More precisely, we have repeated our analyses for firms only that have data available for the period 2014–2017. Our main conclusions remain unchanged for this strongly balanced sample.

¹¹ A possible concern might be that the number of observations vary significantly between our sample countries. In line with Jaggi and Low (2011), we also employ regressions, where the weight of each observation is the inverse of the number of observations in each country, so that each country receives equal weight in the estimation. This does not change our conclusions substantially.

¹² We employ the United States as our benchmark country because it is the country on which most of the audit-related research builds and it exhibits a high number of firm-year observations. Using Japan as an alternative benchmark country does not change our conclusions.

¹³ Although prior literature reports that clients' corporate governance mechanisms have a significant impact on audit pricing (e.g., Bedard & Johnstone, 2004; Chan et al., 2013), we do not include client-level governance control variables in our main model because this would significantly reduce our sample size because governance data from Thomson Reuters Asset4 is only available for the largest firms within a country. Hence, this would strongly limit the generalizability of our findings. Nevertheless, in untabulated tests, we repeat our analyses with and without corporate governance variables included and the results remain largely unchanged. Thus, not considering client-level governance does not entail a substantial omitted variable bias. Detailed tables for all untabulated analyses are available upon request from the authors.

¹⁴ All variables are explained in greater detail in Appendix A.

¹⁵ The results do not change substantially if we use an alternative approach to calculate relative audit fee differences (out-of-sample approach; untabulated). We first estimate a prediction model by estimating model 4 only for US observations as our benchmark country and saving the regression coefficients for each observation. In the next step, using the saved regression parameters, we predict the out-of-sample fees of the other countries. The mean differences between these predicted fees and the actual fees are the relative audit pricing differences of a specific country compared to the United States.

¹⁶ More precisely, the percentage difference is calculated as follows: $(e^{Coeff} - 1) * 100$.

¹⁷ As prominent examples, in both jurisdictions joint audits are mandatory (in South Africa however only for financial institutions that are excluded in our analysis). Joint audits are considered to be more costly (e.g., Ratzinger-Sakel et al., 2013). As another example, South Africa is one of the few countries that has mandated integrated reporting.

¹⁸ We obtain similar results for alternative measures of international differences in audit fees (untabulated). Firstly, instead of using the median, we use the mean (which is, however, more prone to the effect of outliers). Secondly, we follow Simunic (1980) and adjust our ratio by taking the square root of total assets because the relationship between size and audit fees is non-linear. Thirdly, we use alternative denominators and consider net sales or labor costs instead of total assets.

¹⁹ Isidro et al. (2020) argue that the preclassification approach might enhance the explanatory power and facilitate the interpretation of the latent factors, but it does not entirely overcome the multicollinearity

issue. Nevertheless, we believe that this is the more appropriate and feasible empirical approach to comprehensively examine our research question on which country attributes are most important for audit pricing.

- ²⁰ All KMO values clearly exceed 0.5, which is considered as the threshold for an acceptable fit (Kaiser, 1974).
- ²¹ It might be surprising that the coefficient on *Busy_Season* is negative and significant for this international sample, although one would generally expect a positive association based on prior evidence. However, this result is not universal in audit fee studies (Hay, 2013). Although most of the US studies find a positive impact (e.g., Bentley et al., 2013), Langendijk (1997), for instance, reports a negative association for the Dutch audit market. When we run the client-/auditor-level model 4 for US and Dutch observations only, we find the expected positive (negative) coefficient for the US (Dutch) sample.
- ²² Including country-fixed effects instead of the latent country factors, the adjusted R^2 slightly increases by approx. 1 percentage point to 85.29%. Hence, our 11 latent factors capture most of the country characteristics.
- ²³ In line with prior studies (e.g., Dechow, 1994; Hann et al., 2007), we employ Vuong (1989) test to statistically compare the difference in adjusted R^2 between two models.
- ²⁴ We also report the mean VIF, which is clearly below the critical level of 10 even for this comprehensive model, which supports that multicollinearity problems are alleviated due to the principal component analysis approach.
- ²⁵ To highlight substantial changes regarding the statistical significance, we differentiate only between strongly significant (p value < 0.0001) and insignificant coefficients. Thus, we do not further differentiate between the level of significance (such as for the analyses in Table 5).

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APPENDIX A: VARIABLE DEFINITIONS FOR EMPIRICAL ANALYSES

Variable	Brief definition	Source(s)
Dependent variable		
$\ln(\text{audit fees})$	Natural log in audit fees (TR.AuditFees) (in thousands of USD).	Thomson Reuters (TR)/Refinitiv EIKON
Client/auditor variables		
$\ln(\text{total assets})$	Natural log in firm's total assets (WC02999) (in thousands of USD).	TR/Refinitiv EIKON
Big4	Indicator variable, which equals 1 if a firm is audited by one of the Big4 audit firms (TR.BSAuditorCode), and 0 otherwise.	TR/Refinitiv EIKON
Change_Fyear	Indicator variable, which equals 1 if the fiscal year end (WC05350) changes between 2 years, and 0 otherwise.	TR/Refinitiv EIKON
Aud_Change	Indicator variable, which equals 1 if the firm's auditor is in the first year of an audit engagement (TR.BSAuditorCode), and 0 otherwise.	TR/Refinitiv EIKON
Acquis	Indicator variable, which equals 1 if the firm is engaged in acquisitions (WC04355), and 0 otherwise.	TR/Refinitiv EIKON
Loss	Indicator variable, which equals 1 if a firm reports negative net income (WC01751), and 0 otherwise.	TR/Refinitiv EIKON
Invrec	Ratio of sum of total inventories (WC02101) and receivables (WC02051) to total assets (WC02999).	TR/Refinitiv EIKON
RoA	Ratio of net income (WC01751) to lagged total assets (WC02999).	TR/Refinitiv EIKON
Lev	Ratio of total liabilities (WC03351) to total assets (WC02999).	TR/Refinitiv EIKON
NBS	Natural log of 1 plus the number of business segments (WC07021-28).	TR/Refinitiv EIKON
NGS	Natural log of 1 plus the number of geographical segments (WC19601-91).	TR/Refinitiv EIKON
MB	Ratio of firm market capitalization (WC08001) to common shareholder equity (WC03501).	TR/Refinitiv EIKON
Litrisk	Indicator variable, which equals 1 if a firm operates in a high litigation risk industry (four digit SIC codes (WC07021-28) of 2,833-2,836, 3,570-3,577, 3,600-3,674, 5,200-5,961 and 7,370-7,374), and 0 otherwise.	TR/Refinitiv EIKON; Francis et al. (1994)
Opinion	Indicator variable, which equals 1 if a firm reports anything but an unqualified audit opinion (WC07546), and 0 otherwise.	TR/Refinitiv EIKON
Busy_Season	Indicator variable, which equals 1 if the fiscal year (WC05350) ends on 31 December (30 June for South Africa, New Zealand, Australia and Pakistan and 31 March for Japan and India), and 0 otherwise.	TR/Refinitiv EIKON
Cross_List	Indicator variable, which equals 1 if a firm is listed on exchanges outside of its home country (QTEALL), and 0 otherwise.	TR/Refinitiv EIKON

(Continues)

Variable	Brief definition	Source(s)
ADR	Indicator variable, which equals 1 if a firm has an ADR listed on a US exchange (WC11496), and 0 otherwise.	TR/Refinitiv EIKON
Quick	Ratio of current assets (WC02201) less inventories (WC02101) to current liabilities (WC03101).	TR/Refinitiv EIKON
Accr	Firms' accruals defined as the difference between income (WC01751) and operating cash flow (WC04860), deflated by total assets (WC02999).	TR/Refinitiv EIKON
Issue	Indicator variable, which equals 1 if a firm issues equity (WC04302) or debt (WC04401), and 0 otherwise.	TR/Refinitiv EIKON
Foreign	The portion of foreign sales (WC07101) to total sales (WC01001).	TR/Refinitiv EIKON
Special	Indicator variable, which equals 1 if a firm reports non-missing special items (WC04225), and 0 otherwise.	TR/Refinitiv E
Employ	Square root of the number of employees (WC07011).	TR/Refinitiv EIKON
Intangible	Ratio of intangibles (WC02649) to total assets (WC02999).	TR/Refinitiv EIKON
Country-level variables		
Analyst coverage	Extent of analyst coverage in a country.	Kini et al. (2003)
Anti-director rights	An index reflecting the strength of shareholder rights in a country.	La Porta et al. (1998)
Anti-self-deal index	A measure of legal protection of minority shareholders against expropriation by corporate insiders in a country.	Djankov et al. (2008)
Audit regulatory environment	An index capturing the regulation of the external auditors' working environment (e.g., whether an auditor must be licensed or whether audit [firm or partner] rotation is required).	Brown et al. (2014)
Average total assets	Natural log of clients' average total assets (in millions of USD) in a country.	Knechel et al. (2019); TR/Refinitiv EIKON
Big4 dominance	Difference between the smallest Big4 auditor's market share and that of the largest non-Big4 auditor in a country.	Choi et al. (2008); TR/Refinitiv EIKON
Big4 market concentration	Herfindahl index based on total client sales audited by each Big4 firm in a country.	Francis et al. (2013); TR/Refinitiv EIKON
Big4 share	Percentage of Big4-firm-year observations in a country.	Francis et al. (2013); TR/Refinitiv EIKON
Book-tax conformity	Book-tax conformity in a country based on the proportion of current tax expense that cannot be explained by pre-tax book income.	Atwood et al. (2010)
Civic morality	A variable capturing the level of societal civic cooperation or 'trustworthiness' in a country.	Knechel et al. (2019); Integrated Values Survey
Control of corruption	A variable capturing perceptions of the extent to which public power is exercised for private gain in a country, including both petty and grand forms of corruption.	Kaufmann et al. (2014)
Corporate governance		World Economic Forum

(Continues)

Variable	Brief definition	Source(s)
	A variable capturing the strength of supervision by investors and boards on management decisions in a country.	
Cost of entry	A linear combination comprising different cost of entry measures into a country's market.	Djankov et al. (2002)
Cost of living	A measure for how much money is needed to maintain the same standard of living in each country.	Numbeo
Development level	Economic development level of a country.	World Bank
Disclosure minority shareholders	A variable capturing the extent of disclosure in protecting minority shareholders through transparency and disclosure of related-party transactions.	World Bank Doing Business Report
Disclosure quality	Disclosure level (i.e., informativeness of annual reports) in a country.	CIFAR
Disclosure requirements	An index of disclosure requirements in a country.	La Porta et al. (2006)
Earnings management	The average level of earnings management in a country, measured as abnormal working capital accruals.	DeFond and Park (2001)
Efficiency judicial system	Assessment of the legal environment's efficiency and integrity in a country.	La Porta et al. (2006)
Enforcement environment	An index capturing the enforcement bodies' working environment (e.g., whether the enforcement body reviews financial statements or has the power to set accounting and auditing standards).	Brown et al. (2014)
Ethics	An index capturing the level of corporate ethical values in a country.	World Economic Forum
Financial action task force	Indicator variable, which equals 1 if FATF recommendations have been adopted in a country, and 0 otherwise.	FATF
FDI	Foreign direct investments, scaled by GDP.	World Bank
GDP growth	Annual growth in GDP.	World Bank
GDP per capita	GDP per capita.	World Bank
Generalized trust	A variable capturing the level of generalized trust (i.e., trust in strangers) in a country.	Knechel et al. (2019); Integrated Values Survey
Government transparency	A variable capturing the extent to which firms are clearly informed by the government of changes in policies and regulations.	World Economic Forum
IFRS adoption	Indicator variable, which equals 1 if the use of IFRS is required, 0.5 if the use of IFRS is permitted, and 0 otherwise.	IASB
Importance equity market	Importance of the equity market in a country, measured by the extent to which firms rely on equity financing.	La Porta et al. (1997)
Inflation	Inflation rate.	World Bank
Investor protection	A variable capturing the strength of investor protection in a country.	World Economic Forum
Judicial independence	A variable measuring to what extent the judiciary is independent of influences from members of government, citizens, or firms.	World Economic Forum

(Continues)

Variable	Brief definition	Source(s)
Legal origin	Indicator variable capturing the level of legal tradition in a country, which equals 1 if a country is a common law country, and 0 otherwise.	La Porta et al. (1997)
Legal rights	A variable capturing the strength of investors' legal rights in a country.	World Economic Forum
Litigation risk	A variable capturing the strength of a country's legal regime, measured by the natural log of the Wingate (1997) litigation index.	Wingate (1997); Choi et al. (2008)
Ownership concentration	Average ownership percentage of the three largest shareholders within the 10 largest domestic firms in a country.	La Porta et al. (1998)
Property rights	A variable capturing the strength of property rights protection in a country.	World Economic Forum
Protection minority shareholders	A variable capturing the strength of the protection for minority shareholders' interests in a country.	World Economic Forum
Public enforcement	An index capturing the level of public enforcement in a country.	La Porta et al. (2006)
Regulatory quality	A variable capturing the ability of a government to formulate and implement sound policies and regulations in country.	Kaufmann et al., 2014
Risk of expropriation	An index capturing the risk of property's 'outright confiscation and forced nationalization' in a country.	La Porta et al. (1998)
Rule of law	A variable capturing the extent to which agents have confidence in and abide by the rules of society in a country.	Kaufmann et al., 2014
Secrecy	A cultural measure for secretive behavior in a country based on Hofstede's (1980) cultural dimensions; calculated as the sum of uncertainty avoidance and power distance less individualism.	Hofstede (1980); Hope et al. (2008)
Size securities regulator	Size of a country's securities regulator staff scaled by total population.	Jackson and Roe (2009)
Market capitalization	Stock market capitalization scaled by GDP.	World Bank
Strength standards	A variable capturing the strength of financial auditing and reporting standards regarding financial performance in a country.	World Economic Forum
Wage level	Average ratio of labour costs to sales in a country.	TR/Refinitiv EIKON; Kallunki et al. (2007)

Notes: Data codes for the client-/auditor-level variables are in parentheses.

Abbreviations: FDI, foreign direct investment; GDP, gross domestic product.