

# A Review of the Empirical Literature on Audit Market Concentration

## Synopsis

### *The research problem*

The extant audit market concentration (AMC) literature is quite scattered that makes it challenging to comprehend the current state of knowledge and to highlight the areas that require further exploration. An improved understanding of AMC and its possible effects require a comprehensive review of the AMC literature, since no such review has yet been published. Therefore, our paper intends to: (a) synthesize the empirical work in the AMC literature; (b) determine the limitations in the ways AMC has been investigated; (c) identify avenues of inquiry that could guide future thinking on AMC; and (d) develop insights into how future AMC investigations can be further developed.

### *Motivation*

The most noticeable developments in AMC have occurred since the audit firm megamergers of the 1980s and 1990s and Andersen's demise in 2002. This trend toward a few large suppliers of auditing services has sparked intense debate about the costs and benefits of AMC. However, the literature provides mixed evidence on the determinants and the consequences of AMC.

### *Adopted methodology*

A structured literature review (Massaro *et al.*, 2016) was employed to review the extant AMC literature.

### *Analyses*

We analyzed 108 empirical papers published in 39 peer-reviewed quality accounting/auditing journals in the English language over a 55-year period (1967–mid-2021).

### *Findings*

The analysis suggests a consistent rise in AMC levels, leading to a tight oligopoly and in rare cases to a duopoly status, across countries and over time. Studies of audit pricing and audit quality are the predominant part of the literature and report mixed findings as to whether AMC facilitates monopolistic pricing and allows audit-quality-threatening behaviors. This could be attributed to several factors including the focus on the short-term effects of AMC; the substantial variations in how concentration was measured; and the misguided use of proxies for audit competition and audit quality. The review identifies four key limitations that circumscribe our understanding of AMC: (a) the lack of investigation into the actual dynamic rivalry among audit firms; (b) the great reliance on the positivistic approach and quantitative methods, and the lack of use of explicit theories aside from economic theories; (c) the focus on the audit of publicly listed companies in the USA, UK, and Australia; and thus; (d) the absence of key organizational settings and central regions in the AMC debate. To counter these limitations, this review puts forward possible future research avenues which can help to advance our understanding of AMC to address emerging challenges in the field.

*Keywords:* Audit market concentration; audit competition; big four.

JEL Classification: M40

## 1. Introduction

The AMC phenomenon was originally flagged by Mautz and Sharaf (1961), who observed the concentration in the American auditing profession in the late 1950s. They predicted that audits of public companies would be dominated by a few very large international audit firms, which has come to pass over the past three decades as a result of audit firm mergers and the demise of one of the largest audit firms (i.e., Arthur Andersen). Basically, the auditing industry went from being comprised of eight globally dominant audit firms (for most of the twentieth century until 1989) to the so-called big four (2002 onwards). Thenceforth, these four firms have held a growing majority share of the audit services market. In the US, the big four audit approximately 97% of the total market capitalization (Harris, 2017). In Europe, in 15 of 21 member states, the big four hold more than 80% of the market share (European Commission [EC], 2017), with complete dominance of the audit work of the UK FTSE 100 (Financial Reporting Council [FRC], 2019). In Australia, just over 90% of the largest 200 companies are audited by the big four (Carson, 2019).

In the early 2000s, immediately after the dominant group was reduced to the big four, the AMC issue became a key concern of policy makers and the accounting profession (see, for example, Government Accountability Office [GAO], 2003, 2008; EC, 2010; the UK House of Lords Economic Affairs Committee, 2011; the UK Competition and Markets Authority [CMA], 2019). The concern is that AMC restricts a client's (especially listed companies') choice of auditor, strengthens auditors' market power, and encourages complacency among auditors, resulting in a lack of competition, higher audit fees, and lower audit quality (Huang *et al.*, 2016). These regulatory reports have not advised that remedial actions should be taken either to lessen the concentration levels or to mitigate their potential consequences. The big four continue not only to increase their audit market share but also fail to deliver consistently

high-quality audits, resulting in a series of high-profile corporate/audit failures. This puts the auditing profession in general and the big four in particular at the center of the public's wrath, and regulators have recently called for effective remedial actions. For instance, high-profile corporate/audit failures (Carillion, Patisserie Valerie, and Thomas Cook) triggered a string of reviews of the audit sector which aimed to increase competition, and there were calls for the UK's big four to separate their audit practices by 2024 (FRC, 2020), with increasing calls for a full break-up in the future. The main concerns about the big four are twofold. First, they are too big: if one of them fails or exits the audit market, it could cause significant disruption to financial markets. Second, current AMC levels could increasingly make the big four auditors feel secure in their position vis-à-vis audit regulators, thus resulting in high audit pricing and audit-quality-threatening behaviors.

AMC became an area of interest for scholars when Zeff and Fossum (1967) published their pioneering large-scale investigation of audit clients in the US market. Since then, studies have mainly investigated AMC in various countries/industries and examined whether AMC has an impact on audit fees, audit quality, and/or auditor choice; however, these offer inconclusive evidence. For example, while studies by the GAO (2003, 2008) found no association between AMC and audit pricing, Numan and Willekens (2012) found that AMC is associated with lower audit fees, and Gerakos and Syverson (2015) suggested that the loss of one of the big four could raise audit fees. This inconclusiveness suggests that the AMC phenomenon remains an area ripe for further research. One way to address this gap is to conduct an up-to-date comprehensive review of the AMC literature to provide an overarching analysis of the existing field of AMC knowledge and identify a path towards how further AMC investigations could be improved.

Two AMC reviews were found: Yardley *et al.* (1992) and Walker and Johnson (1996). However, both reviews were (a) outdated; (b) not comprehensive: Yardley *et al.* (1992) focus

on the US audit market, while Walker and Johnson (1996) cover the non-US markets for audit services; and (c) based on a traditional literature review style, thus lacking empirical justification of how and why AMC research has developed in the way it has. In addition, some of the suggested future research directions address generic concerns. These shortcomings emphasize the need for an up-to-date, structured, and comprehensive review of prior AMC research that provides an in-depth analysis of the current AMC research and how it might be further developed in future. To this end, the present study sets out four research questions: What do we currently know about AMC? What are the limitations in the ways AMC has been investigated to date? What do we still need to learn about AMC? How can future AMC investigations be improved?

## **2. Methodology**

To answer these questions, a structured literature review methodology was adopted (Massaro *et al.*, 2016). Following Massaro *et al.* (2016), some rules were implemented to develop the dataset and achieve the purpose of this study. First, the scope of this review encompasses: (a) empirical research on AMC; (b) research published in peer reviewed journals listed in the Academic Journal Guide 2021 (AJG); (c) research written in the English language; and (d) research available online, in full text, up to July 2021.<sup>1</sup> Second, to identify such studies, the keyword search approach was adopted using the terms: “audit market concentration”, “audit market structure”, and “audit market competition”. A search of the SCOPUS database was conducted by searching titles, keywords, and abstracts using the identified keywords. This produced 373 papers whose abstracts were reviewed to discard those not meeting the inclusion criteria, resulting in 81 relevant papers. A further Google Scholar search was carried out using

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<sup>1</sup> AJG was developed by the UK Chartered Association of Business Schools (CABS) and is internationally employed by scholars and university managers as a measure of journal quality (Beattie & Goodacre, 2004).

Harzing's Publish or Perish software. This yielded 15 additional papers. The search process was then expanded by manually tracking down references in all the preselected papers to identify papers that might not have been considered in previous searches. When the titles of papers were insufficiently informative, abstracts were read to assess the relevance of the papers. This final search resulted in 12 additional papers; thus, the final dataset consisted of 108 papers.<sup>2</sup> The search process was undertaken independently by two authors over three different steps (and double checked randomly by the third author) to ensure the accuracy and completeness of the sample and thereby the generalizability and accuracy of the findings of the structured literature review. Table 1 provides an overview of the studies reviewed, grouped by source journal. Finally, to characterize and synthesize the 108 articles, following Guthrie *et al.* (2012), two authors independently read and manually coded a randomly selected sample of ten articles to develop and test a classification and coding scheme.<sup>3</sup> This resulted in eight classification criteria, namely: journal type, publication year, theme, method, paradigm, geographical focus, organizational focus, and theory. To ensure consistency, the remaining (98) papers were read and manually coded in a spreadsheet by one of the authors responsible for data collection, and a random check was conducted by another. In cases of doubt, papers were discussed jointly until agreement was reached. During the manual coding process, the coder used their implicit knowledge of AMC to “effectively interpret idiomatic and metaphorical text” (Guthrie *et al.*, 2012, p. 71).

[TABLE 1 HERE]

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<sup>2</sup> The details of the 108 identified and analysed articles are not included in this paper but are available from the authors upon request.

<sup>3</sup> Krippendorff's alpha (K-alpha) was computed to measure interrater reliability, which resulted in a K-alpha score of 0.90—moderately higher than the recommended (minimum) score of 0.80 (Krippendorff, 2013, p. 325).

### 3. AMC Literature Analysis

This section briefly summarizes the AMC literature profile before answering the first two research questions: What do we currently know about AMC? What are the limitations in the ways AMC has been investigated to date?

#### 3.1. *Literature profile*

As shown in Table 1, across a 55-year period (from Zeff & Fossum in 1967 to Cahan *et al.* and Mohammadi *et al.* in 2021), the AMC papers (108) were published in a wide range of (39) journals, where the highest number (15) of AMC studies is published in “Auditing: A Journal of Practice and Theory”. However, the majority (68.5%) of AMC literature is published in nonspecialized auditing (mainly generalist accounting) journals such as “Contemporary Accounting Research”, “The Accounting Review”, and “Accounting Horizons”. This could be attributed to the relatively limited availability of specialized auditing journals in comparison to generalist accounting journals. In addition, the AMC-related topics may have been more appealing to generalist accounting journals because of their links to economics. Also, author submission practices could also be a reason: those with a track record of publications in the AMC field provide a signal to potential authors, which results in a concentration of contributions.

[TABLE 2 HERE]

Over the past five decades, audit firm mergers have been a polarizing issue in relation to AMC. Therefore, the period of the review was divided into four categories representing the big N periods and the number of AMC studies undertaken in each period: big eight (pre-1989), big six (1989–1997), big five (1998–2001), and big four (2002–2021). Table 2 shows a clear upward trend in AMC publications per year, from less than one paper per year (pre-1989) to

around three papers per year (post-2002), reflecting the growing importance of the AMC topic especially after the audit market became dominated by the big four accounting firms.

### **3.2. *What do we currently know about AMC?***

As shown in Table 3, based on the analysis of the 108 articles reviewed, five research streams were identified. This section concentrates on these research streams to provide a context for understanding the issues examined in AMC studies.

*[TABLE 3 HERE]*

#### *3.2.1. Trends and determinants*

Overall, the literature reports substantial variations in concentration levels across countries and over time. For example, a consistent rise in AMC was found in the UK (1987–1991), leading to a tight oligopoly (Beattie & Fearnley, 1994), and a duopoly status was reported in Denmark between 1989 and 1991 (Christiansen & Loft, 1992) and in Hong Kong between 1980 and 1989 (Lee, 1994). The average concentration ratio in 15 EU member states has increased substantially from 62% (1998–2001) to 70.6% (2002–2004). The Japanese audit market transformed from big four to big three after the dissolution of PwC Chuo-Aoyama in 2007 (Semba & Kato, 2019). In China, mergers around 2013 have created two large domestic firms of comparable size to the big four, thereby reducing the big four’s dominance (Cahan *et al.*, 2021). The merging of accounting firms forming the big six (1987 and 1989) resulted in increased AMC in the US; however, this has not necessarily resulted in less competition or higher prices (Tonge & Wootton, 1991). The demise of Andersen in 2002: (a) increased the big four’s market share to 96% in the UK (Beattie *et al.*, 2003); (b) did not lead to excessive AMC in the US (Comunale & Sexton, 2003); and (c) did not substantially affect competition in the Australian audit market (Hamilton *et al.*, 2008). While AMC might have been rising at

the country level, the degree of concentration varies substantially across different locations within the same country (Huang *et al.*, 2016) depending on client market size. However, these results are criticized for being focused on the very short-term effects of Andersen's demise in a single country and, thereby, allowing very limited time for the market to settle at a new concentration level.

Moreover, a number of AMC determinants have been identified in the literature. These include the merging of audit firms, switching to a larger audit firm, and the fall in the number of joint audits (Moizer & Turley, 1989); the increasing number of listed companies, the increased complexity of the audit process, and increasing audit regulations (Comunale & Sexton, 2005); significant barriers to entering the audit market and increasing international client concentration (Maijor & Buijink, 1995); and mandatory auditor rotation and retention. AMC increase has been explained by economies of scale or differences in the quality of audits provided by large audit firms (e.g., Maijor & Buijink, 1995); however, Doogar and Easley (1998) found that quality differences and economies of scale do not necessary explain AMC, while contracting practices, client size distributions, and differences in auditor productivity are the joint determinants of audit firms' market share.

### 3.2.2. *Audit fees*

Audit fees have mostly been reported to increase with increased AMC. For instance, following the demise of Arthur Andersen, audit fees increased in the US between 2000 and 2013 (Eshleman & Lawson, 2017). Using data from 28 countries, Gunn *et al.* (2019) found a positive association between AMC and audit fees. A similar positive association has been echoed in the Netherlands (Ciconte *et al.*, 2015), Belgium (van Raak *et al.*, 2020), China (Chang *et al.*, 2019), Canada (Bandyopadhyay & Kao, 2004), Australia (Carson *et al.*, 2012), and the UK (McMeeking *et al.*, 2007). Economic theory also supports this positive association



(e.g., Weiss, 1989; Feldman, 2006). The general argument is that increasing AMC facilitates monopolistic pricing and allows the obtaining of abnormal profits (Dunn *et al.*, 2011). Contrarily, audit fees have been reported to decrease with AMC increase due to the intense competition among the remaining suppliers or economies of scale (Cahan *et al.*, 2021; Ettredge *et al.*, 2020). This negative association could be explained by the enhanced efficiency and cost savings that motivated the big audit firms' mergers (Cahan *et al.*, 2021), if the merged firms pass cost savings on to their clients (Sullivan, 2002).

Such mixed evidence emphasizes concerns around the (in)adequacy of using AMC as a proxy for audit market competition when studying its impact on audit fees. This is because competition level varies due to the relative size, specialization, and distance between firms. Where competition from a nearby firm has a negative effect on audit fees, industry specialization increases audit fees (Numan & Willekens, 2012). Moreover, while audit fees increase with increased distance between a small firm and its closest competing small firm, they decrease with increased distance from its closest competing large firm (Bills & Stephens, 2016). Studies employing other proxies for competition (e.g., Chu *et al.*, 2018) also found mixed evidence for the association between AMC and audit fees. Therefore, the competition-based argument may not be the only possible explanation for the relationship between AMC and audit fees. A possible explanation for these mixed results could be based on economic theory, suggesting that pricing in an oligopoly can fall anywhere between the extremes of monopoly pricing and perfect competition (Nicholson & Snyder, 2008). Another possible explanation could be related to the method of controlling for observable and unobservable market-specific characteristics correlated with local AMC measures (Eshleman & Lawson, 2017).

### 3.2.3. *Audit quality*

The empirical evidence on the impact of AMC on audit quality is contradictory. For instance, increased AMC is associated with lower audit quality for complex clients (Gunn *et al.*, 2019) and in less complex SME-client segments (van Raak *et al.*, 2020). However, some (e.g., Willekens *et al.*, 2020) found a lack of association between AMC and audit quality. Other studies (e.g., Huang *et al.*, 2016; Asthana *et al.*, 2019; Chang *et al.*, 2019) found evidence of a positive association between AMC and audit quality. This could be because, for instance, AMC motivates big firms to improve their efficiency (Newton *et al.*, 2013) and helps to achieve scale economies in audit technology and resources (van Raak *et al.*, 2020), while mergers increase audit quality (Cahan *et al.*, 2021). Moreover, economic theory suggests that competition incentivizes suppliers to compete not just over prices but also over quality (Domberger & Sherr, 1989); clients want high quality audits, while more competition among audit firms facilitates higher audit quality (Ettredge *et al.*, 2020).

The conflicting evidence about whether AMC necessarily implies reduced competition could explain the contradictory empirical evidence about the impact of AMC on audit quality. AMC is often viewed as evidence of the lack of competition, as it would be easier for a small number of firms to collude in setting fees, which may result in reduced auditor skepticism and greater leniency, thereby endangering audit quality. However, competition can be intense even in highly concentrated markets. Another possible explanation could be that audit quality is not directly observable; therefore, different proxies for audit quality are adopted. This shows that AMC's impact on audit quality is an indirect relationship that could be mediated by factors other than audit fees, audit quality measures, and joint audits such as, for example, audit specialization.

#### 3.2.4. *Industries and locations*

Specialization is a proxy for auditor expertise in a specific industry or location, thus recruiting specialized auditors may be associated with higher fees and improved quality (Elder and Yebba, 2020). Factors affecting audit specialization levels within the client industry and location include concentration in the client industry, city population, industry size, and the percentage of active audit firms to the number of companies (Cabán-García & Cammack, 2011). However, conflicting results were reported on how client industry concentration influences auditor specialization. Kwon (1996) found a negative relationship between client industry concentration and AMC, while Krishnan (2005) and Hogan and Jeter (1999) found a positive relationship. Dey (2010) reports that auditor industry specialization is lower in competitive industries preferring expertise and higher in dominant firm industries preferring privacy. These conflicting results might be because national-industry and city-industry analysis provide different insights into the market structure (Dunn et al., 2019) and because of the sensitivity to how specialization is measured (Carson & Fargher, 2007). Having a market share larger than 30% (Numan & Willekens, 2012) or having a 10% market share with a minimum of 30 firms/industries are requirements for industry specialization (Craswell & Taylor, 1991). Spatial competition, which is the market power due to differentiation from the closest competitor, affects industry specialization. Moreover, the fee premium is affected not only by industry specialization but also by the industry market share distance between the auditor and its closest competitor (Numan & Willekens, 2012). Thus, a portion of the fee premiums reported in previous studies might be attributed to the auditor's industry market share distance from its closest competitor, and not industry specialization per se.

### 3.2.5. *Other issues*

Other AMC issues include its impact on auditor choice, where the structure of the client industry affects the structure of the audit firms serving clients in this industry (Kwon, 1996). In Japan, companies tend to choose their main bank's preferred auditor (Pong & Kita, 2006). Moreover, auditor narcissism's effect on AMC was assessed, and a positive and significant relationship between auditor narcissism and AMC was reported (Mohammadi *et al.*, 2021). Recently, the impact of regulations on AMC levels was an important issue. No evidence was found that the new disclosure requirement of the European Commission audit directive unsettled AMC in 10 European countries between 2010 and 2012 (La Rosa *et al.*, 2019). In response to the 2016 European Commission regulation on the audit of public interest entities (PIE) aimed at lowering AMC level, the big four, other accounting firms, and professional accountancy bodies lobbied in favor of a narrow definition of PIE in the UK, resulting in an oligopolistic market structure (Clacher *et al.*, 2019). AMC for nonprofit organizations dropped by more than half within five years of SOX and remained at this level through 2013 (Duguay *et al.*, 2020). After the State of New York passed acts to improve independent audit quality, the audit market became more concentrated, with greater usage of specialist audit firms and fewer small firms (Elder & Yebba, 2020).

## **3.3. *What are the limitations in the ways AMC has been investigated to date?***

### 3.3.1. *The nature of AMC measures*

The lack of consistent evidence regarding AMC in the literature could be attributed to differences in the measures focus (cumulative market shares versus the equality of market shares among the big N). As shown in Table 4, the concentration ratio (CR) and Hirschman–Herfindahl index (HH) are the most frequently used measures. CR simply measures the

cumulative market shares of the largest (four, six, or eight) firms in the market. It does not reflect market share equality or distinguish the competition within each level of analysis. For instance, assume that the four largest audit firms have total market share of 80% in two different industries. However, the CR of each firm is 60%, 10%, 5%, and 5% in one industry, while 20%, 20%, 20%, and 20% in the other industry. Even though the four-firm CR is the same (80%), the structure is completely different (Dunn *et al.*, 2011). In industries with high concentration but low inequality, competition may exist between large but equal competitors (Dunn *et al.*, 2019). While HH captures the market share equality among the biggest firms in a better way than CR, Gini supplies a more direct and sensitive measure of market inequality than HH. Even when using the same measure(s), comparisons over time and across markets are difficult due to the different audit market share measures adopted and the different submarkets analyzed. Table 4 shows that audit fees and number of audit clients are the most widely used market share measures. In countries where audit fees are not statutorily disclosed, surrogates (e.g., the auditee's total assets or total revenues) have been used (Chang *et al.*, 2009). However, Lee (1994) found that total sales or total assets and their square root transformation provide, respectively, consistent overestimates and underestimates of concentration measures based on audit fees. Furthermore, the number of audits is not considered as a good measure because it understates the market shares, because larger firms usually charge higher fees, while it assumes that the same audit fees will be collected from each client irrespective of client size, the complexity of the audit process, and the audit firm engaged (Moizer & Turley, 1987). Therefore, AMC literature does not adequately portray the actual rivalry among auditors in the audit market.

*[TABLE 4 HERE]*

### 3.3.2. *Reliance on positivistic approach with lack of theorization*

Despite the criticism of positivists' reductionist approach to studying accounting using inferential methods and their failure to view it as a social construct (e.g., Ahrens *et al.*, 2008), 96% of the (108) reviewed papers adopt a positivistic paradigm with a quantitative approach. As shown in Table 5, the most employed method of data collection is content/archival-historical analysis, followed by surveys/questionnaires. Since positivists are more interested in patterns and trends, rather than individuals, reliance on economic theories and quantitative approaches is the most expected choice (Chu *et al.*, 2018). A staggering 60% of the reviewed papers do not adopt any explicit theory (Maijoor & Willem, 1995; Newton *et al.*, 2016); they instead rely on paradigmatic (Kend *et al.*, 2014) and/or pragmatic (Boone *et al.*, 2010) forms of theorizing.

[TABLE 5 HERE]

Although there have been efforts to encourage alternative research perspectives (de Villiers *et al.*, 2019), the adoption of interpretive and critical paradigms, and qualitative approaches, remains exceptionally low—i.e., 3% of the reviewed papers (Stringfellow *et al.*, 2015). Similarly, only one study adopts a hybrid paradigm with a mixed approach (Baskerville & Hay, 2006). Moreover, the lack of theorization in accounting research has been highlighted by scholars (Hopper *et al.*, 2009; van Helden & Uddin, 2016). After the Sarbanes-Oxley Act (SOX) was passed in 2002, Inanga and Schneider (2005) highlighted that the failure of accounting research to improve practice was due to a clear lack of accounting theories. Notably, Kulik (2005) suggested that a rich theoretical base might help practitioners to avoid Enron like debacles. Thus, it was expected that AMC research in the post-Enron period would be driven by robust theories. However, although 48% of the “no-theory” papers pertain to the pre-Enron era, a comparable 52% relate to the post-Enron period; thus, a large percentage of AMC studies

do not draw on any theory (Table 6). This continuing “no theory” trend could be attributed to the absence of robust audit theories (DeFond & Francis, 2005), which resonates with our observation that 38% of the papers use economic theories (Eshleman & Lawson, 2017) and 2% use sociology theories.

*[TABLE 6 HERE]*

As evidenced by our analysis, only a minute percentage of studies have adopted a qualitative approach; one of the reasons could be the inherently sensitive nature of audit work. Although case studies are suitable for addressing questions around complex human behavior (Cooper & Morgan, 2008), these remain underutilized in AMC research. This could be attributed to difficulties in data collection on site/field as the result of the confidential nature of auditors’ work. For similar reasons, surveys/questionnaires are not considered readily feasible for AMC research; only 6% of our reviewed studies draw on this method.

### *3.3.3. Focus on publicly listed companies*

Not surprisingly, 73% of the reviewed studies focus on publicly listed organizations (Figure 1). AMC research of private organizations constitutes only 14% of the papers reviewed. One of the understandable reasons is the relative difficulty of accessing private organizations’ data. For instance, as elaborated in the earlier sections, one of the most common measures of AMC is audit fee data that, in many countries, is not publicly available; thus, it is difficult to measure the market share of the big four’s audits. There is also variation in the regulatory requirements for auditing private companies. For instance, except for some private organizations (e.g., financial firms), private companies in the US are not subject to mandatory audit requirements (Minnis & Shroff, 2017). Although AMC is considerably higher in EU and UK private companies, with the big four conducting over 60% of audits, AMC research is

primarily focused on publicly listed companies; however, there are several challenges to keep in mind. For instance, following the introduction of EU regulations in 2016 on the statutory audit of PIEs<sup>4</sup>, the majority of UK private companies fall outside the narrow and ambiguous scope of the PIE definition (Clacher *et al.*, 2019). Thus, the new regulatory changes around the mandatory rotation of audit firms and restrictions around non-audit services and fees do not apply to non-PIE private companies. Importantly, 11% of the (108) reviewed AMC studies, classified as general/other organizational focus, examined AMC-related concerns of a broadly contemporary and/or critical nature (Whittle *et al.*, 2014).

Of the 15 papers examining the private organizational context, only three relate to the Belgian private sector (e.g., Willekens & Achmadi, 2003). This is even though the private sector in Belgium is a good context to consider for AMC research because of the high degree of fee transparency and public interest in the audit market in the Belgian private sector (van Raak *et al.*, 2020). Only one study (Tomczyk & Read, 1989) relates to AMC in US private organizations. This lack of audit research of private organizations is a well-documented concern (Vanstraelen & Schelleman, 2017). Similarly, only two AMC studies (e.g., Bandyopadhyay & Kao, 2004) pertain to the public sector: it examines the association between AMC and non-big six audit fees in the Canadian context. Overall, the extant AMC research does not provide sufficient evidence of the impact of AMC on public sector audits. Only one study (Beattie *et al.*, 2003) relates to the not-for-profit sector. The reason for this lack of research could be the lack of robust models for audit fee determination and lower AMC in not-for-profit organizations. Moreover, except for Kend *et al.* (2014), all the studies classified as general/other organizational focus rely on quantitative methods of data collection. This is

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<sup>4</sup> As per Regulation 537/2014 of the EU Audit legislation, which became applicable in 2016, PIEs are defined as the entities whose transferable securities are admitted to trading on a regulated market, credit institutions, insurance undertakings, and entities designated by the member states as public-interest entities.



somewhat anomalous since studies of contemporary and critical concerns mostly implement qualitative methods. Arguably, the difficulty in conducting qualitative AMC research could be the reason for the increased reliance on quantitative (secondary) data.

[FIGURE 1 HERE]

#### 3.3.4. *Focus on the North American context*

A large percentage (41%) of the 108 reviewed AMC studies (Figure 2) pertain to the North American context (e.g., Bills & Stephens, 2016), which can be attributed to several factors. The oligopolistic nature of the North American audit market (Asthana *et al.*, 2019), characterized by an upward trend in the big four's dominance, presents an attractive setting for AMC researchers. The Enron scandal in 2001, the WorldCom bankruptcy, and the fall of Arthur Andersen in 2002 all attracted researchers' attention. Furthermore, the implementation of SOX in 2002 and the Public Company Accounting Oversight Board (PCAOB) in 2003, which led to increased AMC by driving the small audit firms out, prompted researchers to examine AMC and other audit practices pre- and post-SOX (e.g., Ciconte & Kitto, 2020). Of the studies conducted in North America, 17 relate to the pre-SOX era and 27 post-SOX.

[FIGURE 2 HERE]

16 of the 24 studies were conducted post-2001 in the Australasian context. Most of these studies examine the Australian audit market and, more specifically, a series of corporate failures (e.g., Harris Scarfe, One-Tel, Ansett, and Pasmenco). The audit-related regulatory reforms in Australia (e.g., Corporate Law Economic Reform Program Act 2004) also attracted the interest of researchers (Martinov-Bennie *et al.*, 2011). As far as New Zealand is concerned, researchers are mainly intrigued by reforms (e.g., New Zealand Stock Exchange Governance Rules 2004 and NZ IFRS 2005) that affected auditors' fees (Griffin *et al.*, 2009). AMC studies

in the Hong Kong context (Tai & Kwong, 1997) have primarily been conducted to examine the impact of audit firm mergers: this could be because of the Hong Kong regulatory bodies' interest in the downside (such as the reduction in audit quality and increase in audit fees) of such mergers (Lai, 2019). Furthermore, the AMC studies in China are focused on examining intense competition in a relatively weak regulatory environment (Huang *et al.*, 2016). Only one study (Pong & Kita, 2006) has been conducted in the Japanese context. This is surprising given the 2006 dissolution of PwC ChuoAoyama and the subsequent shift from the big four to big three in Japan, which offer sound ground for AMC research (Frendy, 2018).

Regarding the UK and EU, researchers have remained interested in the period of structural changes that followed the audit firm mergers of the 1980s and 1990s and the fall of Andersen (e.g., Abidin *et al.*, 2010). Most AMC studies in the UK context pertain to the year 2015 and earlier. Of the 16 EU studies, only four (e.g., van Raak *et al.*, 2020) examine post-EU audit reforms.

## **4. AMC Future Directions**

### **4.1. *What do we still need to learn about AMC?***

#### *4.1.1. Long-term consequences of AMC*

While the extant literature provides insights into the short-term consequences of AMC (e.g., Beattie *et al.*, 2003), it does not provide sufficient understanding of the long-term consequences of AMC changes. Thus, future studies could offer long-term insights by comparing concentration levels in different organizational settings and countries. This could also be achieved by investigating the long-term impact of AMC on different audit efficiency measures, audit quality, audit firms' market power, audit costs, and fees. A long-term focus on

AMC changes might contribute to the policy recommendation debate, among regulators and professional bodies, regarding the benefits and costs of increased AMC. Importantly, through comparative longitudinal studies, future research may also reveal whether the intended positive effects of new legislation, aimed at tackling AMC's negative impacts, could materialize and whether the expected positive results will be achieved. Possible questions that future AMC research may address include: What is the long-term impact of increased AMC on competition? What possible regulatory measures may tackle the issue of increasing AMC? How might the enhanced understanding of long-term AMC contribute to the policy debates? Will the AMC changes erode big audit firms' economies of scale in the long-term? What factors might affect the level of AMC in the long-term?

#### 4.1.2. *The role of non-audit fees and competition*

Bleibtreu and Stefani (2012) highlighted the impact of prohibiting non-audit services on AMC. Their results indicated that the prohibition of non-audit services directly affects the structure of the audit market and that, in the absence of competition between small and large audit firms, non-audit services led to an increase in market concentration. This suggests that non-audit fees might affect the well-established association between AMC and audit fees. However, extant audit research does not provide empirical evidence on the possible interactions between audit fees, non-audit fees and AMC. This could possibly be explained through comprehensive measures of market dynamics (e.g., market share mobility) to paint an accurate picture of the actual competition in an audit market (van Raak et al., 2020). Additionally, since most of the prior research focuses on AMC's impact on fee competition mainly among the big four auditors, we encourage additional research to investigate what makes mid-tier audit firms able to compete for big four audit clients and under what circumstances their price bids would be successful (Hallman et al., 2020). Possible future

research questions include: What is the possible impact (direct, indirect, or moderating) of non-audit fees on the association between AMC and audit fees? How the dynamics measure of market concentration (e.g., market share mobility) compares with static measures (e.g., CR, HH and Gini) to explain the possible interaction between audit fee, non-audit fee and AMC? Moreover, with mandatory audit tendering being introduced by regulatory bodies to reduce AMC (Allam et al., 2017), future AMC research might explore whether various competing mid-tier firms may benefit from lowballing.

#### 4.1.3. *The impact of regulatory reforms and new measures of audit quality*

Increasing concerns around AMC consequences have prompted regulators to reform the auditing market to reduce AMC, regardless of how this may affect audit quality. For instance, the introduction of mandatory audit firm rotation by the EC may increase transaction costs and endanger audit quality (Velte & Stiglbauer, 2012). Future research may offer more detailed analysis of the costs and benefits of these reforms, in terms of audit quality, to inform regulators of the consequences of such reforms. Since the audit quality proxies used in the extant AMC research have limitations, future research could use more direct measures of audit quality, such as the likelihood of restatements, or input measures, such as audit hours (Cahan *et al.*, 2021). Future research may also examine how factors such as regulatory reforms, political environment characteristics, legal contexts, audit quality proxy, the corruption level in a country (Duh *et al.*, 2020), country-level institutional characteristics, and audit firms' style (Gunn *et al.*, 2019) could affect the association between AMC and audit quality. Possible research questions include: What is the impact of different reforms (e.g., mandatory audit firm rotation, joint auditing, audit tendering) on AMC and its association with audit quality? How might the political environment, legal contexts, corruption level, country-level institutional characteristics, and audit firms' style affect the impact of different reforms on AMC and its

association with audit quality? How might the regulatory reforms cater for the public perception of auditors' competency, independence, and objectivity?

#### 4.1.4. *Concentrations in industries and office locations*

Future research may explore whether mid-tier audit firms could increase their market share through specialization in concentrated client industries and city markets to offer insights for regulators who wish to establish informed audit market reforms. However, proxies for capturing industry specialization (e.g., industry homogeneity, changes in industry-member operating expenses) are imperfect (Cairney & Young, 2006); thus, future research may develop alternative measures and construct their validity. Additionally, it has been found that there is a risk associated with auditor industry specialization within the audit office (lower audit quality and less timely audits). This manifested during the financial crisis of 2008, where it mainly affected the banking industry (Cassell *et al.*, 2019). However, these results may not be generalized to the Covid-19 crisis, which is of a different magnitude and influences many other industries. It will be interesting to learn how industry specialization within the audit office affected audit quality during this unprecedented crisis. Audit firms and regulators should consider whether the audit market, audit firms, or audit offices have become too specialized to handle the resource allocation problems that crisis situations present. Possible future research questions include: What are the factors affecting concentration at the industry and city level? How do firms build industry expertise and what are the issues they face when building it internally? What is the impact of increased specialization on audit fees, audit quality, and/or auditor reputation? Are differences in competition, audit quality, and audit fees at industry, city, and city-industry levels associated with market share equality? What is the association between intra-industry competition and AMC? Have audit firms become too specialized to deal with the diverse challenges posed by the Covid-19 pandemic?

## 4.2. *How can future AMC investigations be improved?*

### 4.2.1. *Towards more appropriate concentration measures to reflect competition*

The review highlights the need for future research to adopt better measures than those commonly used (CR and HH) to reflect the actual competition in the market; these could consider market share (in)equality, audit complexity, and market share mobility. As shown in Table 4, only six papers (e.g., Clacher *et al.*, 2019) have used the Gini measure. Gini, using the Lorenz curve, graphs the cumulative market share from the smallest to the largest in an industry. Gini compares the curve to the 45° angle that represents equal market shares, and it ranges from 0 to 1; the higher the level, the more supplier inequality it reflects (Dunn *et al.*, 2019). Moreover, the currently used AMC measures fail to sufficiently reflect the dynamics of market structure changes over time and the impact of audit complexity on competition. Industrial organization theory argues that supplier concentration is a static measure of market structure and a possible driver of competition but does not necessarily reflect the actual rivalry among suppliers (van Raak *et al.*, 2020). Only a few studies (e.g., Kermiche & Piot, 2018; Stringfellow *et al.*, 2015; Duxbury *et al.*, 2007) have employed dynamic measures of audit market structure. Resultantly, our understanding of predicted future market positions and whether the rebalancing of market shares is extended beyond the big audit firms is highly limited. The dynamic measures of market concentration (e.g., market share mobility and Markov chain modelling) may complement the commonly used measures to paint an accurate picture of the actual competition in an audit market. While AMC is endogenous to audit complexity, client mobility—an alternative dynamic measure of market structure—is not endogenous to audit complexity (van Raak *et al.*, 2020). It measures competition from the temporal variation in audit firms' individual market shares. Most prior research has relied on static market structure measures only and has ignored a potentially important dimension of

audit market competition. Thus, future AMC investigations could be improved through complementing the measures of static market structure with measures of market dynamics, such as market share mobility, to capture rivalry and accurately reflect market competition. This would contribute to the debate on whether concentrated audit markets are competitive. Another interesting direction could be the replication of static measures-based AMC research by employing dynamic measures and assessing if the findings differ. Any (dis)similarities will add to debate on the actual state of competition in the audit market.

#### 4.2.2. *Alternative perspectives to investigate AMC*

Our review highlights the shift required in future research from positivism to providing interpretive and critical accounts of AMC. For example, Velte (2017) emphasized the need to examine the decision-making process and stakeholders' perceptions using qualitative research methods, which will add to our understanding of the cognitive and behavioral aspects of AMC at the individual/micro-level. Our recommendations link to the previous sections, where the relationship between AMC, audit fees, and audit quality was shown to be inconclusive: this could be explored using alternative perspectives to AMC. From a regulatory standpoint (Ishaque, 2020, 2021; Moore, 2006), future AMC research may seek to examine whether current legislation is informed by cognitive and behavioral processes at the microlevel, i.e., the level of an individual auditor, client, and/or other stakeholders. We believe that this line of inquiry could be explored through questions including: How does AMC affect stakeholders' perceptions and expectations? What is the impact of AMC on the decision-making process of auditors and clients? What is the impact of AMC on the decision-making power of auditors and clients? Is the relationship between AMC and audit fees (and/or audit quality) moderated or mediated by auditors' cognitions?

In all the reviewed papers, the unit of analysis is the organization(s)/audit market (macrolevel). None of the studies has, exclusively, considered individuals (microlevel) as the unit of analysis. For instance, in their study of the effect of accounting firm mergers on the market for audit services, Baskerville and Hay (2006) interviewed partners to capture how the mergers affected them. However, the authors were mainly interested in gaining a macro-level understanding of the impacts of merger activity rather than the micro-level individual processes involved in judgements and decisions. Similarly, Kend et al. (2014) interviewed key stakeholders in the audit market to capture their views on the level of market competitiveness. Again, their primary focus was on examining the macrolevel competition process, albeit through the lens of individuals. Furthermore, Stringfellow et al. (2015) conducted interviews to understand macro-level symbolic domination in the UK; nonetheless, their study covers microlevel social mechanisms concerning the big four's domination to some extent. Importantly, since most AMC research claims to offer implications for audit practice and policies (Liu et al., 2014), the role of theoretical foundations is increasingly significant. For instance, Kislov (2019) emphasized the ability of a theory to provide a robust explanation by which to understand the “how”, “why”, and “what” of the phenomena in improvement and implementation research. Thus, to have a stronger impact, future AMC research should be underpinned by vigorous theories.

#### 4.2.3. *Improving research in the private sector and new public management*

Future AMC research may consider the private sector. Vanstraelen and Schelleman (2017) highlighted the significance of private companies and small and medium companies (SMEs) to capital markets' economic growth and called for audit research of private organizations. Given that there have been concerns regarding the lobbying behavior of the accounting profession, with regard to keeping private organizations outside PIEs (Clacher *et al.*, 2019),



AMC research of the EU and UK private sector should be encouraged. Moreover, due to the high degree of fee transparency and public interest in the audit market in the Belgian private sector, future AMC research could be conducted in Belgium's private sector (van Raak *et al.*, 2020). Similarly, the big four's oligopoly in Latvia's PIE audit market also offers opportunities for AMC research in the private organizational context (Rozgina *et al.*, 2020). Similarly, there is an opportunity for future AMC research in the public and not-for-profit sectors. Following the emergence of New Public Management (NPM) in response to growing demands for accountability in the public sector, many countries have adopted NPM models to showcase best organizational practice and accountability concerns (Beattie *et al.*, 2003). For instance, public sector organizations in New Zealand are governed by private sector-style boards and are required to prepare financial statements using the same standards followed by the private sector (Bradbury, 2017). In relation to organizational settings, efforts to enhance the transparency of public audit data, under the umbrella of New Public Management (NPM), will enable more AMC research in the public sector. Possible questions that future AMC research may address include: What is the association between AMC and non-big four audit fees in the private sector? How might NPM facilitate AMC research in the public and not-for-profit sectors? Addressing these concerns and questions will allow for comparisons to be made across various organizational contexts that might inform public policy on addressing the possibly devastating impacts of concentration and competition.

#### 4.2.4. *Looking outside North America*

Future research may examine AMC in relation to the EU audit reforms of 2016. Since the new audit reforms include provisions around audit firm rotation, the prohibition of non-audit services, and fee caps, it would be interesting to examine the possible effect(s) of these reforms on AMC. Whilst some research has already started to examine the association between EU

reforms and AMC (Indyk, 2019), there is a clear need for more research in this area. Importantly, although one of the purposes of EU audit reforms is to increase auditors' independence (Velte & Eulerich, 2014), the interplay between independence and AMC is not clear: this highlights an opportunity for future research to examine how the relationship between EU audit reforms and AMC might be mediated by auditors' independence. There is also an opportunity for future researchers to study AMC in Japan, with a prime focus on the 2006 dissolution of PwC ChuoAoyama and the subsequent shift from the big four to big three; the need to address this gap has also been highlighted by Frendy (2018). Another interesting direction could be the replication of North American studies in the Australasian, UK, and EU contexts, which would allow for comparisons of AMC's effects across different contexts. Future research should pay attention also to the regions where there is a clear lack of AMC studies, such as MENA, Africa, South America, and other emerging economies.

#### 4.2.5. *Investigating AMC in relation to corporate scandals*

From a regulatory viewpoint, AMC issues should be further investigated in relation to the strength (or weakness) of the regulatory environment in the North American, Australasian, UK, and EU contexts. While increased AMC is considered an aftereffect of the various corporate scandals that led to the dissolution of one or more audit firms, the possible role of AMC as a precursor to corporate scandals is not explicitly examined in the extant literature. Furthermore, from a regulatory standpoint, regulators and the public have also raised concerns about audit firms lobbying on behalf of their clients, as this poses an advocacy threat to auditor independence (Burnett *et al.*, 2018). Although this might be a chicken and egg dilemma, future AMC research should examine whether different levels of AMC, across different geographical and organizational contexts, increase or decrease the likelihood of corporate scandals occurring. Other possible directions that future AMC research may address include: What is

the association between AMC and non-big four audit fees in the private sector? Is the relationship between AMC and audit fees (and/or audit quality) affected by geographical context? How does the regulatory environment affect the relationship between AMC and audit fees (and/or audit quality)? Does increased AMC lead to unethical lobbying behavior?

## **5. Final Remarks**

Analyzing 108 papers published in 39 journals over a 55-year period, this paper reviews the extant empirical literature on concentration in the auditing services market, discusses limitations of the literature, and suggests opportunities for future research.

The analysis illustrates a consistent rise in the dominance of a few very large international audit firms since the 1980s across countries and over time, leading to a tight oligopoly and in rare cases to a duopoly status. However, this phenomenon has not been studied either as much or in the manner it deserves, resulting in a relatively limited understanding of AMC and its possible effects. The AMC literature is largely focused on audit pricing and audit quality; however, it reports mixed findings as to whether AMC facilitates monopolistic pricing and allows audit-quality-threatening behaviors. The analysis suggests a number of factors that have possibly contributed to such limited understanding. First, prior studies focus on the short-term effects of AMC, thereby allowing very limited time for the market to settle at a new concentration level. Second, the substantial variations in how concentration was measured have failed to sufficiently reflect the dynamics of market structure changes over time, market share (in)equality, and the impact of audit complexity on competition. Third, the misguided use of proxies for audit competition and audit quality has affected the relationship between AMC and audit fees/quality. Fourth, the literature is largely reliant on the positivistic approach and quantitative methods, and draws upon economic theories or, most often, on no specific theories; thus, it fails to view AMC as a socially constructed phenomenon. Fifth, the literature is mainly

concerned with the audit of publicly listed companies, perhaps because their data are publicly available; as a result, we have limited knowledge about AMC in the context of private companies, public organizations, and not-for-profit organizations. Sixth, the AMC literature is mainly dominated by the USA, UK, and Australia, while many other important regions (e.g., emerging economies) are largely absent. Finally, the audit market's macrolevel is the most studied area of analysis in the reviewed studies, which results in limited knowledge about the microlevel behavioral implications of AMC.

Despite the knowledge gained to date, many of the big-picture issues remain hazy, and many of the granular topics have not been adequately identified and articulated. From a practical perspective, we still need to learn about the long-term consequences of AMC on audit competition, audit quality, audit fees, and non-audit fees through comparative studies across different organizational settings and countries and about the audit market's response to the various regulatory reforms introduced (mainly after corporate scandals and audit failures) to lessen AMC levels. Also, future research may uncover potential costs and benefits of AMC in private, public, and not-for-profit sectors, especially in less-examined economies (e.g., emerging economies). From a methodological stance, future AMC research must take requires a quite specific look at the concentration measures employed and methodologies adopted. There is a real gap to be filled regarding the consideration of using more appropriate concentration measures to reflect the actual rivalry among suppliers in the auditing services market as well as better reflective measures for audit quality. There is a need also for interpretive and critical accounts of AMC. It is important to address the how and why questions associated with the positive/negative effects of AMC.

Finally, as with all literature reviews, the findings are limited to the choices made regarding the scope and boundaries of the data analyzed and, therefore, the interpretation of

the results. Our analysis, and thus our results, is limited to AMC empirical research published in AJG-ranked journals in the English language and available online up to July 2021. Future studies can enrich our results by looking beyond 2021 and including nonempirical studies.

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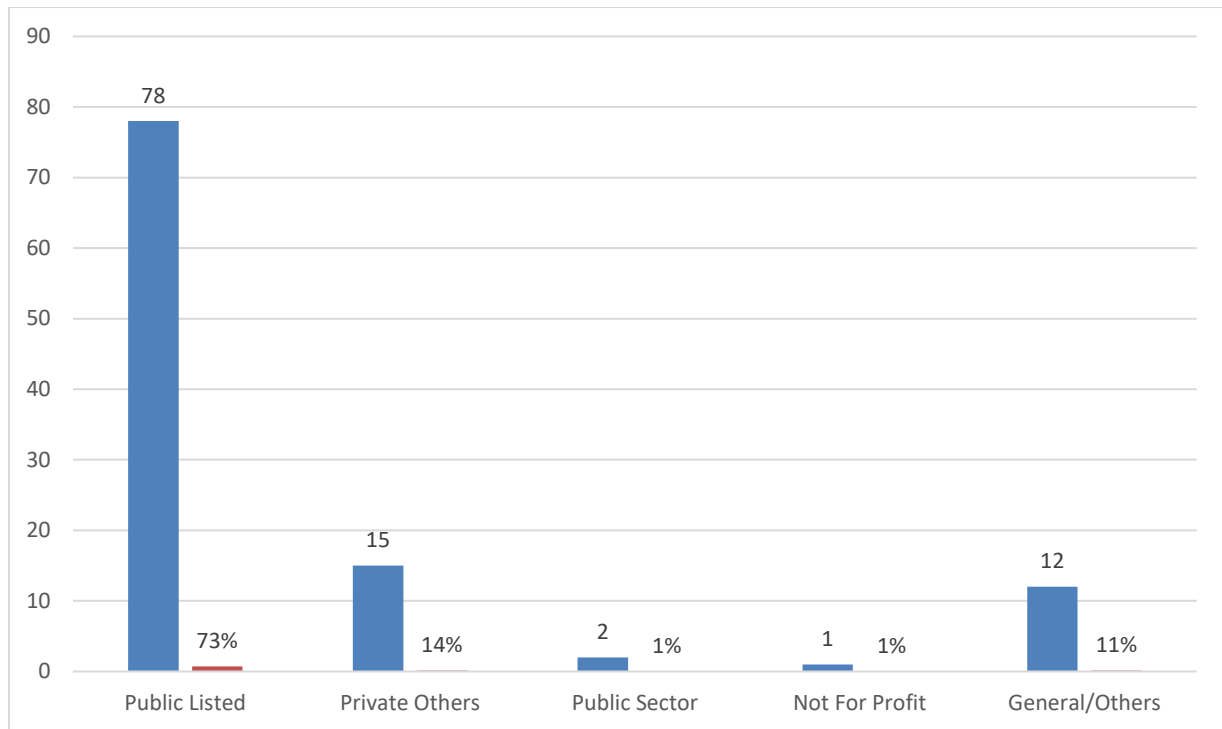
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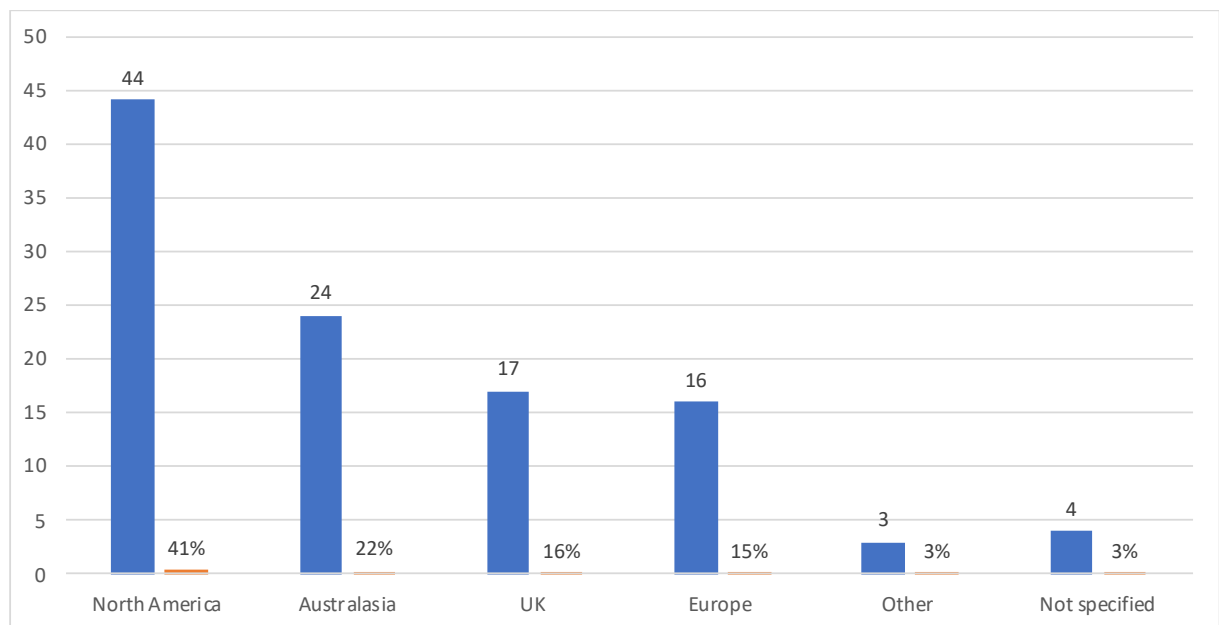
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**Figure 1.** Classification of papers by organizational focus



**Figure 2.** Classification of papers by geographical focus

**Table 1.** Journals where reviewed articles published

	<b>Journal</b>	<b>#</b>
<b>Specialized Auditing Journals</b>	<i>Auditing: A Journal of Practice &amp; Theory</i>	15
	<i>Managerial Auditing Journal</i>	8
	<i>International Journal of Auditing</i>	6
	<i>Journal of Accounting, Auditing &amp; Finance</i>	2
	<i>Accounting, Auditing &amp; Accountability Journal</i>	2
	<i>Journal of International Accounting, Auditing and Taxation</i>	1
<b>Nonspecialized Auditing Journals</b>	<i>Contemporary Accounting Research</i>	7
	<i>The Accounting Review</i>	5
	<i>Accounting Horizons</i>	5
	<i>The British Accounting Review</i>	4
	<i>Journal of Accounting and Economics</i>	4
	<i>Accounting and Business Research</i>	4
	<i>Accounting &amp; Finance</i>	4
	<i>The International Journal of Accounting</i>	4
	<i>Journal of Business Finance &amp; Accounting</i>	3
	<i>Journal of Accounting and Public Policy</i>	3
	<i>European Accounting Review</i>	3
	<i>Abacus</i>	3
	<i>Advances in Accounting (Advances in International Accounting)</i>	2
	<i>Journal of International Financial Management and Accounting</i>	2
	<i>Critical Perspectives on Accounting</i>	2
	<i>Australian Accounting Review</i>	2
	<i>Review of Quantitative Finance and Accounting</i>	1
	<i>Review of Industrial Organization</i>	1
	<i>Research in Accounting Regulation</i>	1
	<i>Management Science</i>	1
	<i>Management Research Review</i>	1
	<i>Journal of Financial Regulation and Compliance</i>	1
	<i>Journal of Empirical Finance</i>	1
	<i>Journal of Economics and Business</i>	1
	<i>Journal of Contemporary Accounting &amp; Economics</i>	1
	<i>Journal of Accounting Research</i>	1
	<i>International Advances in Economic Research</i>	1
	<i>Corporate Governance: An International Review</i>	1
	<i>Asian Review of Accounting</i>	1
	<i>Asia-Pacific Journal of Accounting &amp; Economics</i>	1
<i>Applied Economics</i>	1	

	<i>Accounting Historians Journal</i>	1
	<i>Accounting Education</i>	1

**Table 2.** Articles reviewed by journal type and the big N periods

	Specialized Auditing Journals	Nonspecialized Auditing Journals	Total
Big 8 (pre-1989)	1	6	7
Big 6 (1989–1997)	5	17	22
Big 5 (1998–2001)	3	9	12
Big 4 (2002–2021)	25	42	67
Total	34	74	108

**Table 3.** Research themes

		Big 8 period Pre-1988	Big 6 period 1989–1997	Big 5 period 1998–2001	Big 4 period 2002–2021	Total
General AMC	Over time	3	10	6	5	24
	After event	0	3	2	10	15
	Determinants	0	0	1	1	2
Audit Fees		1	6	1	33	41
Audit Quality		0	0	0	18	18
Audit Specialization		2	6	2	15	25
Other		0	1	1	8	10
Total		6	26	13	90	135*

\* Some articles have multiple focuses, and they were coded into multiple related categories

**Table 4.** AMC measures and market shares measures used in the literature

Market Share Measures	AMC Measures							No. of articles
	CR	HH	Gini	CR HH Gini	CR HH	CR Gini	HH Gini	
Audit fees	3	9	1		4			17
No. of clients	8	2			3		1	14
Total assets	6	2			1			9
Total sales		2			2			4
No. of clients/audit fees	3	1		2	7			13
No. of clients/total assets	5	3			2			10
No. of clients/total sales					5			5
Audit fees/total assets	1			1				2
Audit fees/total sales		3			1			4
Total sales/total assets				1				1
No. of auditors/audit fees					1			1
No. of clients/total assets/total sales	3				1			4
No. of clients/audit fees/total sales	1				2			3
Audit fees/ no. of clients/total sales/total assets		1		1	1			3
No. of auditors					5			5
Other	3			1	2			6
Total No. of articles	33	23	1	6	37	0	1	101**

\* The choice of a concentration index was not explained in seven articles.

**Table 5.** Research paradigms across theories and methods

	Theory			Total	Research Method			Total
	No theory	Economics	Sociology		Case/field study interviews	Content analysis/archival-historical analysis	Survey questionnaire other empirical	
Positivistic	63	41		104		99	5	104
Interpretive	1		1	2	1	1		2
Critical			1	1	1			1
Hybrid	1			1	1		1	2
Total	65	41	2	108	3	100	6	109*

\* The number does not add up to 108, as one article used mixed methods; it was equally coded/counted into two categories.

**Table 6.** Pre- and post-Enron papers

	Papers Reviewed		“No Theory” Papers	
	No.	%	No.	%
Pre-Enron (1967–2001)	41	38%	31	48%
Post-Enron (2002–2021)	67	62%	34	52%
Total	108	100%	65	100%