COMPETITION AND AUDIT QUALITY WITHIN THE SMALL AUDIT MARKET

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Abstract

This paper uses spatial distance to capture competition and examine its effect on audit quality in the small audit market (non-Big4 firms). Competition consists of non-Big4 audit firms competing with other non-Big4 audit firms and competing with Big4 firms for market share. Audit market competition and its effect on audit quality has been an ongoing debate. This study finds that within the small audit market, as competition increases between non-Big4 firms, abnormal accruals also increase; however, this relationship is most pronounced among large accelerated filer and non-accelerated filer clients. Additionally, competition between non-Big4 firms and Big4 firms does not have an effect on abnormal accruals except in the large accelerated filer setting. Overall, findings suggest that competition within the small audit market has a negative impact on audit quality as proxied by abnormal accruals.

INTRODUCTION

This paper studies whether a relationship exists between audit quality and two measures of spatial competition. Audit market concentration and lack of audit market competition have been important topics for policy makers and audit market participants for over a decade. Regulators have expressed concerns that the consolidated audit market may lead to auditor complacency and to a decrease in audit quality (GAO 2008). Yet, in its report, the Government Accountability Office (GAO) also states that oligopolistic competition may be sufficient to overcome the downfalls of an audit market dominated by Big4 firms. Academic research has found mixed results when examining tests about regulators' concerns. Additionally, the GAO adopts the stance that little competition exists between large audit firms (Big4 firms) and small audit firms (non-Big4 firms) (GAO 2008). However, recent studies have shown that large audit markets are susceptible to competitive pressures of small audit firms (Bills and Stephens 2016; Keune, Mayhew, and Schmidt 2016).

While the large and small audit markets have different characteristics, Bills and Stephens (2016) and Keune et al. (2016) provide evidence that at a local level, small audit firms and large audit firms compete on price. Specifically, Bills and Stephens (2016) find that large audit firms reduce audit fees more from competitive pressure of small audit firms than from competitive pressure of other large audit firms. Moreover, they show that within the small audit market, small audit firms charge higher fees when small audit firms compete with large audit firms for market share.

Competition can be measured in different ways (Herfindahl index, leadership, office-client-balance, spatial distance) and at different levels (national, local, local-industry). The focus of this paper is spatial competition at a local-industry level. Spatial competition derives from spatial economics, and it is based on how firms compete relative to their product-space locations within the market (Hotelling 1929; Biscaia and Mota 2013). Spatial competition, also known as spatial distance, is measured as the smallest absolute difference in market shares between two companies (competitors). Hereafter, the term competitive distance refers to spatial

competition. A decrease in competitive distance indicates that firms are closer together in market share, and it suggests an increase in competitive pressure. On the other hand, an increase in competitive distance signifies that firms are farther apart in market share, and it implies a decrease in competitive pressure.

This measure of competitive distance described above follows Bills and Stephens (2016) by proxying competition as the smallest absolute audit fee market share difference between the two closest competitors. Audit fee market share is defined at a local-industry level (two-digit SIC, MSA) for the years 2004-2021. Market share is defined at the local industry level because prior research has shown that auditors tend to specialize in industries within an MSA and not just specialize in an MSA (Reichelt and Wang 2010). It is also necessary to define who is a specific audit firm's competitor: small audit firm or large audit firm. This paper disentangles competition into competition amongst small audit firms and competition between a small audit firm and a large audit firm.

Audit quality is proxied using the absolute value of abnormal accruals. The absolute value of abnormal accruals is a measure of financial reporting quality that is used to detect opportunistic earnings management (DeFond and Zhang 2014). The reasoning behind this measure is that higher earnings quality (lower absolute value of abnormal accruals) signifies higher audit quality since high quality auditors do not tolerate earnings management (Balsam, Krishnan, and Yang 2003).

It is unclear what the relationship is between audit quality and competitive distance. The relationship between audit quality and competition could be positive: more competition leads to higher audit quality, and less competition leads to lower audit quality. If audit firms are driven to differentiate themselves from others, then increasing technology and innovations may improve audit quality. When less competition exists, auditors may become complacent and lax in their professional skepticism, which leads to lower audit quality. On the other hand, it can also be argued that audit quality and competition are negatively related. More competition is associated with lower audit quality, and less competition is related to higher audit quality. More competition leads to higher auditor turnover as well as increased pressure to decrease audit fees. Auditors may reduce audit hours to maintain firm profits when fees decrease. Additionally, auditors may be more tolerant of client's earnings management to retain the client. When competition is low, auditors do not face fee pressure, so they have more flexibility in audit hours and audit fees for their budget and contracts. Under this setting, since a lower chance of auditor turnover exists, auditors may perform a "watchdog" role and push back on clients that have unreasonable estimates (Boone, Khurana, and Raman 2012), which could signal better audit quality. Lastly, market-based institutional incentives encourage auditors to perform their jobs in an independent and professional manner. As such, competition (high or low) would not have an influence on audit quality.

In this paper, the results show that as competition intensity increases between small audit firms, abnormal accruals also increase. This relationship is most evident among large accelerated filers and non-accelerated filers. Interestingly, there is not a significant relationship among non-Big4 and Big4 competition and abnormal accruals except for a somewhat significant association in the large accelerated setting. Overall, these results suggest that market-share based competition between small audit firms negatively influences audit quality as shown through abnormal accruals.

Overall, this research paper contributes to the audit literature and may be of interest to several different parties. First, this study delivers further insight into the audit competition literature. The competition literature examines the association between competition and audit quality; however, the results are mixed (Kallapur, Sankaraguruswamy, and Zang 2010; Boone et al. 2012; Newton, Wang, and Wilkins 2013; Ettredge, Sherwood, and Sun 2017). While these

audit quality papers examine competition in some form, they do not capture competition strictly among small audit firms and strictly between small and large audit firms while examining audit quality. Thus, this paper provides evidence on this topic. This paper may be of interest to regulators and policy makers who are concerned about the audit market concentration, competition among audit firms, and audit quality. This research also provides more insight into the small audit market behavior since academic research is often limited in this area (Bills and Stephens 2016).

BACKGROUND AND HYPOTHESES

Audit market concentration and the concern over potential lack of competition has been an ongoing issue for the United States as well as other countries (Francis, Michas, and Seavey 2013a). Recently, studies have focused on how small audit firms compete and affect the large audit firms (Bills and Stephens 2016; Keune et al. 2016). Some researchers argue that the audit market can be divided into two separate markets, the "oligopolistic" large audit market (Big4 firms: KPMG, Ernst & Young, Deloitte, PwC) and the "atomistic" small audit market (Non-Big4 firms: Grant Thornton, BDO, etc.) (Ghosh and Lustgarten 2006). In general, the large audit market is highly concentrated due to the limited number of potential suppliers. Also, the large audit market has access to more resources, which allows these firms to be dominant on a national and international scale. However, Simunic (2014) argues that the large audit market is closer to perfect competition than an oligopoly. In a perfectly competitive environment, all firms offer an identical product, and pricing is not controlled by the firms. On the other hand, the small audit market tends to be less concentrated, has access to fewer resources, and focuses more on a regional footprint. Despite these differences between the large and small audit markets, Hogan and Martin (2009) argue that small audit firms compete with large audit firms at the local level as evidenced by second-tiered auditors (non-Big4 firms that are inspected annually by the PCAOB) that audit previous Big4 clients. Overall, evidence suggests that an overlap between the large and small audit markets exists, and that each audit market (large or small) may exhibit their own unique characteristics.

Audit firms can compete on both price and quality; however, a tradeoff exists between audit effort and profit because unlimited audit hours are unreasonable and audit fees typically have an upper bound (Newton et al. 2013). Auditors may exert more audit effort to provide a higher quality audit, but they must either increase audit fees to compensate for their work or cut into the audit firm's profits by charging less. In the audit literature, competition has been negatively associated with audit fees (Kallapur et al. 2010; Numan and Willekens 2012; Bills and Stephens 2016; Eshleman and Lawson 2017). Kallapur et al. (2010) find that lower Herfindahl index (lower concentration, higher competition) is associated with lower audit fees. The Herfindahl index is the sum of squared market shares of all offices in a market (Pearson and Trompeter 1994; Bandyopadhyay and Kao 2004; Feldman 2006; Boone et al. 2012; Newton et al. 2013). An underlying assumption of the Herfindahl index is that all firms within an industry experience the same level of competition and compete on quantity and price in homogenous markets.

Empirically, Numan and Willekens (2012) and Lennox and Liu (2012) argue that this Herfindahl assumption does not hold in audit markets because firms face differing amounts of competition. Consider a scenario with a large, well-known firm and a small, unknown firm. A larger, well-established firm's strategy may relate to maintaining their client base; whereas, a small, young firm must strive to overcome entry barriers and gain market share. The larger, older firm may have less competition compared to the smaller, younger firm. The Herfindahl

index does not necessarily distinguish between these two firms. Instead of using the Herfindahl index, some papers use competitive distance.

Competitive distance is a measure of competition that considers a firm's location in the market relative to another firm. Specifically, competitive distance is defined as the smallest absolute market share difference between company i and its closest competitor. In general, spatial economics proposes that as the distance in market location between two firms decreases, competition increases, and equilibrium prices become closer to marginal costs (Hotelling 1929). These competitive distances can be measured between different competitors and at different levels.

Competitive distance has been applied in the context of audit fees as well as audit quality (Numan and Willekens 2012; Newton et al. 2015; Bills and Stephens 2016; Willekens et al. 2023). Numan and Willekens (2012) show that a decrease in competitive distance (increased competition) is associated with a decrease in audit fees. In other words, as the difference between Big4 market share decreases (as Big4 firms are closer in market share), audit fees decrease. This finding is also supported by Bills and Stephens (2016). For audit quality, Willekens et al. (2023) demonstrate that as the competitive distance increases, audit quality increases as demonstrated through restatements and abnormal accruals in a single integrated audit arena. This study differentiates from Willekens et al. (2023) by examining the small audit market only and measuring competitive distances by distinguishing what type of audit firm the competitor is.

In the audit literature, a shift from a national level to the local office level has occurred. The local office level is important for several reasons. First, audit firms strive to have uniform quality across all offices through firm-wide best practices; however, the decentralized nature of firms and the difficulties of nation-wide knowledge sharing may cause audit quality to differ from office to office (Krishnan 2005). Second, client engagement, audit fee pricing, and audit opinion decisions are made at the office level (Francis, Stokes, and Anderson 1999b; Reynolds and Francis 2000). Lastly, research has provided evidence that factors such as office size, office location, and office environment affect audit quality (Krishnan 2005; Francis, Michas, and Yu 2013b). Therefore, it is important to study competition at a local-industry level instead of at a national level.

At a local-industry level, more consideration is placed on small audit firms. Research on small audit firms has shown that, like Big4 firms, small audit firms differentiate themselves through quality and pricing (Bills, Cunningham, and Myers 2016; Bills and Stephens 2016; Keune et al. 2016). For example, Bills et al. (2016) show that small audit firms that are part of accounting associations provide higher audit quality (fewer PCAOB inspection deficiencies, fewer misstatements, and less extreme abnormal accruals) and charge a premium compared to non-associated small audit firms. Additionally, Bills and Stephens (2016) and Keune et al. (2016) find that small audit firms compete with large audit firms.

Keune et al. (2016) examine small audit firm competition and audit fees in the top 50 largest MSAs. They measure competition as the presence of a non-Big4 local market leader. This unique measure is based off rankings that consider overall services provided by audit firms such as public and private engagements, tax services, and consulting services. The authors find that the presence of a non-Big4 leader decreases audit fees; however, a non-Big4 is not a perfect substitute due to differing premiums between the Big4 and non-Big4 firms. Overall, their paper demonstrates that an overlap of knowledge between private and public engagements exists and that a non-Big4 audit firm with a strong local reputation is a competitor to a Big4 firm.

Another paper that researches small audit market competition and audit fees is Bills and Stephens (2016). This paper accounts for the two-tiered nature of the audit market: large audit firms (Big4) and small audit firms (non-Big4) by applying competitive distances similar to

Numan and Willekens (2012). Bills and Stephens (2016) measure competitive distance within and between the large and small audit markets. Their findings suggest that the local-industry market share distance between large and small audit firms has an influence on Big4 audit fees. Specifically, as a small audit firm decreases the local-industry market share distance between itself and a large audit firm, the large audit firm deceases its audit fees. Furthermore, Bills and Stephens (2016) show that as the small audit firm increases the competitive distance between themselves and other small audit firms, their audit fee increases. Lastly, as a small audit firm decreases the local-industry market share distance between itself and a large audit firm, the small audit firm increases audit fees. The authors explain that this result stems from the lookalike theory. The lookalike theory states that lookalike products "mimic" national brands and advance their competitive position simply because customers perceive them to be similar since they are in the same product category (Sayman, Hoch, and Raju 2002; Richards, Hamilton, and Patterson 2010; Johnson, Gibson, and Freeman 2013).

The purpose of this study is to examine the relationship between audit quality and competitive distances within the small audit market and between the small and large audit markets at a local-industry level. The large audit market is defined as all Big4 accounting firms, and the small audit market is defined as all non-Big4 accounting firms. As detailed above, the relationship between competition and audit quality is unclear. Auditors must balance audit effort exerted and audit fees. In competitive environments, auditors face fee pressure and a higher risk of auditor turnover. Auditors compete to retain clients by lowering audit fees. A decrease in audit fees may imply a decrease in audit effort which increase the likelihood of earnings management (Caramanis and Lennox 2008) and suggests lower audit quality (Doogar, Sivadasan, and Solomon 2015). Additionally, the audit firms may be entrenched in their clients and lack independence. If an audit firm loses a client, it would result in lower audit fees and a possible loss of their market position. Thus, an audit firm may be more tolerant of earnings management to keep the client.

In contrast, more competition may encourage more innovation among auditors as auditors attempt to distinguish themselves from others. Innovation (i.e. computerized work papers and data analytics tests) may lead to more efficient and effective audit techniques, which improves audit quality (Polimeni, Burke, and Benyaminy 2010). Another viewpoint is that low competition stimulates complacency in auditors. As an audit firm pulls further away from their competition, the audit firm may not be motivated to continue to provide higher audit quality. The audit firm may become lax or less skeptical in their testing, leading to a higher likelihood of not discovering and/or correcting a material misstatement. Conversely, in low competitive environments, auditors are less likely to succumb to audit fee pressures because auditor turnover is lower. If a client's financial statements need extensive audit testing, the audit firm can adjust the contract accordingly without fear of losing the client. Also, an auditor may be less tolerant of earnings management and push back on the client's judgments when necessary (Boone et al. 2012). Finally, reputation loss, litigation risk, and regulatory action for non-compliance may be sufficient market-based institutional incentives to encourage auditors to perform their jobs in an independent and professional manner. As such, competition (high or low) would not have an influence on audit quality. Because of these opposing scenarios, this paper does not make directional hypotheses about the relationship between competition and audit quality.

Hypothesis 1: In the small audit market, competitive distance between two small audit firms is not associated with audit quality.
Hypothesis 2: In the small audit market, competitive distance between a small audit firm and its nearest large audit firm competitor is not associated with audit quality.

SAMPLE

For the sample construction, Audit Analytics is used to retrieve audit fees, auditor location information, and data related to audit opinions and internal control weaknesses. Compustat data is used to gather a company's financial information needed to construct variables such as firm size, health, growth, leverage, etc. The sample covers the years 2004-2021. The market share data related to audit fees is constructed using the full Audit Analytics database before any observations are removed. Additionally, the calculation for abnormal accruals uses the full sample of Compustat with the necessary variables available before eliminating any firm-year observations.

Table 1 displays the sample attrition. Markets are defined as 2 digit SIC, MSA for each year represented in the sample. First, the sample begin with all non-utility and non-financial firm observations in Audit Analytics that also have corresponding Compustat data.[1] From here, any small audit market with only one small audit firm present is removed. In other words, each small audit market has a minimum of two small audit firms. Finally, one of the variables of interest measures the difference in market shares between a small audit firm and its closest large audit firm competitor. This measure requires the audit market to have at least one large audit firm present. Any observations are deleted that do not meet these market requirements. By default, each audit market has at least three audit firms present (two small audit firms and one large audit firm).

Table 1: Sample Attrition

Audit Analytic Data (2004-2021)	166,635 observations remaining
Merge with Compustat and delete observations missing data	43,196 observations remaining
Remove Big4 firms	11,974 observations remaining
Remove observations with only 1 small audit firm or no large audit firm	7,075 observations remaining
Final Sample	7,075 observations

Competitive distance in this paper is used to proxy for competition for several reasons. First, this research paper is interested in studying the impact of small audit firm competition within the small audit market as well as competition between the small and large audit markets. The Herfindahl index does not allow measurement between markets; however, competitive distance does capture competition within a market and between markets. Secondly, several academic studies have debated that high industry concentration does not automatically imply low competition within a market (Dedman and Lennox 2009; Lennox and Liu 2012; Numan and Willekens 2012). Lastly, competitive distance as a proxy for competition has been used in previous studies (Numan and Willekens 2012; Newton et al. 2015; Bills and Stephens 2016, Willekens et al. 2023).

Competitive distance is the smallest absolute difference in market share between two firms. A firm's biggest threat to losing their relative market position is going to be those firms that are located closest to it in market share. To construct the competitive distance variable, the methodology of Bills and Stephens (2016) is followed, and it uses local-industry market share (2 digit SIC, MSA).

NB4_TO_NB4 is the smallest absolute industry market share difference between company i's non-Big4 auditor and its closest non-Big4 audit firm competitor in a two-digit SIC industry within an MSA in a year. This variable captures competition between small audit firms.

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[1] Utilities and financial institutions are excluded due to their different operating features and regulatory requirements (Fields, Fraser, and Wilkins 2004; Boone et al. 2012).

NB4_TO_B4 is used to proxy for competition between a small audit firm and a large audit firm. *NB4_TO_B4* is defined as the smallest industry market share difference between company i's non-Big4 auditor and its closest Big4 audit firm competitor in a two-digit SIC industry within an MSA in a year.

RESULTS

DeAngelo (1981) states that audit quality is "the market-assessed joint probability that a given auditor will both detect a breach in the client's accounting system, and report the breach." Audit research relies on many different proxies to capture audit quality. Some of these measures are outputs of the audit process (e.g. going concern opinions, financial reporting quality measures) and some of these measures of audit quality are audit input oriented (e.g. auditor size, audit fees) (DeFond and Zhang 2014). The problem with audit quality is that audit quality is not the only factor that influences financial reporting quality; rather, financial reporting quality is a function of the innate characteristics of the firm, the financial reporting system, and the audit quality. This paper uses abnormal accruals to proxy for audit quality, which are a measure of financial reporting quality that proxy for managers' opportunistic reporting.

The proxy for audit quality used in this paper is based on abnormal accruals (*ABS_DACC_SIZE*). This proxy is defined as the absolute value of abnormal accruals as measured using the performance-adjusted abnormal accruals model based on the cross-sectional modified Jones equation (Jones 1991; Kothari, Leone, and Wasley 2005) and estimated using size-year deciles, following the methodology of Ecker, Francis, Olsson, and Schipper (2013). Size is defined as lagged total assets and requires at least 11 observations per size year estimate. Previous audit literature has associated lower abnormal accruals with higher audit quality. For example, industry experts, larger offices, and Big N auditors have all been linked with lower abnormal accruals, and accordingly, higher audit quality (Francis, Maydew, and Sparks 1999a; Balsam et al. 2003; Krishnan 2003; Francis and Yu 2009; Choi, Kim, Kim, and Zang 2010; Reichelt and Wang 2010). The reasoning behind this measure is that higher quality auditors should not tolerate higher abnormal accruals, and higher quality auditors should be able to detect and restrain any opportunistic reporting actions by management.

The equation below estimates abnormal accruals as follows:

$$TA_{i,t} = \beta_0 + \beta_1(1/A_{i,t-1}) + \beta_2(\Delta Sales_{i,t} - \Delta Rec_{i,t}) + \beta_3 PPE_{i,t} + \beta_4 ROA_{i,t} + \varepsilon_{i,t} \qquad (1)$$

where:

$TA_{i,t}$ = total accruals for company i in year t, calculated as income before extraordinary items less net cash flow from operating activities, scaled by company i's total assets in year t-1,

$A_{i,t-1}$ = lagged total assets for company i in year t-1,

$\Delta Sales_{i,t}$ = change in sales for company i between year t-1 and year t, scaled by total assets for company i in year t-1,

$\Delta Rec_{i,t}$ = change in receivables for company i between year t-1 and year t, scaled by total assets for company i in year t-1,

$PPE_{i,t}$ = net property, plant, and equipment for company i in year t, scaled by total assets for company i in year t-1,

$ROA_{i,t}$ = return on assets for company i in year t (net income in year t divided by assets in year t)

The absolute value of the residual in Equation (1) represents abnormal accruals (*ABS_DACC_SIZE*). Lower abnormal accruals suggest less earnings management and less financial misreporting, which in turn, implies higher audit quality. Advantages of the absolute value of abnormal accruals are that it is linked to the continuous nature of audit quality and may signal more egregious, undetected misstatements. Also, abnormal accruals depict quality

variation for many firms (DeFond and Zhang 2014). Limitations of abnormal accruals are that it is subject to measurement error and sensitivity as well as potential bias. Additionally, several different ways exist to measure abnormal accruals (Kothari et al. 2005).

To test if audit quality and competitive distance are related, the absolute value of abnormal accruals (*ABS_DACC_SIZE*) is regressed on the aforementioned proxies of competitive distance and a set of control variables from prior studies (Reichelt and Wang 2010; Numan and Willekens 2014; and Bills and Stephens 2016). Industry and year fixed effects are also included in the model, and heteroskedasticity is controlled for by using robust standard errors that are clustered by company. Some companies are too large for small audit firms to audit since small audit firms may lack the necessary resources to provide a quality audit. Additionally, some companies are too small and cannot afford a large audit firm. Therefore, Equation (2) is estimated using the full sample, and then, the equation is run separately based on a company's filing status (large accelerated, accelerated, and non-accelerated). Separating the regression by filing status allows similar observations to be grouped together and allows the coefficients on the variables of interest to differ depending on the filing status of the companies.

$$ABS\_DACC\_SIZE_{i,t} = \beta_1 NB4\_TO\_NB4_{i,t} + \beta_2 NB4\_TO\_B4_{i,t} + \beta_3 SPEC\_MSA_{i,t} + \beta_4 HERF_{i,t} + \beta_5 SIZE_{i,t} + \beta_6 LEV_{i,t} + \beta_7 CFO_{i,t} + \beta_8 STD\_CFO_{i,t} + \beta_9 MB_{i,t} + \beta_{10} LOSS_{i,t} + \beta_{11} ABS\_LTA_{i,t} + \beta_{12} Z\_SCORE_{i,t} + \beta_{13} LIT_{i,t} + \beta_{14} TENURE_{i,t} + \beta_{15} AB\_FEE_{i,t} + \beta_{16} MAT\_WEAK_{i,,t} + \beta_{17} TIER\_2_{i,t}$$
$$+ Industry\ and\ Year\ fixed\ effects_{i,t} + \varepsilon_{i,t} \qquad (2)$$

Refer to Appendix A for variable definitions.

The variables of interest in Equation (2) are *NB4_TO_NB4* and *NB4_TO_B4*. Hypothesis 1 pertains to the small audit firm samples and the relationship between audit quality and the competitive distance between small audit firms as captured by *NB4_TO_NB4*. Hypothesis 2 examines if small audit firm quality is associated with competitive distance between the small and large audit firms as proxied by *NB4_TO_B4*. A negative coefficient on these competitive distance variables demonstrates that decreasing competitive distance leads to higher abnormal accruals (lower audit quality). In contrast, if positive, it signals that decreasing competitive distance is associated with lower abnormal accruals (higher audit quality).

Within Equation (2), other competition measures such as concentration within the audit market (*HERF*) and competition based on industry specialization (*SPEC_MSA* and *TIER_2*) are control variables. Previous studies have found associations between competition, specialization, and abnormal accruals (Kallapur et al. 2010; Reichelt and Wang 2010; Boone et al. 2012). *SPEC_MSA* and *TIER_2* are predicted to have negative coefficients since previous literature has shown that these types of auditors are associated with lower abnormal accruals and higher audit quality (Reichelt and Wang 2010). Consistent with prior studies, negative coefficients are expected for *SIZE, LEV*, and *CFO*. Larger firms (*SIZE*) are associated with more steady accruals (Dechow and Dichev 2002). More highly leveraged firms have been linked to lower abnormal accruals (DeFond and Jiambalvo 1994; Becker, DeFond, Jiambalvo, and Subramanyam 1998), and firms with higher operating cash flows perform better and have lower accruals (Frankel, Johnson, and Nelson 2002). Firms that have higher bankruptcy risk (*Z_SCORE, LOSS*) as well as firms in high litigation industries (*LIT*) are projected to have higher abnormal accruals since these are riskier firms, and these firms face financial pressure to manipulate earnings. Additionally, firms with more growth (*MB*), higher prior year accruals (*ABS_LTA*), and higher volatility of cash flow from operations (*STD_CFO*) are expected to have higher abnormal accruals as these characteristics are associated with unstable and volatile financial environments. Audit tenure (*TENURE*) is a control variable because regulators debate if longer tenure impairs auditor independence and audit quality. Material weakness (*MAT_WEAK*) is a control variable as material weaknesses have been linked to higher abnormal accruals (Doyle, Ge, and McVay 2007b). *AB_FEE* is included to control for

additional audit effort (Newton et al. 2013). In conclusion, industry and year fixed effects are included to control for time and industry effects on the absolute value of abnormal accruals. Table 2 provides the descriptive statistics. To reduce the influence of outliers, all continuous variables are winsorized at the 1st and 99th percentile. The sample has a total of 7,075 observations. *NB4_TO_NB4* has a mean of 0.050, and *NB4_TO_B4* has a mean of 0.191. *ABS_DACC_SIZE* has a mean of 0.087.

Table 2: Descriptives

Variable	Mean	Std Dev	1st Quartile	Median	3rd Quartile
ABS_DACC_SIZE	0.087	0.086	0.027	0.059	0.116
NB4_TO_NB4	0.050	0.091	0.002	0.013	0.052
NB4_TO_B4	0.191	0.247	0.033	0.086	0.230
SPEC_MSA	0.048	0.214	0.000	0.000	0.000
HERF	0.427	0.181	0.291	0.375	0.527
SIZE	4.313	1.835	3.060	4.286	5.512
LEV	0.141	0.282	0.000	0.029	0.190
CFO	-0.004	0.312	-0.066	0.044	0.125
STDCFO	2.057	71.761	0.036	0.070	0.136
MTB	4.926	209.365	0.896	1.704	3.471
LOSS	0.523	0.500	0.000	1.000	1.000
ABSLTA	2.117	76.010	0.044	0.092	0.183
ZSCORE	0.920	23.258	-0.499	1.613	3.294
LIT	0.349	0.477	0.000	0.000	1.000
TENURE	1.301	0.781	0.693	1.386	1.946
AB_FEE	-0.213	0.598	-0.516	-0.172	0.169
MATWEAK	0.208	0.406	0.000	0.000	0.000
TIER2	0.269	0.443	0.000	0.000	1.000

Table 3 shows the results of Equation (2) for the entire sample. In this table, the coefficient for competitive distance between small audit firms (*NB4_TO_NB4*) is negative and significant, signaling that more intense competition among small audit firms leads to lower audit quality. The other variable of interest is *NB4_TO_B4*, which has a positive coefficient, but does not load significantly. This result suggests that competition between a small audit firm and a large audit firm does not affect abnormal accruals. To further explore the relationship between competitive distance and abnormal accruals, Equation 2 is run based on filing type.

Table 3 Dependent Variable: ABS_DACC_SIZE

Variable	Coeff.	P-Value
Intercept	0.041***	(0.005)
NB4_TO_NB4	-0.062***	(0.000)
NB4_TO_B4	0.010	(0.130)
SPEC_MSA	0.006	(0.376)
HERF	0.000	(0.997)
SIZE	-0.003***	(0.000)
LEV	0.010	(0.110)
STDCFO	0.000	(0.580)
CFO	-0.041***	(0.001)
MTB	-0.000	(0.485)
LOSS	0.002	(0.596)
ABSLTA	-0.000	(0.537)

ZSCORE	-0.000	(0.438)
LIT	0.009**	(0.047)
TENURE	-0.004**	(0.011)
AB_FEE	-0.001	(0.710)
MATWEAK	0.015***	(0.000)
TIER2	-0.010***	(0.002)
Fixed Effects	Yes	
N	7,075	
R^2	0.0947	

***,**,* Denote $p < 0.01$, $p < 0.05$, and $p < 0.10$, respectively. Coefficient p-values are two-tailed and based on t-statistics using robust standard errors, clustered by company.

The first, second, and third columns of Table 4 represent the coefficients, p-values, and significance levels for Equation (2) regressed among different filing types. The majority of the control variables are in their predicted directions as suggested by prior literature. Hypothesis 1 specifically focuses on audit quality and the competitive distance between two small audit firms (NB4_TO_NB4). NB4_TO_NB4 is negative and significant at $p < 0.05$ for two out of the three filing types. This relationship suggests that as the competitive distance decreases between two small audit firms, abnormal accruals increase. In other words, more competition among small audit firms leads to poorer audit quality in terms of abnormal accruals when auditing large accelerated filers and non-accelerated filers. The coefficient on NB4_TO_B4 is not significant except in the large accelerated filers setting, so overall, the results signify that competitive distance between a small audit firm and its nearest large audit firm competitor does not affect audit quality, as measured by abnormal accruals. A limitation of this analysis by filing type is that statistical power is reduced. In summary, in the small audit firm market, evidence exists that competitive distance between small audit firms (NB4_TO_NB4) is negatively associated with abnormal accruals, and most coefficients suggest that there is no relationship between competitive distance among small and large audit firms and abnormal accruals.

Table 4 Dependent Variable: ABS_DACC_SIZE

	Large Acc.		Acc.		Non-Acc.	
Variable	Coeff.	P-Value	Coeff.	P-Value	Coeff.	P-Value
INTERCEPT	0.141***	(0.000)	0.071**	(0.020)	0.032	(0.139)
NB4_TO_NB4	-0.067**	(0.026)	-0.022	(0.402)	-0.098***	(0.001)
NB4_TO_B4	0.040**	(0.048)	0.007	(0.550)	0.005	(0.540)
SPEC_MSA	-0.000	(0.990)	0.005	(0.573)	0.008	(0.441)
HERF	-0.029	(0.259)	0.009	(0.640)	0.003	(0.810)
SIZE	-0.007***	(0.009)	-0.005**	(0.031)	0.001	(0.381)
LEV	0.006	(0.692)	0.001	(0.885)	0.009	(0.264)
STDCFO	0.068**	(0.037)	0.040***	(0.004)	0.000	(0.722)
CFO	-0.003	(0.903)	-0.004	(0.868)	-0.034**	(0.021)
MTB	0.000***	(0.000)	0.000	(0.789)	-0.000*	(0.064)
LOSS	0.009	(0.267)	0.002	(0.699)	-0.001	(0.865)
ABSLTA	-0.010**	(0.035)	-0.002***	(0.004)	0.000	(0.787)
ZSCORE	0.000	(0.364)	0.000**	(0.028)	-0.001***	(0.000)
LIT	-0.001	(0.877)	0.003	(0.730)	0.011*	(0.051)
TENURE	-0.001	(0.869)	0.002	(0.379)	-0.006***	(0.002)
AB_FEE	0.007*	(0.077)	-0.004	(0.277)	-0.002	(0.458)
MATWEAK	0.011	(0.253)	0.013**	(0.020)	0.016***	(0.000)
TIER2	-0.007	(0.293)	-0.005	(0.271)	-0.009*	(0.060)
Fixed Effects	Yes		Yes		Yes	
N	1,003		1,632		4,440	

R^2	0.1977	0.1088	0.1051

***,**,* Denote p < 0.01, p < 0.05, and p < 0.10, respectively. Coefficient p-values are two-tailed and based on t-statistics using robust standard errors, clustered by company.

ADDITIONAL SENSITIVITY TESTS

Another test is done to examine if the main results are sensitive to the continuous nature of the competitive distance variables. For this sensitivity test, Equation 2 is re-run except the competitive distance variables are replaced by ranked competitive distance variables (terciles, quartiles, quintiles, and deciles). The competitive distance variables are ranked by year. The results for competitive distance among small audit firms (*NB4_TO_NB4*) are similar to the results found in the main results and presented in Table 5. Also, with this test, competitive distance between a small audit firm and a large audit firm (*NB4_TO_B4*) now loads significantly and positively related to abnormal accruals, indicating competitive distance between small and large audit firms does affect abnormal accruals. These results suggest that perhaps there may be other unique settings where competition between a small and large audit firm could affect audit quality.

Table 5 Dependent Variable: ABS_DACC_SIZE

	Terciles		Quarters		Quintiles		Deciles	
Variable	Coeff.	P-Value	Coeff.	P-Value	Coeff.	P-Value	Coeff.	P-Value
N2N_R3	-0.007***	(0.000)						
N2BR_R3	0.004***	(0.008)						
N2N_R4			-0.005***	(0.000)				
N2BR_R4			0.004***	(0.002)				
N2N_R5					-0.004***	(0.000)		
N2BR_R5					0.003***	(0.000)		
N2N_R10							-0.002***	(0.000)
N2BR_R10							0.002***	(0.001)
Control Variables & Fixed Effects	Yes		Yes		Yes		Yes	
N	7,075		7,075		7,075		7,075	
R^2	0.0962		0.0968		0.0975		0.0972	

***,**,* Denote p < 0.01, p < 0.05, and p < 0.10, respectively. Coefficient p-values are two-tailed and based on t-statistics using robust standard errors, clustered by company.

Untabulated results run Equation (2) by filing type using the ranked competitive variables. The results find that in the large accelerated filer setting, all ranked competitive distance variables among small audit firms are negatively and significantly related to abnormal accruals and that all ranked competitive distance variables among small audit firms and large audit firms are positively and significantly related to abnormal accruals. For accelerated filer setting, no competitive distance variables load significantly. Finally, for non-accelerated filer settings, all competitive distance variables among small audit firms load negative and significant, and all competitive distance variables among small and large audit firms load positively but not significantly.

CONCLUSION

This paper examines the relationship between audit quality and competitive distance within the small audit market. Prior literature has found mixed results when proxying competition with concentration measures such as the Herfindahl index. Recently, papers researching audit market competition have used competitive distance to capture competition. Competitive distance is founded in spatial economics and is based on a firm's relative location in a market.

It is calculated as the absolute smallest difference in market shares between two competitors. For this paper, competitive distance is captured within the small audit market and between the small and large audit firms.

Most of the results indicate that local-industry competition between small audit firms is negatively associated with audit quality as proxied by abnormal accruals. In particular, this relationship is most prevalent in the large accelerated filers and non-accelerated filers. Opposingly, the results show no evidence of a relationship between competitive distance of a small audit firm and a large audit firm, except when looking at large accelerated filers.

A limitation of this study is endogeneity related to the direction of causality between competitive distances and the proxy for audit quality. Does lower competitive distances (more competition) lead to higher abnormal accruals? Or, do these demands for poorer financial reporting quality lead to more competition between auditors, as clients demand cheaper audits? It is not possible to completely disentangle these effects, and readers should exercise caution when interpreting the outcomes.

Overall, competition has been a concern for regulators. Regulators fear that highly concentrated markets and not enough competition cause auditors to become complacent and not offer high quality audits. This paper provides insight into the dynamics of audit quality and competition within the small audit market. Future research could explore various settings where competition might have differing effects.

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Appendix A: Variable Definitions

Dependent Variable	
Variables	**Definition**
ABS_DACC_SIZE	Absolute value of abnormal accruals for company i using performance-adjusted abnormal accruals model based on the cross-sectional modified Jones equation (Jones 1991, Kothari et al. 2005). The model is run by size-year deciles and requires at least 11 observations per group, following the methodology of Ecker et al. (2013).

Variables of Interest	
Variables	**Definition**
NB4_TO_B4	The smallest absolute industry market share difference between company i's non-Big4 auditor and its closest Big4 audit firm competitor in an MSA.
NB4_TO_NB4	The smallest absolute industry market share difference between company i's non-Big4 auditor and its closest non-Big4 audit firm competitor in an MSA.

Control Variables	
Variables	**Definition**
ABS_LTA	Absolute value of total accruals scaled by lagged total assets of company i.
AB_FEE	The residual from the following audit fee model: AUDIT_FEES= $+\beta_0 +X'\beta$ +Industry and Year fixed effects$_{i,t}$ +$\varepsilon_{i,t}$; X is a vector of control variables common to fee models.
CFO	Operating cash flow scaled by lagged total assets of company i.
HERF	The industry Herfindahl index calculated as the sum of squared industry market shares (in audit fees) of all local audit offices in an MSA.
LEV	Leverage of company i, defined as long-term debt divided by assets.
LIT	Indicator variable equal to 1 if company i operates in a high litigation industry (SIC 2833-2836, 3570-3577, 3600-3674, 5200-5961, and 7370), and 0 otherwise.
LOSS	Indicator variable equal to 1 if company i has net income < 0, and 0 otherwise.
MAT_WEAK	Indicator variable equal to 1 if company i has an internal control weakness, and 0 otherwise.
MB	The market-to-book ratio of company i, defined as market value of equity divided by book value.
SIZE	Log of total assets for company i.
SPEC_MSA	Indicator variable equal to 1 if company i has an auditor that has at least a 30% market share in a 2 digit SIC, MSA per year, and 0 otherwise.
STD_CFO	Standard deviation of operating cash flow scaled by lagged total assets of company i for year t through year t-2.
TENURE	The natural logarithm of (the number of years that the auditor has audited company i's financial statements).
TIER_2	Indicator variable equal to 1 if company i is audited by a second tier firm, and 0 otherwise. Second tier is defined as non-Big4 firms that are inspected annually by the PCAOB.
Z_SCORE	Altman (1983) score for company i, measures the likelihood of company survival. The lower the score the greater the bankruptcy risk.