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DIVERSIFICATION BY THE AUDIT OFFICE AND ITS IMPACT ON AUDIT QUALITY

ABSTRACT: Prior research documents a positive association between audit office size and audit quality (Francis and Yu 2009; Choi et al. 2010; Francis et al. 2012). Since firms diversify with the intention of revenue expansion (Palepu 1985), large audit offices are likely to be more diversified. Moreover, strategic management theory suggests that diversification may have positive / negative effect on the quality of output, depending on the nature of diversification. Thus, the interrelationship of diversification, audit office size, and audit quality is an interesting yet unexplored research issue.

This paper examines the impact of four different diversification strategies: industry diversification, client diversification, geographic diversification, and service diversification on two proxies of audit quality, mainly, discretionary accruals and propensity to meet-or-beat earnings expectations by a cent. Results suggest that, holding audit office and auditee attributes constant, industry diversification, client diversification, and geographic diversification have detrimental effects on audit quality, possibly because such diverse audit engagements strain the resources of the audit office. On the other hand, service diversification, results in improvement of audit quality, possibly due to knowledge spill-over effect from providing multiple services to the same client, such as, tax compliance and planning, auditing employee benefit plans, acquisition related consultancy services, internal control reviews, and attest services.

The pecking order of various strategies available for revenue expansion is also studied. The results suggest that the more effective a diversification strategy, the greater the detrimental effect on audit quality. Audit offices with more reputation in the local audit market manage diversification better, probably due to higher visibility costs and greater potential for loss of quasi-rents. Finally, consistent with theory, increase (decrease) in diversification levels over time has negative (positive) impact on audit quality. These results are robust to various controls from extant research. The findings of this paper are important since they identify additional factors that explain audit quality at the audit office level.

JEL Classification: D46, G12, G14, M41, M42

Key Words: Audit office; diversification; audit quality.

DIVERSIFICATION BY THE AUDIT OFFICE AND ITS IMPACT ON AUDIT QUALITY

I. INTRODUCTION

Business entities indulge in market and product diversification with the intention of sales expansion, risk management, and profit maximization. Strategic management theory suggests that diversification should have positive impact on performance due to economies of scope and scale, market power effects, risk reduction effects, and learning effects (Geringer et al. 2000). If the diversification has a narrow focus and is across connected constituencies (related diversification), it can have positive effect on performance since the different market and product areas can leverage knowledge gained in each other (Rumelt 1974). However, if the diversification is too wide (unrelated diversification), it can have negative impact on performance due to lack of economies of scope in developing competencies (Palepu 1985).

Extant research (Francis and Yu 2009; Choi et al. 2010; Francis et al. 2012) suggests that audit quality is an increasing function of audit office size. Moreover, audit office revenue (size) may be a function of diversification and audit quality may be a function of diversification. However, no prior study examines the impact of audit office diversification on audit quality[1]. This paper tries to fill this gap by examining the consequences of diversification by the audit office on its performance. The audit offices can diversify in various ways. They can audit clients in multiple industries; audit a wide variety of clients within an industry; audit clients located in diverse locations; or provide multiple services, other than auditing, to the same client, such as, tax compliance and planning, auditing employee benefit plans, acquisition related consultancy services, internal-control reviews, and attest services. Thus, the research question addressed in this paper is: Does diversification at the audit office level lead to economies of scope, scale, and

[1] Deltas and Doogar (2003) examine diversification strategy of Big N audit firms in the context of mergers.

experience, thereby, providing higher audit quality; or does diversification strain available resources at the audit office level resulting in lower audit quality?

Over nineteen-thousand client-year observations pertaining to 3,320 clients for the period 2000-2009 are analyzed and the impact of various diversification measures on two proxies of audit quality, mainly levels of discretionary accruals and propensity to meet or beat earnings expectations by a cent are examined. The findings support the conclusion that diversification across industries, across clients within industries, and across clients dispersed geographically amounts to unrelated diversification that is detrimental to the audit quality of the audit office. One explanation of this result is that such diversification lacks focus and fails to create synergy and does not transfer competencies between various constituencies. On the other hand, diversification of types of services offered to the same client is a related diversification that leads to economies of scope and learning and results in improved audit quality at the audit office level. Pecking order of the various diversification strategies is also examined. Finally, the paper tests for impact of changes in diversification levels and role of audit office reputation on audit quality. These findings add to the recent research stream that examines micro-factors at the audit office level and their impact on audit quality. The results will also help future researchers in refining their models that examine the impact of audit office attributes on audit quality.

The rest of the paper is organized as follows. Section II develops the theoretical framework and presents the hypotheses. Next, the research design is explained in Section III, followed by a discussion of the sample in Section IV and the results in Section V. Concluding comments in are offered in Section VI.

II. THEORY AND HYPOTHESES

Diversification by business entities has been a common practice over time (Rumelt 1974; Hitt et al. 1994; Hitt et al. 1997). According to Palepu (1985), diversification strategy of a business entity is an important part of strategic management, and the impact of diversification strategy on the performance of the business entity is an issue of considerable interest to both academics and managers. Typically, the entity's diversification strategy is positively associated with its performance (Christensen and Montgomery 1981; Montgomery 1982; Rumelt 1982). Diversification can lead to sales expansion (Etgar and Rachman-Moore 2010), and according to Porter (1976), sales volume and relative market shares are major determinants of firms' relative power in the market allowing the firm to extract rent from more customers. Teece (1982), Barney (1991), Mahoney and Pandian (1992), Peteraf (1993), Teece et al. (1997) use the resource-based theory of the firm to argue that economies of scope and economic quasi-rent from shared strategic capabilities help generate sustainable competitive advantages and better performance.

According to Greenwood et al. (2005), multidisciplinary practice (MDP) in accounting has four competitive benefits. First, it offers clients the convenience of dealing with a single supplier, which the Big-N accounting firms claimed as an important justification for their provision of consulting services. Second, economies of scope arise from delivering several services through the same distribution channels. Third, firms can "cross sell" services, taking advantage of relationships with clients to offer additional services. Clients, confronted with uncertainty over the capabilities of alternative suppliers, transfer their assessment of a firm's capabilities from one service to another (Nayyar, 1993). Fourth, diversification helps retain highly skilled personnel because the firm can offer complex assignments and provide scope for growth. Arrunada (1999) argues that a diversified client base leads to independence. In other

words, spreading quasi-rents across a large number of clients makes the auditor more dependent on all the clients and less dependent on any one client, thereby reducing chances of any leniency towards a single client. According to him, the structure of the audit firm, human capital, and the existing client relationship can be utilized more efficiently through diversification. Knowledge can be shared and transferred among employees performing overlapping tasks leading to a more efficient and comprehensive performance leading to better judgment resulting in better audit quality. On the other hand, Gort (1962), Arnould (1969), and Markham (1973) do not find a significant association between performance and the level of diversification.

Finance literature provides some evidence that the value of diversified firm is less than the sum of its parts (Jensen 1986; Berg and Ofek 1995). Several studies in strategic management literature provide evidence of an inverted U curvilinear relationship between diversification and firm performance (Palich et al. 2000). Pennings et al. (1994) argue that diversification extends a firm's domain but entails risk and uncertainty. Andrews (1980) and Gluck (1985) point to diversification as a means for the firm to expand from its core business into other product markets. Carrera et al. (2003) identify several factors that can affect an audit firm to diversify: diversification of litigation risk (Jones and Raghunandan 1998); saturation of existing markets and search of new clients (Peel 1997); economies of scale and reduced cost of entrance (Boone et al. 2000); and division of audit firms into audit and consultancy businesses (Carrera et al. 2003).

When the firm operates in a set of related businesses, it can exploit its 'core factors' leading to economies of scope and experience (Palepu 1985). *Economies of scope* is achieved by using the same resources, such as, information technology systems, finance, human resources management systems, marketing, and logistics across diverse markets and products (Etgar and Rachman-Moore 2010). *Economies of experience* arise when firms learn how to benefit from

coordination of resource flow across diverse markets (Kogut 1985). On the other hand, unrelated diversification provides few operating synergies (Palepu 1985) and can be detrimental to performance. Firms pursuing related diversification have been shown to outperform unrelated diversification (Jacqemin and Berry 1979; Palepu 1985; Wernerfelt and Montgomery 1988). To the extent that audit offices are profit maximizing entities, managed by rational individuals, the findings of research literature in industrial organization and strategic management related to diversification should be applicable to them.

Another stream of auditing research examines the effect of audit office size on audit quality. Francis and Yu (2009) argue that larger offices have more "in-house" expertise and collective human capital. A larger audit office has more engagement hours. This provides better opportunities to the auditors to gain expertise in detecting material problems in the financial statements of clients. According to Francis and Yu (2009), larger offices are more likely to detect and report material problems in the financial statements and are also more likely to require clients to correct the statements before being issued. They conclude that larger audit offices provide better audit quality to their clients. Along similar lines, Choi et al. (2010) reason that large (small) local offices are less (more) likely to be economically dependent on a particular client and are, therefore, less (more) likely to acquiesce to pressures from this client. They conclude that audit quality of large (small) audit offices is higher (lower). More recently, Francis et al. (2012) report that Big 4 office size is associated with fewer client restatements, and conclude that bigger offices have higher audit quality.

Figure 1 summarizes the various effects discussed above. On one hand, audit office size is known to be positively related to audit quality. On the other hand, diversification and office size may be positively associated. Moreover, unrelated diversification may be detrimental to

audit quality while related diversification may be beneficial for audit quality. Thus, two audit offices of the same size may provide different audit qualities, depending on the nature and extent of diversification.

[Insert Figure 1 about here]

Greenwood et al. (2005) document a positive association between revenue per professional and diversification for accounting firms. The increase in revenue per professional should lead to an increase in audit office size (measured as the total office revenue and the number of clients). Chen and Hsu (2009) also find a positive association between audit fees and diversification. Thus, based on prior research, this study expects a positive association between audit office size and diversification and the first hypothesis can be written in alternate form as.

H1a: Ceteris paribus, diversification at the audit office level leads to client and sales expansion

Next, the paper examines two forms of diversification at the audit office level, mainly, market diversification and product diversification.

Market Diversification

The audit office can achieve market diversification by choosing clients in multiple industries, choosing diverse clients within an industry, and by choosing clients within an industry that are geographically dispersed. These forms of diversification are discussed below.

Industry Diversification

Given limited resources, audit offices that are more diversified across industries sacrifice the advantage of industry specialization. Industry specialization has been shown to improve audit

quality (Carcello and Nagy 2002; Balsam et al. 2003; Krishnan 2003; Dunn and Mayhew 2004; Francis and Yu 2009; Choi et al. 2010)[2]. For a given office, if it services more industries it will have fewer resources per industry. This might make it more challenging for the office to achieve expertise in a particular industry. In other words, the office may spread its resources too 'thin' across more industries, sacrificing depth for width. Based on extant literature, one should expect industry diversification to be detrimental to audit quality. This leads to my second hypothesis in alternate from.

H2a: Ceteris paribus, audit quality will be negatively associated with industry diversification at the audit office level

Client Diversification

The nature of the audit can vary by client size. Smaller firms may have auditing issues different from large firms. Smaller firms typically have fewer levels of management, less specialized accounting staff, less complex accounting systems, and smaller internal audit groups (Hardesty 2008); have weaker audit committees with fewer independent directors and financial experts (Gramling et al. 2009); and have weaker internal controls (Michelson et al. 2009). Larger (influential) clients have more bargaining power and get fee discounts from their auditors (Casterella et al. 2004) and have better earnings quality (Reynolds and Francis 2001; Francis and Yu 2009). Investors' perception of earnings quality has also been shown to be a function of client size (Ghosh et al. 2009). Given this diversity in the audits of small and large firms, the audit office can choose to specialize in clients of similar size groups or diversify across clients with varied sizes. To the extent that firms of different sizes require different auditing expertise,

[2] Hiring an industry specialist auditor is not without risks, though. Ettredge et al. (2009) cautions that clients could shy away from industry specialists due to the risk of loss of competitive advantage through information leaks.

size-related diversification may adversely affect the audit quality of the audit office. The second hypothesis (in alternate form) can be stated as follows:

H3a: Ceteris paribus, audit quality will be negatively associated with diversification of client-size at the audit office level.

Geographic Diversification

Audit offices can focus on local clients in the same city or diversify to more distantly located clients. Local auditors have superior knowledge and are in a better position to get information about their clients (Francis et al. 1999); can visit clients and talk to employees and suppliers more frequently; and have better understanding of local businesses and market conditions (Choi et al. 2008). Choi et al. (2008) shows that the auditor-client distance adversely affects audit quality. Prior research also shows that the SEC is able to monitor the firm's behavior better as the geographic distance between the firm and the SEC decreases (Kedia and Rajgopal 2005). DeFond et al. (2011) provide similar results using the proximity of the SEC regional offices and the audit office and conclude that geographic location influences audit quality. Thus, geographic diversification may have adverse consequences for audit quality. The third hypothesis in alternate form states:

H4a: Ceteris paribus, audit quality will be negatively associated with diversification to distantly located clients.

Product Diversification

In addition to market diversification, the audit office can diversify by offering multiple services other than auditing to the same client, such as, tax compliance and planning, auditing employee benefit plans, acquisition related consultancy services, internal control reviews, and attest services. Provision of multiple services to the same client can lead to impairment of auditor

independence and, as a result, to reduced audit quality. On the other hand, knowledge gained from providing other services to the client can result in knowledge spillover and, thereby, lead to improved audit quality. Prior research provides limited evidence of independence impairment due to provision of non-audit services (Frankel et al. 2002; Defond Et al. 2002; Ashbaugh et al. 2003; Chung and Kallapur 2003; Antle et al. 2006; Ruddock et al. 2006; Hope and Langli 2010). According to Gleason and Mills (2011), prior research finds little evidence that non-audit services are associated with impaired auditor independence. On the contrary, Kinney et al. (2004) and Gleason and Mills (2011) find that provision of non-audit services improves quality of earnings reporting, implying higher audit quality. More specifically, they show that auditor provided tax services (ATS) improve the estimate of tax reserves and conclude that their results are consistent with knowledge spillover. Based on the above reasoning, the fourth hypothesis can be written in alternate form as:

H5a: Ceteris paribus, audit quality will be positively associated with diversification across services provided by the audit office.

III. RESEARCH DESIGN

Measurement of Audit Quality

Consistent with extant research (Higgs and Skantz 2006; Lim and Tan 2008; Davis et al. 2009; Francis and Yu 2009; Choi et al. 2010; Reichelt and Wang 2010; Choi et al. 2012), I use client's earnings quality as a proxy for audit quality. Two proxies for earnings quality commonly used in prior research are discretionary accruals and propensity to meet or beat earnings

expectations.[3] . Discretionary accruals (DACC) are calculated using the cross-sectional modified version of the Jones model (Jones 1991, Dechow et al. 1995), deflated by total assets and estimated by year and for each industry. I adjust discretionary accruals for performance as suggested by Kothari et al. (2005). Following Hribar and Collins (2002), I use the difference between net income and cash from operations, deflated by lagged assets as my measure of total accruals, TACC.

Thus, TACC = (IBC – OANCF) / Lag(AT)

Where IBC is the income before extraordinary items (Compustat cash flow item), OANCF is net cash flow from operating activities, and AT is total assets. The model to estimate discretionary accruals is:

$$TACC = \omega_1 + \omega_2[1/Lag(AT)] + \omega_3[\{\Delta SALE + RECCH\}/Lag(AT)] + \omega_4[PPEGT/Lag(AT)] + \omega_5 ROA + error \quad (1)$$

Where Lag(AT) is total assets of prior year; ΔSALE is change in revenue; RECCH is the decrease in accounts receivables ; PPEGT is property plant and equipment (gross total); and ROA is return on assets, calculated as IBC deflated by AT. Equation 1 is estimated by year for each industry (2-digit SIC code). Then, TACC minus the predicted value from the above regression is my measure of discretionary accruals (DACC).

The last measure of audit quality is the propensity to meet-or-beat earnings expectations, MBEX. This variable is defined as a dichotomous variable with value of one if the firm meets or beats the earnings expectation (proxied by the most recent median consensus analysts' forecast available on IBES file) by one cent; and zero otherwise.

[3] Myers et al. (2003) and Choi et al. (2010) argue against the use of *likelihood of auditors issuing modified audit opinions* as a proxy for audit quality. They say that "modified audit opinions are related to only few extreme situations and thus do not differentiate audit quality for a broad cross-section of firms".

Measurement of Audit Office Diversification

Jacquemin and Berry (1979), Palepu (1985), and Robins and Wiersema (2003) define diversification with an entropy measure DT (total diversification) as follows.

$$DT = \sum_i P_i \, Log(1/ P_i) \qquad (2)$$

Where P_i is market share of the i^{th} industry segment in the total revenue of the audit office. Robins and Wiersema (2003) show that under the assumption that all business in a portfolio are approximately the same size, equation 2 can be simplified to.

$$DT = Log(N) \qquad (3)$$

Based on equation 3, I define industry diversification at the audit office level (INDUSTRY_DIV) as the natural logarithm of the number of unique two-digit SICs of clients serviced in that office.[4] Client diversification (CLIENT_DIV) is a measure of the diversification of types of clients within an industry based on engagement size. CLIENT_DIV is measured as the variance of LAFEE of clients within two-digit SIC industries in the audit office in a year. GEOG_DIV measures the geographic diversification at the audit office level and is measured as the mean of natural logarithm of 1 plus the distance of clients' head offices from the audit office within two-digit SIC industry.[5] Finally, SERVICE_DIV measures the extent of service diversification at the audit office level and is estimated as the mean of natural logarithm of the number of different services provided to the client. The dependent and test variables discussed above and control variables used in subsequent regression analyses are summarized in table 1.

[insert Table 1 about here]

[4] Using equation 2 instead of equation 3 to define the diversification measures does not affect the conclusions. However, since equation 3 is easier to interpret, I report that in the paper.

[5] Distance of the client's head office from the audit office is calculated with the new SAS 9.2 function ZipCityDistance.

Test of Hypotheses

For testing H1a, I run a correlation analysis between the four measures of diversification at the audit office level, INDUSTRY_DIV, CLIENT_DIV, GEOG_DIV, and SERVICE_DIV with three measures of office size: natural logarithms of total number of clients serviced by the office, clients' assets, and office revenue. H1a predicts that diversification will lead to business expansion. Thus I posit positive correlations for all measures of diversification with proxies for office size.

To test H2a-H5a, the following regressions are run with DACC and MBEX as the dependent variable with the four diversification measures along with several controls from extant research as independent variables.

$$\begin{aligned} DACC = {} & \beta_0 + \beta_1 INDUSTRY\_DIV + \beta_2 CLIENT\_DIV + \beta_3 GEOG\_DIV + \beta_4 SERVICE\_DIV \\ & + \beta_5\, LMV + \beta_6\, FINANCED + \beta_7\, ACQUISITION + \beta_8\, LEVERAGE + \beta_9\, LOSS \\ & + \beta_{10}\, BETA + \beta_{11}\, B2M + \beta_{12}\, VOLATILITY + \beta_{13}\, ROA + \beta_{14}\, ANNRETURN \\ & + \beta_{15}\, SGROWTH + \beta_{16}\, EGROWTH + \beta_{17}\, CFFO + \beta_{18}\, SDCFFO \\ & + \beta_{19}\, SDEARN + \beta_{20}\, SDSALES + \beta_{21}\, CLIENTVISBL + \beta_{22}\, BIG\text{-}N + \beta_{23}\, TENURE \\ & + \beta_{24}\, SWITCH + \beta_{25}\, QUALIFIED + \beta_{26}\, ICOPINION + \beta_{27}\, BUSYSEASON \\ & + \beta_{28}\, AUDITDELAY + \beta_{29}\, LNAFEE + \beta_{30}\, INDLEADER + \beta_{31}\, CITYEXPERT \\ & + \beta_{32}\, LOFFICE + error \end{aligned} \quad (4)$$

$$\begin{aligned} Probability\,(MBEX = 1) = {} & \\ & F\{\, \gamma_0 + \gamma_1 INDUSTRY\_DIV + \gamma_2 CLIENT\_DIV + \gamma_3 GEOG\_DIV + \gamma_4 SERVICE\_DIV \\ & + \gamma_5\, LMV + \gamma_6\, FINANCED + \gamma_7\, ACQUISITION + \gamma_8\, LEVERAGE + \gamma_9\, LOSS \\ & + \gamma_{10}\, BETA + \gamma_{11}\, B2M + \gamma_{12}\, VOLATILITY + \gamma_{13}\, ROA + \gamma_{14}\, ANNRETURN \\ & + \gamma_{15}\, SGROWTH + \gamma_{16}\, EGROWTH + \gamma_{17}\, CFFO + \gamma_{18}\, SDCFFO + \gamma_{19}\, SDEARN \\ & + \gamma_{20}\, SDSALES + \gamma_{21}\, CLIENTVISBL + \gamma_{22}\, BIG\text{-}N + \gamma_{23}\, TENURE + \gamma_{24}\, SWITCH \\ & + \gamma_{25}\, QUALIFIED + \gamma_{26}\, ICOPINION + \gamma_{27}\, BUSYSEASON + \gamma_{28}\, AUDITDELAY \\ & + \gamma_{29}\, LNAFEE + \gamma_{30}\, INDLEADER + \gamma_{31}\, CITYEXPERT + \gamma_{32}\, LOFFICE + \gamma_{33}\, STDEST \\ & + \gamma_{34}\, LNUMEST + error\} \end{aligned} \quad (5)$$

Where, F{*} represents the logistic cumulative probability distribution function. Models (4) and (5) are based on prior research, as explained below. LMV is computed as the natural

logarithm of the client's market value at the close of fiscal year. LMV controls for any size-related effects. Ashbaugh et al. (2003), Butler et al. (2004), Geiger and North (2006), and Asthana and Boone (2012) show that size is negatively associated with DACC and MBEX. Earnings quality may be affected as a result of financing activities or acquisition proceedings (Ashbaugh et al. 2003; Chung and Kallapur 2003). FINANCED is defined as 1 if the number of outstanding shares increases by at least 10% or long-term debt increases by 20% (following Geiger and North 2006) and 0 otherwise. ACQUISITION is a dichotomous variable with value of 1 if the firm indulged in acquisition activities and 0 otherwise. Following, DeFond and Jiambalvo (1994), Reynolds and Francis (2001), Francis and Yu (2009), and Asthana and Boone (2012), LEVERAGE, LOSS, and BETA are included to control for the effects of debt, financial distress, and risk on earnings quality. LEVERAGE is total debt deflated by total assets; LOSS is a dichotomous variable with value of 1 if the client reported a loss during any of the past two fiscal years and 0 otherwise; BETA is the client's systematic risk calculated from the capital asset pricing model using last year's daily returns. B2M is the book to market ratio and is included to captures effects of growth opportunities (Geiger and North 2006; Asthana and Boone 2012).

Following Hribar and Nichols (2007) and Francis and Yu (2009), VOLATILITY (the standard deviation of daily stock returns for the past year) captures the effect of capital market pressure on earnings management. ROA is the net income before extraordinary items and cumulative effect of accounting changes deflated by total assets; ANNRETURN is the annual return; SGROWTH is the sales growth; and EGROWTH is the earnings growth rate. The four variables, ROA, ANNRETURN, SGROWTH, and EGROWTH control for firm performance (Menon and Williams 2004). CFFO is cash flow from operations deflated by total assets. Prior

research (Frankel et al. 2002; Chung and Kallapur 2003) finds negative association between earnings management and CFFO.

Hribar and Nichols (2007) show that earnings management may be associated with firm-specific attributes such as the volatility of cash flows, earnings stream, and sales. SDCFFO, SDEARN, and SDSALES (defined as the standard deviations of CFFO, earnings, and sales, respectively, deflated by total assets, calculated over the current and past four years) are included to control for these effects. CLIENTVISBL is a measure of client visibility estimated as the ratio of a client's total fee to the total annual fee of the practice office (Reynolds and Francis 2001).

The following variables are included as independent variables to control for auditor and engagement office attributes. BIG-N is a dummy variable for big N auditors; TENURE is 1 for auditor-client relationships less than or equal to 5 years and 0 otherwise; SWITCH is a dummy for auditor switch; QUALIFIED takes value of one (zero) for qualified (clean) audit opinions; ICOPINION is the number of material internal control weaknesses reported by the auditor; BUSYSEASON is an indicator variable that takes value 1 if fiscal year end of the client is in December; AUDITDELAY is the number of days from the fiscal year end to the auditor's report date; LNAFEE is measured as the natural logarithm of non-audit fee; INDLEADER is a dichotomous variable with value of one if an auditor has the highest total client audit fees in an industry in the country in a specific year; and 0 otherwise (following Francis and Yu 2009); CITYEXPERT is a dichotomous variable with value of one if an audit office has the highest total client audit fees in an industry within that city in a specific year and 0 otherwise (following Francis and Yu 2009); and LOFFICE is the natural logarithm of the audit fees of the practice office (as defined in Francis and Yu 2009). In addition, consistent with Reichelt and Wang (2010) and Asthana and Boone (2012), model (5) includes two additional variables, STDEST

(standard deviation of analysts' earnings forecasts) and LNUMEST (natural logarithm of number of analysts' forecasts) to control for the attributes of the forecasts. Hypotheses H2a, H3a, H4a, and H5a predict that in model (5), $\beta_1 > 0$, $\beta_2 > 0$, $\beta_3 > 0$, *and* $\beta_4 < 0$, respectively; and that in model (6), $\gamma_1 > 0$, $\gamma_2 > 0$, $\gamma_3 > 0$, *and* $\gamma_4 < 0$, respectively.

IV. SAMPLE

Sample Selection

The sample selection procedure is outlined in table 2. Out of 81,807 observations (firm-year combinations) available for the period 2000-2009 with complete data on Compustat and CRSP, merging with Audit Analytics leaves a residual sample of 35,807 observations. Further requirement of data availability on I/B/E/S results in the final sample of 19,539 firm-year observations for 3,320 unique firms. Thus, on average, a typical firm has data for six years.

[insert Table 2 about here]

Sample Characteristics

Table 3 contains the variable distribution. The average market value of sample firms is $5.82 billion and the auditor charges a mean audit fees of $2.31 million. A typical audit office has 12 clients from 7 industries and earns over $32 million in revenue every year. Mean DACC is -0.0023 and almost 11% of firms just meet or beat earnings expectations (MBEX = 0.1062). On average, fewer than 19% firms were involved in acquisitions; had annual returns under 5%; and were audited by big-N auditors in 85% of cases. 32% clients were involved in financing activities. ROA was barely above zero (0.0087); 24% firms had losses in current or previous year; almost 48% firms had qualified opinions; and 8% clients switched auditors. Finally, almost 33% of clients have been with their auditors for five years or less.

[insert Table 3 about here]

V. RESULTS

Table 4 reports the correlation analysis between three proxies of office size, logarithm of total number of clients, logarithm of total assets of clients (in $ million) and logarithm of total office revenue, with the four measures of diversification, INDUSTRY_DIV, CLIENT_DIV, GEOG-DIV, and SERVICE_DIV. All correlations are significant at 1% level and range in values from 2.62% to 91.78%. This supports the hypothesis that diversification at the audit office level leads to client and sales expansion (H1a).

[insert Table 4 about here]

The results of our multivariate analysis (models 4 and 5) are reported in Table 5 (panels A-B). The two regressions, with DACC, and MBEX as dependent variables, have adjusted/pseudo r-squares of 71.79%, and 17.14%, respectively, all significant at 1% level. The three measure of diversification, INDUSTRY_DIV, CLIENT_DIV, and GEOG-DIV are positively related to DACC at 5% or better levels, while SERVICE_DIV is significant (1% level) and negatively associated with DACC (Panel A); INDUSTRY_DIV, and CLIENT_DIV are positively associated at 1% significance level, while SERVICE_DIV is negatively associated (at 5% significance level) with MBEX (Panel B).

[insert Table 5 about here]

These results support H2a-H5a. Thus, industry diversification and client diversification result in lowered audit quality across both measures of audit quality, DACC, and MBEX, supporting H2a and H3a. Geographic diversification reduces audit quality (for DACC proxy but not MBEX), consistent with H4a. Finally, service diversification improves audit quality with DACC and MBEX as proxies for audit quality, in accordance with H5a. Overall, the tests provide support for the conjecture that unrelated (related) diversifications result in deterioration

(improvement) in audit quality at the audit office level.

The control variables are mostly significant in the expected directions. DACC is positively associated with, LEVERAGE, LOSS, VOLATILITY, ROA, SDEARN, SDSALES, CLIENTVISIBL, QUALIFIED, and ICOPINION; and negatively associated with FINANCED, BETA, ANNRETURN, SGROWTH, CFFO, BIG-N, BUSYSEASON, AUDITDELAY, CITYEXPERT, and LOFFICE. Finally, MBEX has positive coefficients on ACQUISITION, VOLATILITY, ROA, SGROWTH, and SDEARN; and negative coefficients on LMV, LEVERAGE, LOSS, BETA, B2M, ANNRETURN, CFFO, SDCFFO, BIG-N, TENURE, ICOPINION, BUSYSEASON, AUDITDELAY, INDLEADER, and LOFFICE. The variance inflation factors (VIFs) are also reported in the last column in all panels. None of the values are greater than 5, suggesting that multicollinearity is not a concern.[6]

Lastly, given that there is a significant association between office size and diversification (Table 4), one concern could be that in Models 4-5, the test variables, INDUSTRY_DIV, CLIENT_DIV, GEOG-DIV, and SERVICE_DIV are picking up engagement office size effects, despite the control variable, LOFFICE. This would result in model misspecification and unreliable test statistics. To allay this fear, the paper conducts portfolio tests. One-hundred portfolios are formed based on LOFFICE. Models 4-5 are now run on each of the portfolios independently. The distribution of the coefficients on the four test variables are presented in Table 6. Since office size is mostly controlled for within each portfolio, the test variables are not likely to pick up any size-related effects. Overall, the results are consistent with multivariate regressions in Table 5 and support H2a-H5a.

[insert Table 6 about here]

[6] According to Chatterjee and Price (1977), VIFs under 10 imply that the model does not have significant multicollinearity problem.

Additional Tests

Is there a Pecking Order?

I also conduct tests to examine the pecking order of different strategies of diversification available to managers. Since the four measures of diversification used in the paper are measured on different scales, their coefficients are not comparable. To facilitate comparison, I convert these four variables to a (0, 1) scale as follows. INDUSTRY_DIV, CLIENT_DIV, GEOG_DIV, and SERVICE_DIV are ordered one-by-one from lowest to highest values and assigned ranks. The ranks are then deflated by the highest rank to get a variable distribution between 0 and 1. First, the various proxies of office size discussed in Table 4 are regressed against the four standardized measures of diversification. The results are reported in Panel A of Table 7. The differences in coefficients are then tested. The following sequence emerges INDUSTRY_DIV > CLIENT_DIV > GEOG_DIV > SERVICE_DIV. In other words, INDUSTRY_DIV (SERVICE_DIV) is the most (least) effective diversification strategy.

(Insert Table 7 about here)

Next, the regressions in Table 5, panels A-B are rerun with the four standardized measures of diversification (see Panel B of Table 7). Overall, the same pecking order emerges, INDUSTRY_DIV > CLIENT_DIV > GEOG_DIV > SERVICE_DIV. This implies that INDUSTRY_DIV has the most detrimental effect on audit quality and SERVICE_DIV has the least effect.

Does Local Reputational Capital Matter?

If an audit office has gained reputation in the local audit market, it will make extra efforts to minimize the detrimental effect of diversification on audit quality in order to retain its reputation and the quasi rents (reputation premium) it earns from the clients. To conduct this test,

I first define a combined diversification INDEX as the sum of the standardized diversification measures (discussed above). When adding, the signs are adjusted to reflect detrimental effect on audit quality. Models 4 and 5 are rerun with this INDEX replacing INDUSTRY_DIV, CLIENT_DIV, GEOG_DIV, and SERVICE_DIV. The variable CITYEXPERT is used as a proxy for the reputational capital of the audit office in the local market. The results are presented in Table 8. Columns I and II show that INDEX is significant and positive (at 1% level) as expected. This implies that higher values of INDEX have detrimental effect on audit quality. Columns III and IV include interaction INDEX*CITYEXPERT variable. This variable is significantly negative in DACC regression suggesting that offices with local reputation manage diversification more efficiently with less adverse effect on audit quality. Tests show that INDEX + INDEX*CITYEXPERT is still positive and significant at 1% level in both regressions suggesting that there is still residual adverse effect on audit quality.

(Insert Table 8 about here)

Does the Level of Past Diversification Matter?

Finally, consider two offices "A" and "B" with the same levels of current diversification. Office "A" was more diversified in the past and has reduced its level of diversification to get to today's level. Office "B" has done the opposite and increased diversification to attain the current level. I posit that since diversification consumes resources, office "A" will have surplus resources and diversification-related expertise and will be able to provide better quality audits compared to office "B" which has diversified from the past level and has a strain on its resources. To test this notion, I define a variable ΔINDEX which is the current value at time "t" minus the lagged value at time "t-5". ΔINDEX has significantly positive coefficient for the DACC regression (see Column V of Table 8). This suggests that office "A" will have higher

audit quality than “B” as expected as postulated.

VI. CONCLUSION

Francis and Yu (2009) and Choi et al. (2010) present evidence that audit office size and audit quality are positively associated. Palepu (1985) suggests that firms diversify with the intention of revenue maximization. Thus, large audit offices are likely to be more diversified. According to strategic management theory, diversification could have positive or negative impact on the product or service quality, depending on the nature of diversification. Following this stream of reasoning, the interrelationship of diversification, audit office size, and audit quality is an interesting yet unexplored research issue.

The paper examines the impact of four different diversification strategies: industry diversification, client diversification, geographic diversification, and service diversification on two proxies of audit quality, mainly, discretionary accruals and propensity to meet-or-beat earnings expectations by a cent. Using over 19,000 observations for over 3,000 unique clients for the period 2000-2009, the analyses show that, after controlling for office and client attributes, industry diversification, client diversification, and geographic diversification have adverse effects on audit quality, possibly because such diverse audit engagements strain the resources of the audit office. On the other hand, service diversification has beneficial effect on audit quality, possibly due to knowledge spill-over effect from providing multiple services to the same client, such as, tax compliance and planning, auditing employee benefit plans, acquisition related consultancy services, internal control reviews, and attest services. These results are robust to various controls from extant research.

The pecking order of the four strategies of diversification on office size and audit quality is also examined. The diversification strategy that is most (least) effective in expanding the office size is also the one that has the most (least) adverse effect on audit quality. Also, the audit offices that have more stakes (reputational capital) in the local market manage the additional demands on resources due to diversification more efficiently with less adverse effect on audit quality. Finally, consistent with theory, I show that increase (decrease) in diversification levels over time has negative (positive) impact on audit quality.

The findings of this paper are important since they identify additional factors that explain audit quality at the audit office level and extend the recent research on audit office performance in the local audit market. As a consequence of these results, future researchers are advised to control for diversification at the audit office level, in addition to controls for office attributes suggested by extant research.

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TABLE 1
VARIABLE DEFINITIONS

Variable	Definition
	Main Variables
DACC	Discretionary accruals; calculated using the cross-sectional version of the Jones (1991) model as in DeFond and Jiambalvo (1994), deflated by total assets for each 2-digit SIC code by year. We use the difference between net income and cash from operations as our measure of total accruals (Hribar and Collins 2002)
MBEX	A dichotomous variable with value of one if the firm meets or beats the earnings expectation (proxied by the most recent median consensus analyst forecast available on IBES file) by one cent or less; and zero otherwise
INDUSTRY_DIV	Industry diversification at the audit office level, measured as the natural logarithm of the number of unique two-digit SICs of clients
CLIENT_DIV	Firm diversification at the audit office level, measured as the variance of LAFEE within two-digit SIC industry
GEOG_DIV	Geographic diversification at the audit office level, measured as the natural logarithm of 1 plus the mean distance of clients' head offices from the audit office within two-digit SIC industry
SERVICE_DIV	Service diversification at the audit office level, measured as mean of the natural logarithm of the number of different services provided to the client
	Control Variables (in Alphabetical Order)
ACQUISITION	A dichotomous variable with value of 1 if the firm indulged in acquisition activities during the year; and 0 otherwise
ANNRETURN	Stock return for the fiscal year, obtained from the monthly CRSP file
AUDITDELAY	Audit delay, measured as the number of calendar days from fiscal year-end to date of auditors' report
B2M	Book-to-market equity ratio at the end of the fiscal year
BETA	Firm's systematic risk (beta) calculated from the capital asset pricing model (CAPM) using last year's daily returns
BIG-N	A dichotomous variable equal to 1 if the auditor is a big-N; 0 otherwise
BUSYSEASON	A dichotomous variable with value of 1 if the client has a fiscal year-end in December; and 0 otherwise
CFFO	Cash flow from operations divided by total assets
CITYEXPERT	Following Francis and Yu (2009), a dichotomous variable with value of one if an audit office has the highest total client audit fees in an industry within that city in a specific year; and 0 otherwise

TABLE 1 (Continued)

Variable	Definition
CLIENTVISBL	Following Reynolds and Francis (2001), ratio of a client's total fee relative to the total annual fee of the practice office which audits the client
EGROWTH	Earnings growth rate
FINANCED	A dichotomous variable with value of 1 if number of outstanding shares increased by at least 10 percent or long-term debt increased by at least 20% during the year (Geiger and North 2006); and 0 otherwise
ICOPINION	Number of material internal control weaknesses reported in Audit Analytics
INDLEADER	Following Francis and Yu (2009), a dichotomous variable with value of one if an auditor has the highest total client audit fees in an industry in the country in a specific year; and 0 otherwise
LEVERAGE	Total debt deflated by total assets
LMV	Natural logarithm of firm's total market value at the end of the fiscal year
LNAFEE	Natural logarithm of non-audit fee during the current fiscal year
LNUMEST	Natural logarithm of the number of analysts' forecasts
LOFFICE	Following Francis and Yu (2009), the natural logarithm of total annual audit fee of the practice office which audits the client
LOSS	A dichotomous variable with value of 1 if client has a negative net income before extraordinary items in year t or t-1; and 0 otherwise
QUALIFIED	A dichotomous variable with value of one if audit opinion is a qualified opinion; and zero otherwise
ROA	Net income before extraordinary items and cumulative effect of accounting changes deflated by total assets
SDCFFO	Standard deviation of cash flow from operations deflated by total assets, calculated over the current and prior four years
SDEARN	Standard deviation of earnings deflated by total assets, calculated over the current and prior four years
SDSALES	Standard deviation of sales deflated by total assets, calculated over the current and prior four years
SGROWTH	Sales growth rate
STDEST	Standard deviation of analysts' earnings forecasts
SWITCH	A dichotomous variable equal to 1 if the firm switched auditors during the current year; and 0 otherwise
TENURE	A dichotomous variable with value of 1 if auditor has been with the client for five years or less; and 0 otherwise
VOLATILITY	Standard deviation of daily returns for the past year obtained from CRSP

TABLE 2
SAMPLE SELECTION

Data Procedure	Observations
Data available on Compustat and CRSP for the period 2000-2009	81,807
Data also available on Audit Analytics	35,807
Data also available on I/B/E/S (*Final Sample*)	19,539

The final sample pertains to 3,320 unique firms for the period 2000-2009.

TABLE 3
SAMPLE DISTRIBUTION

Variables	Mean	Median	Std. Devn.	Q1	Q3
Descriptor Variables					
Market Value ($ bill.)	5.8191	0.8326	21.4760	0.2438	2.9781
Audit Fee / Client ($ mill.)	2.3104	0.9302	4.8459	0.4050	2.1800
Office Revenue ($ mill.)	32.5707	14.9270	48.3075	4.2333	39.9993
No. of Clients / Office	11.8728	8.0000	10.6365	4.0000	17.0000
No. of Industries / Office	7.4181	6.0000	4.9518	3.0000	11.0000
Distance from Client HO	84.4561	13.2000	288.5477	5.6000	30.0000
No. of Services / Client	2.7895	3.0000	0.8539	2.0000	3.0000
Test Variables					
DACC	-0.0023	0.0007	0.0906	-0.0330	0.0347
MBEX	0.1062	0.0000	0.3081	0.0000	0.0000
INDUSTRY_DIV	1.7178	1.7918	0.8342	1.0986	2.3979
CLIENT_DIV	0.3677	0.0000	0.7965	0.0000	0.3819
GEOG_DIV	2.7238	2.6603	1.6952	1.8245	3.5496
SERVICE_DIV	0.5752	0.6092	0.2362	0.4479	0.7022
Control Variables (in Alphabetical Order)					
ACQUISITION	0.1855	0	0.3887	0	0
ANNRETURN	0.0478	0.0126	0.4496	-0.2606	0.3010
AUDITDELAY	59.7265	60.0000	17.1966	51.0000	72.0000
B2M	0.5854	0.4744	0.4851	0.2786	0.7387
BETA	1.0564	1.0000	0.6161	0.6407	1.3989
BIG-N	0.8545	1.0000	0.3526	1.0000	1.0000
BUSYSEASON	0.7298	1.0000	0.4441	0.0000	1.0000
CFFO	0.0721	0.0821	0.1410	0.0319	0.1353
CITYEXPERT	0.6624	1.0000	0.4729	0.0000	1.0000
CLIENTVISBL	0.1088	0.0245	0.2132	0.0040	0.0927

TABLE 3 (Continued)

Variables	Mean	Median	Std. Devn.	Q1	Q3
EGROWTH	-0.1752	0.0121	4.9857	-0.5903	0.3663
FINANCED	0.3231	0.0000	0.4677	0.0000	1.0000
ICOPINION	0.6054	1.0000	0.5619	0.0000	1.0000
INDLEADER	0.2866	0.0000	0.4522	0.0000	1.0000
LEVERAGE	0.2203	0.1851	0.2091	0.0331	0.3389
LMV	6.7834	6.7245	1.9081	5.4963	7.9990
LNAFEE	11.5094	12.2141	3.4902	10.8780	13.3995
LNUMEST	1.4607	1.6094	1.0132	0.6931	2.3026
LOFFICE	16.5252	16.7380	1.7942	15.4078	17.8499
LOSS	0.2423	0.0000	0.4285	0.0000	0.0000
QUALIFIED	0.4765	0.0000	0.4995	0.0000	1.0000
ROA	0.0087	0.0361	0.1658	0.0007	0.0773
SDCFFO	0.0572	0.0389	0.0634	0.0210	0.0688
SDEARN	0.0654	0.0311	0.0908	0.0139	0.0744
SDSALES	0.1472	0.0999	0.1928	0.0491	0.1847
SGROWTH	0.1260	0.0791	0.3931	-0.0215	0.2003
STDEST	0.0476	0.0200	0.1126	0.0000	0.0400
SWITCH	0.0800	0.0000	0.2714	0.0000	0.0000
TENURE	0.3256	0.0000	0.4686	0.0000	1.0000
VOLATILITY	0.0311	0.0271	0.0185	0.0189	0.0393

See Table 1 for variable definitions.

TABLE 4
DIVERSIFICATION AND OFFICE SIZE

Type of Diversification	Pearson Correlation Coefficients with Proxies of Office Size		
	Log(No. of Clients)	Log(Clients' Assets)	Log(Office Revenue)
INDUSTRY_DIV	***0.9179	***0.7021	***0.7976
CLIENT_DIV	***0.2759	***0.2334	***0.2559
GEOG_DIV	***0.2191	***0.0262	***0.0722
SERVICE_DIV	***0.0633	***0.2677	***0.2527

See Table 1 for variable definitions.

*** implies significance at 1% level (two-sided)

TABLE 5
MULTIVARIATE REGRESSION ANALYSIS

Panel A: Dependent variable = DACC (Model 4)

Variables	Coefficient	Std. Err.	t-Value	p-Value	VIF
Intercept	***0.0482	0.0039	12.33	<0.0001	0.0000
	Test Variables				
INDUSTRY_DIV	***0.0021	0.0005	3.86	0.0001	2.7893
CLIENT_DIV	**0.0007	0.0003	2.17	0.0303	1.0908
GEOG_DIV	**0.0004	0.0002	2.33	0.0198	1.1427
SERVICE_DIV	***-0.0050	0.0012	-4.05	<0.0001	1.2097
	Firm-Specific Control Variables				
LMV	-0.0001	0.0002	-0.35	0.7272	2.6256
FINANCED	***-0.0016	0.0006	-2.62	0.0088	1.1138
ACQUISITION	0.0000	0.0007	0.01	0.9956	1.0721
LEVERAGE	***0.0098	0.0014	7.25	<0.0001	1.1243
LOSS	***0.0077	0.0009	8.72	<0.0001	1.9783
BETA	***-0.0033	0.0005	-6.59	<0.0001	1.3376
B2M	0.0010	0.0007	1.46	0.1456	1.5229
VOLATILITY	***0.4890	0.0193	25.33	<0.0001	1.6823
ROA	***0.6361	0.0038	169.24	<0.0001	3.8477
ANNRETURN	***-0.0024	0.0006	-3.64	0.0003	1.1798
SGROWTH	***-0.0073	0.0008	-9.68	<0.0001	1.1072
EGROWTH	0.0000	0.0001	-0.53	0.5982	1.0202
CFFO	***-0.7366	0.0035	-208.71	<0.0001	2.8064
SDCFFO	-0.0096	0.0063	-1.53	0.1261	1.9526
SDEARN	***0.0278	0.0045	6.21	<0.0001	2.0266
SDSALES	***0.0117	0.0016	7.21	<0.0001	1.1970
CLIENTVISBL	***0.0082	0.0017	4.94	<0.0001	1.7871
	Auditor-Specific Control Variables				
BIG-N	***-0.0059	0.0011	-5.58	<0.0001	1.9309
TENURE	-0.0005	0.0006	-0.73	0.4638	1.3217
SWITCH	-0.0001	0.0011	-0.07	0.9445	1.2304
QUALIFIED	***0.0050	0.0005	9.14	<0.0001	1.0800
ICOPINION	***0.0046	0.0005	8.65	<0.0001	1.3047
BUSYSEASON	***-0.0027	0.0006	-4.43	<0.0001	1.0442
AUDITDELAY	***-0.0001	0.0000	-4.38	<0.0001	1.3240
LNAFEE	0.0000	0.0001	-0.47	0.6374	1.3455
INDLEADER	0.0003	0.0006	0.56	0.5787	1.0994
CITYEXPERT	***-0.0053	0.0006	-8.84	<0.0001	1.1552
LOFFICE	***-0.0014	0.0003	-4.66	<0.0001	3.9666

TABLE 5 (continued)

Observations	19,539
Adjusted R-Square	0.7179
F Value	1474.30
Probability > F	<0.0001

Panel B: Dependent variable = MBEX (Model 5)

Variables	Coefficient	Std. Err.	Wald χ^2	p-Value	VIF
Intercept	***1.1299	0.4171	7.3393	0.0067	0.0000
	Test Variables				
INDUSTRY_DIV	***0.2506	0.0570	19.3105	<0.0001	2.7742
CLIENT_DIV	***0.0884	0.0306	8.3531	0.0039	1.0904
GEOG_DIV	-0.0024	0.0173	0.0196	0.8887	1.1587
SERVICE_DIV	**-0.2781	0.1266	4.8256	0.0280	1.2141
	Firm-Specific Control Variables				
LMV	***-0.1198	0.0287	17.4531	<0.0001	3.5868
FINANCED	0.0696	0.0604	1.3299	0.2488	1.1186
ACQUISITION	***0.1836	0.0656	7.8222	0.0052	1.0748
LEVERAGE	***-0.9218	0.1584	33.8573	<0.0001	1.1372
LOSS	***0.5727	0.1164	24.2116	<0.0001	1.9295
BETA	**-0.1365	0.0550	6.1524	0.0131	1.3430
B2M	***-0.8113	0.1084	55.9911	<0.0001	1.5288
VOLATILITY	***6.7770	2.3833	8.0859	0.0045	1.7021
ROA	***1.3309	0.3809	12.2059	0.0005	3.2530
ANNRETURN	**-0.1447	0.0698	4.2987	0.0381	1.2144
SGROWTH	*0.1501	0.0811	3.4278	0.0641	1.1122
EGROWTH	-0.0055	0.0064	0.7237	0.3949	1.0218
CFFO	***-1.1828	0.3662	10.4304	0.0012	2.3705
SDCFFO	***-2.0730	0.6925	8.9621	0.0028	1.9316
SDEARN	***1.4457	0.4223	11.7216	0.0006	2.0571
SDSALES	-0.1642	0.1737	0.8931	0.3446	1.1920
CLIENTVISBL	0.0939	0.1733	0.2937	0.5878	1.7736
	Auditor-Specific Control Variables				
BIG-N	*-0.1927	0.1166	2.7320	0.0984	1.9818
TENURE	*-0.1164	0.0666	3.0575	0.0804	1.3254
SWITCH	0.0503	0.1158	0.1888	0.6639	1.2346
QUALIFIED	-0.0538	0.0560	0.9215	0.3371	1.0820
ICOPINION	***-0.3530	0.0601	34.5060	<0.0001	1.3263
BUSYSEASON	**-0.1146	0.0579	3.9250	0.0476	1.0434
AUDITDELAY	**-0.0045	0.0018	6.5330	0.0106	1.3429
LNAFEE	0.0105	0.0107	0.9665	0.3256	1.3443
INDLEADER	**-0.1243	0.0614	4.0906	0.0431	1.1009
CITYEXPERT	0.0207	0.0617	0.1129	0.7369	1.1581
LOFFICE	***-0.1479	0.0315	22.0156	<0.0001	4.0300

TABLE 5 (continued)

Analyst-Specific Control Variables

Variables	Coefficient	Std. Err.	Wald χ^2	p-Value	VIF
STDEST	***-16.6053	1.3229	157.5548	<0.0001	1.1021
LNUMEST	***0.7518	0.0436	297.5560	<0.0001	1.9890
Observations	19,539				
Pseudo R-Square	0.1714				
Wald Chi-Square	1084.3592				
Probability > Chi-Sqr	<0.0001				
Percent Concordant	77.0000				

See Table 1 for variable definitions.
*** implies significance at 1% level (2-sided)
** implies significance at 5% level (2-sided)
* implies significance at 10% level (2-sided)

TABLE 6
PORTFOLIO-LEVEL REGRESSION ANALYSIS
(Number of Portfolios = 100 / Observations per Portfolio = 195 or 196)

Diversification Measure	Dependent Variables							
	DACC (Model 4)				MBEX (Model 5)			
	Mean	Median	Q1	Q3	Mean	Median	Q1	Q3
INDUSTRY_DIV	*0.0013	*0.0009	-0.0036	0.0058	***1.3929	***0.5006	-0.5828	1.9305
CLIENT_DIV	*0.0008	-0.0001	-0.0022	0.0037	0.4062	0.3184	-0.3498	0.8473
GEOG_DIV	**0.0005	**0.0004	-0.0010	0.0020	-0.0136	-0.0096	-0.3193	0.3761
SERVICE_DIV	-0.0001	-0.0007	-0.0128	0.0108	1.4099	**-0.8057	-3.1085	1.3665

See Table 1 for variable definitions. Control variables are included in the regressions but not reported for the sake of brevity. 100 portfolios are formed on audit office-size (LOFFICE). 5% extreme estimates are eliminated from calculations.

*** implies significance at 1% level (2-sided)
** implies significance at 5% level (2-sided)
* implies significance at 10% level (2-sided)

TABLE 7
TEST OF PECKING ORDER

Panel A: Pecking Order of Diversification Measures

Test of Differences between Regression Coefficients	Dependent Variables in Regressions		
	Log(No. of Clients)	Log(Clients' Assets)	Log(Office Revenue)
Δ(INDUSTRY_DIV v/s CLIENT_DIV)	***1.5895	***0.5250	***2.7462
Δ(CLIENT_DIV v/s GEOG_DIV)	***0.6989	0.0057	***0.1264
Δ(GEOG_DIV v/s SERVICE_DIV)	*0.0131	***0.2563	***1.6598

Panel B: Relative Impact of Pecking Order on Audit Quality

Test of Differences between Regression Coefficients	Dependent Variables	
	DACC (Model 4)	MBEX (Model 5)
Δ(INDUSTRY_DIV v/s CLIENT_DIV)	*0.0035	0.0126
Δ(CLIENT_DIV v/s GEOG_DIV)	0.0006	*0.0156
Δ(GEOG_DIV v/s SERVICE_DIV)	***0.0065	*0.0141

See Table 1 for variable definitions.

*** implies significance at 1% level (two-sided)
* implies significance at 10% level (two-sided)

TABLE 8

ADDITIONAL TESTS

Independent Variables	Dependent Variables					
	DACC (I)	MBEX (II)	DACC (III)	MBEX (IV)	DACC (V)	MBEX (VI)
Intercept	***0.0419	*0.7070	***0.0391	*0.6885	***0.0379	*15.1894
INDEX	***0.0031	***0.1982	***0.0058	***0.2116	***0.0023	**2.4988
INDEX*CITYEXPERT			***-0.0039	-0.0195		
ΔINDEX					***0.0033	0.2219
Observations	19,539	19,539	19,539	19,539	5,767	5,767
Adjusted R-Square	0.7190		0.7188		0.7157	
F Value	1652.93		1595.65		484.87	
Probability > F	<0.0001		<0.0001		<0.0001	
Pseudo R-Square		0.1719		0.1719		0.7369
Wald Chi-Square		1092.92		1092.91		29.15
Probability > Chi-Sqr		<0.0001		<0.0001		<0.0612

See Table 1 for variable definitions. Control variables are included in the regressions but not reported for the sake of brevity.

*** implies significance at 1% level (2-sided)
** implies significance at 5% level (2-sided)
* implies significance at 10% level (2-sided)

FIGURE 1
INTER-RELATIONSHIP OF DIVERSIFICATION, AUDIT OFFICE SIZE, AND AUDIT QUALITY