

**AUDITOR SPECIALIZATION AND PERCEIVED AUDIT QUALITY,
AUDITEE SATISFACTION AND AUDIT FEES
IN THE LOCAL GOVERNMENT AUDIT MARKET**

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ABSTRACT: Recent changes to government audit procurement practices in Florida have been associated with reduced audit fees (Jensen and Payne 2005b) and coincide with improved audit quality and an increased presence of specialized audit providers (Lowensohn and Reck 2004) in the Florida government audit market. We examine auditor specialization in the Florida government audit market and study the effect of specialization on perceived governmental audit quality, finance director satisfaction with their auditors, and audit fees. We survey 286 finance directors of local Florida governments and find that non-Big 5 specialists are associated with higher audit quality and higher levels of auditee satisfaction, but do not receive higher audit fees. In contrast, Big 5 auditors charge higher audit fees but are associated with lower perceived audit quality and lower auditee satisfaction. Our findings indicate that engagement of non-Big 5 specialist auditors may be preferable for many local governments from a policy standpoint.

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INTRODUCTION

Governmental audit quality has been an important issue since the 1980's, when a Government Accountability Office (GAO) study (GAO 1986) revealed that a third of audits examined were substandard.¹ Since that time, there has been considerable debate about the relation between audit procurement and audit quality in the governmental sector. While the Treadway Commission (1987) and AICPA (1986) raised concerns about the effects of competition on audit quality, the GAO (1987) recommended competitive bidding to improve audit quality. Despite evidence of improved government audit quality over time (Lowensohn and Reck 2004), the quality of governmental audits is again under scrutiny (Emerson 2002; Broadus 2004) and worthy of further examination.²

Substantial change to audit procurement practices in the State of Florida provides the opportunity to examine governmental audit issues. In 1993 the Florida Supreme Court overruled a state statute restricting the use of competitive bidding by prospective audit providers. Hackenbrack et al. (2000) find that the bidding restriction lead to higher audit fees and greater demand for Big 6 auditors.³ Jensen and Payne (2005b) report that, subsequent to the elimination of the bidding restriction, audit fees declined and Big 6 auditors were displaced by audit firms having expertise in government auditing. During the same time period, Lowensohn and Reck (2004) observe improvement in governmental audit quality in Florida and increased market concentration for firms

specializing in governmental audits. The contemporary Florida government audit market thus provides the opportunity to investigate the comparative levels of audit quality and auditee satisfaction associated with Big 5 firms and non-Big 5 specialist firms.

We focus on audit firm industry specialization within the Florida government audit market using three different measures of specialization based on audit market share. We surveyed 286 finance directors of Florida local governments regarding their perceptions of the quality of the audit their government received and their degree of satisfaction with the audit firm. We also obtained data on audit fees and other fee-related control variable data. We find that non-Big 5 government specialist auditors are a significant predictor of perceived audit quality and auditee satisfaction, but do not receive premium audit fees. In contrast, Big 5 auditors are associated with lower perceived audit quality and auditee satisfaction, yet charge premium audit fees. Our results are consistent with Copley's suggestion (1991) that the largest firms are not the only auditors providing high-quality service in the public sector and substantiate Jensen and Payne's observation (2005b) that specialists can provide high-quality audits at reduced fee levels. Our findings also provide support for the argument by Copley and Doucet (1993) that competition in the auditor procurement process improves, rather than detracts from, audit quality. The policy implications of our study are that competition in audit procurement is beneficial to auditees and that governments may be best served by retaining a non-Big 5 specialist audit firm.

The remainder of this paper is organized as follows. The next two sections provide the background for the study and research model development, while the fourth

section addresses the research method. The paper concludes with results and a discussion of findings.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

From 1969 until 1993, officials of governmental entities within the State of Florida were required to select external auditors on the basis of nonprice factors. Florida Statutes (Section 473.317, Rule 21A-24.03) specified that prospective auditors were to be evaluated and contract negotiations undertaken with the highest-ranked firm. If a contract agreement was not possible, negotiations with the second-highest ranked firm began, and so on. Competition on the basis of audit fees was prohibited. Hackenbrack et al. (2000) find that the competitive bidding restriction resulted in higher audit fees and greater demand for high reputation Big 6 auditors. After the restriction was lifted in 1993 (*State of Florida v. Rampell 1993*), Jensen and Payne (2005b) note reduced audit fees and a decrease in the presence of Big 6 firms within the Florida market, while Lowensohn and Reck (2004) note improvements in municipal audit quality in Florida and increased market concentration for audit firms specializing in municipal audits. Hence it appears that the introduction of price competition into the Florida governmental audit procurement process resulted in the presence of more specialized audit firms in the governmental audit market and higher governmental audit quality, in conjunction with lower audit fees.

In a competitive bidding situation, Casterella et al. (2004) note that firms often seek a differentiation strategy to create a sustainable competitive advantage. Big 5 firms have an inherent reputational advantage; however, others may pursue industry

specialization to differentiate themselves and to become more cost efficient within the industry. Since audit firm size and level of industry specialization presumably affect audit quality, we examine these relationships in the Florida governmental audit market following the introduction of price competition using three longitudinal measures of specialization. We also incorporate audit-firm and audit-team factors previously related to audit quality and auditee satisfaction to construct our theoretical models.

Audit Firm Size and Audit Quality

DeAngelo (1981) defines audit quality as the probability that an auditor will both discover and report an error in a client's accounting system. In the public sector, the GAO (1986) defines audit quality as "compliance with professional standards and contractual terms" for the audit under consideration. Researchers frequently use proxies for audit quality and consider quality to be associated with audit firm attributes, such as size (Shockley and Holt 1983), investment in firm reputation (Beatty 1989), premium fees (Copley 1991), or extent of litigation (Palmrose 1988). In a behavioral study, Carcello et al. (1992) identified 12 composite factors of audit-related attributes which were related to audit quality.

Evidence generally supports a positive relation between audit quality and firm size in the governmental sector (O'Keefe and Westort 1992; GAO 1986). However, unlike the audit market for public companies, which is dominated by the current Big 4, the governmental market is more fragmented and includes a substantial number of small audit firms (Deis and Giroux 1992). Brown and Raghunandan (1995) find a positive relation between audit firm size and audit quality for governmental audits, and argue for

greater use of large audit firms. However, Elder (1997) argues that most governmental auditors provide quality audits, and cost must also be considered in the choice of auditor. Furthermore, while O'Keefe and Westort (1992) suggested that governmental audit quality was higher for larger audit firms, O'Keefe et al. (1994) confirmed this association only for the at that time Big 8 firms.

Hackenbrack et al. (2000) study auditor choice in Florida when a bidding restriction required that the auditor be initially selected without consideration of fee information. Using fiscal year 1992 data, they find greater use of Big 6 auditors and higher fees compared to neighboring control states. They also find higher audit quality as measured by the percentage of audits receiving the Certificate of Achievement for Excellence in Financial Reporting from the Government Finance Officers Association (GFOA), and imply that higher quality supports the tradeoff in higher fees. In contrast, Lowensohn and Reck (2004) studied governmental audit report error rates from 1992 through 2000 and noted improved audit quality as the Big 5 presence in the Florida governmental audit market waned.

Deis and Giroux (1996; 1992), O'Keefe et al. (1994) and Giroux et al. (1995) examined audit quality in school districts; however, each of the studies excluded Big 6 firms. Given the limited study and mixed results henceforth, the examination of firm size and audit quality is relevant, especially in the governmental market. We investigate whether perceived audit quality is associated with use of a Big 5 audit firm.

H1a: Big 5 auditors will be associated with higher levels of perceived audit quality.

Quality attributes also have been investigated in relation to auditee satisfaction.⁴ Behn et al. (1997) use the twelve Carcello et al. (1992) quality factors to examine the effect of audit quality attributes on auditee satisfaction in the private sector. They find significant, predominantly positive, relationships between auditee satisfaction and many of the audit quality attributes identified by Carcello et al. (1992). Accordingly, we also hypothesize that audit firm size will be related to auditee satisfaction.

H1b: Big 5 auditors will be associated with higher levels of auditee satisfaction.

Auditor Specialization and Audit Quality

In general, a positive relationship is expected between audit quality and industry specialization (Gramling and Stone 2001). Industry specialization, a proxy for auditor expertise, is based on training and practical experience gained from auditing in a particular industry (Gramling and Stone 2001; Solomon et al. 1999; Hogan and Jeter 1999; Craswell et al. 1995). Expert knowledge gained through years of on-the-job experience increases the likelihood that auditors will detect errors in financial statements (Ashton 1991; Libby and Frederick 1990). Also, research indicates that auditors with training or experience in specialized areas outperform those without the training or experience (Kwon 1996; Libby 1995).

Evidence on the relation between auditor industry specialization and audit quality in the governmental sector is limited. O'Keefe et al. (1994) find that auditor industry specialization is associated with decreased levels of GAAS reporting violations for audits of California school districts. Deis and Giroux (1996; 1992) and Giroux et al. (1995) find the number of independent school districts audited by a particular firm to be associated

with higher audit quality, measured as a composite metric of audit quality deficiencies noted in quality control reviews. Using enforcement files of the Texas State Board of Accounting, Thomas et al. (1998) find that auditors performing substandard governmental audits devote a lower percentage of their practice to governmental accounting and auditing than those auditors that performed governmental audits which were not deemed substandard. Finally, Hackenbrack et al. (2000) and Jensen and Payne (2005a, 2005b) suggest a positive relationship between audit firm experience and audit quality.

Most extant studies of specialization focus on private sector industries and therefore include only Big 6 specialists; however, the role of non-Big 6 specialists is being recognized (Jensen and Payne 2005b; Matthews et al. 1998). In fact, Cullinan (1998) examines employee benefit plan audits in the U.S., which are similar to governmental audits in that they include many auditing requirements beyond those required by generally accepted auditing standards (GAAS), and finds that smaller CPA firms may establish a significant market presence in certain niche assurance service markets. Further, these "boutique" firms may have the ability to command higher fees than other firms in the market based on their industry expertise.

Substandard governmental audits have been blamed on audit firms' lack of industry-specific knowledge (O'Keefe et al. 1994) and limited research has examined whether specialized non-Big 5 auditors perform at a level comparable to Big 5 firms. Accordingly, we expect that industry specialists will be associated with higher levels of perceived audit quality.

H2a: Specialist auditors will be associated with higher levels of perceived audit quality.

In the Behn et al. (1997), auditor industry knowledge was an important determinant of auditee satisfaction. Accordingly, we also hypothesize that specialist auditors will also be associated with higher levels of auditee satisfaction.

H2b: Specialist auditors will be associated with higher levels of auditee satisfaction.

The models used to test for relationships between audit firm size and industry specialization and perceived audit quality and auditee satisfaction are developed in the following section.

MODEL DEVELOPMENT AND RESEARCH METHOD

To develop models of the relationships between auditor attributes and perceived audit quality and auditee satisfaction, we begin with audit variables identified in Carcello et al. (1992) and Behn et al. (1997) as being related to audit quality and auditee satisfaction. These variables are updated and modified to reflect unique characteristics of governmental audits. We then add a Big 5 variable to capture the effect of firm size. We also replace the Likert-scale measure of expertise used in those studies with direct measures of specialization. The models are as follows:

$$\text{QUAL} = b_0 + b_1\text{ATEN} + b_2\text{INDEP} + b_3\text{PLAN} + b_4\text{MGTLTR} + b_5 \text{MGRTIME} + b_6\text{FIELDW} + b_7 \text{SKEPT} + b_8\text{INPUT} + b_9\text{B5} + b_{10}\text{SPEC} + \varepsilon \quad (1)$$

$$\text{OSAT} = b_0 + b_1\text{ATEN} + b_2\text{INDEP} + b_3\text{PLAN} + b_4\text{MGTLTR} + b_5 \text{MGRTIME} + b_6\text{FIELDW} + b_7 \text{SKEPT} + b_8\text{INPUT} + b_9\text{B5} + b_{10}\text{SPEC} + \varepsilon \quad (2)$$

Model variables are defined in Table 1 and discussed further below.

Insert table 1 about here

Discussion of Independent Variables

Carcello et al. (1992) identified “auditor experience with the client” as the most significant factor contributing to perceived audit quality, while Behn et al. (1997) find a positive association between this variable and auditee satisfaction. The corresponding variable in our study is auditor tenure (in years), ATEN, for which we expect a positive coefficient in both models.

The second most significant factor in the Carcello et al. study was the auditor level of industry expertise. Since Gramling and Stone (2001) note that industry specialization may be evidenced by having either a few large clients or a large number of clients in an industry, we measured the SPEC variable in each of the models in three different ways: 1) SPEC\$ represents the total dollar amount of 2003 Florida governmental revenues audited by a firm or B5 office; 2) SPEC# represents the total number of Florida governmental entities audited by an audit firm or B5 office in 2003; and 3) SPECTOT is a longitudinal measure of the total number of Florida governmental entities audited by a firm between 1993 and 2003 (measured in 1993, 1998, 2003 and summed).⁵

The three specialization measures incorporate three perspectives on the benefits of specialization. The SPEC\$ measure weights clients by size, reflecting the argument that the audit firm’s investment in industry knowledge is likely to be increasing with the total audit fees earned in the industry. SPEC# weights each client equally as specialist

knowledge is likely to be increasing as the total number of industry clients served increases. Finally, SPECTOT recognizes that specialist knowledge is generated across clients and across time. Given the specialized nature of government accounting and auditing, we anticipate a positive relationship between this variable on both perceived audit quality and auditee satisfaction.

“Responsiveness to client needs” was significant in Carcello et al. and Behn et al. We operationalize this factor as the auditor providing suggestions to the client in a management letter (MGTLTR). We expect a positive coefficient for this variable in both models.

Carcello et al. identified CPA firm compliance with general audit standards as a key factor in perceived audit quality. Behn et al. expanded the attribute to include CPA firm technical compliance, independence and due professional care. The current study includes PLAN (adequate planning by the auditor) and INDEP (auditees’ perceptions of whether audit team members avoided compromising their independence) to operationalize the audit quality attribute “CPA firm compliance with general audit standards”. Planning is a specific key general audit standard that clients understand and appreciate, whereas we felt that finance directors might not be familiar with or be able to evaluate the auditing concept of due professional care. Positive signs for both coefficients in the quality model are anticipated.

MGRTIME is our measure of executive involvement and refers to the extent to which the engagement manager was involved in planning and conducting the audit. The corresponding variable in Carcello et al. and Behn et al. is “CPA firm executive

involvement.” Consistent with these studies, we predict a positive coefficient for this variable in both models.

Carcello et al. identified a “conduct of fieldwork” quality factor based upon use of microcomputers, use of statistical sampling techniques, and quality of the study of internal control. Behn et al. also employed this variable. To some extent, the variables that loaded on this factor in their study are obsolete (*i.e.*, use of microcomputers). Given this, and in light of the specialized nature of government accounting, we decided to capture separately two important aspects of fieldwork. ACCTSYS thus refers to the adequacy of the audit team’s understanding of the auditee’s accounting system, while ICS measures the auditee’s perceptions of the thoroughness of the auditors’ study of the government internal control systems. We employ a composite fieldwork variable, FIELDW (the mean of the values for ACCTSYS and ICS), in our models; and positive coefficients are expected.

Carcello et al. report that professional skepticism is viewed as an attribute of audit quality, while Behn et al. find that this construct is significantly *negatively* associated with auditee satisfaction. Accordingly, in our study, SKEPT captures the degree of professional skepticism maintained by audit team members during the course of audit conduct. We predict a positive association between SKEPT and perceived audit quality. We conjecture that professional skepticism may influence government officials’ satisfaction with their auditors differently from the manner in which professional skepticism influences their corporate counterparts; however, we do not predict the sign of SKEPT in the satisfaction model.

We included INPUT, the finance director degree of involvement in the auditor selection process, as a control variable to ensure that respondents did not indicate high degrees of perceived audit quality and satisfaction solely based upon the fact that they were integral in the decision process. Finally, Behn et al. suggest that researchers extend the auditee satisfaction line of research to clients of non-Big 5 firms; and the government audit market provides such an opportunity. We do not predict the sign of the Big 5 variable in either model.

RESEARCH METHOD

We use a survey instrument to capture (1) perceptions of audit quality (QUAL) and overall auditee satisfaction (OSAT), (2) relevant independent audit variables previously employed by Carcello et al. (1992) and Behn et al. (1997), and (3) other municipality-specific audit data. We supplemented survey content with three specialization measures collected from historical information regarding the identity of independent audit firms performing municipal audits in Florida since 1992 and municipal revenue data available online from the Florida Department of Financial Services.⁶

The survey included thirteen Likert scale questions related to perceived audit quality, auditee satisfaction, and audit-related factors. Items found to be significantly related to audit quality and auditee satisfaction in Carcello et al. and Behn et al. and relevant to the current study were included, in addition to items addressing the reasonableness of the audit fee and the continuity of audit team members. All items were measured on 7-point Likert scales (strongly agree - strongly disagree).⁷ The factor questions were measured relative to the audit team rather than the audit firm, since,

Schroeder et al. (1986) and Carcello et al. (1992) each report that audit quality factors are more often associated with the specific audit team than the audit firm.

While the survey was anonymous to ensure confidentiality, respondents were asked to identify their external auditor and provide information related to auditor tenure, auditor rotation policies, and audit fee. Additional questions referred to GASB 34 implementation, nonaudit services, and entity revenues. Respondents were also asked to indicate the extent to which they were involved in the auditor selection process and the degree to which the external auditor drafted the financial statements.

Data Collection

We obtained contact information from the Florida State Auditor General's Office for 846 finance officials from counties, local municipalities and special districts subject to audit within the State of Florida. Surveys and cover letters describing the study were mailed to the finance officials. Respondents were asked to refer to audits for the fiscal year ending September 30, 2002. We received 286 usable responses for a 33.81% response rate. Table 2 Panel A provides a breakdown of responses by entity type.

Data Analysis

As noted above, we estimate separate regression models of perceived audit quality and auditee satisfaction.⁸ Our Likert-scale data are ordinal but cannot be assumed continuous or equal-interval (Borooah 2002). Thus, we use ordinal regression for primary analysis.⁹ Ordinal regression is a linear-regression-like model which is appropriate for attitudinal responses measured on an apparently continuous ordinal scale (McCullagh and Nelder 1989). Ordinal regression allows for the interpretation of model parameters even

if the variable is not truly continuous (McCullagh 1980) or if there is limited justification for category assignment (SPSS 2004). Ordinality is assumed, and “the imposition of an arbitrary scoring system for the categories is thereby avoided” (McCullagh 1980, p. 110).

We employ the ordinal regression function housed in SPSS Release13.0 for Windows (SPSS 2004). Ordinal regression requires selection of a "link function" (a predicted function of the actual cumulative probabilities underlying the regression model) according to the research issue and the characteristics of the data. Based on the distribution of the dependent variables, we selected the complementary log-log link function.¹⁰ Note that the ordinal regression procedure yields “threshold estimates,” which correspond to intercept terms in OLS. The number of threshold estimates always equals [(the number of dependent variable categories) - 1]. Since we employ seven dependent variable data categories, the ordinal regression models include six threshold estimates.

RESULTS AND DISCUSSION

Table 2 presents descriptive statistics for the overall sample. Panel B reports those variables measured on a 7-point scale. The table shows that respondents generally have favorable views of the performance of their auditors, in that the means for the dependent variables and the independent variables are well above the scale midpoint of 3.5, although responses for most variables span the full range of values (1 to 7). Panel C reports that 10.8% of the respondents employed a Big 5 audit firm, while Panel D illustrates that the finance official who answered the survey had considerable influence in the auditor selection process. Auditor tenure averaged 7.89 years, while ranging from 1-40 years. Descriptive statistics for the three specialization measures show considerable

range in the number of governmental audit engagements that the various audit firms (or Big 5 offices) maintained either in 2003 or over the ten-year period (1992-2003), as well as the revenues audited by the firm offices.

Insert table 2 about here

Table 3 presents bivariate correlations among the independent variables. Many of the independent variables are highly correlated, which is not surprising given the narrow range of many of the data items. Common diagnostic measures are not available in ordinal regression; however, examination of the Wilk-Shapiro statistic and variance inflation factors for each model estimated using OLS identified no problems with non-normality of residuals or collinearity.

Insert table 3 about here

Table 4 displays the results of the perceived audit quality models estimated using ordinal regression. The chi-square statistic indicates that the model provides a significant improvement over the baseline intercept-only model. The Cox and Snell statistic, as well as the Nagelkerke Pseudo R-square, indicates that the model is capturing a great deal of the variance in audit quality.¹¹ As expected, INDEP, PLAN, MGTLTR, MGRTIME, and FIELDW are significant and positive in each model, although SKEP and INPUT are not significant. The ATEN variable is also positive and significant. Although there has been debate about the benefits of auditor rotation, auditor tenure is associated with perceived higher quality.

The SPEC\$ and SPECTOT variables are positive and significant, while the SPEC# variable is positive but not significant. These results suggest that auditor specialization is associated with higher perceived audit quality. Surprisingly, in the

SPEC\$ and SPECTOT models B5 is negative and significant, and is negative but insignificant in the SPEC# model. Hence, H1a is rejected, and H2a is substantially confirmed.

Insert table 4 about here

Table 5 presents results of the auditee satisfaction models estimated using ordinal regression. Again, the chi-square statistic indicates that the model is a significant improvement over the baseline intercept-only model, while the Pseudo R-square statistics indicate that the model is capturing a great deal of the variance in the dependent variable.

Insert table 5 about here

ATEN, PLAN, MGRTIME, FIELDW, and SKEP are significant and positive in each model, while INDEP, MGTLTR and INPUT are not significant. The SPEC variable is positive and significant in each of the models. The B5 variable is negative in each model but only significant in the SPEC\$ and SPECTOT models. Thus, H1b is rejected and H2b is accepted.

When comparing the results of the perceived quality and overall satisfaction models, it is interesting that the specialization measures were positive and significant in all models except the SPEC# quality model. In contrast, the Big 5 variable was consistently negative and significantly so in most models. These results suggest that the movement away from the Big 5 following the removal of the bid restriction in Florida resulted in higher perceived audit quality and auditee satisfaction.

For the remaining variables, ATEN, PLAN, MGRTIME, and FIELDWORK are significant in all QUAL and OSAT models. Hence, both perceived audit quality and

auditee satisfaction increase with auditor tenure, adequate audit planning, audit manager involvement, and the audit team's study of entity accounting and internal control systems. Auditor independence (INDEP) and management letter contributions (MGTLTR) increase perceived quality but not satisfaction. Professional skepticism influenced satisfaction but not quality. INPUT did not appear to affect responses.

Discussion of Findings

The finding that B5 is negatively associated with perceived audit quality is interesting. It is important to note that our study measures perceived, rather than actual audit quality. Also, this result does not indicate that Big 5 are perceived as lacking in audit quality, only that Big 5 audits are perceived, on average, to be of lesser quality than those performed by non-Big 5 auditors. This may relate to the prevailing view that large firms are generally not enthusiastic about government auditing. An AICPA task force (1987, p. 45) noted, "There is a perception that the CPAs consider government clients secondary to the private sector."

As would be expected, audit firms who are considered specialists are more often associated with audit quality. This holds true when the specialization measure is total dollars in Florida governmental revenue audited by a firm in 2003 (SPEC\$) or a longitudinal measure of governmental audit experience in Florida (SPECTOT), although the absolute number of Florida governmental audits performed in 2003 (SPEC#) is not significant.

Table 6 reports auditor trend data for the Florida governmental audit market during the 10-year period between 1993 and 2003.¹² As reported in Panel A, the B5

presence in the Florida governmental audit market waned substantially, consistent with Jensen and Payne (2005b). They suggest that the higher cost Big 5 firms were unable or unwilling to compete on price. It is interesting that the changes in market share by the Big 5 were not uniform. In 1993 PwC had by far the largest market share with 59 clients, but by 2003 served only six clients in the market. On the other hand, KPMG increased its market share from 16 to 24 clients. These results suggest that the impact of price competition or firm strategic response to the change was not uniform across the Big 5.

Insert table 6 Here

The negative association between Big 5 firms and perceived audit quality and overall satisfaction also suggests that the movement away from the Big 5 was not strictly motivated by price. Jensen and Payne (2005b) note a shift toward experienced non-Big 5 firms, while Lowensohn and Reck (2004) note an increase in overall audit quality during the period.

To further explore the specialization results, we examine the nature of the Florida governmental audit market. As reported in Panel B of Table 6, during the period the number of non-Big 5 audit firms participating in the market decreased in total, and the number of firms serving few governmental audit clients decreased, especially the number performing only one governmental audit. A slight trend toward specialization of firms is also evident from data in Panel C. A total of 235 different firms audited the 601 governmental units under review for the ten-year period. During that period, 240 of the 601 governmental entities under study did not change auditors (36 counties, 144 cities, 60 SD). Most of the audit firms experienced little change in their governmental client base;

however, some firms absorbed the Big 5 fall-out and some appear to have specialized, picking up as many as 22 new clients.

Analysis of Audit Fees

As part of our survey, we also collected data on audit fees to address whether the quality and satisfaction differences we examine for specialists and Big 5 auditors is associated with differences in audit fees. Jensen and Payne (2005b) document a decline in fees following the removal of the bid restriction in Florida, and the fee change was greater if the change was to a more experienced auditor.¹³ Much previous government audit fee research finds higher fees associated with Big 5 auditors (e.g. Rubin 1988). In contrast, evidence for industry specialization in the governmental sector has been mixed. For example, Ward et al. (1994) find higher fees for one specialized non-Big 8 firm in Michigan, while Chase (1999) finds lower fees for a specialized firm in Virginia. In his study of pension plan audits, Cullinan (1998) explains that specialists' industry expertise costs per client could be either higher or lower than those of nonspecialists depending on the magnitude of the total expertise costs, and the number of industry clients the firm has. Hence, with expertise differentiation and a cost-based audit pricing strategy, it is difficult to anticipate the relationship between industry expertise and audit fees.

In addition to Big 5 and specialist auditor, fee model variables include auditor tenure (ATEN), the logarithmic transformation of total revenues (LOG_TOT_REV), the extent to which the audit firm drafted the financial statements (DRAFT), mandatory auditor rotation (dichotomous), and initial audit (dichotomous).¹⁴

Insert table 7 about here

Panels A-C of Table 7 present the regression models using each of the three specialization variables, while Panel D presents descriptive statistics for the fee model variables. Although Big 5 auditors were associated with lower perceived quality and satisfaction, they were able to charge higher audit fees. In contrast, while specialists were associated with higher perceived audit quality and satisfaction, they did not charge higher fees. These results are consistent with the suggestion in Jensen and Payne (2005a, 2005b) that government entities were able to maintain quality at lower fees by choosing specialist auditors. In fact, the government units were able to obtain higher perceived quality and satisfaction and reduced fees. These results suggest that the removal of the bidding restriction in Florida was beneficial for many Florida governmental units.

Conclusion

The quality of governmental audits is again under scrutiny. Recent research finds lower audit fees (Jensen and Payne 2005a, 2005b) and increased levels of audit quality (Lowensohn and Reck 2004; Jensen and Payne 2005b) in the Florida governmental audit market after the introduction of price competition. Thus it is useful to examine factors and conditions within Florida, as they may have policy implications for other states. It appears as though audit firms which make the strategic decision to specialize in governmental auditing may be able to perform high quality audits without charging higher fees. Furthermore, Big 5 audit firms are not necessarily the highest quality performers in the market. Following from our findings, along with Jensen and Payne (2005b), competitive bidding among firms contributed to an increased presence of

specialized non Big 5 firms providing high quality audits which satisfy client expectations.

It is widely presumed that Big 5 audit firms charge higher fees to reflect superior quality (Zeithaml 1988; Lichtenstein 1993). However, for our sample, higher fees for the Big 5 were not associated with higher perceptions of audit quality. Further study of actual and perceived audit quality for Big 4 audits in the municipal sector is warranted to assess whether these results are unique to the Florida market.

Following the landmark Sarbanes–Oxley Act, the remaining Big 4 auditing firms have been more selective in the clients and markets they serve, creating opportunities for other experienced auditors. It has been implied that industry experience equates to higher audit quality (Jensen and Payne 2005a; 2005b; Gramling and Stone 2001). In this study, we examine a governmental audit market where experienced, non-Big 5 audit specialists have increased their market share. The result was high levels of perceived audit quality and client satisfaction. Further study is warranted in other governmental markets to assess whether overall changes in the audit market result in the growth of non-Big 4 specialists, as suggested by Jensen and Payne (2005b) and Matthews et al. (1998).

There are several considerations which may limit the results and their generalizability to other samples. All respondents surveyed were from Florida because of the regulatory changes that occurred in that state. As a result, these results may not be generalizable to other states. Second, use of questionnaire methodology poses potential problems such as “errors of severity/leniency,” “halo effect,” problems associated with understandability, and respondent truthfulness. However, the survey was adapted from prior research and respondent confidentiality was assured to enhance the likelihood of

truthful response. While our results may not be generalizable to all governmental entities, they suggest that governmental officials may wish to consider non-Big 4 specialists during the audit procurement process.

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Table 1
Summary of Variables

Dependent variables measured on a 7 point Likert scale

<u>Name</u>	<u>Construct or concept measured</u>
QUAL	Perceived quality of audit
OSAT	Overall satisfaction with audit

Independent variables measured on a 7 point Likert scale

<u>Name</u>	<u>Construct or concept measured</u>
INDEP	The audit team maintained independence in appearance and in fact
PLAN	The audit was adequately planned
MGTLTR	The audit team provided valuable suggestions to management (e.g. management letter)
MGRTIME	The engagement manager's active involvement in planning and conducting the audit
ACCTSYS	Adequacy of the audit team's understanding of the governments accounting system
ICS	Thoroughness of the audit team's study of the government's internal controls
FIELDW	A composite "fieldwork" variable comprising ACCTSYS and ICS
SKEPT	The audit team maintained an attitude of professional skepticism throughout the audit engagement

Other Independent variables

<u>Name</u>	<u>Construct or concept measured</u>
B5	The audit firm is one of the Big Five
ATEN	The audit firm's tenure as the government's auditor
INPUT	The extent to which the respondent was involved in the auditor selection
SPEC\$	Total 2003 Florida governmental revenues audited by firm or B5 office
SPEC#	Total number of Florida governmental entities audited by audit firm or B5 office in 2003
SPECTOT	Total number of Florida governmental entities audited by firm between 1993 and 2003 (measured in 1993, 1998, 2003 and summed)

Table 2
Descriptive Statistics - Overall Sample (N=286)

Panel A	Sample Statistics			
Type of Government	Surveyed	Respondents	Response Rate	Percentage of Sample
County	68	25	36.76%	8.74%
City/Local Government	402	150	37.31%	52.45%
Special District	376	111	29.52%	38.81%
Total	846	286	33.81%	

Panel B	Measured on a 7-point scale		
<u>Variable</u>	<u>Mean</u>	<u>SD</u>	<u>Range</u>
QUAL	6.18	1.162	1-7
OSAT	6.04	1.241	1-7
INDEP	6.58	0.884	1-7
PLAN	5.92	1.269	1-7
MGTLTR	5.68	1.345	1-7
MGRTIME	6.00	1.235	1-7
ACCTSYS	6.24	1.054	2-7
ICS	6.02	1.205	1-7
FIELDW	6.13	1.013	2-7
SKEPT	6.29	0.965	3-7

Panel C	Dichotomous, Set = 1		Dichotomous, Set = 0	
<u>Variable</u>	<u>Number</u>	<u>Percentage</u>	<u>Number</u>	<u>Percentage</u>
BIG5	31	10.8	255	89.2

Panel D	<u>Mean</u>	<u>SD</u>	<u>Range</u>
TENURE	7.89 years	6.805	0-40
INPUT	46.89%	36.221	0-100
SPEC\$	\$863,805,856	1,202,626,574	\$72,996-12,683,580,081
SPEC#	14.77 clients	16.002	1-98
SPECTOT	35.36 clients	29.487	1-106

Table 3
Variable Correlations
(N=286)

	QUAL	OSAT	INDEP	PLAN	MGTLTR	MGRTIME	FIELDW	SKEP	B5	TENURE	INPUT	SPEC\$	SPEC#	SPECTOT
QUAL	1.000													
OSAT	0.833	1.000												
INDEP	0.541	0.482	1.000											
PLAN	0.742	0.793	0.497	1.000										
MGTLTR	0.743	0.632	0.382	0.585	1.000									
MGRTIME	0.641	0.598	0.375	0.616	0.500	1.000								
FIELDW	0.767	0.741	0.544	0.699	0.669	0.548	1.000							
SKEP	0.630	0.547	0.588	0.565	0.629	0.542	0.602	1.000						
B5	<i>-0.142</i>	<i>-0.146</i>	0.025	-0.110	-0.208	<i>-0.148</i>	<i>-0.118</i>	-0.034	1.000					
TENURE	<i>0.141</i>	<i>0.140</i>	0.017	0.065	<i>0.118</i>	0.004	<i>0.130</i>	-0.002	-0.045	1.000				
INPUT	<i>0.157</i>	<i>0.136</i>	<i>0.123</i>	<i>0.130</i>	0.199	<i>0.133</i>	0.211	0.108	-0.077	-0.088	1.000			
SPEC\$	0.025	0.029	0.114	0.005	-0.114	-0.010	-0.033	0.007	0.474	-0.050	-0.030	1.000		
SPEC#	0.086	0.069	0.019	-0.027	<i>0.125</i>	0.043	0.040	0.045	-0.192	-0.070	0.071	0.246	1.000	
SPECTOT	0.056	0.050	0.068	0.003	0.018	0.010	0.012	0.039	0.401	-0.021	0.056	0.570	0.720	1.000

Note: Correlations in bold type significant at $p \leq .01$; correlations in italic type significant at $p \leq .05$.

Table 4
Ordinal Regression Model of Factors Associated with Perceived Audit Quality
(Dependent Variable is QUAL) N = 286

MODEL 1	Coefficient Estimate	Standard error	Wald-Statistic	p-value^b
Threshold (1.00-6.00) ^a	6.078-12.459	.867-1.107	42.148-126.666	.000
ATEN	0.021	0.016	1.798	.090
INDEP	0.377	0.121	9.758	.001
PLAN	0.238	0.107	4.949	.013
MGTLTR	0.522	0.104	25.330	.000
MGRTIME	0.381	0.101	14.243	.000
FIELDW	0.427	0.136	9.860	.001
SKEPT	0.115	0.138	0.698	.201
INPUT	0.002	0.003	0.282	.298
B5	-0.547	0.318	2.965	.043
SPECS	0.001	0.000	1.717	.095
MODEL 2	Coefficient Estimate	Standard error	Wald-Statistic	p-value^b
Threshold (1.00-6.00) ^a	6.179-12.575	.873-1.117	43.016-126.815	.000
ATEN	0.022	0.016	1.945	.081
INDEP	0.389	0.120	10.469	.001
PLAN	0.261	0.112	5.473	.009
MGTLTR	0.504	0.106	22.777	.000
MGRTIME	0.384	0.101	14.424	.000
FIELDW	0.424	0.136	9.712	.001
SKEPT	0.115	0.138	0.690	.203
INPUT	0.002	0.003	0.281	.298
B5	-0.261	0.287	0.823	.182
SPEC#	0.005	0.007	0.598	.220
MODEL 3	Coefficient Estimate	Standard error	Wald-Statistic	p-value^b
Threshold (1.00-6.00) ^a	6.246-12.658	.929-1.123	43.016-127.158	.000
ATEN	0.021	0.016	1.783	.182
INDEP	0.389	0.121	10.371	.001
PLAN	0.265	0.109	5.861	.008
MGTLTR	0.496	0.105	22.380	.000
MGRTIME	0.376	0.101	13.846	.000
FIELDW	0.427	0.136	9.837	.001
SKEPT	0.123	0.139	0.791	.187
INPUT	0.001	0.003	0.149	.350
B5	-0.601	0.337	3.193	.037
SPECTOT	0.007	0.004	2.554	.055

	Model 1, 2, 3
Model Chi-square statistic	608.456
Prob (Chi-square statistic)	.000
Pseudo R ²	
Cox and Snell	.914
Nagelkerke	1.000

^a The ordinal regression procedure yields “threshold estimates,” which correspond to intercept terms in OLS. The number of threshold estimates always equals [(the number of dependent variable categories) - 1], thus our ordinal regression models include six threshold estimates. For ease of exposition, these estimates are summarized in one line.

^b All variables have an expected positive sign and are one-tailed tests, except B5 for which no direction is hypothesized. The link function for each model was the complementary log-log function.

Table 5
Ordinal Regression Model of Factors Associated with Auditee Satisfaction
(Dependent Variable is OSAT) N = 286

MODEL 1	Coefficient Estimate	Standard error	Wald-Statistic	p-value^b
Threshold (1.00-6.00) ^a	5.568-12.684	.840-1.088	35.615-135.850	.000
ATEN	0.022	0.014	2.531	.056
INDEP	0.074	0.117	0.400	.264
PLAN	0.700	0.111	39.939	.000
MGTLTR	0.099	0.098	1.024	.156
MGRTIME	0.198	0.095	4.307	.019
FIELDW	0.755	0.139	29.606	.000
SKEPT	0.183	0.137	1.770	.091
INPUT	0.002	0.003	0.347	.278
B5	-0.548	0.317	2.984	.042
SPECS	0.001	0.000	3.491	.031
MODEL 2				
	Coefficient Estimate	Standard error	Wald-Statistic	p-value^b
Threshold (1.00-6.00) ^a	5.709-12.819	.885-1.100	36.696-135.718	.000
ATEN	0.025	0.014	3.205	.036
INDEP	0.087	0.117	0.560	.227
PLAN	0.762	0.116	43.241	.000
MGTLTR	0.046	0.099	0.216	.321
MGRTIME	0.182	0.096	3.617	.028
FIELDW	0.741	0.139	28.537	.000
SKEPT	0.193	0.137	1.968	.080
INPUT	0.002	0.003	0.326	.284
B5	-0.142	0.284	0.249	.309
SPEC#	0.014	0.006	4.727	.015
MODEL 3				
	Coefficient Estimate	Standard error	Wald-Statistic	p-value^b
Threshold (1.00-6.00) ^a	5.170-11.755	.808-1.022	34.413-132.287	.000
ATEN	0.020	0.016	2.004	.078
INDEP	0.060	0.121	0.2681	.302
PLAN	0.719	0.109	42.330	.000
MGTLTR	0.036	0.105	0.132	.358
MGRTIME	0.143	0.101	2.265	.066
FIELDW	0.686	0.136	25.576	.000
SKEPT	0.200	0.139	2.210	.068
INPUT	0.001	0.003	0.096	.378
B5	-0.810	0.337	6.165	.006
SPECTOT	0.011	0.004	8.072	.002

	Model 1, 2, 3
Model Chi-square statistic	670.388
Prob (Chi-square statistic)	.000
Pseudo R ²	
Cox and Snell	.933
Nagelkerke	1.000

^a The ordinal regression procedure yields “threshold estimates,” which correspond to intercept terms in OLS. The number of threshold estimates always equals [(the number of dependent variable categories) - 1], thus our ordinal regression models include six threshold estimates. For the sake of space, these estimates are summarized in one line.

^b All variables have an expected positive sign and are one-tailed tests, except B5 for which no direction is hypothesized. The link function for each model was the complementary log-log function.

Table 6
Florida Governmental Audit Market Trends
1993-2003

Panel A: Big 5 Presence 1993-2003

	<u># of Florida Governmental Clients</u>		
	<u>1993</u>	<u>1998</u>	<u>2003</u>
AA	11	8	0
DT	19	11	2
EY	29	20	14
KPMG	16	19	24
PWC	59	16	6
Total	134	74	46

Panel B: Number of Clients – Non Big 5 Audit Firms

<u>Number of Clients</u>	<u>Number of Firms</u>		
	<u>1993</u>	<u>1998</u>	<u>2003</u>
one client	89	69	54
2-5 clients	48	59	46
6-10 clients	17	17	15
more than 10	8	9	12
Total	162	154	128

A total of 235 different firms participated in the market during this period, auditing 601 governmental entities throughout the ten-year period.

Panel C: Changes in number of Florida governmental audit clients for non Big 5 firms between 1993 and 2003

	<u>Number of Firms</u>
Lost 6-10 clients	5
Lost 3-5 clients	16
Lost 2 clients	16
Lost 1 client	70
No change	44
Gained 1 client	33
Gained 2 clients	15
Gained 3-5 clients	14
Gained 6-10 clients	11
Gained more than 10 clients	6 maximum +22
Total Non Big 5 firms	230

Table 7
Regression Model of Audit Fees
(Dependent Variable Is Natural Logarithm of Audit Fees)
N = 302

Panel A	Expected Sign	Coefficient Estimate	Standard Error	t- statistic	p-value
Constant	?	2.665	0.231	11.538	0.000
Tenure	+/-	0.013	0.005	2.953	0.003
LOG_TOT_REV	+	0.451	0.014	31.555	0.000
B5	+	0.324	0.106	3.044	0.001
DRAFT	+	0.001	0.001	.770	0.221
Initial Audit	?	0.074	0.107	.692	0.490
Auditor Rotation	?	0.170	0.083	2.049	0.042
SPEC\$?	0.000	0.000	-.436	0.663
Model F-statistic	219.196				
Prob (F-statistic)	0.000				
Adjusted R ²	0.862				

Panel B	Expected Sign	Coefficient Estimate	Standard Error	t- statistic	p-value
Constant	?	2.673	0.229	11.651	0.000
Tenure	+/-	0.014	0.005	3.014	0.003
LOG_TOT_REV	+	0.449	0.014	31.889	0.000
B5	+	0.316	0.099	3.197	0.001
DRAFT	+	0.000	0.001	.672	0.250
Initial Audit	?	0.065	0.107	.608	0.502
Auditor Rotation	?	0.168	0.083	2.027	0.044
SPEC#	?	0.001	0.002	.604	0.546
Model F-statistic	219.383				
Prob (F-statistic)	0.000				
Adjusted R ²	0.862				

Panel C	Expected Sign	Coefficient Estimate	Standard Error	t- statistic	p-value
Constant	?	2.677	0.230	11.659	0.000
Tenure	+/-	0.014	0.005	2.978	0.003
LOG_TOT_REV	+	0.450	0.014	31.859	0.000
B5	+	0.303	0.105	2.888	0.002
DRAFT	+	0.001	0.001	.728	0.233
Initial Audit	?	0.071	0.107	.6668	0.505
Auditor Rotation	?	0.170	0.083	2.039	0.043
SPECTOT	?	0.000	0.001	.046	0.963
Model F-statistic	218.996				
Prob (F-statistic)	0.000				
Adjusted R ²	0.862				

Panel D	Descriptive Statistics for Audit Fee Model Variables		
<u>Variable</u>	<u>Mean</u>	<u>SD</u>	<u>Range</u>
Fee	\$ 45,701	74,548	\$ 300 – 804,192
Tenure	7.89 years	6.805	0-40
Revenues	\$ 76,265,314	299,005,769	\$1,417 – 6,692,788,893
Draft	55.18%	43.38%	0 - 100%
SPEC\$	\$863,805,856	1,202,626,574	\$72,996-12,683,580,081
SPEC#	14.77 clients	16.002	1-98
SPECTOT	35.36 clients	29.487	1-106
	Dichotomous, Set = 1	Dichotomous, Set = 0	
	<u>Number</u>	<u>Number</u>	
	<u>(Percentage)</u>	<u>(Percentage)</u>	
BIG5	31 (10.8)	255 (89.2)	
AUDROT	47 (16.4)	239 (83.6)	
INITIAL	25 (8.7)	261 (91.3)	

¹ Prior to 2004 the GAO was known as the General Accounting Office.

² Over 20% of federal quality control reviews conducted in recent years noted audit quality problems (Broadus 2004). These results prompted a group of federal agencies, in conjunction with the Office of Management and Budget, the AICPA, the GAO, and the National State Auditors Association, to institute the National Project to Statistically Measure the Quality of Single Audits.

³ During the period examined in this study, the five largest public accounting firms (Big 5) became the Big 4 public accounting firms, following the demise of Arthur Andersen. These firms are generally comparable to the Big 6 in research prior to the merger of Price Waterhouse and Coopers and Lybrand. We continue to refer to the firms as the Big 5 throughout the study except where researchers studied Big 6 firms.

⁴ Audit quality and auditee satisfaction represent two important, yet distinct, concepts within the overall audit market (Behn et al. 1997). While audit quality is important to both internal and external stakeholders, auditee satisfaction is “central to the accounting profession” (Bhattacharya 2001, p.14). To remain viable, audit firms must strive for both high quality audit performance and high levels of auditee satisfaction.

⁵ These measures differ by nature and content. SPECTOT includes audit firm data for 601 entities (66 counties, 358 cities, 177 special districts) over a ten-year period, including only entities where data is available for the entire period. SPEC\$ and SPEC# include 2003 data for 882 entities representing 97.36% of the total Florida governmental revenue that year. The major difference is the inclusion of 281 additional special districts for which we have 2003 revenues and auditors; however the additional special districts either were not in existence in 1993, did not require an audit in 1993 and/or 1998, or did not submit their audit report to the auditor general’s office in a timely manner during those years.

⁶ Municipality and auditor data were requested annually from the Florida State Auditor General’s Office and compiled manually by one of the authors. Florida municipal revenue figures were located at <http://www.fldfs.com/localgov/DownLoads.html>.

⁷ Carcello et al. used a 5-point agree/disagree scale, while Behn et al. used a 5-point satisfied/dissatisfied scale.

⁸ We do not employ simultaneous regression in this study because, while perceived audit quality and auditee satisfaction are thought to be related, they are not endogenously modeled in this study. That is, neither appears as an independent variable in the regression model of the other. Indeed, Palmrose (1989) provides an example of modeling closely related constructs (audit fees and audit hours) in which the independent variables are *identical*. However, since neither dependent variable appears as an explanatory variable in the counterpart regression model, Palmrose employs separate, non-simultaneous, regressions.

⁹ Carcello et al. used factor analysis, while Behn et al. used regression analysis in the prior studies of audit quality and auditee satisfaction. While we adopt many of the independent variables from these prior studies, we believe our methodology improves upon the prior work. First, we measured the independent variables on seven-point scales. Second, recognizing that our data cannot be assumed continuous or equal-interval, we employ ordinal regression analysis.

¹⁰ Inspection revealed that the dependent variable responses are skewed to higher scale values (consistent with the notion that auditees are at least somewhat satisfied with the auditors they have engaged). On this basis, it is appropriate to define the link function within the ordinal regression model as "complementary log-log" (SPSS 2005).

¹¹ SPSS reports pseudo R-square values for ordinal regression. While these values are considered to be similar to an OLS R-square in terms of model assessment, they do not directly measure the variance explained by the independent variables. The Cox and Snell's R-Square has a maximum value less than 1.0 (Cox and Snell 1989) and Nagelkerke's R-Square allows for a value of 1 (Nagelkerke 1991).

¹² Jensen and Payne (2005b) present market data for 126 Florida cities in their sample. We extend the analysis by examining 601 Florida entities, representing over 97% of 2003 revenues, over a ten-year period.

¹³ Although Jensen and Payne test for a relation between specialization and audit fees, we use more extensive specialization data and alternative measures of specialization.

¹⁴ Copley and Doucet (1993) employ a highly parsimonious model of audit fees. They note that while parsimonious models hold the potential to yield biased parameter estimates, the results are suitable if omitted variables are not highly correlated with the independent variable of interest. We control for auditee size (virtually always found to be the single most dominant influence on audit fees). Prior research (e.g., Copley 1989; Johnson et al. 2002) finds that auditee size is the variable most highly correlated with Big 5 auditors. Since our fee model controls for auditee size, we believe that any problem with our model arising from omitted variables is minimal, such that the Big 5 result can be interpreted straightforwardly.