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EXTERNAL AUDITOR SELECTION OR RETENTION: THE INFLUENCE OF AUDIT COMMITTEES AS BOUNDARY SPANNERS

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INTRODUCTION

Corporations often establish audit committees to monitor the financial reporting process and to reduce the likelihood of fraud, mismanagement, and financial liability. Verschoor (1993) found that these committees generally review internal controls over financial reporting and compliance with designated laws and regulations. While the corporate governance structure establishes the committee's composition and authority, audit committees generally serve as intermediaries among external and internal auditors and the full board of directors. The committees monitor the exchange of financial information and act as interfaces between the firm and the external environment (Kalbers and Fogerty, 1993). These functions allow audit committees to be classified as boundary spanners in organizational theory. Extensive research exists concerning behavioral explanations of how boundary spanner groups facilitate or influence transactions between firms (Scott, Mitchell, and Birnbaum, 1981; Osborn, Hunt, and Jauch, 1980).

Boundary spanning roles, such as those performed by purchasing agents, involve information acquisition and control, domain determination, interface and physical input control, and facilitation of interorganizational commerce (Jemison, 1979; Organ, 1971). Jemison (1984) associates about 60 percent of the variance in the influence on strategic decisions with boundary spanning roles, thereby stressing the importance of such groups. While other studies have focused on the organizational behavior exhibited by boundary spanning groups such as purchasing agents or governing boards (Singh and Rhoads, 1991; Katz and Tushman, 1983; Dollinger, 1984), no study has yet focused on the audit committees' boundary spanning connection with the decision concerning the selection or retention of the external auditor. Other factors related to the firm's management or the external economic environment may influence the selection or retention decision for external auditor, but the present study will only examine whether audit committee composition characteristics are statistically related to that decision. Research on other boundary spanning groups indicates that membership composition is influential in the decision process; however, that inference contrasts with the widely held notion that the committee will seek to reduce its perceived legal risk by making unbiased recommendations that are not influenced by committee members' business associations.

Theory of Organizational Behavior for Boundary Spanners

Boundary spanners facilitate direct (when possessing the authority to purchase or select) or indirect (when occupying an advisory or watchdog role) transactions between firms. In examining strategies for dealing with uncertainty and the subsequent decisions that boundary spanning groups employ, Stern and Morgenroth (1968) found evidence of a firm "size" effect. Boundary spanning groups in large firms exhibited limits to their considerations for choices: their behavior was the most predictable for purchase decisions. They often selected established products or services and were more likely to recommend suppliers with whom they had a history of successful transactions. Their consideration of alternatives was even more limited when compared to those conducted by smaller firms and was influenced more by compatibility between firm structures or information systems than by pricing.

Schwab, Ungson and Brown (1985) found that larger and smaller firms exhibited differing boundary spanning behavior; such groups in larger firms reacted to their perceived legal or environmental risk through purchase decisions that stressed the quality of goods or services and emphasized the reliability of established products or services from market leaders. Porter (1980) suggests that the boundary spanner role changes as firms mature. Although the emphasis on innovation by small firms makes buyers' and suppliers' actions more difficult to predict, firms undergoing rapid growth ultimately move toward greater reliability and reduced variability in their decision choices.

Although the major boundary spanning behavioral studies focus on decisions of departments and division specialist roles such as purchasing departments (Kolchin, 1986), product managers (Lysonski, 1985), customer service personnel (Singh and Rhoads, 1991), joint venture specialists (Pfeffer and Nowak, 1976), loan officers (Jemison, 1984), merger analysts (Pfeffer, 1972) or (hospital) governing boards (Fennell and Alexander, 1987), the audit committees' influence to select or retain auditors may follow a similar pattern. Bartunek and Reynolds (1983) classify CPA firm managers as boundary spanners and found that their regulatory obligations, combined with their subordinate position relative to the firm partners, caused them increased role-related stress. In response to this increased uncertainty, these managers adopted risk reduction strategies. While Bartunek and Reynolds (1983) focus on CPA firms, the authors of this paper examine the audit committee as the boundary spanning group and explore the linkages between them, the firm, and the external auditor.

The purpose of this study is to examine how audit committees of NYSE listed companies select or retain their auditors in order to determine if this choice or recommendation corresponds to previously observed boundary spanning behavior with a tendency toward the familiar or the well established (e.g., selecting or retaining an audit firm that is also the same one employed by an audit committee member's primary employer).

The authors examine the characteristics of both the audit committee composition and the external auditor in order to identify any factors that link these two groups in the

decision to select or retain an auditor. A sample of NYSE firms that switched auditors is also examined to determine if the change in auditors follows expected boundary spanning behavior for large organizations of switching toward market leaders, more established services, or firms possessing similar information or organizational structures (i.e., to detect if a tendency exists to switch to an external audit firm that is used by an audit committee member's primary employer or to switch to an audit firm with a larger market share in the auditee's industry). Both audit committee composition characteristics and external auditor firms' market shares are examined to see if they help explain the outcome of auditor switch decisions.

Audit Committee Functions and Interactions

In 1947, the American Institute of CPAs (AICPA) informally supported the audit committee concept in a **Journal of Accountancy** editorial (Carey, 1947); in 1967 and in 1977, the AICPA formally endorsed the committee concept as a means of strengthening the CPA's independence and performance (Cottel and Rankin, 1989). Since 1978, the NYSE has required its listed firms to use audit committees comprised of independent directors.

Wooten et al. (1994) note that the United States Senate's Metcalf Report expressed concern about whether auditors were "independent in fact from the interests of their corporate clients" and warned that "excessive market concentration traditionally causes problems concerning the price and availability of goods and services."

Audit committees may formally select or retain an external auditor, but that decision is also influenced by management's input. Pearson and Ryans (1982) and Ruffing (1994) found that management generally welcomed the committee's involvement in selecting the external auditors, negotiating their fees, and determining audit arrangements. Mautz and Neumann (1977) cited the committee's role as an intermediary between the firm management and the external auditor. Many recent AICPA Auditing Standards Board Statements on Auditing Standards address the reporting requirements between the audit committee and the auditor.[1]

Some of the research on the decision to switch auditors is consistent with the boundary spanning behavior mentioned earlier. After studying 67 of the 112 American Stock Exchange member firms that switched auditors from 1973 to 1978, Eichenseher and Shields (1983) found that companies with audit committees exhibited significantly more propensity to switch to Big Eight (now Big Six) firms than those without such committees. They suggested that previously developed business relationships could partially explain the selection or retention of external auditors, although other factors also may affect or control the decision process (e.g., perceived prestige of the audit firm in the industry, the firm's managerial governance structure, company size, degree of financial leverage, or whether the company operates in regulated industry).

Other studies have also helped explain this propensity to select Big Eight auditors: 1) larger companies prefer dealing with larger rather than smaller audit firms (Dopuch and Simunic, 1980); 2) the more owners a company has, the more likely the company will

employ Big Eight firms (Jensen and Meckling, 1976); 3) regulated companies tend to select audit firms with technical specialties in these industries (Eichenseher and Danos, 1981); 4) only large CPA firms with multiple offices can usually audit large companies with multiple locations. The present study examines the existence of statistically detectable associations between the audit committee composition or external auditor firm factors and the decision to select or retain a specific external audit firm.

THE GENERAL APPROACH OF THIS STUDY

Previous organizational behavior research found that choices or recommendations made by boundary spanners in large firms can be explained based on characteristics of the boundary spanning group. Their behavior is often reflected in choices for a familiar informational or organizational structure or in purchases inclined toward the market leader. In recommending the selection or retention of external auditors, this choice may be related to characteristics of the composition of the audit committee and linkages to (or market position of) the external auditor. The first part of this study investigates the relationship issue by simultaneously examining audit committee composition factors, external auditor characteristics, and the resemblance of the selected or retained external auditor to the one used by an audit committee member's primary employer. While firms rarely switch external auditors, the second part of this study investigates whether factors of the audit committee's composition can discriminate between firms that do and do not switch auditors. In addition, the market share of the predecessor and successor auditors are statistically compared to detect possible trends toward market leaders resulting from the auditor switches.

EMPIRICAL STUDY

The authors randomly selected 246 NYSE listed firms and identified the names and affiliations of the audit committees external members from their 1987 annual reports. Table 1 summarizes the size of the audit committees and the number of firms in the sample.

The top portion of Table 2 displays the number of Big Six auditors selected or retained by the NYSE firms compared to the Big Six external auditor employed by a committee member's primary employer.[2] The lower portion of Table 2 includes the expected frequency of occurrence between the Big Six auditor that the firm selected or retained compared to the Big Six auditor used by the audit committee member's primary employer under the null hypothesis of no association between the committee's firm employing an external auditor and the audit committee member's primary employer.

A chi square contingency table test of the count data associated with Table 2 indicates a statistically significant association (chi squared = 45.5852, $p<.0072$) between the selected or retained external auditor for the NYSE firm and the external auditor employed by the audit committee member's primary employer.[3] For all Big Six firms, the counts on the main

Table 1			
Audit Committee Size			
(1)	(2)		(3)=(1)x(2)
Number of Audit Committee Members	Number of Firms	Percentage of Firms	Total Audit Committee Members
One	1	0.4	1
Two	7	2.8	14
Three	57	23.2	171
Four	62	25.2	248
Five	58	23.6	290
Six	41	16.7	246
Seven	9	3.7	63
Eight	5	2.0	40
Nine	2	0.8	18
Eleven	3	1.2	33
Seventeen	1	0.4	17

Table 2							
External Auditor Selected or Retained by Firm and External Auditor Employed by Committee Members' Primary Employers							
Firm's Auditor	External Auditor used by Audit Committee Members' Primary Employers						
	AA	EY	CL	DT	PM	PW	TOTAL
AA	**25**	13	15	13	9	17	92
EY	20	**33**	26	16	15	27	137
CL	8	21	**26**	16	19	9	99
DT	7	13	10	**9**	2	7	48
PM	7	11	8	7	**8**	4	45
PW	16	17	15	9	11	**29**	97
Total	83	108	100	70	64	93	518

NOTE: In Table 2, if there is no association between the firm's external auditor and the external auditor used by the committee member's primary employer, the counts would be:

Firm's Auditor	Table 2 (continued) External Auditor for Audit Committee Members' Primary Employer						
	AA	EY	CL	DT	PM	PW	TOTAL
AA	14.74	19.18	17.76	12.43	11.37	16.52	92
EY	21.95	28.56	26.45	18.51	16.93	24.60	137
CL	15.86	20.64	19.11	13.38	12.23	17.77	99
DT	7.69	10.01	9.27	6.49	5.93	8.62	48
PM	7.21	9.38	8.69	6.08	5.56	8.08	45
PW	15.54	20.22	18.73	13.11	11.99	17.42	97
Total	83	108	100	70	64	93	518

AA:
Arthur Andersen & Co.
EY:
Ernst & Young
CL:
Coopers & Lybrand
DT:
Deloitte & Touche
PM:
KPMG Peat Marwick
PW:
Price Waterhouse

diagonal of the matrix from upper left to lower right are higher for the actual employment count (upper table) than for the expected count (lower table), which is developed from the null hypothesis of statistical independence between the choice of external auditor used by the committee member's primary employer and the selected or retained external auditor for the firm. Hence, a higher incidence that a Big Six audit firm is selected or retained when the committee member's primary employer selects or retains that same audit firm is seen. Evidence of a higher incidence of matching between the external auditor and the auditor employed by a committee member's primary employer than would be expected from random events alone was statistically detected, but other factors may help exaggerate this circumstance.

Organizational theory suggests that boundary spanning groups in large firms seek transactions with firms possessing a similar informational or a familiar organizational structure to reduce perceived risk (Fennell and Alexander, 1987). The statistical test based on the individual committee member's relationship to an auditor through his/her primary employer confirms this observation. However, since the entire committee, rather than an individual member alone, influences the decision to select or retain the external auditor, factors of the audit committee's composition that may be associated with the trend toward selecting or retaining a familiar auditor and the external auditor's market share associated with that outcome were examined.

Cross-sectional Predictability for Auditor Choice

Similarities or differences of individual audit committee member's backgrounds can influence his/her recommendations. One may expect frequent matched correspondences (between the choice for retained or selected external auditors compared to the audit firm used by any audit committee member's primary employer) if most committee members share a relationship to the same audit firm through their primary employers. Committee members may believe they can reduce perceived risk by recommending the selection or retention of an audit firm with whom they are familiar through primary employer relationships. External observers may view this as a bias although boundary spanning groups often make the choice toward the familiar (in order to reduce risk).

The sample of 246 firms contained 53 companies with "consensus" auditors, where most of the company's audit committee members were primarily employed by companies using the same external auditor. Consensus here indicates that the retained or selected external auditor is the same Big Six auditor used by the primary employers of more than half of the audit committee members per sampling unit. The remaining 193 selected or retained auditors are called "non-consensus" auditors.

Research on other boundary spanning groups has found that the groups often purchase from firms with which they have previously established relationships (At-Twaijri and Montanari, 1989). For audit committees, this situation would be confirmed is an unusually high incidence occurs in which the selected or retained external auditor matches the one used by a committee member's primary employer. The issue of possible associations between the audit committee composition and the external audit firm was examined by statistically testing whether factors such as audit committee composition are associated with a trend toward some familiar informational or organizational structure. Since the tendency may be stronger for consensus audit cases, both consensus and non-consensus cases were examined separately from the overall analysis.

Discriminant Analysis

Discriminant analysis is a multivariate statistical methodology that reduces a set of multiple measurements on one or more variables into a linear composite with values that maximally distinguish membership between two or more groups.

The general functional form of a model can be given as:

$$Z = c + b_1 X_1 + b_2 X_2 + b_3 X_3 + \ldots + b_n X_n \qquad (1)$$

where Z is the score which classifies observations into groups, the X_i are independent variables, the coefficients b_i are the discriminant weights and c is a constant or intercept term. Discriminant analysis essentially takes the independent variables (X_i's) as measured for each of two groups and derives a Z-composite score such that the scores of the groups have a minimum of overlap. Kleinbaum, Kupper and Muller (1988), Anderson (1958), and

Stuart and Ord (1991) provide a mathematical background for discriminant analysis, and Nichols (1987), Koh and Killough (1990), Bricker (1989), Baldwin and Glezen (1992), and others have previously applied this technique to perform audit research.

Discriminant analysis is a branch of the general linear model that includes multiple linear regression. Other boundary spanning studies (Bartunek and Reynolds, 1983; Dollinger, 1984; and At-Twaijur and Montanari, 1989) employed multiple linear regression in their empirical analysis.

One means of detecting whether a trend toward the familiar informational or organizational structure exists is by measuring how often the external auditor is the same one that is employed by at least one committee members' primary employer. For the 246 firms in the sample, stepwise discriminant analysis was used to determine which (if any) audit committee composition factor or characteristic of the external auditors will yield the statistically significant capability to discriminate between two groups:

NO MATCH: firms in which the selected or retained auditor is not the same auditor as the primary employer of any audit committee member.

MATCH: firms in which the selected or retained auditor is the same auditor for the primary employer of at least one audit committee member.

A higher instance of matches than can be explained by random variation in the earlier analysis was found. In this section, the focus is not directly in the forecasting version of model (1), but in detecting statistically which variables (X_i's) enter the equation or discriminate between a match compared to no match. In order to investigate which factors concerning audit committee composition or the external auditor contribute to separating the groups NO MATCH or MATCH, the authors consider constructing independent variables (X's) by considering the following categories:

Effect of Audit Committee Size. Fennell and Alexander (1987) found increased predictability in choices involving external purchases or linkages as the size of a hospital's governing board increased. Larger boards were associated with perceptions of a more stringent regulatory environment and strategies to reduce perceived risk. Similarly, larger audit committees may be less flexible and seek to reduce perceived risk by selecting or retaining external auditors with an established or familiar informational or organizational structure. As audit committee size increases, a tendency may exist for the retained or selected auditor to match with one employed by an audit committee member's primary employer. If matches occur more frequently than would be predicted by random probability theory when the size of non-consensus audit committees increases, then stronger support exists for the committee size effect.

Familiarity. Leifer and Delbecg (1978) suggest that boundary spanners seek to protect the entity from environmental stress noting, for example, that purchasing strategies often consider only limited choices and select goods or services from well established firms. If a substantial number or a proportion of audit committee members is acquainted with the informational structure of an external auditor firm that their primary employer uses, the committee may more likely retain or select the same external auditor. Under a blind selection process, audit firms would have equal probabilities of being selected or retained.

However, under the familiarity concept, as the proportion of audit committee members whose primary employers use any Big Six audit firm rises, so too will the likelihood that the selected or retained auditor will match the one used by some audit committee member's primary employer. Pincus, Rusbarsky and Wong (1989) detected an association between the proportion of corporate outside directors and the voluntary formation of audit committees of NASDAQ firms. They indicated that outside directors may seek to reduce information asymmetry between the external auditor and the client firm in order to limit personal liability or to address potential agency cost implications.

Dominant Market Share. Katz and Kahn (1978) suggest that the role of boundary spanning groups is to relate the organization to its larger community or social system. One result of this responsibility is a tendency to choose market leaders or established goods or services on the grounds of higher quality and reliability. Larger or more established CPA firms may advertise their services to the audit committee with this theme; hence, matches may occur more often for audit firms with larger market shares.

Based on these general factors from the boundary spanning literature, the following independent or X_i variables (measured for each firm in our sample) were investigated:

X_1: the size (or number of members) of the audit committee.[4]

X_2: the number of audit committee members whose primary employer use any Big Six auditor.[4]

X_3: the proportion of audit committee members whose primary employer uses any Big Six Auditor.[4]

X_4: the industry market share for the external auditor selected or retained by the firm.[5]

The dummy variables for the external audit firms will take on value 1 for the named firm and 0 for any other firm (e.g., the dummy variable for Arthur Andersen is defined as:

AA = 1 if Arthur Andersen is selected or retained for the firm,
AA = 0 if any firm other than Arthur Andersen is selected or retained for the firm.

Dummy variables were defined for Arthur Andersen (AA), Coopers & Lybrand (CL), Ernst & Young (EY), Deloitte & Touche (DT), Peat Marwick (PM) and Price Waterhouse (PW). These dummy variables allow the inclusion of the qualitative effect of differing Big Six audit firms with respect to detecting if they are statistically influential in discriminating between membership in the groups NO MATCH and MATCH—the Y variable in equation (1). Johnson and Wichern (1982) and Kleinbaum, Kupper and Muller (1988) provide details about the use of dummy variables. Symbols for the dummy variables are the same as those given in Table 2.

The variables X_1, X_2 and X_3 may be co-linear. Using dummy variables can confound the discriminant analysis approach, and a direct discriminant or logistic regression could yield biased error estimates. Since the authors sought to detect which variables are related

to the discrimination of the match and the no match groups, the stepwise methodology of Belsley, Kuh and Welsch (1980), Cohen (1991) and O'Gorman and Woolson (1991) was used to improve the variable selection process.

The stepwise discriminant analysis was conducted separately for all 246 firms, the substrata for 53 consensus audit committee firms and the 193 non-consensus audit committee firms.[6] Table 3 displays the mean value for each independent variable (X variable and dummy variables) in the NO MATCH and MATCH groups to compare these two groups. For the entire sample of 246 firms, the variables detected as statistically significant predictors with respect to whether the selected or retained auditor will be the same one used by at least one audit committee member's primary employer were X_3, the proportion of audit committee members whose primary employers use a Big Six auditor and the dummy variables for CL. The selection of significant variables was obtained using the step-wise discriminant analysis methodology, and the mean values reported in Table 3 are only used to illustrate the change in mean level of the independent variable associated with the MATCH and NO MATCH groups. The mean values may be fairly close when the independent variable is not a discriminator between the MATCH and NO MATCH groups. However, the difference in mean values would be considered statistically significant for independent variables selected for inclusion during the stepwise discriminant algorithmic procedure.

Table 3 shows that the proportion of committee members in which the primary employer's auditor is any Big Six auditor averages 55 percent for audit committees in which the external auditor is the same as a committee member's primary employer's auditor (MATCH group). By contrast, the proportion of audit committee members whose primary employer uses any Big Six auditor averages 35 percent for firms in which the selected or retained auditor differs from the external auditor for the primary employer of any committee member (NO MATCH group); therefore, as the proportion of committee members with primary employers using Big Six auditors increases, a higher probability that the selected or retained auditor will match the external auditor for an audit committee member's primary employer's external auditor is apparent. The greater the proportion of audit committee members with affiliations to a Big Six firm through their primary employers, the more likely the selected or retained auditor will be one employed by a committee member's primary employer.

The dummy variable for CL is significant, and the higher mean proportion (.25) for the MATCH group indicates that, on average, 25 percent of audit committees selecting or retaining the same auditor as the external auditor for at least one committee member's primary employer use CL. This proportion falls to 14 percent of committees selecting or retaining CL in the group in which the selected or retained auditor differs from the external auditor for the primary employer of any audit committee member (the NO MATCH group); therefore, when the selected or retained external auditor coincides with at least one committee member's primary employer, CL has a higher incidence of being the selected or retained auditor than expected under a random chance model.

Table 3

Discriminant Analysis of 246 NYSE listed firms (1987)

	ALL (246) MEAN			CONSENSUS (53) MEAN			NON-CONSENSUS (193) MEAN		
	No Match		Match	No Match		Match	No Match		Match
X_1	4.47		4.46	5.09		4.40	4.32		4.48
X_2	1.62		2.40	3.06		3.15	1.26		2.16
X_3	0.35	***	0.55	0.61	*	0.71	0.28	***	0.50
X_4	17.10		16.71	17.29		14.98	17.05		17.30
AA	0.20		0.19	0.12		0.20	0.22		0.19
CL	0.14	*	0.25	0.09		0.15	0.15	*	0.29
PW	0.16		0.20	0.18	*	0.40	0.15		0.14
EY	0.25		0.20	0.33		0.20	0.22		0.21
PM	0.10		0.07	0.09		0.05	0.10		0.08
DT	0.13		0.07	0.18	*	0.00	0.12		0.10

No Match:
firms where the selected or retained auditor is not the same as the external auditor employed by any audit committee member's primary employer
Match:
firms where the selected or retained auditor is the same as the external auditor employed by at least one audit committee member's primary employer
X_1: committee size
X_2: Number of audit committee members whose primary employer uses any Big Six audit firm
X_3: Proportion of audit committee members whose primary employer uses a Big Six auditor
X_4: market share (%) of the retained or selected external auditor
AA: Arthur Andersen proportion CL: Coopers & Lybrand proportion DT: Deloitte & Touche proportion
EY: Ernst & Young proportion PM: KPMG Peat Marwick proportion PW: Price Waterhouse proportion
* signif. $p < .10$
** signif. $p < .05$
*** signif. $p < .01$ ( ) denotes sample size

For both the consensus and non-consensus subsamples, the X_3 variable is a statistically significant discriminator between the MATCH and the NO MATCH groups, which aligns with the inference of the earlier analysis involving the entire sample of 246 firms. The dummy variable for CL is also still a significant discriminator between the MATCH and the NO MATCH groups inside the non-consensus sample with the same directional inference.

While the sample size is small, some evidence exists for PW and DT as discriminators between the two groups for consensus committees. PW has a higher than random chance of being the selected or retained external auditor when a match exists between the external auditor and the auditor employed by at least one audit committee member's primary employer. On the other hand, there is a higher likelihood that DT is the selected or retained auditor when the external auditor is not the same as any employed by some audit committee members' primary employer.

Industry Effects

Schwab, Ungson and Brown (1985) found evidence of industry specific behavior for boundary spanning groups. In order to investigate this circumstance, the 246 firms of the study were divided into the following industry categories:

1. Manufacturing
2. Distribution and Retail
3. Financial Services
4. Telecommunications and Public Utilities
5. Oil & Gas Extraction
6. Health Care
7. Other Industries

The sample size available to compare the NO MATCH and the MATCH groups for the stepwise discriminant analysis model (1) was adequate for analysis only in manufacturing, finance and the other industries categories. The summary results, in a form analogous to the format for Table 3, appear in Table 4. The independent variable X_3 is a significant discriminator between groups for NO MATCH and MATCH for both manufacturing and the other industries category. The interpretation of the effect of X_3 is similar to what was observed in the previous analysis of all 246 firms.

Table 4

Discriminant Analysis within the Industry Category

	MANUFACTURING (125) MEAN			FINANCE (15) MEAN			OTHER IND. (39) MEAN		
	No Match		Match	No Match		Match	No Match		Match
X_1	4.38		4.53	4.25		4.86	4.37		4.07
X_2	1.55		2.76	1.75		2.57	1.50		2.13
X_3	0.33	***	0.62	0.45		0.55	0.34	***	0.53
X_4	16.45		15.49	18.26		19.47	19.40	*	16.33
AA	0.17		0.16	0.13		0.00	0.21		0.20
CL	0.14	*	0.26	0.00	*	0.29	0.08		0.20
PW	0.20		0.29	0.00		0.14	0.08		0.20
EY	0.23		0.16	0.63		0.43	0.33		0.20
PM	0.16		0.08	0.00		0.14	0.08		0.13
DT	0.08		0.05	0.25		0.00	0.21		0.07

Note: See Table 3 for details of abbreviations.

The dummy variable for CL was a significant discriminator for the manufacturing and the financial services' industries with an interpretation that follows the same direction as the earlier analysis of all 246 firms. Only the new variable, X_4, for the market share of the external auditor in the other industry category entered as a discriminator, although the mean values of the X_4 variable for the two groups (NO MATCH and MATCH) are not in the expected direction. In this case, the market share of the external auditor is lower for the group where the retained or selected auditor is the same as the external auditor for some committee member's primary employer (MATCH group). However, the other industry category is a collection of less homogeneous businesses (compared to the other six categories), and the relatively small sample size could influence this result.

The discriminant results of Table 4 indicate the significant discriminators (X_i variables) that predict membership in the two groups, NO MATCH and MATCH, differ among the industry groups. This hypothesis can be directly established using Analysis of Covariance—a statistical methodology that tests whether the linear models (estimated inside different strata or subsamples) are the same or whether the coefficients of the X_i variables of model (1) differ (Johnson and Wichern, 1982; Stuart and Ord, 1992). The results of the overall Analysis of Covariance test indicated significant differences in b_i coefficients of the discriminant models (1), estimated within the manufacturing, finance and other industry categories ($p<.06$). This result also validates the inferences from Table 4 and statistically establishes the presence of industry specific effects for the explanation of the association between the selected or retained auditor for the firm compared to the characteristics of the audit committee composition.

In general, the selection or retention of the auditor exhibits statistically significant predictable behavior based on variables for the audit committee membership: a high proportion of audit committee members whose primary employers use any Big Six auditor corresponds to an increased incidence of a match between the selected or retained auditor and some committee member's primary employer's auditor. This inference corresponds with the familiarity argument for boundary spanning groups and does not support the issue of committee members independently recommending audit firms. The direction of these inferences generally agree with the behavior exhibited by other boundary spanning groups.

EXAMINING AUDITOR SWITCHING DECISIONS

As stated above, audit committees seldom switch auditors. However, many researchers, including Johnson and Lys (1990), Haskins and Williams (1990), Danos and Eichenseher (1982), Eichenseher and Shields (1983), and Eichenseher and Danos (1981), suggest that CPA firms seek to increase their overall market share by gaining competitive advantages in certain niche markets. Hence, in order to focus on audit committees' behavior when firms switch auditors, the researchers enlarged the sampling frame from the 246 companies in 1987 to consider a time series study of 121 NYSE-listed companies that switched auditors from 1984-1987. The additional sample provides an opportunity to check earlier conclusions. The stepwise discriminant function was estimated to find any statistically

significant variables for these 121 companies using the same grouping categories (NO MATCH and MATCH) and the same set of independent variables defined in the earlier section.

Table 5 summarizes the mean values of the independent (X_i) variables for comparing groups (NO MATCH to MATCH) along with an indication of which of these independent variables are statistically significant discriminators between the two groups. The analysis was done for all 121 companies as well as the 33 consensus subsample and the 88 non-consensus subsample. The results are not identical to those in the previous section, but the same type of boundary spanning group behavior is detected.

Table 5

Discriminant Analysis of NYSE-Listed Firms That Switched Auditors (1984-1987)

	All (121)			Consensus (33)			Non-Consensus (88)		
	mean			mean			mean		
	No Match		Match	No Match		Match	No Match		Match
X_1	3.31		3.56	3.04		3.38	3.39		3.59
X_2	0.62		1.65	0.88		1.75	0.53		1.58
X_3	0.19	***	0.47	0.32	**	0.57	0.15	***	0.41
X_4	17.60		16.00	16.56		15.58	17.94		16.26
AA	0.14		0.25	0.04	**	0.38	0.17		0.17
CL	0.19		0.15	0.16	*	0.25	0.20		0.08
PW	0.12		0.15	0.12		0.13	0.12		0.17
EY	0.21		0.25	0.20		0.13	0.21		0.33
PM	0.18		0.05	0.20		0.00	0.17		0.08
DT	0.16		0.10	0.24		0.13	0.13		0.08

Note: See Table 3 for details of abbreviations.

The proportion of committee members whose primary employer uses a Big Six auditor (X_3) is a significant discriminator to distinguish between the NO MATCH and MATCH groups for all samples. Again, a decision outcome toward the selection of a familiar or established information structure is seen.

The dummy variable for Arthur Andersen (AA) is a significant discriminator between the groups for NO MATCH compared to MATCH in the consensus sample. For firms in which the external auditor is the same as that employed by an audit committee member's primary employer (MATCH group), there is a greater likelihood that AA will be the selected or retained auditor. CL is also a significant discriminator in this subsample, and the inference is in alignment with the earlier study of 246 firms that did not switch auditors. Overall, committee composition characteristics can be associated with the incidence that

certain auditors are selected or retained and that certain auditor firms show a higher incidence of being selected or retained as the external auditor.

Effect of Auditor's Market Share

The earlier analysis examines the association between the committee's characteristics and those of the successor auditor for firms that switched auditors but did not address any comparisons of the predecessor and successor external auditors when a switch occurs. If boundary spanning groups tend to select market leaders, it might be expected that the successor external auditor will exhibit a higher market share in the firm's industry. Table 6 displays the mean market share for predecessor and successor auditors in the sample of firms that switched auditors during 1984 through 1987. A paired difference Student t-test indicates that market share is significantly higher for the successor than the predecessor ($p<.001$). Again, the empirical evidence agrees with the general behavior that has been detected for other boundary spanning groups.

Table 6

Paired Comparison of Market Share for Predecessor and Successor Auditors of the 121 NYSE-Listed Firms That Switched Auditors (1984-1987)

	Market Share	
Auditor	Mean	Standard Deviation
Predecessor	13.204	8.0196
Successor	17.328	5.6651

Discriminating Between Switch and No Switch Decisions

Cottel and Rankin's (1989) study of the National Association of Securities Dealers-listed companies found some switching to Big Eight firms but attributed such shifts to company management attitudes, the Foreign Corrupt Practices Act of 1977, legal pressure, and heightened industry competitiveness rather than to audit firms' competitive strategies. Eichenseher and Shields (1985) hypothesize a direct correlation between audit committee formation and retention of Big Eight firms, primarily motivated by the belief in the Big Eight firms' expertise and management's perceived legal risk aversion.

Boundary spanning behavior studies infer that the successor auditor may be more familiar to the committee members or be more established in the firm's industry group. This suggests that committee composition variables such as X_1 (audit committee size), X_2 (the number of audit committee members whose primary employer uses a Big Six audit firm)

or X_3 (the proportion of audit committee members whose primary employer uses a Big Six audit firm) might discriminate between firms that do and do not switch auditors.

To test this hypothesis, the authors compared the original sample of 246 firms with all 121 NYSE-listed firms that switched auditors between 1984-1988. For firms that switched auditors, the designated the successor auditor as the external auditor, basing the analysis on finding which variables discriminate between the two groups:

SWITCH: firms that switched auditors
NO SWITCH: firms that did not switch auditors.

Table 7 presents the means of independent variable values within the SWITCH and NO SWITCH groups, along with an indication of which of these X_i variables are significant discriminators between the two groups. While the results do not establish causality, the data demonstrate certain statistical associations: larger committees are less likely to switch, and companies that do not switch are more likely to be associated with larger sized audit committees. A reduced likelihood of an auditor switch also exists as the proportion of audit committee members whose primary employers use a Big Six external auditor increases. Some audit firm specific evidence exists: Peat Marwick (PM) had a higher incidence as the successor auditor for those firms that switched auditors.

Table 7

Analysis to Detect Factors Which Discriminate Between the Switch and No-switch Outcomes for the External Auditor

	Outcome		
	Switch (121)		No Switch (246)
X_1	3.34	***	4.47
X_2	0.79		1.88
X_3	0.24	***	0.42
X_4	17.30		17.00
AA	0.16		0.20
CL	0.18		0.18
PW	0.12		0.17
EY	0.21	*	0.23
PM	0.16		0.09
DT	0.15		0.11

Note: See Table 3 for details of abbreviations.

CONCLUSIONS

Audit committees function as boundary spanning groups that facilitate interorganizational commerce and information acquisition. Studies on other boundary spanning groups find that large firms' decision behaviors are associated with certain identifiable factors. Firms tend to reduce perceived risk by selecting goods or services from established brands, market leaders, or suppliers with a similar informational or organizational structure. Evidence was found that for NYSE-listed firms the selection or retention of an external auditor is statistically related to audit committee composition characteristics. In addition, market leaders or large audit firms are more likely to be selected or retained as the external auditor. In addition to these behaviors, there are specialized effects for certain industries such as manufacturing or finance. The effect of an auditor firm's market share in an industry exhibits a statistically significant effect in the cases in which an auditor switch occurs. Although auditor switches occur infrequently, it was found that the successor auditor has a larger market share in the industry than the predecessor auditor. Overall, the findings indicate that the decision outcome for the selection or retention of external auditors by large firms fits in the same behavioral framework previously established for other boundary spanning roles.

ENDNOTES

[1]For example, four of the nine "Expectations Gap" SASs issued in 1988 involve audit committees. SAS Nos. 53, 54, 60 and 61 require reporting such matters as errors and irregularities, illegal acts, internal control structure matters and other sensitive audit data to the audit committee. More recently issued SASs (Nos. 65, 66 and 71) continue to emphasize the audit committee's important role in the audit process.

[2]The researchers sampled NYSE companies,which must use audit committees. They also deleted three selected companies whose securities were not audited by the Big Eight, which account for 96.2 percent of the entities whose securities are listed on the NYSE (Wooten et al., 1990). Next, in order to ascertain how many audit committee members have primary employer auditors (e.g., college professors and independent investors have no such auditors), the researchers analyzed the sampled companies' annual reports, **Who Audits America** and the **Disclosure** data base. (Since the Big Eight firms merged into the Big Six in 1989, the results in Table II were configured into the Big Six.)

[3]To ascertain if the observed chi-square values resulted from deviations from expected on- or off-diagonal effects or both, the authors used Hotelling's T^2 statistic to detect mean differences between multi-variate vectors in two populations (Johnson and Wichern, 1982). This test detected if statistical relationships along the diagonal differed significantly from the expected distribution for the row in Table 2. Relations along the diagonal indicate the association between the selected or retained auditor and the auditor employed by the

committee member's primary employer. That is, committee members tend to select some firms more than others. The computed T^2 value of 22.048 ($p.<.0054$) implies that means differ for some auditors. After applying a univariate Student t-test statistic for each audit firm, significant ($p.<.05$) differences were detected in the means for the CPA firms with three largest diagonal values—Arthur Andersen, Coopers & Lybrand, and Price Waterhouse (PW).

[4]The full committee size was used to define these variables. Educators, consultants and retirees were included in the count.

[5]To obtain these data, the researchers employed the Big Six industry market share statistics provided by a Big Six Audit Firm as of December 31, 1988. (No Big Six firm had available data for 1987). The Big Eight CPA firms merged into the Big Six shortly after the data were collected, presumably to reduce overhead expenses and increase their specialized services. As boundary spanners, audit committees should be even more likely to select CPA firms that are industry-wide market leaders following the mergers. This shrinkage of the number of major CPA firms should also increase the likelihood that individual audit committee members have business relationships with particular CPA firms (since fewer competitors now exist). While the data span the transition period, it is hypothesized that the effect on the decision to retain or select an external auditor was not dramatically altered during the one year time span of the study and that the effects of the mergers probably took more time for the deep structural changes to emerge.

[6]Discriminant analysis was done using the University of Michigan's (Fox and Guire, 1976) statistical analysis software: Michigan Interactive Data Analysis (MIDAS). Details of MIDAS are given in the documentation guide listed in the references and two group discriminant analysis is developed in Kleinbaum, Kupper and Muller (1988) in Chapter 23. The stepwise procedure and variable selection method applied was based on the work done by Cohen (1991) and O'Gorman and Woolson (1991).

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