

**Mandatory Disclosure and the
Joint Sourcing of Audit and Management Advisory Services**

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Abstract

This paper contributes to the ongoing debate about the consequences of mandatory disclosure. The question considered is whether mandating the disclosure of auditor-sourced management advisory services advances the government's interest in ensuring appropriate consideration is given to the influence of joint sourcing on auditor independence. The evidence is consistent with disclosure substantively altering managements' joint-sourcing decisions in a manner consistent with investors' expressed preferences. An implication of the reported result is that mandatory disclosure might achieve the policy objective of ensuring auditor independence without resorting to the one-size-fits-all solution of denying all companies access to potentially valuable jointly-sourced services.

Mandatory Disclosure and the Joint Sourcing of Audit and Management Advisory Services

1. Introduction

The largest part of the legal contribution to corporate governance is federal law with Securities and Exchange Commission (SEC) disclosure regulations the primary tool (Thompson and Sale 2003). There is little evidence on the alleged costs and benefits of disclosure regulation generally (Benston 1973; Healy and Palepu 2001; Bushee and Leuz 2003), let alone the costs and benefits of mandatory disclosure in settings where asserted conflicts of interest potentially harm a third-party. This is surprising given the central role regulation plays in disclosure and the limitations of the economic arguments supporting mandatory disclosure (Grossman and Hart 1980; Dye 1990; Beaver 1998; Verrecchia 2001). The consequences of mandatory disclosure continue to be debated (see, e.g., Easterbook and Fishchel 1984, Coffee 1984, and Viscusi, Vernon, and Harrington 2000).

This paper contributes to the debate by examining the consequences of an SEC mandate that companies disclose the magnitude (expressed as a percentage of the audit fee) and scope of services sourced with their incumbent auditor. The regulation is Accounting Series Release No. 250 (ASR 250): *Disclosure of Relationships with Independent Public Accountants*, effective for the years 1979 through 1981. The question considered is whether mandating disclosure advances the government's interest of ensuring appropriate consideration is given to the influence of jointly sourced audit and nonaudit services on auditor independence. Data from 8,038 annual proxy statements for the entire effective period of ASR 250 as well as financial statement and stock price data are used to test the veracity of three claims: (i) the disclosure regime allayed fears or deterred future abuse (called monitoring), (ii) the disclosure regime cast an unwarranted veil of suspicion management avoided by substituting away from their incumbent auditor to a second-best provider of management advisory services (called unwarranted curtailment), and (iii) the disclosure regime aligned managements' purchase decisions with investors' preferences (called investor protection). The evidence is consistent with the SEC's disclosure policy substantively altering

managements' joint-sourcing decisions in a manner consistent with the claim of investor protection.

The management consulting divisions of the Big 8 public accounting firms made significant inroads into the traditional management consulting market in the mid 1960s. Their presence immediately sparked controversy. The public debate focused on how to manage the inevitable tensions that arise as the profession moved from the 1930's caricature of public accounting where the external audit service is the principle business and primary concern of audit firm management to a multi-product professional service business model. Auditor independence, if not in fact then in appearance, is said to be more elusive in this climate, jeopardizing the level of public confidence in the integrity of audited financial statements that support active capital markets. To no surprise, a contributor to the debate was the traditional consulting industry, an industry openly concerned about losing market share to the public accounting industry (Hayes 1979).

The issues and dialogue changed little over the last three decades. In the late 1990s, the SEC responded to widespread dissatisfaction with the state of public accounting self-regulation, in part, by again mandating proxy statement disclosure of management advisory services (MAS) sourced with the incumbent auditor (SEC 2000). The analyses reported in this paper are based on disclosures made under ASR 250 rather than disclosures made under the more recent regime. This design choice is motivated in part by the fact that far fewer contemporaneous events occurred during the earlier period and by measurement issues.¹

A two step empirical approach is used. The first examines the distributional characteristics of the primary ASR 250 disclosure, the percentage relationship MAS fees bear to the audit fee, emphasizing year-to-year trends. The principle result is an economically meaningful decline in the percentage of companies willing to jointly source management advisory services, but not (or modestly) the relative amount purchasers purchase. This tentative result motivates the structure of the second step.

The second step examines the association between investors' interpretations of the MAS fee ratios and managements' subsequent joint-sourcing decisions in a selection model that mimics the

descriptive results – management choosing whether to jointly source and how much. The test variable is the contemporaneous market model residual associated with the prior year MAS proxy disclosure. At the margin, investors’ reactions to the mandated disclosure are positively associated with managements’ subsequent purchases at two levels: the likelihood a company chose to jointly source audit and MAS and the overall (relative) purchase levels for the 14% of the sample that purchased “high” levels of MAS. The evidence is consistent with the disclosure regime substantively altering managements’ joint sourcing decisions with managers choosing among alternate suppliers, at least in part, in a manner consistent with investors’ expressed preferences. The data is consistent with the view that by mandating disclosure the SEC influences not just what managers say about their conduct, but conduct itself.

This result stands in contrast to studies that conclude the ASR 250 disclosure regime influenced neither the extent or mix of jointly-sourced nonaudit services (Scheiner 1984; SEC 1981), the SEC’s conclusion when rescinding ASR 250 that investors had shown little if any interest in the MAS disclosures (SEC 1982), and the American Institute of Certified Public Accountants’ (AICPA) position when lobbying against the most recent disclosure regime (SEC 2000). More generally, the paper contributes to a line of research on auditor independence that generally concludes investors do not share the scope-of-services concerns of regulators (Kinney 1999).

This paper also contributes to a broader literature. The issues associated with the joint sourcing of nonaudit services are like those in healthcare and medical research where patients and users of medical products are purportedly harmed by financial relationships between physicians and provider organizations and researchers and pharmaceutical companies. Politicians make laws governing people and corporations that contribute to their political campaigns. Analysts and underwriters coexisting in investment banking firms. A remedy considered in all these contexts is mandatory disclosure of the suspect financial relationship.

Research on the efficacy of mandatory disclosure offers few insights into these third-party settings. Mandated disclosure in the accounting literature is framed in terms of information differences

and conflicting incentives between managers and claimants with most of the literature focusing on managements' disclosure decisions within the context of available reporting options (Fields, Lys, and Vincent 2001), the capital market consequences of disclosure (Kothari 2001; Holthausen and Watts 2001), and in a few instances the imposition of very costly, extensive reporting requirements (Benston 1973; Bushee and Leuz 2003). Mandatory disclosure in the economics literature too is framed in two party settings, focusing primarily on health and safety regulation (Viscusi et al. 2000).² This paper is unique in terms of providing large-sample evidence about whether disclosure regulation affects behavior in settings where asserted conflicts of interest potentially harm a third-party.³

The remainder of the paper is organized as follows. Background information relevant to understanding the context of the study is provided in section 2. Three competing claimed consequences of the mandated disclosure regime are developed in section 3. The data gathering process and related descriptive statistics is described in section 4. The results of the first step of the empirical analyses, the distributional characteristics of the fee ratio disclosure, are presented in section 5. The results of the second step, the selection model, are presented in section 6. In section 7, the principal results are cast in terms of changes in the public accounting industry over the last 25 years and the efficacy of disclosure vis-a-vis other potential regulatory responses.

2. Background and Institutional Setting

2.1 Trends in the Consulting Industry

Management consulting in the United States began in the latter part of the nineteenth century, but did not prosper until the 1950s and 1960s when revenues grew at 10% percent annually reaching more than \$2 billion by 1970. Growth accelerated during the mid-70s to an annual rate of 20%, fueled primarily by a myriad of new government regulations (e.g., the Foreign Corrupt Practices Act and the Employee Retirement Income Security Act), a revolution in information processing, and growth in international trade (Greiner and Metzger 1983). The market became increasingly competitive. By the

mid-1970s even leading firms found it necessary to advertise, something historically considered an anathema to the consulting industry (Business Week 1979).

A new source of competition for the traditional management consultants arose in the 1970s – the management consulting divisions of the Big 8 public accounting firms (Payne 1986). Their information system expertise, intimate understanding of SEC rules, global affiliations, and access to management enabled them to capitalize on trends in the consulting industry (Business Week 1979). By 1978, seven of the Big 8 firms were among the top fifteen management consultants. In 1982, Arthur Andersen became the largest U.S. management consulting firm with consulting revenues of \$218 million followed by Booz-Allen and McKinsey with revenues of \$210 million and \$145 million, respectively (Consulting News 1983).

2.2 Scrutiny of the Public Accounting Industry

2.2.1 Unfair Competition

The management consulting market was characterized by many specialities and firms competing across the many specialities (Fuchs 1975). Competition was particularly fierce in information system design and implementation, a market expected to double between 1979 and 1983. Data processing companies feared public accounting firms, firms that were expected to expand significantly after already making substantial inroads in the market (Smith 1975). In an interview for the New York Times, an officer of the Association of Data Processing Service Organizations stated public accounting firms' audit franchise gives them an unfair competitive advantage and creates the potential for stealing trade secrets during the course of their audits (Hayes 1979).⁴ "We think their role should be limited to the audit functions and to recommend other professional services, not providing them on their own ... There is nothing in their charter that says they should be in the management consulting business" (D4). In a May 1979 speech to the Association, Senator Thomas Eagleton, chairman of the Subcommittee on Governmental Efficiency, stated he shared their view and that accounting firms should be barred from

selling non-accounting services to their audit clients. He pledged to “... continue the work involving the regulatory aspects of the accounting profession ...” begun by Congress.

2.2.2 Auditor Independence

The audit profession came under intense scrutiny in the mid-1970s as a result of numerous financial frauds (e.g., Penn Central) and concerns about widespread corporate improprieties. Congress and the accounting profession reexamined the roles and responsibilities of public accountants. Each focused on the independence of auditors and, among other things, the recent increase in the practice of jointly sourcing audit and MAS. A U.S. Senate Subcommittee known as the Metcalf Committee took the lead, concluding joint sourcing can create a conflict of interest and accountants should only perform services directly related to accounting (Metcalf 1976 and 1977). Congress and the SEC posited pre-ASR 250 that the joint sourcing of MAS was a widespread practice and can, by its nature or dollar amount, impair auditor independence (Metcalf 1976; SEC 1977). Legislation was introduced which would have required the SEC to formulate rules requiring public accounting firms to divest all services that cause a conflict of interest (the Public Accounting Regulatory Act of 1978). The AICPA’s Cohen Commission offered a different view, concluding there was no evidence joint sourcing compromises auditor independence and that it benefits investors via an improved audit function and reduced transaction costs that, in turn, increase purchases of needed professional services (Cohen 1978).

2.3 Regulatory Response

The SEC responded by requesting comments on the effects of joint sourcing on auditor independence, the banning of certain services, and a proposal to require disclosure of nonaudit services (SEC 1977). After reviewing the comments received, the SEC adopted Accounting Series Release No. 250: *Disclosure of Relationships with Independent Public Accountant* effective September 30, 1978 (SEC 1978). This release required public companies to disclose in their annual proxy statements (i) the total nonaudit service fees expressed as a percentage of the audit fee, (ii) each nonaudit service fee expressed

as a percentage of the audit fee, and (iii) whether nonaudit services were approved by the audit committee or board of directors in advance of their purchase. The SEC stated in ASR 250 the purpose of the disclosure requirement was to permit investors to better evaluate companies' relationships with their auditors and compile a data base from which to determine the need for further action. The SEC's response was more inline with the views of the public accounting profession than those of Congress or competing suppliers of management advisory services in large part because the public accounting profession assured the SEC it was capable of and committed to self regulation.⁵ Also, it was reluctant to proceed with a ban given its lack of data (SEC 1977).

ASR 250 was part of a flurry of regulatory initiatives during the Carter administration. A major deregulation effort began early in the Reagan administration (Viscusi et al 2000). Part of that effort was Accounting Series Release No. 296: *Relationships Between Registrants and Independent Auditors* wherein the SEC invited interested parties to comment on whether ASR 250 should be rescinded (SEC 1981). Comments fell into two camps: accountants and their clients opposing disclosure and competing suppliers supporting disclosure (SEC 1982; Antle, Griffen, Teece, and Williamson 1997). The result was Accounting Series Release No. 304: *Relationships Between Registrants and Independent Accountants* wherein the SEC rescinded ASR 250 effective February 1982 (SEC 1982). Addressing the motivations for ASR 250, the SEC concluded investors had shown little, if any, interest in the disclosure and considered sufficient for monitoring purposes the AICPA's SEC Practice Section's proposed reporting program.⁶ The 1977-80 Commissioner of the SEC explains "... this reversal in SEC policy is unusual and difficult to explain, except politically" (Karmel 2000, page 2).

3. Claims

Three claims are considered, distinguished by year-to-year changes in auditor-sourced MAS purchases. The null "no change" is labeled monitoring (section 3.1). Two alternative claims are consistent with a decline in joint sourcing – investor protection (section 3.2) and unwarranted curtailment

(section 3.3). Empirically, the disclosure regulation will be judged investor protection if managements' sourcing decisions are consistent with investors' expressed preferences and unwarranted curtailment absent such evidence.⁷

3.1 Monitoring

Analyses of ASR 250 data suggest few companies purchase “large” amounts of sensitive services from their auditors (SEC 1980; Scheiner 1984; Table 2). No association has been found between jointly-sourced MAS and stockholder auditor approval rates (Glezen and Millar 1985), auditor tenure (Beck, Frecka, and Solomon 1988), auditor switching (DeBerg, Kaplan, and Pany 1991), company ownership (Palmrose 1988), lawsuits (Palmrose 1999), and audit opinions (DeFond, Raghunandun, and Subramanyam 2002). These results are consistent with the view managements recognize the potential for sensitive or large amounts of (recurring) jointly-sourced services to impair auditor independence and, consequently, limit purchases *ex ante* (Parkash and Venable 1993; Firth 1997). In other words, there is no agency problem to solve.

To the extent these results are generalizable to the pre-ASR 250 period, regulation that has the effect of disturbing the existing equilibrium with companies substituting away from their incumbent auditor to a second best supplier would not be in the best interest of the intended beneficiary of the ASR 250, investors. The role of mandatory disclosure in this setting would not be to change sourcing decisions. Rather, its role would be to (i) collect baseline data to gauge the current level of the activity, (ii) allay suspicions and dispel concerns about potential conflicts of interest, and (iii) deter future excess (SEC 1977, 1978). The SEC in rescinding ASR 250 noted it continued to believe information about the joint sourcing of audit and MAS is important for monitoring purposes (SEC 1982).

3.2 Investor Protection

For whatever reason, pre-ASR 250 scant data was available on accounting firms generally let alone on the magnitude and scope of management-auditor financial relationships. This made it

particularly difficult for those not privy to management-auditor relationships to judge the extent of possible conflicts of interest. The ASR 250 proxy disclosures allowed regulators and investors to identify for the first time engagement-level (relative) fees and services without relying solely on general perceptions.⁸ The furor over the SEC's disclosure rules raised the suspicion there was much to hide and affirmed the significance of the mandated MAS disclosures (Karmel 2000). In other words, there is an agency problem to solve.

The promise of disclosure in such settings is to remove barriers to collective action, providing an opportunity for investors to exercise their corporate governance responsibilities without imposing significant costs on companies, disrupting market operations, or requiring a one-size-fits-all solution like a ban on joint sourcing (Beales, Craswell, and Salop 1981; Prevost and Wagster 1999; Viscusi et al. 2000). There are two forms of investor protection. One is consistent with a rational expectations view whereby empowering investors (and the SEC) causes managements to anticipate investor reaction to forthcoming mandated disclosures and adjust purchase patterns accordingly. The studies cited in section 3.1 are consistent with this view if the public debate described in section 2.2 gave management sufficient lead time to undo prior to the effective date of ASR 250 joint sourcing arrangements expected to be judged negatively. Mandated disclosure in this scenario has a (complete) deterrence effect. Empirically, this form of the claim of investor protection is indistinguishable from the claim of monitoring.

An alternate form of investor protection occurs when management pre-emption is incomplete. This characterization views regulating the timing and content of proxy disclosures as shedding light on suspect relationships, providing new information interested parties act on to ensure joint sourcing decisions reflect investors' interests (Stigler 1964; SEC 1977, 1981; Romano 1993). Substitution away from the incumbent auditor after the effective date of ASR 250 is viewed as managements not fully anticipating investor reaction to the disclosure of higher-than-expected MAS or not being able to undo ongoing projects in anticipation of the disclosure regime.

3.3 Unwarranted Curtailment

Palmrose (1986, 1988) documents post-ASR 250 a strong demand for jointly-sourced relative to competing-supplier-sourced MAS, suggesting incumbent auditors represent low cost suppliers and companies perceive they are better off in many cases with jointly-sourced services. Yet comments received in response to Accounting Series Release No. 264: *Interpretative Release to Accounting Matters: Scope of Services by Independent Accountants* described examples of companies severing existing auditor-sourced MAS engagements or not accepting new engagements simply to avoid SEC scrutiny or out of fear the SEC would question an auditor's independence after the fact based solely on ASR 250 proxy disclosures. Opponents of ASR 250 (predominately auditors) believed mandatory disclosure cast an unwarranted veil of suspicion management avoided by curtailing purchases of auditor-sourced MASs, depriving investors of the benefits associated with jointly-sourced MAS (SEC 1981). There is no agency problem to solve yet managements' exercise of undue caution upset the equilibrium in the consulting market with the second-best suppliers of MAS the primary beneficiary of the disclosure regulation instead of the investor. The rhetoric was couched in terms of management overreacting to the regulation.⁹ Nevertheless, such actions might be rational if the incumbent auditor and the next best rival are close and audit-related scope economies and transactions costs are small relative to expected legal costs, influence costs, and so on.¹⁰

4. Data Gathering Process and Related Descriptive Statistics

4.1 Sample Selection

Table 1, panel A, summarizes the sample selection procedure. There are 8,506 annual proxy statements compiled in the microfiche service SEC File (1988) for the entire effective period of ASR 250.¹¹ The base sample is the 8,038 proxies wherein companies provided the primary ASR 250 disclosure – the percentage relationship which the aggregate fees for all nonaudit services bear to the audit fee.¹² Compustat data is considered available if the industry code (Compustat item 'NAICS') is available,

yielding a sample of 5,406 observations where financial statement data and company and auditor characteristics are merged with the proxy statement data. Sufficient CRSP data to compute stock price reactions to ASR 250 disclosures are available for 4,179 observations. Roughly 25%, 35%, and 40% of the observations are from the years 1979, 1980, and 1981, respectively, regardless of sub-sample.¹³

The increasing percentage of observations by year reflects the expanding coverage of the SEC File service. In panel B, the sample is partitioned by year and company size (quintiles of 1980 total assets, Compustat item 'data6'). Companies in the 1979 sub-sample were larger than those in 1980 and 1981 with mean total assets of roughly \$1,322 million in 1979 and \$989 million in 1980 and 1981 combined ($p=.04$). This pattern indicates the microfiche service was adding smaller companies to the database during the effective period of ASR 250. Reported analyses control for company size and are replicated on the sub-sample of 936 companies (50% of the 1979 observations) with proxy data in all three years. Panel C presents the frequency of observations by industry. The industry composition of the sample is stable year to year and similar to that of companies tracked by Compustat in 1980. The current sample is more comprehensive than that used in prior studies of ASR 250 disclosures, studies confined to a limited time frame and the largest companies (e.g., SEC 1980 and Scheiner 1984).

4.2 Compilation of the Fee Ratio

Table 2, panel A, presents descriptive statistics for the distribution of the mandated aggregate fee ratio disclosure (i.e., “... the percentage relationship which the aggregate fees for all nonaudit services bear to the audit fee ...” (SEC 1978)). The mean (median) aggregate fee ratio declined from 29% (16%) in 1979 to roughly 23% (14%) in both 1980 and 1981 ($p < .001$). The fee ratio ranges from 0% to 4,077%, with a 99th percentile of roughly 190%. This skewness of the fee ratio distribution is evident in prior studies, indicating a relatively small number of companies account for a disproportionate amount of joint sourcing.

Companies were also required to “... describe each professional service provided by the principle

accountant ... and state the percentage relationship which the fee for each nonaudit service bears to the audit fee” (SEC 1978). ASR 250 did not specify the categories of service-types. As a result, proxy disclosures in some cases were vague and inconsistent between companies. That said, a coding scheme is developed that resulted in the eighteen categories.¹⁴ Untabulated results reveal the services most frequently provided were tax compliance (71%), acquisition-related (15%), and information systems-related (12%). Included in the list are services that have received considerable criticism – information system design and implementation (8%), actuarial services (1%), accounting method choice / valuation (5%), human resource consulting (4%), and expert services (3%). The fees for these services can be substantial. For example, the mean information design and implementation fee ratio conditional on purchasing the service is 47% and ranges to 738%.¹⁵

The mandated aggregate fee ratio disclosure is a more complete rendering of joint sourcing than the sum of the individual fee ratios. There are 2,833 instances (35% of the observations) where the aggregate minus the sum of the individual fee ratios does not equal zero, ranging from 920 (49%) instances in 1979 to 981 (29%) in 1981. Ninety-eight percent of the time the difference is positive. When negative, the difference reflects rounding. There are 340 instances (20%) where the sum of the individual fee ratios overstates the number of non-purchasers. Consequently, the primary variable is the mandated aggregate disclosure with one modification – it is reduced by the fee ratio for state, federal, and foreign tax filings.¹⁶ The resulting fee ratio is labeled MAS in all that follows. Table 2, panel B, presents descriptive statistics for the distribution of the MAS fee ratio. No MAS is purchased a majority of the time, indicating a need to consider the distribution of the fee ratio conditional on the purchase of MAS. The focus on MAS as opposed to aggregate fees is a consequence of the descriptive results reported in section 5 and is consistent with the rhetoric leading up to the passage of ASR 250 wherein the SEC stated in congressional testimony it was not concerned with the influence of tax compliance services on auditor independence (SEC 1980).

4.3 Fee Ratios by Auditor

Table 3 summarizes the number of observations, the frequency of providing services to audit clients, and average aggregate and MAS fee ratios for each Big 8 firm and for all other firms combined. Means and medians are conditional on a service being provided. Arthur Andersen contributes the largest number of observations, is the most frequent provider, and, on average, generates the largest fee ratio. The mean aggregate (MAS) fee ratio ranges from 20% (16%) for Deloitte Haskins & Sells to 51% (44%) for Arthur Andersen. Again, the means are much larger than the medians, suggesting a relatively small number of companies account for a disproportionate amount of the nonaudit service purchases. There is nothing distinctive about the service patterns for non-Big 8 firms. Arthur Andersen appears atypical, so will be a control variable in subsequent analyses.

5. Fee Ratios by Year

Table 4, panel A, is the frequency of both aggregate and MAS fee ratios by the level of the fee ratio and year.¹⁷ The frequency of companies choosing to source (aggregate) nonaudit services with their incumbent auditor did not change during the effective period of ASR 250 primarily because the frequency of companies sourcing tax compliance services with their incumbent auditor increased during the period (70% to 73%, $p=.04$). The level and trend in tax compliance services masks the trend in purchases of MAS services where the percentage of non-purchasers rose from 46% to 58% ($p<.001$). The increase in the frequency of non-purchasers is most evident in the 1980 proxy statement disclosure of 1979 purchases, purchase decisions that coincide with the SEC's adoption of ASR 250 in June 1978. The percentage of MAS fee ratios between 0% and 50% went from 49% in 1979 to 38% by 1981. The frequency of fee ratios exceeding 50% is constant at roughly 5% in all three years.

Panel B presents data on the distribution of the conditional fee ratios, i.e., the fee ratio for the sub-sample of nonaudit service purchasers. The mean aggregate fee ratio declined slightly (33% in 1979 to 29% in 1981, $p = .05$), with a modest decline in the 95th percentile. There is no systematic shift in the

distribution of the MAS fee ratios by percentile or on average across the three years ($p = .31$). The patterns evident in panels A and B are observed when the analyses are confined to the sub-sample of 936 companies (50% of the 1979 sample) that are in the data set all three years, indicating the pattern is not driven by SEC File's expanding coverage of companies during the effective period of ASR 250 (see Table 1, panel C).

Taken together, the evidence suggests the mandated ASR 250 disclosure is associated with an economically meaningful decline in the number of companies willing to source MAS with their incumbent auditor, but not (or modestly) the relative amount purchasers purchase. These tentative results motivate the design of the multivariate analysis. The evidence is inconsistent with the complete deterrence interpretation of the claim of investor protection as managements do not appear to have acted as if they foresaw the regulation and preemptively adjusted purchase patterns. The evidence is also inconsistent with the claim of monitoring as managements significantly reduced the joint sourcing of audit and MAS during a period when the consulting market was growing 20% annually.

Consequently, the goal of the selection model is to distinguish the claims of investor protection and unwarranted curtailment. Empirically, the disclosure regulation will be judged investor protection if managements' sourcing decisions are consistent with investors' expressed preferences and unwarranted curtailment absent such evidence. The proxy for investor preference is the (lagged) market model residual associated with the MAS proxy disclosure.

6. Selection Model

The questions of interest are 'who chooses to jointly source' and 'how much is sourced with the incumbent auditor.' Companies that choose to jointly source are not a random sample of companies and their decision to jointly source is correlated with the (relative) amount purchased (see evidence in sections 6.2 and 6.3). This is an example of what Greene (2000) calls incidental truncation. The general solution to the selectivity problem is to incorporate information about the decision to jointly source in the

estimation of how much. The method used here corresponds to the results of theorem 20.5 in Greene (2000) and a procedure due to Heckman (1979) and Lee (1983). The first stage is a logit with the dichotomous dependent variable ‘whether to source MAS with the incumbent auditor in year t’ (Purchase). The second stage is an OLS with the dependent variable ‘the year t MAS fee ratio minus the year t-1 MAS fee ratio’ (Change). Only year t purchasers chose how much. Consequently, the second stage OLS is confined to the sample of year t purchasers. The resulting OLS model produces consistent (albeit inefficient) estimates, avoiding what in essence is a correlated omitted variable problem.

6.1 Empirical Model

6.1.1 Logit Model

The following model of the probability of jointly sourcing audit and MAS is estimated:

$$\begin{aligned} \text{Purchase} = & \alpha_1 + \alpha_2 \text{No_MAS} + \alpha_3 \text{High_MAS} + \alpha_4 \text{Size} + \alpha_5 \text{AA} \\ & + \alpha_6 \text{Profit} + \alpha_7 \text{Ab_Return} + \epsilon \end{aligned}$$

where

Purchase (0,1) is coded one if the year t MAS fee ratio is greater than zero, and 0 otherwise,

No_MAS (0,1) is coded one if the year t-1 MAS fee ratio is zero, and 0 otherwise,

High_MAS (0,1) is coded one if the year t-1 MAS fee ratio is greater than 35, and 0 otherwise,

Size (0,1) is coded one if the year t total assets is above the median of all observations, and 0 otherwise,

AA (0,1) is coded one if the year t incumbent auditor is Arthur Andersen, and 0 otherwise,

Profit (0,1) is coded one if the year t net income is positive, and 0 otherwise, and

Ab_Return is the contemporaneous market model abnormal return associated with the year t-1 proxy statement.

The test variable is Ab_Return (α_7), the (lagged) residual from a market model regression cumulated over the five day period one day before to three days after the date on the cover letter accompanying the annual proxy statement. A five day window is used because proxy statements were

mailed to investors and the SEC during the period covered by ASR 250. The market model parameters are estimated from time-series, company-level regressions of company stock returns on the CRSP NYSE/AMEX/NASDAQ value-weighted market return over the period 250 to 31 days before the event date. Use of a short-window excess price reaction to the MAS announcement reflects the investor orientation central to federal regulation of corporate disclosure and a stated purpose of ASR 250, i.e., to permit investors to better evaluate companies' relationships with their incumbent auditor (SEC 1978). Ab_Return links the market's interpretation of prior year sourcing decisions with the current year decision to jointly source audit and MAS. No association between Ab_Return and Purchase ($\alpha_7 = 0$) is consistent with the claim of unwarranted curtailment. A positive association between Ab_Return and Purchase ($\alpha_7 > 0$) is consistent with the claim of investor protection.

The descriptive evidence in sections 4 and 5 and prior research (Beck et al. 1988; Palmrose 1986, Scheiner and Kiger 1982; Parkash and Venable 1993) suggest several factors that might affect purchase decisions. Their consideration led to several control variables. The first three parameters ($\alpha_1, \alpha_2, \alpha_3$) measure the extent to which one year's purchases are associated with the likelihood of joint sourcing the following year, i.e., momentum or persistence in sourcing decisions. Quandt's (1958) switching regression method is used to determine the critical level, if any, that distinguishes modest from heavy purchasers of MAS circa 1980. The method partitions the sample into two groups and finds the value of the partitioning variable that maximizes the model log-likelihood, in this application between the MAS fee ratio and the contemporaneous excess stock return. This procedure indicates a critical level of the fee ratio in the neighborhood of 35% and rejects the null hypothesis 'no switch occurred' ($\chi^2(6)=1579$, $p<.001$). This result is confirmed in a piecewise weighted least squares regression framework that corresponds to equation 10.28 in Neter, Wasserman, and Kutner (1983). The intercept of the response function is not significant, its slope is flat before and after the critical value 35%, and it is discontinuous at the critical value 35% with a price reaction of -1.1% ($p<.001$).¹⁸ Fourteen percent of the sample had a fee ratio greater than 35%.¹⁹ Non-purchasers (α_2) are distinguished from modest purchasers (fee ratios <

36%, α_1) and high purchasers (fee ratios > 35%, α_3). Companies that jointly source are expected to continue to do so (Firth 1997), such that $\alpha_2 < 0 < \alpha_3$.²⁰

The variables Size (α_4) and AA (α_5) were identified in section 4 as potential control variables. Each is expected to be positive. Profit (α_6) is included to control for the availability of resources that could affect the purchase of MAS ($\alpha_6 > 0$) or situations where companies can ill afford not to seek outside help ($\alpha_6 < 0$). Other possible control variables that did not reach statistical significance are an indicator variable for the year, the market-to-book ratio, a Big 8 indicator variable, leverage, and continuous measures of company size and net income.

6.1.2 OLS Model

The following model of the change in the (relative) level of purchases is estimated for companies that chose to jointly source audit and MAS:

$$\begin{aligned} \text{Change} = & \beta_1 + \beta_2 \text{Size} + \beta_3 \text{AA} + \beta_4 \text{BOD} + \beta_5 \text{High_MAS} \\ & + \beta_6 \text{Ab_Return} + \beta_7 \text{Ab_Return} * \text{High_MAS} + \beta_8 \text{Lambda} + v \end{aligned}$$

where

Change is the year t fee ratio minus the year t-1 fee ratio,

Size (0,1) is coded one if the year t total assets is above the median of all observations, and 0 otherwise,

AA (0,1) is coded one if the year t incumbent auditor is Arthur Andersen, and 0 otherwise,

BOD (0,1) is coded one if the Board of Directors approved the year t MAS purchases, and 0 otherwise,

High_MAS (0,1) is coded one if the year t-1 fee ratio was greater than 35, and 0 otherwise,

Ab_Return is the contemporaneous market model abnormal return associated with the year t-1 proxy statement, and

Lambda is the inverse mills ratio.

The test variable is again Ab_Return, the lagged cumulative market model residual defined in section 6.1.1. The interpretation of the sign is as before. The influence of investor reaction on Change is

allowed to differ by the level of year t-1 MAS by including the interaction between Ab_Return and High_MAS. This reflects investor skepticism of high purchases only (fee ratio > 35%, section 6.1.1) and focuses attention on $\beta_6 + \beta_7$. A positive association between Ab_Return and Change ($\beta_6 + \beta_7 > 0$) is consistent with investor protection.

The measurement and basic motivation for the control variables Size (β_2), AA (β_3), and High_MAS (β_5) is sketched in section 6.1.1. No prediction on the sign or significance of β_2 or β_3 is offered. Some regression to the mean is expected, with high purchases one year paired with lower purchases the following year ($\beta_5 < 0$). ASR 250 required companies to disclose whether the Board approved the joint sourcing before the professional service was provided (SEC 1978). A negative association between Change and BOD ($\beta_4 < 0$) is consistent with boards restraining management's appetite for MAS (Abbott, Parker, Peters, and Raghunandan 2003). Other possible control variables that do not reach statistical significance are an indicator variable for year, the market-to-book ratio, a Big 8 indicator variable, leverage, and continuous measures of company size and net income.

Some of the regressors affect both the probability of jointly sourcing MAS and the (relative) amount purchased. The marginal effect of these regressors has two components – the direct effect on the mean of Change and the indirect effect through Purchase. The indirect effect is summarized in the regressor Lambda. The test of the null 'no selectivity' is $\beta_8 > 0$.

6.2 Sample and Related Descriptive Statistics

Table 5 presents descriptive statistics for the variables used in the selection model. There are 1,748 observations with all needed data after eliminating one influential observation. Panel A presents measures of location for the indicator variables. Companies in the selection sample are larger than companies in the overall sample (Size: 58% and 50%, respectively). This is a result of the selection model requiring two consecutive years of data with larger companies more likely than smaller companies to be in the data base more years. Larger companies are also more likely than smaller companies to be

purchasers of MAS (panel C), hence the lower frequency of non-purchaser in the selection sample than in the overall sample (No_MAS: 44% and 54%, respectively). Likewise, larger companies are more likely than smaller companies to obtain board approval for joint sourcing ($p < .01$), hence the higher frequency of board approval in the selection sample than the overall sample (BOD: 89% and 73%, respectively). Companies in the selection sample are just as likely as companies in the overall sample to have fee ratios greater than 35%, use Arthur Andersen, and report positive net income. In the logit sample, Purchase (50%) is greater than No_MAS (44%, equivalently a 56% purchase frequency) because the Purchase is measured at time t and No_MAS at time $t-1$ and the frequency of purchasers decreases with time (Table 4). The increased frequency of large purchasers, large companies, and Arthur Andersen clients in the OLS as opposed to the logit sample foreshadow the results of the logit.

Panel B presents measures of location and spread for the continuous variables. The mean Change and Ab_Return is negative in the logit sample and positive in the OLS sample, consistent with investor reaction influencing subsequent purchase decisions. Though statistically significant, as expected the overall means are modest in economic terms. Lambda is highly significant, consistent with self-selection. Panel C is a correlation matrix. The first order effects mimic the marginal effects in the selection model.

6.3 Results

Table 6, panel A, presents the results of estimating the likelihood of jointly sourcing audit and MAS. The model goodness-of-fit compares favorably with alternate model specifications. The model correctly classifies 68% of the observations outperforming the naive model which operates at the level of chance ($p < .001$). Prior year purchases have a significant effect on whether management chose to jointly source MAS the following year. When the non-fee-related independent variables are set equal to their mean values, the predicted likelihood of purchasing MAS when the prior year fee ratio is zero, modest, or high is 31%, 61%, and 82%, respectively. Non-purchasers are likely to continue to be non-purchasers and modest purchasers are more likely than heavy purchasers to become non-purchasers. This result

indicates there is momentum in purchases of what others have labeled non-recurring, nonaudit services (e.g., Beck et al. 1988 and Parkash and Venable 1993).

The control variables Size (α_4), AA (α_5), and Profit (α_6) are statistically and economically significant. When each independent variable is taken one at a time for a modest purchaser with the mean abnormal return, the predicted likelihood of purchasing MAS is 12% higher for large companies than small companies, 6% higher for Arthur Andersen clients than non-Andersen clients, and 9% higher for profitable than unprofitable companies. This pattern is consistent with earlier descriptive results.

The test variable Ab_Return (α_7) is statistically and economically significant. At the margin, the predicted likelihood of joint sourcing is 17% higher for companies with a one standard deviation above the mean year t-1 excess price reaction than for companies with a one standard deviation below the mean price reaction (for a modest purchaser and the mean value of Size, AA, and Profit). The decision to purchase reflects the preferences of the intended beneficiary of ASR 250, the investors, consistent with the claim of investor protection. The results replicate when the analysis is run separately on the year sub-samples. The results also replicate when the analysis is confined to the sub-sample of companies that are in the data set all three years.

Table 6, panel B, presents the results of estimating the change in the MAS fee ratio for joint purchasers of MAS. Diagnostic tests reveal the parameter estimates and associated p-values are not unduly influenced by influential observations or collinearity. The direct effect is the least squares estimate. The total effect is the marginal effect after considering the indirect effect for regressors that also influence the probability of jointly sourcing audit and MAS (through their presence in Lambda). The estimated coefficient on Lambda is positive and significant (β_8), consistent with the positive correlation between the logit and OLS model error terms ($\rho = .82$) and the prevalence of self-selection. The only significant control variable is Size (β_2), with the fee ratio for large companies predicted to decline six percentage points relative to small companies. Whether the incumbent auditor was Arthur Andersen (β_3) or a Board approved the purchase (β_4) is not associated with Change.

The estimated coefficient on High_MAS (β_5) is both statistically and economically significant, but is meaningful only in light of the market's interpretation of the year t-1 fee ratio (β_7). Change is not associated with Ab_Return when purchases are "low or moderate" (β_6), but is when purchases are "high" ($\beta_6 + \beta_7$). At the margin, fee ratios for "high" purchasers are predicted to decline 55 (38) percentage points for companies with a one standard deviation below (above) the mean year t-1 abnormal return. On average, "high" (relative) purchases do not persist and negative investor reaction exacerbates the decline, consistent with the claim of investor protection.

7. Concluding Remarks

For more than 25 years, the SEC has been pressuring the public accounting profession to develop mechanisms to ensure that the joint provision of audit and management advisory services does not compromise auditor independence or the appearance of independence. During that time, accounting firms increased their reliance on profits generated from MAS. This trend and widespread dissatisfaction with the state of public accounting self-regulation prompted the SEC in 2000 to again draft auditor independence rules, including a new rule mandating the disclosure of jointly-sourced services. The policy formulation process, then as well as in 1978, was based primarily on a systematic review of the comments and opinions of accomplished individuals with a vested interest in auditor independence requirements. The current study contributes large sample evidence to the ongoing debate on the consequences of mandated disclosure.

The evidence reported in this study is consistent with the SEC's disclosure policy substantively changing behavior. The percentage of companies jointly sourcing audit and MAS dropped from 70% to 45% during the effective period of ASR 250, a time when consulting industry revenues were expanding at 20% annually. Investors' reactions to the mandated disclosure are positively related to managements' subsequent purchases at two levels: the likelihood a company chose to jointly source audit and MAS and the overall (relative) purchase levels for the 14% of the sample that purchased high levels of MAS. This

result is consistent with managers choosing among alternate suppliers, at least in part, in a manner consistent with investors' expressed preferences, a policy goal of the SEC when promulgating ASR 250. The result refutes the SEC's claim that investors had shown little, if any, interest in the disclosure when rescinding ASR 250.

Many remedies were available to the SEC in both 1978 and 2000, ranging from an outright ban on jointly sourced nonaudit services to simply letting the market continue to sort it out. This paper does not address whether joint sourcing creates an agency problem to solve, measure the net social cost or benefit of ASR 250, confront Lucas' critique (1976), or compare directly alternate potential regulatory responses. That said, the results suggest mandatory disclosure is a reasonable regulatory response in this setting. At one end of the policy continuum, bans would be justified when barriers exist to mandated disclosures acting as a deterrent or informed interested parties acting purposefully. But that was not the case here as sourcing decisions changed in a manner consistent with investors' preferences. At the other end of the policy continuum, calls for no action would be justified if information deemed useful were voluntarily provided. Only 187 (9%) companies disclose any MAS-related information in 1978 proxy filings. And only 1094 (27%) companies continued to disclose any MAS-related information in 1982, the period immediately after the repeal of ASR 250. For whatever reason, the market did not support voluntary disclosure of reasonably costless, objective, joint-sourcing information, information shown in this study to change behavior in a manner consistent with investor preferences.

On balance, the evidence is consistent with disclosure being a reasonable response. Market forces have historically promoted sound auditing, suggesting marketplace solutions and self-regulation should take precedence over government imposed regulation (Gunther and Moore 2002). But the market cannot function if investors and regulators are not sufficiently informed. Mandating disclosure is the SEC's primary responsibility (Karmel 2000; Thompson and Sale 2003). By exploiting the primacy of decentralized decisions and economic incentives, mandatory disclosure might better advance the government's interest of ensuring appropriate consideration is given to the influence of joint sourcing on

auditor independence than the one-size-fits-all solution of denying all companies access to valued services (e.g., recent bans on internal audit outsourcing (SEC 2003). Studies of the efficacy of disclosure vis-a-vis other regulatory remedies or combinations of remedies (e.g., caps on and disclosure of campaign contributions) is a natural next step.

Endnotes

1. ASR 250 was the sole regulatory response during its time and was implemented against the backdrop of a stable public accounting industry structure, consulting industry revenues expanding 20% annually, and minor changes in reporting requirements. The same cannot be said for the more recent period. Examples of fundamental changes in the public accounting industry during the late 1990s and early 2000s include the work of the Independence Standards Board (e.g., disclosure of management-auditor financial relationships to boards of directors), bans on some services (SEC 2003), Big 5 divestiture or plans to divest consulting business segments, the demise of Arthur Andersen, declining demand for consulting services generally let alone post-2000, and more generally the Enron-era changes in the practice of corporate governance. Also there are ongoing disputes over the implementation of the current regime as well as significant changes in reporting requirements (Bryan-Low 2003). Tax compliance services cannot be identified in the current regime.
2. For example, mandates to provide consumers information regulators deem necessary to exercise good judgment when using a product (drain opener labeling), judging the riskiness of a product (cigarette warning labels), or judging the relative riskiness of products (nutrition labeling).
3. The extent to which the current result is generalizable to other third-party settings depends on a host of factors. For example, social models of trust depend on face-to-face contact. Thus, mandated physician disclosure to patients of investments in clinics when referring patients to a clinic might not alter a patient's willingness to accept a physician's referral.
4. The Association of Data Processing Service Organizations Inc. was a trade group with 400 members in 1979 including International Business Machines Corporation, Control Data Corporation, and Honeywell Inc.
5. The profession's attempts to meet its commitment to improve self-regulation included creating the SEC Practice Section of the AICPA and AICPA-sponsored organizations like the Public Oversight Board. Actions taken by these private-sector organizations included establishing a peer review program and banning a short list of nonaudit services (e.g., executive search).
6. Specifically, the SEC Practice Section of the AICPA revised its membership provisions to require member firms to report in their in annual Section reports for years ending on or after January 1, 1982 the number of clients from which they receive fees for management advisory services that, when expressed as a percentage of the audit fees, are in the ranges 1% to 25%, 26% to 50%, 51% to 100%, and over 100%. They are also required to state how many audit clients in the "over 100%" category fell into that category for three consecutive years.
7. Posner (1974) argues that regulators can become captured by those they regulate, which in the current setting is consistent with public accounting industry lobbying efforts resulting in a benign disclosure regulation as an alternative to consequential reforms like a ban on MAS. This possibility is not articulated in the paper and is not supported by the evidence. The SEC Chairman when ASR 250 was implemented asserted capture played a role in the repeal of ASR 250 (Karmel 2000).
8. The first attempt to collect data on firm-level activities of accounting firms was undertaken by Congress in 1974 (Metcalf 1975).

9. The notion that mandated disclosure might result in investor loss is not new. For example, management is required to disclose how they pay themselves (SEC 1992). While disclosure protects investors from managerial looting, groups such as unions and the media can use the disclosures to place pressure on boards of directors to lower executive compensation. Jensen and Murphy (1990) find the sensitivity of pay to performance declined from the 1930s to the 1980s and attribute this decline to the disclosure of compensation arrangements whereby pressures to limit compensation at the top of the pay range are accompanied by limits on potential losses from poor performance at the bottom of the pay range.
10. Several factors favor management looking to their incumbent auditor as needs arise: (i) search costs can be avoided, (ii) prior knowledge of the company or industry might make the incumbent auditor a natural low cost provider, and (iii) prior positive experiences help establish the incumbent as a trusted business advisor. Influence costs include justifying exceeding the one-size-fits-all criteria of proxy voting consulting firms like Institutional Shareholder Services.
11. Proxy data was hand collected by a team of twelve masters of accounting students under the direction of one doctoral student and the supervision of the author. A second doctoral student audited the compiled proxy data by scanning for unusual entries, evaluating descriptive statistics, and re-performing approximately 40 randomly selected observations for each masters student.
12. ASR 250 disclosures are required only when the incumbent auditor stands for re-election. The identity of the incumbent auditor is known for 121 of the apparent omissions. In only nine (7%) instances did the incumbent not stand for re-election, indicating absences of the ASR 250 disclosure are predominately examples of non-compliance.
13. ASR 250 was effective for three fiscal years, with 1979, 1980 and 1981 proxy disclosures reflecting purchases made in 1978, 1979, and 1980, respectively.
14. Scheiner and Kiger (1982) identified 17 categories in their study and Glezen and Millar (1985) eight categories in theirs, while others focus on recurring vs. non-recurring services (e.g., Beck et al. 1988 and Parkash and Venable 1993).
15. One-third of the sample reported purchasing more than one nonaudit service, with 838 instances of companies purchasing three or more services. There are 3,204 instances (40%) where tax compliance was the only service purchased.
16. Both aggregate and MAS are net of the fee ratio for pension compliance work. This adjustment is necessary to accommodate changes in reporting practices – the SEC initially instructed companies to classify all services provided to employee benefit plans a nonaudit service (Staff Accounting Bulletin No. 25, SEC 1978), then allowed companies to classify audits of employee benefit plans an audit service (Staff Accounting Bulletin No. 33, SEC 1979). The data indicates companies did change their reporting practices. The number of companies disclosing pension compliance work is 487, 71, and 62 in 1979, 1980, and 1981, respectively. All results replicate after eliminating all observations or all companies that reported pension compliance work.
17. The levels used are those required by the SEC Practice Section (effective January 1982) when member firms file annual section reports and used by the SEC in various analyses of ASR 250 disclosures. The data compiled in this study is well calibrated with data compiled by the SEC in a proxy review program that examined approximately 1,200 proxies from 1979 and 1980 (SEC 1981).

18. The notion there is a threshold beyond which MAS is viewed skeptically is evident today. For example, the proxy voting consulting firm Institutional Shareholder Services recommends non-audit service fees not exceed the audit fee.

19. In the sub-sample of observations with fee ratios greater than 35%, the evidence is consistent with investors, on average, being surprised by the magnitude of MAS provided and believing joint sourcing impairs at least the appearance of auditor independence (Frankel, Johnson, and Nelson 2002) or learning the company is in trouble and needs outside help. Ashbaugh et al. (2003) remind us to consider the breadth of firm-specific disclosures contained in proxy statements when interpreting the market's reaction to any one disclosure, in this case the MAS fee ratio disclosure. The scope of the proxy statements during the effective period of ASR 250 were much narrower than today, but did include information on the election of directors, remuneration of directors and officers, and stock option plans. Ab_Return is not statistically or economically significant for non-purchasers.

20. MAS is predominately what others have labeled nonrecurring services (Beck et al. 1988; DeBerg et al 1991; Parkash and Venable 1993). When viewed as a single, sporadic engagement that occurs on an irregular basis, a company's purchase history will be unrelated to its current period purchases ($\alpha_2 = \alpha_3 = 0$).

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Table 1
Description of Sample

Panel A: Number of Observations by Year

	1979	1980	1981	Total
Annual Proxy Statements	1936	2965	3605	8506
No ASR 250 Disclosure	51	166	251	468
	1885	2799	3354	8038
Not Listed in Compustat Data	584	967	1081	2632
	1301	1832	2273	5406
Insufficient Event Study Data	237	471	519	1227
	1064	1361	1754	4179

Panel B: Number of Observations by 1980 Total Asset Quintile by Year (n = 5406)

Total Assets (mm\$)	1979	1980	1981	Total
less than \$14.5	86 (7%)	356 (20%)	360 (17%)	802 (15%)
\$14.5 to \$48.4	190 (15%)	356 (20%)	445 (20%)	991 (19%)
\$48.4 to \$131.6	279 (22%)	357 (20%)	441 (20%)	1077 (20%)
\$131.6 to \$592.5	351 (27%)	358 (20%)	495 (22%)	1204 (23%)
greater than \$592.5	368 (29%)	357 (20%)	470 (21%)	1195 (23%)
	1274 (100%)	1784 (100%)	2211 (100%)	5269 (100%)
not available	27	48	62	137
	1301	1832	2273	5406

Table 1, continued**Panel C: Number of Observations by Industry by Year (n = 5406)**

	Sample			1980 Compustat
	1979	1980	1981	
Mining	70 (6%)	117 (6%)	171 (8%)	7%
Utilities	44 (3%)	46 (3%)	70 (3%)	2%
Construction	30 (2%)	37 (2%)	51 (2%)	2%
Textiles	134 (10%)	142 (8%)	154 (7%)	7%
Wholesale	50 (4%)	86 (5%)	86 (4%)	5%
Durable Manufacturing	384 (30%)	542 (29%)	707 (31%)	28%
Manufacturing, Other	200 (15%)	241 (13%)	296 (13%)	11%
Hospitality	22 (2%)	62 (3%)	59 (3%)	3%
Transportation	50 (4%)	54 (3%)	72 (3%)	3%
Retail	95 (7%)	112 (6%)	138 (6%)	6%
Professional Services	31 (2%)	55 (3%)	64 (3%)	5%
Publishing	46 (4%)	74 (4%)	96 (4%)	6%
Financial Services	93 (7%)	163 (9%)	203 (9%)	9%
Leasing	17 (1%)	50 (3%)	53 (2%)	3%
Other	35 (3%)	51 (3%)	53 (2%)	3%
Total	1301 (100%)	1832 (100%)	2273 (100%)	8994

Table 2
Descriptive Statistics: Fee Ratios

Panel A: Aggregate Fee Ratio

	Number of Observations	Mean	Median	Standard Deviation	99th Percentile / Maximum
1979	1885	28.5%	16.0%	103.1%	206% / 4077%
1980	2799	22.7%	13.0%	45.3%	171% / 1448%
1981	3354	23.7%	14.0%	41.6%	181% / 895%
Overall	8038	24.5%	14.0%	62.7%	186% / 4077%

$F(2,8035) = 5.27, p < .005$

Panel B: MAS Fee Ratio

	Number of Observations	Mean	Median	Standard Deviation	99th Percentile / Maximum
1979	1885	15.2%	5.0%	43.8%	187% / 835%
1980	2799	11.7%	0.0%	41.4%	138% / 1448%
1981	3354	9.7%	0.0%	29.7%	115% / 738%
Overall	8038	11.5%	0.0%	37.6%	139% / 1448%

$F(2,8035) = 12.72, p < .001$

‘Aggregate’ is the percentage relationship which all nonaudit service fees bear to the audit fee. ‘MAS’ is the aggregate fee ratio less the fee ratio for tax compliance work. F-statistics are tests of the null ‘the means do not differ by year’.

Table 3
Descriptive Statistics: Conditional Fee Ratios by Auditor

	Number of Observations	Aggregate		MAS	
		Number (Percent) of Purchasers	Mean/Median	Number (Percent) of Purchasers	Mean/Median
Arthur Andersen	1269 (16%)	1151 (91%)	51% / 27%	770 (61%)	44% / 16%
Arthur Young	538 (7%)	438 (81%)	23% / 17%	273 (51%)	16% / 11%
Coopers&Lybrand	865 (11%)	716 (83%)	27% / 18%	496 (57%)	22% / 14%
Deloitte Haskins&Sells	693 (9%)	554 (80%)	20% / 13%	365 (51%)	16% / 10%
Ernst and Whinney	939 (12%)	779 (85%)	25% / 14%	458 (49%)	17% / 9%
Peat Marwick Mitchell	995 (12%)	861 (87%)	30% / 20%	499 (50%)	20% / 11%
Price Waterhouse	864 (11%)	729 (84%)	24% / 17%	482 (56%)	17% / 10%
Touche Ross	654 (8%)	521 (80%)	30% / 18%	311 (48%)	28% / 12%
other	1207 (15%)	896 (74%)	20% / 14%	407 (34%)	17% / 10%
Total	8024 (100%)	6665 (81%)	29% / 17%	4061 (45%)	24% / 11%

‘Aggregate’ is the percentage relationship which all nonaudit service fees bear to the audit fee. ‘MAS’ is the aggregate fee ratio less the fee ratio for tax compliance work. Table entries in the columns labeled ‘mean/median’ are for the distribution of the percentage relationship which the nonaudit service fees bear to the audit fee conditional on the service being purchased. Fourteen observations with multiple auditors are excluded.

Table 4
Purchase Patterns During Effective Period of ASR 250 (n = 8038)

Panel A: Frequency of Fee Ratios By the Level of the Fee Ratio and Year

Fee Ratio	Aggregate			MAS		
	1979	1980	1981	1979	1980	1981
None	361 (19%)	539 (19%)	595 (18%)	870 (46%)	1559(56%)	1946(58%)
< 26%	982 (52%)	1558 (56%)	1830 (54%)	774 (41%)	948 (34%)	1096(33%)
26% to 50%	336 (18%)	430 (15%)	574 (17%)	146 (8%)	170 (6%)	179 (5%)
51% to 100%	144 (8%)	196 (7%)	263 (8%)	50 (3%)	71 (2%)	91 (3%)
>100%	62 (3%)	76 (3%)	92 (3%)	45 (2%)	51 (2%)	42 (1%)
Total	1885	2799	3354	1885	2799	3354

Panel B: Fee Ratios Conditional on a Service Being Purchased

	Aggregate			MAS		
	1979	1980	1981	1979	1980	1981
25th Percentile	10%	9%	10%	6%	6%	6%
50th Percentile	19%	17%	17%	12%	11%	12%
75th Percentile	34%	30%	32%	25%	24%	23%
95th Percentile	90%	84%	82%	88%	85%	74%
Mean	33%	28%	29%	26%	25%	23%
	F(2,6540) = 3.34, p = .04			F(2,3660) = 1.17, p = .31		
Frequency of Companies Purchasing Nonaudit Services	81%	81%	82%	54%	44%	42%
	$\chi^2(2) = 3, p = .225$			$\chi^2(2) = 71, p < .001$		

‘Aggregate’ is the percentage relationship which all nonaudit service fees bear to the audit fee. ‘MAS’ is the aggregate fee ratio less the fee ratio for tax compliance work. Test statistics are for tests of the null ‘the mean/frequency does not differ by year’.

Table 5
Descriptive Statistics: Variables in the Selection Model

Panel A: Location and Dispersion, Indicator Variables

	Selection Model – Mean		All Observations	
	Logit (n=1748)	OLS (n=873)	n	Mean
Purchase: coded 1 if the year t MAS fee ratio is greater than zero, and 0 otherwise	.499	--	–	--
No_MAS: coded 1 if the year t-1 MAS fee ratio is zero, and 0 otherwise	.441	--	8038	.544
High_MAS: coded 1 if the year t-1 MAS fee ratio is greater than 35, and 0 otherwise	.083	.137	8038	.073
Size: coded 1 if year t total assets is above the median of all observations in the data set, and 0 otherwise	.577	.662	5269	.500
AA: coded 1 if the year t incumbent auditor is Arthur Andersen, and 0 otherwise	.154	.184	8024	.158
Profit: coded 1 if the year t net income is positive, and 0 otherwise	.915	--	5266	.876
BOD: coded 1 if the Board of Directors approved the year t MAS purchases, and 0 otherwise	--	.889	8028	.730

Table 5, continued

Panel B: Location and Dispersion, Continuous Variables

	Selection Model		All Observations	
	Logit (n=1748)	OLS (n=873)	n	Mean (Std. Dev.)
Change: the year t fee ratio less the year t-1 fee ratio	-1.77 (26.9)*	2.25 (33.8)*	--	--
Ab_Return: the market model abnormal return for the five day period one day before to three days after the date of the year t-1 proxy statement	-.003 (.049)*	.004 (.049)*	4179	-.001 (.048)
Lambda: Inverse Mills Ratio	--	.694 (.306)*	--	--

Table 5, continued

Panel C: Correlation Matrix (n=1743)

	Change	No_MAS	High_MAS	Size	AA	Profit	BOD	Ab_Return
Purchase	.149*	-.345*	.197*	.172*	.083*	.070*	--	.126*
Change	--	.243*	-.408*	-.018	-.054*	-.024	-.004	.063*
No_MAS	--	--	-.267*	-.178*	-.092*	-.041*	-.131*	-.025
High_MAS	--	--	--	.026	.204*	.024	.045	.014
Size	--	--	--	--	.013	.181*	.185*	.027
AA	--	--	--	--	--	-.012	.070*	-.017
Profit	--	--	--	--	--	--	.038	-.047
BOD	--	--	--	--	--	--	--	.021

'MAS' is the aggregate fee ratio less the fee ratio for tax compliance work. In Panel B, the heading 'Std. Dev.' is standard deviation and * indicates the p-value associated with the test of null 'the mean is zero' is less than .05. In panel C, * indicates the p-value associated with the test of the null 'the correlation coefficient is zero' is less than .06.

Table 6
Selection Model

Panel A: Logit Model, Decision to Purchase (n=1748)

	Parameter Estimate	Chi-Square	P-value	Marginal Effect
Intercept (α_1)	- .171	.8	.383	--
No_MAS (α_2)	-1.250	132.2	<.001	-30%
High_MAS (α_3)	1.057	19.9	<.001	21%
Size (α_4)	.503	21.6	<.001	12%
AA (α_5)	.243	2.6	.104	6%
Profit (α_6)	.353	3.3	.070	9%
Ab_Return (α_7)	5.809	27.6	<.001	17%

$\chi^2(7) = 296, p < .001$

concordance = 72.6

Table 6, Continued

Panel B: OLS Model, Change in MAS Fee Ratio (n=873)

	Direct Effect		Total Effect	
	Parameter Estimate	t-statistic	Parameter Estimate	t-statistic
Intercept (β_1)	-18.27	-3.17 (p=.002)	–	–
Size (β_2)	4.34	1.72 (p=.086)	-5.78	-2.04 (p=.042)
AA (β_2)	7.45	2.70 (p=.007)	2.50	.79 (p=.430)
BOD (β_4)	-2.78	-.84 (p=.402)	-2.78	-.84 (p=.402)
High_MAS (β_5)	-25.41	-6.80 (p<.001)	-46.69	-10.69 (p<.001)
Ab_Return (β_6)	79.33	3.23 (p=.001)	37.40	1.35 (p=.178)
Ab_Return*High_MAS (β_7)	147.86	2.35 (p=.019)	147.86	2.35 (p=.019)
Lambda (β_8)	31.58	6.55 (p<.001)	–	–

F(7, 865) = 32, p<.001

R² =.205

Definitions of the variables and descriptive statistics are presented in Table 5. In panel A, ‘marginal effect’ is the change in the predicted likelihood of purchasing MAS for each independent variable taken one at a time. In panel B, the ‘direct effect’ is the marginal effect of each variable obtained by OLS estimates. The ‘total effect’ is the direct effect from the OLS plus the indirect effect through ‘lambda’ for regressors in the first stage logit.