AUDITOR SIZE AND AUDIT QUALITY

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Regulators and small audit firms allege that audit firm size does not affect audit quality and therefore should be irrelevant in the selection of an auditor. Contrary to this view, the current paper argues that audit quality is not independent of audit firm size, even when auditors initially possess identical technological capabilities. In particular, when incumbent auditors earn client-specific quasi-rents, auditors with a greater number of clients have 'more to lose' by failing to report a discovered breach in a particular client's records. This collateral aspect increases the audit quality supplied by larger audit firms. The implications for some recent recommendations of the AICPA Special Committee on Small and Medium Sized Firms are developed.

1. Introduction

Large audit firms are increasingly criticized on the basis of size alone both by regulators and by smaller firms within the accounting profession.¹ The allegation underlying these criticisms is that professional standards impart a homogeneity across different sized audit firms such that audit quality is independent of audit firm size. For example, employing the assumption that audit quality is relatively homogeneous across audit firms, Arnett and Danos (1979) argue that size alone 'should not be a prime determinant of future success' (p. 8, emphasis added). Furthermore, they argue that 'as long as professional standards and qualifications were maintained, it is unfair to arbitrarily distinguish between the largest eight and all other CPA firms' (p. 56, emphasis added).

Because of the alleged discriminatory impact on smaller audit firms, eighteen small-to-medium sized audit firms filed suit in 1978 to block the division of the American Institute of Certified Public Accountants into two practice sections. One section now consists of audit firms whose clients are required to file reports with the Securities and Exchange Commission, the


¹See the Report of the Subcommittee on Reports, Accounting, and Management of the Committee on Government Operations (U.S. Senate, 1977) (Metcalf Report), Arnett and Danos (1979), and the Report of the Special Committee on Small and Medium Sized Firms (AICPA, 1980) (Derieux Committee Report).

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other of firms whose clients are not. According to Public Accounting Report (February 1978), the grounds for suit were that 'this seemingly innocuous proposal is part of a calculated design... to further concentrate power in the hands of the largest accounting firms'. While the suit was later dismissed, the AICPA considered the size issue sufficiently important to appoint a special committee (the Derieux Committee) to study it in more depth.

The Derieux Committee Report stresses the 'concern that smaller firms may be replaced simply because they are less well known, even though the smaller firms may well be providing as high or higher quality services' (p. 5). The Committee articulates this 'problem' and the recommended solution as follows:

**Problem:** Auditors are sometimes chosen on the basis of arbitrary factors such as size of their firm.

**Recommendation:** An information booklet should be published stressing that the selection of a CPA firm *should* be based not on size, but on the ability to provide service. (p. 18, emphasis added)

In other words, the Derieux Committee's position is that auditor size should be irrelevant in the selection of an auditor. Justification for this position is provided by the assumption that auditor size does not affect the quality of audit services supplied.

Contrary to this view, the current paper argues that size alone alters auditors' incentives such that, ceteris paribus, larger audit firms supply a higher level of audit quality. When audit technology is characterized by significant start-up costs, incumbent auditors earn client-specific quasi-rents. These quasi-rents, when subject to loss from discovery of a lower quality audit than promised, serve as collateral against such opportunistic behavior. This implies that, ceteris paribus, the larger the auditor as measured by number of clients, the less incentive the auditor has to behave opportunistically and the higher the perceived quality of the audit.

In order to demonstrate this relationship between audit quality and auditor size, we first provide an operational definition of audit quality (section 2). When quality is costly to evaluate, self-interested individuals who

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2This size measure is appropriate when client-specific quasi-rents do not vary across clients of a given auditor. When quasi-rents vary across clients, the relationship between the quasi-rents specific to a given client and the auditor's total quasi-rents becomes important. Besides altering the magnitude of the collateral bond aspect of the quasi-rents, size also affects the incentives of the partners within the audit firm. We hold these incentives constant in order to concentrate on the collateral aspect of client-specific quasi-rents. Thus, the current analysis isolates one previously unrecognized benefit of auditor size, but does not attempt to characterize the optimal size audit firm. These issues are discussed further in sections 3 and 4 of the paper.

3Watts and Zimmerman (1981) develop an alternative theory that predicts that auditor size is a surrogate for audit quality. Their argument is that large audit firms supply higher quality audits because they possess a comparative advantage in monitoring individual auditor behavior.
potentially benefit from the exchange of quality-differentiated audits have incentives to devise surrogates for quality. When larger audit firms have 'more to lose' from supplying a lower-than-promised level of audit quality, consumers properly use size as a quality surrogate (section 3). The theory supports conventional wisdom that perceived auditor independence is inversely related to the percentage of total audit fees dependent on retaining any one client. Large audit firms are a means of lowering this percentage, as are alternative quality enforcing arrangements (section 4). Implications for some recommendations of the Derieux Committee which would subsidize smaller audit firms at the expense of larger audit firms and clients are developed (section 5). Conclusions and a brief summary are provided in section 6.

2. The quality of audit services

Audit services are demanded as monitoring devices because of the potential conflicts of interest between owners and managers as well as those among different classes of security holders [see Watts (1977), Watts and Zimmerman (1981), and Benston (1980) for elaboration]. In at least some cases, the provision of audited financial statements is the least-cost contractual response to owner-manager and intra-owner conflicts of interest, i.e., agency costs. Agency costs vary across potential client firms and perhaps over time for a given client. For example, it is well known that client firms going public often switch to Big Eight auditors [Carpenter and Strawser (1971)]. Differential agency costs across firms and over time for a given firm imply a heterogeneous demand for audit services, i.e., differing 'levels' of auditing are demanded.

How are different 'levels' of auditing exchanged? In order to address this question, we define the production of audits in terms of inputs and outputs supplied by the auditor alone, and ignore client inputs. With this simplification, audit output can be characterized as independent verification of management-prepared financial data, and consists of a stated opinion (e.g.,

Our argument differs from other arguments for auditor size found in the literature, such as economies of scale in the production of audit services [Arnett and Danos (1979), Benston (1980), Dopuch and Simunic (1979)], greater partner personal wealth (Benston), and benefits to specialization combined with the risk of industry-specific business cycle fluctuations (Arnett and Danos). The current argument is that client-specific quasi-rents create an advantage to large audit firms because of their collateral properties.

Of course, other reasons besides a demand for 'more' auditing may also motivate these switches. For example, Big Eight firms may possess more expertise in preparing SEC documents, auditing large clients, and/or greater industry-specific knowledge.

Defining audit inputs and output in this manner simplifies the analysis at the cost of bypassing some interesting auditor-client interactions caused by the jointness of the production process. See Alchian and Demsetz (1972) for an analysis of the incentives faced by input owners when the production process is joint. For a model which explicitly recognizes auditor-client interactions, see Demski and Swieringa (1974).
an unqualified opinion) with an associated quality dimension. The type of opinion constant, changes in the level of auditing are equivalent to changes in audit quality.

The quality of audit services is defined to be the market-assessed joint probability that a given auditor will both (a) discover a breach in the client's accounting system, and (b) report the breach. The probability that a given auditor will discover a breach depends on the auditor's technological capabilities, the audit procedures employed on a given audit, the extent of sampling, etc. The conditional probability of reporting a discovered breach is a measure of an auditor's independence from a given client. This definition of auditor independence is used in DeAngelo (1981) and Watts and Zimmerman (1981), who argue that the ex ante value of an audit depends on the auditor's incentives to disclose selectively ex post.

Consumers incur costs of evaluating audit quality, i.e., of assessing the joint probability that a given auditor will both discover and report a breach on a given client's audit. First, the actual procedures employed on a given audit engagement are generally not directly observed by consumers. Second, consumers have little information about the incentives induced by the form of a given auditor-client contract which affect the probability of reporting a discovered breach. For these reasons, audit quality evaluation costs are likely to be significant.

When audit quality is costly to evaluate, self-interested individuals have incentives to devise alternative arrangements which enable quality-differentiated audits to be exchanged. Furthermore, competitive forces dictate that the arrangement chosen will be the one which minimizes the total costs of exchange (including the costs of differentiating quality). This cogent observation was first made in a more general setting by Barzel (1977). One potential response is for consumers to develop surrogates for audit quality, i.e., to rely on some other (less costly to observe) variable which is (imperfectly) correlated with quality. The argument of the current paper is that auditor size serves as a surrogate for audit quality.

\[\text{See next page.}\]
Another potential response to consumer quality evaluation costs is for auditors to specialize in a uniform level of audit quality, both across clients and over time. If auditors substantially vary the level of audit quality supplied from period to period, consumers would have to re-evaluate quality over time. If auditors substantially vary the level of quality from client to client, each audit engagement would require separate evaluation by consumers.

Because quality evaluation is costly, consumers will compensate auditors who enable them to avoid these costs by maintaining a relatively uniform quality level. Auditors have incentives to specialize in a uniform quality level because they can capture higher fees by doing so. However, when differential agency costs across clients imply a heterogeneous demand for audit quality, different auditors will specialize in different (albeit uniform) quality levels. When auditors specialize in a given quality level, clients wishing to change the level of audit quality purchased will find it necessary to change auditors.

A distinction should be made between differing levels of audit quality voluntarily exchanged and opportunistic (unanticipated) changes in audit quality. A different level of audit quality is supplied when the market-assessed joint probability that an auditor will both discover and report a breach in a client’s records changes. Significant costs of quality evaluation provide auditors with the opportunity to promise a given level of audit quality ex ante and to opportunistically lower it ex post by, e.g., reporting fewer discovered breaches than promised. This opportunity occurs because it is costly to discover auditor ‘cheating’ (the probability of being caught is less than one).

We argue below that certain aspects of audit technology provide auditors with incentives to opportunistically lower audit quality in order to retain a particular client. However, disincentives to ‘cheat’ are also provided by audit technology, and these disincentives increase as auditor size increases. Because larger auditors have reduced incentives to lower audit quality opportunistically, consumers rationally use auditor size as a surrogate for audit quality.

3. The relationship between auditor size and audit quality

When audit technology is characterized by significant client-specific start-up costs, incumbent auditors possess cost advantages over potential

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10 Of course, in order for auditor size to serve as a surrogate for audit quality, it must be the case that, on average, larger audit firms supply higher quality audits. The relationship between auditor size and audit quality is developed in section 3. It is also important to note that auditor size cannot be a perfect surrogate for audit quality or other quality-assuring arrangements would not be observed in the market for audit services. These other arrangements are discussed in section 4.

11 Supply side competition ensures that, while auditors specialize in a uniform level of audit quality, audit fees adjust so that marginal auditors are indifferent to the quality ‘class’ to which they belong.
competitors in future audits of a given client. Even when the initial market for audit services is perfectly competitive insofar as all auditors possess identical technological capabilities, these advantages to incumbency imply the absence of perfect substitute auditors in future periods. The absence of perfect substitutes enables incumbent auditors to set future audit fees above the avoidable costs of producing audits, i.e., incumbent auditors earn client-specific quasi-rents. Transactions costs of changing auditors also enable incumbents to raise future fees without making it profitable for clients to switch. In the presence of start-up and transactions costs, the relationship between clients and incumbent auditors is a bilateral monopoly [see DeAngelo (1981)].

In a bilateral monopoly, both parties have incentives to continue an established relationship because of the absence of costlessly available perfect substitute auditors (clients). In other words, termination of the relationship imposes costs on both parties. If terminated, incumbent auditors will lose the wealth equivalent of the client-specific quasi-rent stream. Clients will be forced to bear transactions costs of switching and the duplication of start-up costs associated with training a new auditor. The theory therefore predicts an inverse relationship between the magnitude of start-up/transactions costs (and hence client-specific quasi-rents) and auditor turnover. Consequently, observation of the rate at which client firms change auditors provides indirect evidence on the magnitude of these start-up/transactions costs.

Extant empirical evidence is consistent with the existence of significant start-up/transactions costs in the exchange of audit services. In particular, the uniform finding of extant studies [Burton and Roberts (1967), Bedingfield and Loeb (1974), Carpenter and Strawser (1971), Bolton and Crockett (1979), Hobgood and Sciarrino (1972), Financial Executives’ Institute (1978), and Coe and Palmon (1979)] is that the rate at which client firms change auditors is low. For example, Burton and Roberts found a change rate of approximately one percent per annum for a sample of Fortune 500 firms for the time period 1955–1963, while Coe and Palmon found a change rate of approximately 2 percent per annum for a random sample of firms listed on the COMPSTAT tape from 1952–1975. For smaller firms, the auditor

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12 A client-specific quasi-rent is the excess of a given period’s revenues over the avoidable costs incurred in that period, including the opportunity cost of auditing the next-best alternative client. Whether a given quasi-rent stream constitutes a monopoly rent depends on whether the net present value of the stream is positive. For a more extensive discussion of the distinction between quasi-rents and monopoly rents, see Klein, Crawford and Alchian (1978, p. 299).

13 This logic apparently underlies the position of the Commission on Auditors’ Responsibilities (Cohen Commission) that mandatory auditor rotation would ‘considerably increase the cost of audits because of the frequent duplication of the start-up and learning time necessary to gain familiarity with the company...’ [Cohen Report (1978, pp. 108–109)].

14 Similar logic can be found in Becker (1975) for the case of employee training that is specific to the training employer. The prediction in this case is that, ceteris paribus, firms characterized by larger (smaller) amounts of specific training experience lower (higher) employee turnover.
change rate is generally higher, but does not exceed five percent per annum. This evidence is consistent with the assumption that client-specific start-up/transactions costs (and therefore quasi-rents to incumbent auditors) are material.

The anticipation of future technological and transactions cost advantages to incumbent auditors has at least two effects. First, auditors bidding for the initial audit engagement, i.e., for the property rights to become the incumbent and capture the quasi-rents, will 'low ball' (set audit fees below total costs on the initial audit) to obtain the client [DeAngelo (1981)]. Second, because these quasi-rents are client-specific (i.e., they have no alternative use to this auditor and are not marketable to other auditors), incumbent auditors have some incentive to lower quality opportunistically in order to retain the client in future periods.\(^\text{15}\)

This incentive occurs because clients can impose real costs on auditors by termination (loss of the wealth equivalent of the client-specific quasi-rent stream). Therefore clients can potentially extract accounting concessions from incumbent auditors by a credible threat of termination. In particular, incumbent auditors have a lessened incentive to report a discovered breach in the client's records, i.e., incumbent auditors are not perfectly independent from clients.\(^\text{16}\)

Rational consumers recognize that incumbent auditors are not perfectly independent from clients. Consequently, they lower the price they are willing to pay for securities of firms that retain incumbents. In other words, the lower expected level of independence is reflected in reduced client firm value. Rational clients recognize the negative valuation consequences of retaining incumbent auditors. Therefore, they have incentives to reduce this wealth impact by choosing incumbent auditors perceived by the market as being more independent, i.e., as having fewer incentives to 'cheat' in order to retain this particular client.

When auditors earn client-specific quasi-rents, auditors with a greater number of current clients have reduced incentives to 'cheat' in order to retain

\(^{15}\)To the extent that these quasi-rents are not client-specific, e.g., they are marketable to other auditors or have value in alternative uses to the current auditor, they do not provide an incentive to 'cheat'. The quasi-rents with which we are concerned here are those whose alternative use value is zero.

\(^{16}\)By perfect independence, we mean that the conditional probability the auditor reports a discovered breach is one. Of course, if contracting among individuals were costless, perfect auditor independence could be exchanged via an exhaustively specified and perfectly enforced explicit contract. Unfortunately, costless contracting also enables owners and managers to eliminate the conflicts of interest which underlie the monitoring demand for (costly) auditing. Because auditing models which assume costless contracting are internally inconsistent in this sense, the assumption maintained throughout this paper is that explicit contracts which guarantee perfect independence are prohibitively costly to negotiate and enforce.
any one client. Intuitively, client-specific quasi-rents lower auditor independence with respect to a particular client because they provide an incentive to ‘cheat’ in order to retain the client in future periods. On the other hand, the quasi-rents specific to other current clients of a given auditor provide a disincentive to ‘cheat’, i.e., act as a collateral bond against such opportunistic behavior.

To see this collateral effect, consider an individual auditor’s decision to ‘cheat’ in some future period when, due to technological and transactions cost advantages, the auditor earns client-specific quasi-rents. For the moment, we assume that alternative quality-enforcing arrangements (e.g., explicit contracts, collateral bonds, auditor brand name expenditures) are prohibitively costly. We also assume that the magnitude of a given auditor’s client-specific quasi-rents does not vary across clients. Both of these assumptions are relaxed in section 4.

Suppose that, at some future date, a given incumbent auditor discovers a breach in a particular client’s records. The client can attempt to dissuade the auditor from reporting the breach, perhaps by threats of termination. Indeed, the client has a credible threat of termination, should the auditor report the discovered breach. The auditor’s incentive to ‘cheat’ is provided by the present value of the quasi-rents specific to this client, which are lost if the auditor reports truthfully and is terminated by the client.

A countervailing disincentive is provided by the present value of the quasi-rents specific to other current clients of the auditor. If the auditor ‘cheats’ and is caught, he stands to lose some portion of this value both through termination by other clients and through reduced fees from those that continue to retain him. The amount the auditor stands to lose depends on

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17 This assumption is a reasonable one when auditors specialize in a uniform level of audit quality across clients in response to consumer quality evaluation costs. This assumption is not necessary for our conclusions to hold and, in fact, is relaxed in the following section.

18 No other breaches are simultaneously discovered by the auditor, by assumption. The analysis would become considerably more complex if the auditor had the incentive to ‘cheat’ simultaneously on several clients. However, the result that a larger number of current clients lowers the probability of misrepresentation still obtains.

19 Although termination is not costless to clients, such termination is rationally assessed to be a positive probability event. This is the case because a discovered breach (which the incumbent auditor intends to disclose) increases the potential benefits of termination to the client. Specifically, when it is costly for outsiders to discover and verify why termination occurred, opportunistic clients can ‘blame’ the auditor and perhaps avoid or at least mitigate the negative valuation associated with disclosure of the breach. This possibility apparently underlies the SEC and Cohen Commission positions that auditor changes should receive increased scrutiny through mandated disclosure requirements.

20 The tradeoff which these other clients face (the negative impact on firm value of retaining an auditor who has been shown to ‘cheat’ versus the costs of switching auditors) has changed, and thus the other clients are more likely to change auditors. The costs of switching properly include not only transactions costs but also any duplication of start-up costs borne by the client.
both the value of this client-specific collateral and on the probability of being caught lowering audit quality.\textsuperscript{21,22}

As a general proposition, auditors with a greater number of audit clients have reduced incentives to 'cheat' in order to retain any one client, ceteris paribus. When client-specific quasi-rents are identical across clients of a given auditor, auditors with a greater number of current clients supply a higher level of audit quality, because their total collateral is greater. Thus, significant start-up/transactions costs create a benefit to large audit firms.

In order to concentrate on the collateral properties of auditor size, we have ignored other potential costs and benefits to large audit firms.\textsuperscript{23} In particular, we have implicitly held constant internal organizational structure and incentives (i.e., agency costs within the audit firm). In reality, these agency costs can be expected to vary with auditor size. The introduction of internal organizational issues may either strengthen or weaken the association between auditor size and audit quality. Three possibilities deserve brief mention here. First, if large audit firms possess a comparative advantage in monitoring individual auditor behavior, as argued by Watts and Zimmerman (1981), the benefits to auditor size are greater than specified here. On the other hand, as pointed out by Alchian and Demsetz (1972), the greater the number of partners, the greater an individual partner's incentive to shirk. This effect would act to weaken the association between auditor size and audit quality.

Finally, the collateral properties to size argument can also be applied on the individual auditor level.\textsuperscript{24} When partners share proportionately in audit firm profits, the greater the number of clients, the less the wealth of the partner-in-charge of a given client depends on retaining that client. Therefore, the greater is the probability that he will report a discovered

\textsuperscript{21}Of course, if the probability of being caught were zero, the auditor's expected net gain from 'cheating' in order to retain a troubled client is always positive. One function of professional organizations like the AICPA may be to curtail auditor opportunism by raising the probability of getting caught. Measures such as mandatory peer review or mandatory audit committees composed of outside directors, for example, serve this function. While it may not be in one individual auditor's narrow self-interest to raise this probability, it may be in the collective interest of auditors to do so. Thus, institutional arrangements (or regulation) may be an efficient means of accomplishing this goal.

\textsuperscript{22}In this analysis, only the quasi-rents specific to current clients of the auditor serve as collateral when the initial market for audit services is perfectly competitive. Because auditors expect to earn zero profits on new clients in future periods (competition for new clients dissipates any monopoly rents), auditors are indifferent to losing potential new clients. Therefore, in the absence of monopoly rents, potential new clients have no impact on an auditor's decision to lower audit quality.

\textsuperscript{23}The observation that auditors of various sizes exist indicates that there are offsetting costs to auditor size, e.g., of monitoring individual auditors, of maintaining uniformity, or of coordinating audit engagements. We have not attempted to specify these costs. Nor have we addressed the issue of how internal organizational structure and incentives change with auditor size. For these reasons, our analysis is properly viewed as isolating an important benefit to auditor size, but not as deriving the optimal size audit firm. This task is left for future research.

\textsuperscript{24}Eric Noreen deserves credit for pointing out this implication.
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breach. In effect, the impact of his audit decisions on his personal wealth is reduced. While these other effects are potentially important to a positive theory of audit firm size, we continue to ignore them in order to focus on the collateral properties to size associated with client-specific quasi-rents.

4. Generalizations and alternative arrangements

The general proposition that client-specific quasi-rents create a benefit to auditor size continues to hold when these quasi-rents vary across clients. However, another factor becomes important: the percentage of the auditor's total quasi-rent stream which is specific to any one client. In particular, clients for which client-specific quasi-rents are relatively large in a given auditor's portfolio pose special independence problems not captured by the analysis so far. When quasi-rents are not identical across clients, the variable of interest to consumers is the relationship between the value of an auditor's quasi-rents specific to a particular client and the value of the auditor's total quasi-rent stream.

When client-specific quasi-rents vary across clients, auditor size (as measured by the number of current clients) continue to serve as a surrogate for audit quality because larger auditors possess greater total collateral. However, size alone does not inform consumers about the relationship between the quasi-rents specific to one (potentially large) client and the auditor's total quasi-rent stream. Therefore, when client-specific quasi-rents vary across clients of a given auditor, consumers can be expected to develop other quality surrogates in addition to auditor size.

One potential surrogate is the percentage of total audit fees dependent on retaining any one client. For example, the Cohen Report (pp. 113–114) notes that:

When one or a few large clients supply a significant portion of the total fees of a public accounting firm, the firm will have greater difficulty in maintaining its independence. The staff study of the Subcommittee on Reports, Accounts and Management (the Metcalf Report), for example, cites the case of a relatively small firm with a single client that represented 30 percent of the firm's total fees in the year 1973. In the celebrated Equity Funding case, that company represented more than 40 percent of the fees of the Wolfson, Weiner firm that audited the parent company.

Strictly speaking, this statement is incorrect because a client could 'supply a significant portion of the total fees of a public accounting firm' and future client-specific quasi-rents be zero. However, when the percentage of total fees
dependent on one client is viewed as surrogate for the relative magnitude of client-specific quasi-rents, this fee relationship also serves as a surrogate for audit quality.

An interesting example of disclosure of the percentage of total fees dependent on retaining one client is the 1977 annual report of Peat, Marwick, Mitchell, which states that the single largest audit fee comprises only $\frac{1}{4}$% of total revenues. Moreover, a requirement of the new SEC practice section of the AICPA is that members of the section disclose the existence of clients whose fees comprise more than five percent of total audit fees. The Accountant's International Study Group (1976) recommends that auditors be prevented from accepting clients whose fees are expected to exceed ten percent of total income from clients.

When consumers use the percentage of total fees dependent on one client as a quality surrogate, and this percentage is perceived to be 'high' for a given auditor-client pair, the market expects auditor independence to be reduced with respect to that client. This will affect the auditor through the fees he is able to charge. Because of these costs of reduced independence, auditors have incentives to devise arrangements which reduce the percentage of the total fees observed to depend on retaining any one client. Large audit firms are one potential response to these costs.

Large audit firms, however, are not the only potential response to costs of reduced independence. Auditors can also increase perceived independence by increasing their investment in collateral which is not client-specific. Of course, in order to serve as a deterrent to auditor 'cheating', all collateral must be auditor-specific. However, it need not be client-specific. For example, it could be an established reputation for uniform quality audits or other brand name-type collateral. To the extent that brand name expenditures are not dependent on retaining a particular client, they increase an auditor's total collateral and therefore decrease the percentage of total quasi-rents specific to any one client. Consumers are likely to view brand name collateral as a substitute for client-specific collateral, i.e., consumers view auditors with established reputations as having 'more to lose' from misrepresentation.

The client-specific collateral analyzed here, however, has an important advantage over brand name collateral. When client-specific start-up costs are viewed as an unavoidable (sunk) cost of producing audits, their use as collateral may be less costly than incurring additional brand name-type expenditures. This point is made by Klein and Leffler (1981, p. 628) with

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25As noted in footnote 10, auditor size cannot be a perfect surrogate for audit quality or these other arrangements would not be observed.

26For discussion of the brand name mechanism in general, see Barzel (1977, 1980), Darby and Karni (1973), Klein, Crawford, and Alchian (1978), and Klein and Leffler (1981).
respect to productive assets in general:

One potentially efficient alternative or supplement to the pure price premium method of guaranteeing quality may be the use of nonsalvageable productive assets rather than brand name (selling) assets...In particular, if the firm uses a production process that has a non-salvageable capital element, the normal rate of return (quasi-rent stream) on this element of production capital effectively serves as a quality assuring premium.

In other words, technological sunk costs which generate future quasi-rents serve as collateral because they provide auditors with 'something to lose' if caught 'cheating'. Client-specific start-up costs are of this genre, as are other technological sunk costs such as investments in SEC expertise or industry specialization.

Another advantage of the surrogates analyzed here over brand name explanations for quality-differentiated audits [as in, e.g., Benston (1975, 1980), Dopuch and Simunic (1979), and Simunic (1980)], is that our analysis is conditioned on a more easily measured choice variable, auditor size. In addition, the percentage of total fees dependent on retaining any one client is subject to empirical estimation, e.g., by using relationships developed in Simunic (1980). Predictions that auditors supply more or less 'brand name' in response to some parameter shift are more difficult to operationalize. For example, how does one determine that 'more' brand name is supplied? The next section develops the implications of our collateral properties to auditor size argument for some recent recommendations of the Derieux Committee.

5. ‘Discrimination’ against small audit firms

It is well recognized that client firms tend to change to Big Eight auditors when going public [Carpenter and Strawser (1971)]. According to Arnett and Danos (1979, p. 8), this displacement occurs in part because 'underwriters frequently recommend that one of the largest eight accounting firms be used because securities will sell at higher prices as a result'. The Derieux Committee Report labels this the 'bigness syndrome' and asserts that 'in the selection of a CPA firm, size is important only to the extent that it indicates sufficient staff to carry out the engagement' (p. 21).

The Report goes on to attack 'discriminatory clauses' in both underwriting and loan agreements which stipulate the client firm will engage a Big Eight or 'nationally recognized' accounting firm. In the words of the Committee

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27 As an empirical proposition, it is difficult to identify material brand name expenditures by auditors. In particular, given the profession's long-standing ban on advertising (removed in 1978), auditor brand name expenditures do not appear significant relative to the probable magnitude of consumer quality evaluation costs.
Failure to oppose such discriminatory agreements leads to a further concentration of auditing services in an increasingly smaller group of the largest firms. This is not in the public interest since companies and other entities should be offered a choice from among firms of various sizes and characteristics.

It is difficult to see how imposing sanctions on parties who voluntarily contract with large audit firms preserves choice. If implemented and effective, these sanctions decrease the choice set by restricting the ability to engage large audit firms.

The Arnett and Danos (1979) study also opposes agreements which stipulate large or nationally known audit firms. Their argument rests on an explicit assumption that audit quality is independent of audit firm size (p. 9, emphasis added):

*If we assume that the quality of the audit is the same regardless of the size of the firm performing it, the banker would be supplied with the same information on which to base his decision; in this way the size of the firm should not necessarily be a consideration.*

Provided that consumer perceptions of audit quality are also independent of auditor size, this statement is correct.

However, the collateral properties of auditor size identified in the current paper suggest that this assumption is not justified. Rather, our result that auditor size is a surrogate for audit quality provides economic justification both for displacement and for the alleged discriminatory contracts. It seems reasonable to assume that clients going public are those which have experienced a great deal of growth. In turn, growing clients are likely to have become a significant factor in a small auditor's portfolio. In other words, the value of quasi-rents specific to this client may have come to constitute a significant portion of the total value of the prior auditor's quasi-rent stream. In addition, a standard agency costs argument dictates that publicly held clients demand more monitoring, on average, than do privately held clients.

A change to a larger audit firm raises the level of audit quality exchanged when the client constitutes a smaller portion of the new auditor's total quasi-rents (that he did of the prior auditor's). Furthermore, as argued in section 2, when quality-evaluation costs lead auditors to specialize in a relatively uniform level of audit quality, a change of auditor may be required in order to increase the audit quality exchanged. Changing to a larger auditor with an
established reputation when going public is consistent with an increase in audit quality at that time.\textsuperscript{28}

Finally, when evaluating whether underwriters' and lenders' agreements are 'discriminatory', one should consider these parties' incentives. Competition among underwriters (and among bankers) ensures that the most efficient, i.e., those which are consistently able to get the highest prices for securities (able to evaluate loan applicants most accurately) survive. When consumers use auditor size as a quality surrogate, bankers and underwriters rationally request large audit firms.

If sanctions are successfully imposed against this choice (as advocated by the Derieux Committee), bankers and potential purchasers of firm securities will charge client firms which continue to contract with smaller, less well known auditors through lower security prices (higher interest rates). To the extent that the bilateral monopoly between client and incumbent auditor implies a sharing of these costs, audit fees do not fully adjust to shift these costs to incumbent auditors. In this case, successful prevention of 'discrimination' (that is, of competition from large audit firms) represents a windfall gain to smaller auditors at client expense. The allegation that these voluntary contracts discriminate against smaller firms, therefore, serves as an excuse,\textsuperscript{29} i.e., a justification to effect a wealth transfer from clients to smaller audit firms.

The incentive to develop these justifications is provided by the existence of quasi-rents to larger audit firms. When quality evaluation costs are significant, smaller audit firms must incur costs to convince consumers that they supply a uniform level of high quality audits. Larger audit firms with an established clientele do not bear these costs currently. By alleging that this is 'unfair', smaller audit firms may avoid these costs and convert these quality related quasi-rents to monopoly profits. One strategy to effect this transformation is to impose sanctions on underwriters and bankers who voluntarily contract with large audit firms.

Another strategy is to shift these costs to professional bodies like the AICPA. In this case, quality related costs are borne by audit firms of all sizes, while the benefits accrue primarily to smaller, less well known audit firms. For example, one could argue, as do Arnett and Danos (p. 9, emphasis

\textsuperscript{28}A more traditional technological economies of scale argument is also consistent with displacement. However, there is no apparent technological advantage, in this case, to a large audit firm over a consortium of smaller audit firms. Ultimately, as explained by Coase (1937), differences in organizational structure rely on differences in transactions costs, and not on differences in technology. In the current case, as elaborated in footnote 16, costly contracting prevents firms from contracting away client-specific quasi-rents. For more on this point, see DeAngelo (1981).

\textsuperscript{29}For an extensive development of the use of public interest-type excuses for self-interested behavior, see Watts and Zimmerman (1979).
added) that:

Bankers, lawyers, audit committee members, and others who affect selection of CPA firms should make an effort to evaluate the quality of the professional service offered as opposed to the package in which it is delivered... The bigness syndrome should not be permitted to govern the selection of auditors. We feel that without a major educational drive aimed at third parties, the current economic and legal environment unfortunately tends to favor selection of larger firms.

This argument commits the Nirvana fallacy of prescribing behavior as though audit quality evaluation costs are, or should be zero.

Perhaps more importantly, it serves as justification for policy recommendations, as in the Derieux Report, that the AICPA underwrite a national public relations program to 'educate' consumers and to 'bring about a more objective process of selection of a CPA firm' (p. 19). If implemented and effective, this recommendation represents a subsidy of smaller, less well known audit firms by larger, more well known audit firms. However, such a program will be ineffective to the extent that consumers continue to recognize the association between auditor size and audit quality discussed here.

6. Summary and conclusions

By asserting that audit quality is independent of auditor size, smaller audit firms have justified proposed wealth transfers from clients and from larger audit firms. This paper has shown that, when incumbent auditors earn client-specific quasi-rents, audit quality is not independent of auditor firm size. These quasi-rents, when subject to loss from discovery of a lower-than-promised audit quality, serve as collateral against such opportunistic behavior. This implies that, ceteris paribus, the larger the auditor as measured by the number of current clients and the smaller the client as a fraction of the auditor's total quasi-rents, the less incentive the auditor has to behave opportunistically, and the higher the perceived quality of the audit.

This collateral property of auditor size both creates a benefit to large audit firms and provides auditors with incentives to design their client portfolios so that the percentage of quasi-rents dependent on retaining any one client is low. Alternative means of reducing this percentage were discussed, and it was argued that technological sunk costs are likely to dominate brand name-type expenditures as a quality-assuring mechanism in the market for audit services.

Finally, some recent allegations of discrimination against smaller audit firms by bankers and underwriters were analyzed in the current framework.
It was argued that these allegations rest on an assumption that audit quality is independent of auditor size, and that the analysis of this paper casts serious doubt on the validity of that assumption.

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