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PRODUCT DIFFERENTIATION IN AUDIT FIRMS

by

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PRODUCT DIFFERENTIATION IN AUDIT FIRMS

ABSTRACT

This paper provides an explanation for the differences in products supplied by audit firms. Auditees select auditors to lower the costs of contracting to add value to the firm. The variations in the contracts of auditee firms induce a demand for diversity in types of audits. Audit firms develop specializations and maintain a comparative advantage in audits of portfolios of auditees. Auditors will be specialized according to common contracting attributes of auditees and will invest in factors suited to monitoring and arbitrating with respect to those contracts. Auditor quality is described within this context and reconciled with the general descriptions of auditor quality which have appeared in the literature. Propositions with respect to audit pricing, auditor switching and auditor investment strategies are developed and reconciled to the available evidence.

The purpose of this paper is to provide an explanation of why product differentiation exists in audit firms. The issue has arisen in a number of contexts, such as:

(i) Attempts to explain the determinants of auditor choice.[1]

(ii) Assumptions underlying empirical results which show differences in prices charged by auditors to auditees.[2]

(iii) Regulatory investigations of competition within the audit industry.[3]

Despite the extensive empirical research on audit prices, relatively little progress has been made in developing an explanation of how utilisation of particular audit products can be value increasing for the auditee firm. The most consistently adopted approach is that auditors supply differing arrays of audit "quality" in response to the heterogeneous demands for quality which are generated by different auditee agency costs, [see e.g., Watts and Zimmerman, 1986; Dopuch and Simunic, 1982; De Angelo, 1981a, 1981b; Palmrose, 1984; De Fond, 1987; Simunic and Stein, 1987; Francis and Wilson, 1988]. Within this explanation, the supply of auditor "quality" emerges from, and is underwritten by, investments of the audit firm in reputation for supplying a particular "quality" level.

An alternative explanation of product differentiation is that auditors develop technological specialization in response to specific differences between industries [Arnett and Danos, 1979; Shockley & Holt, 1983; Eichenseher and Danos, 1981] or their operating environment [Eichenseher, 1984]. Observation of auditor-auditee behavior suggests both explanations have some relevance and some attempts have been made to integrate the explanations [e.g., Palmrose, 1984; Palmrose, 1986; Johnson and Lys, 1988]. However, the absence of a general theory with the capacity to explain the structure of audit markets and product differentiation in auditing has made

reconciliation of the explanations difficult. This paper is an attempt to partially fill that void.

The central thesis of this paper is that observed specialization by auditee firms is a function of efficient contracting to combine factors of production and consequently observed differences in the output of audit firms is derived from differences in auditee attributes. Section I provides an explanation of the nature of the auditee firm where contracting between various claimholders is costly. This analysis is derived from the works of Coase [1937], Alchian [1984] and Ball [1988]. It is argued in section II that, consistent with prior research, since accounting and external auditing are integral components of contracting in the auditee firm, they derive many of their properties from auditee firm attributes. Section III develops an explanation of the demand and supply of audit quality and the relationship between audit product quantities, audit quality and the structure of audit markets and the section provides an explanation about how auditees and audit firms operate in response to changes in auditee demand for audit products. Section IV examines the extent to which the propositions about audit quality developed in the earlier sections of the paper are reconcilable with principal findings of the audit pricing literature. Section V provides summary conclusions.

I. CONTRACTING AND FIRM PRODUCTION-INVESTMENT DECISIONS

Coase [1937] provides a positive theory for the existence of firms. Firms exist as intermediaries between factor and consumer markets and the survival of the firm is dependent on its ability to generate output consistent with demand preferences of consumers and at a lower cost than if those consumers were to deal with the owners of factors directly. Firms consist of combinations of factors and managers, in seeking to increase the

value of factors within the firm, are faced with decisions about the type of output to be produced and the combinations of specific factors required for that production (i.e., production-investment decisions). The comparative advantage of the firm in contracting depends upon the specialized value particular factors can bring to the firm and the efficiency with which the utilisation of those factors are determined. The contracting solutions that bind these factors are critical and determine ultimately the value of the combination and the marginal value of each factor. The firm is defined by its comparative advantage in contracting[4] with claimholders owning the factors, compared with the costs faced by consumers in resorting directly to markets to purchase those factors.

Factor Specificity

For the firm, the value of any factor of production is defined with respect to the dependency of the other factors on that factor. This concept of factor (resource) specificity [Alchian, 1984] provides insights into understanding the operation of the firm. Claimholders contract to rent their factor property rights in return for an income stream. Cheung [1983, p. 4] describes the necessary conditions in contracting for the private property rights to factors:

> Any productive input is a private property if, within well-defined limits, its owner has (1) the right to exclude others so that he alone may decide on its use, (2) the right to extract exclusive income from its use, and (3) the right to transfer the property (including labour) to or to exchange with anyone he sees fit. The right to exchange implies the right to contract, and property rights may be transacted through a wide variety of contractual arrangements.

Individual claimholders share in a stream of quasi-rents[5] dependent on the continued existence of the coalition of factors that constitute the firm. Should any factor withdraw from the coalition, both firm value and remaining factor values fall. Consequently, the greater specificity of a

factor, the greater will be the loss of quasi-rents to the firm when the factor exits the firm and the greater will be the costs of recontracting to restore the quasi-rent stream [Ball, 1988, p.14]. A direct implication is that the firm will demand long-term contracts with owners of factors of high specificity to minimize disruption and increase the expected value of the stream of quasi-rents [Klein, Crawford and Alchian, 1978; Alchian, 1984; Alchian and Woodward, 1986; Williamson, 1985].[6]

Efficient Contracting with Factors

Factor specificity by itself is a necessary but not sufficient condition to describe contracting via the firm. In addition, the firm must be efficient with respect to writing contracts with claimholders to share in the value created by the firm vis a vis the contracts consumers would write in dealing with claimholders directly. Coase [1937][7] identified this condition. He argues that the firm emerges because of its efficiency in organizing production through the price system and in particular "... discovering what the relevant prices are" [Coase 1937, p. 390].

In the context of production-investment decisions by firms, assembling factors requires knowledge of the specificity of any factor in order that an optimum contract is written. To the extent that any factor purchaser has an advantage in the revelation of specificity, the purchaser is afforded an advantage in markets through reductions in contracting costs. In anticipating production of a certain output, the specificity of a factor will be related to the expected behavior of the factor in the anticipated coalition, availability of the factor through time and, expected variability in both the attributes and price of the factor.

A variety of mechanisms exist for purchasers to identify factor specificity and each mechanism differs in its accuracy and cost [Caves and

Williamson, 1985, p. 115]. However, following Coase [1937], the firm is in a unique position with respect to these search costs because of what are described as economies of scale in repetitive contracting [Ball, 1988 pp. 5-7]. The firm as a frequent purchaser of factors is more likely to utilize a decreasing cost function for identifying factor specificity. Consumers with "once only" or infrequent purchases, cannot avail themselves of these economies. Consequently, the nature of the firm is dependent upon the marginal value added to a coalition by a successive factor and the cost of identifying the specificity of the factor to the coalition.[8,9]

II THE DEMAND FOR ACCOUNTING AND EXTERNAL AUDITING

The Demand for Accounting

The previous section advanced the proposition that firms exist as efficient contracting intermediaries between consumer and factor markets and claimholders on the firm contract to receive a specific set of payoffs from surrendering specific factor property rights. In this section it is argued that accounting and external auditing are integral to contracting through the firm[10] and, since contracts will vary across auditee firms, the nature of the attributes demanded in an external audit will vary systematically with auditee attributes.

Payoffs to factors are uncertain and dependent upon the revealed states of the production-investment decisions of the firm which cannot be costlessly perfectly prespecified. Consequently, there exists a demand for a payoff technology, which consists of mechanisms that reveal states and thereby, the agreed total value added to the coalition as well as sharing rules in contracts which determine the respective claimholder payoffs.

The production of accounting information is one mechanism for revealing states ([hereafter described as accounting technology following Ball

[1988, p.19]).[11] Prior to performance of the contracts, an accounting technology will be agreed to by the factors. Consistent with Alchian [1984, p. 39], efficient technologies emerge to measure value added because of the difficulty of measuring output directly.[12]

These technologies can rely upon "generally accepted" rules (to the factors) for revealing states. This does not necessarily imply that there will be "generally accepted accounting principles" (GAAP) applied to all firms. Generally acceptable descriptions of states can evolve by (voluntary) modification of GAAP in revealing states or by production of sharing rules which effectively undo GAAP in determining payoffs.[13] In the absence of regulation, voluntary associations (e.g., professional accounting bodies) may exist as suppliers of "state revealing" technologies that have become accepted practice [Ball, 1988, p. 36].

Since costly contracting implies that contingencies may occur the accounting technology may be modified from the ex ante agreement to reflect unexpected states including the effects of unexpected opportunistic behavior by claimholders as contracts are performed. Ex post adjustment to the accounting technology in these situations is an expected phenomenon.[14]

The Demand for External Auditing

Given the existence of accounting as a payoff technology, the demand for external auditing is derived from a demand to monitor[15] and arbitrate on the application of the accounting technology. Auditing is a specialist function demanded within firms to facilitate the completion of contracts [Ball, 1988, p. 30].

The demand for external auditing in the firm will vary according to the ex ante specification of the accounting technology (including the ex ante agreed upon process for modification of that technology) in claimholder

contracts and the subsequent revelation of states [Ball, 1988, p. 32].[16] Where revealed states are as expected, the specific contracting provisions such as the accounting technology and the applicable sharing rules, are implemented as the states arise. Accordingly, the auditor monitors the application of the contracted for accounting technology according to the revealed states.[17]

However, given some uncertainty in revelation of states, modification of accounting technology can occur which implies that the auditor is required to arbitrate[18] on the consistency between the states as revealed ex post by the accounting technology and the sharing rules incorporated in, and implied by, the contracts with claimholders. The choice of the description "arbitrator" in this context is deliberate. Where the number of claimholders is large and diverse, the arbitration function becomes more valuable since the cost of determining separate payoffs to firm claimholders increases. The auditor cannot make an absolute statement about the value of payoffs to any one factor since, as we have argued above, neither the contracts are perfectly specified nor is the accounting technology.[19] Consequently, the auditor arbitrates on the accounting information by issuing opinions as to its "fairness". "Fairness" in this sense means that the revelations of unexpected states through the accounting information would be seen by the factors to be consistent with their expectations of the revelation as if it had been anticipated prior to the performance of the contracts.[20] Affected parties are identified and warned by auditors of unfair descriptions in (for example) "subject to ..." opinions and disclaimers [Ball (1988 p. 33)].[21]

III PRODUCT DIFFERENTIATION IN AUDITING

The Differential Demand for Audit Products

Following from the proposition that the demand for external auditing is derived from a demand for monitoring and arbitrating on the application of a firm's accounting technology, it is argued in this section that the demand for auditor competence in the auditee contracts and technical competence in the application of the auditee firm's accounting technology is in turn, derived from this monitoring and arbitrating role. In addition to contracting competence and technical competence, there is a demand for auditor independence derived from the demand for arbitrating.[22] Moreover, we argue that the geographical location of an auditor's offices and provision of non-audit services are important in the efficient provision of the external audit. The proposition which emerges from the section is that the differential demand for these attributes by auditee firms is induced by the heterogeneity in the production-investment decisions of auditees.

Contracting and Technical Competence

For any firm the production-investment decisions of that firm determine its value. Consequently, the firm produces accounting information which reveals the state of the outcomes of those decisions. The total value added by the auditor, given the auditee's production-investment decisions and the claimholder contracts,[23] is dependent upon the accounting technology used in the accounting system and there is a demand for a competent auditor to monitor and arbitrate within that system. Auditees demand of the auditor knowledge and expertise in: understanding the way factor contracts are written to ex ante limit opportunistic behavior by claimholders; anticipating and then monitoring the behavior of the factors in the implementation of the production-investment decisions, and; arbitrating

upon the appropriateness of the accounting technology selected to reveal the states arising from those decisions.

Contracting competence can be distinguished from the demand for technical competence. Technical competence encompasses knowledge and expertise required in understanding the application of the accounting technology appropriate to the revelation of states (transactions) that have occurred in addition to decisions with respect to audit techniques appropriate to monitoring and arbitrating the application of the accounting technology.

The ability of an auditor to monitor and arbitrate the application of the accounting technology is conditional upon both knowledge and expertise in implementing the rules (be they GAAP or specific rules included in the contracts). Most accounting rules (e.g., inventory valuation within GAAP) have some general application across firms and industries and, moreover, auditees can expect a minimum level of technical competence will be supplied by auditors who have satisfied mandatory registration requirements [Watts and Zimmerman, 1986, p.316].[24] The level of technical competence demanded is expected to vary with the volume, complexity and type of transactions involving the auditee firms. For example, the level of technical competence for auditing foreign currency transactions demanded by an auditee with overseas investments would increase with the frequency with which those transactions occur, the number of countries involved, the complexity of the interrelationships in accounting rules associated with these transactions and the introduction of foreign claimholders.

Independence

The demand for independence derives from the arbitration demand by claimholders as to the appropriateness of the determination of auditee

firm payoffs [Ball, 1988, pp. 31-32] . This includes reporting breaches under the contract i.e. the accounting technology utilised does not provide an accurate revelation of the states. This demand is greater where claimholders are less able to observe the states as they are revealed and cannot participate in the process of negotiating the accounting technologies and ensuring the determination of appropriate payoffs to claimholders.[25]

Proximity

Notwithstanding the demands for competence and independence, the costs of audits will be reduced ceteris paribus, the closer the proximity of the auditor to the auditee's offices and operations. The efficiency of the contracts between geographically dispersed claimholders is dependent upon the close proximity of the auditor. The higher agency costs associated with geographical dispersion of an auditee's operations can be mitigated by the selection of an auditor with geographically dispersed offices similar in distribution to the offices of the auditee. Apart from reductions in direct costs associated with the audit such as auditor-auditee contact and audit technology applications, close auditor-auditee proximity allows monitoring by the auditee with respect to the levels of competence and independence. Agency costs between auditor and auditee may also be reduced by bonding arrangements entered into by the auditor to allow his general reputation ("community standing") to be more observable e.g., acceptance of honorary audits of charitable organisations or membership of standard setting authorities.

Provision of Non-Audit Services

Auditees can demand other services closely aligned with the demand for auditor contracting and technical competence e.g., advising auditees about choices of accounting methods, suggesting financing decisions and liaising

with regulators. The knowledge and expertise required to provide these services is dependent, in part, on industry specific and firm specific knowledge required in the provision of audit services [Danos and Eichenseher, 1988]. Less directly associated, but still dependent in part upon the knowledge and expertise of auditee production-investment decisions are non-audit services such as tax planning and designing and evaluating control systems, solvency and liquidation services, and recruitment services. Auditees expect that the spillover of auditor knowledge and expertise in contracting and technical matters reduces the costs of the non-audit services when the services are jointly supplied [Simunic and Stein, 1987, p.9].

Non-audit services may also be valuable to auditees in reducing the costs of contracting between claimholders in particular situations. For example, analysis and design of systems of internal controls are aimed at improving monitoring within the firm and lowers the costs of contracting through the firm. An auditee concerned about tax implications of financing production-investment decisions would value more highly the services of the audit firm familiar with the particular production-investment decisions than one which is not so familiar. The availability of non-audit services from the incumbent auditor reduces search costs borne by auditee management when seeking to acquire non-audit services [Simunic & Stein, 1987, p. 9].[26]

Production of Audit Quality

Our central proposition is that the differential demand for audit products is derived from the attributes of auditees. This section describes aspects of the production (supply) by audit firms of contracting competence, technical competence, independence, proximity and non-audit services and explains the role of brand names in auditor selection. The section then

offers an explanation about how auditees and audit firms respond to changes in the demands of auditees.

Optimal auditor-auditee contracting would imply that the incumbent auditor is the least cost supplier of the audit products to any auditee and the arguments to this point suggest the cost is a function of production-investment decisions of the auditee, the specialisation of the auditor and the comparative advantage of alternative monitoring and arbitrating mechanisms. An implication of the argument is that the expectation of the auditee is that the auditor will remain the least cost supplier of audit technology through time even when production-investment decisions of the auditee may change. For the auditor to maintain this comparative advantage to any particular auditee, it may be necessary for the audit firm to invest in new and different productive factors. Failure by the auditor to so adapt, can result in the loss of the comparative advantage in the supply of the audit and replacement by another auditor who has invested in the required factors to supply the audit product attributes demanded as a consequence of production-investment changes and who charges a lower price for the audit.

The problem of adaption is complicated by the auditor holding a portfolio of auditees. Changes for one auditee may provide an insufficient inducement for the auditor to invest in an expanded set of productive factors. The extent to which the auditor anticipates the changes in the auditee's decisions, the expected returns and the costs of investing in the new factors will be important considerations. The investment in technology is made by the auditor only to the extent that it is expected to be value increasing for the audit firm and these factors would combine as determinants of expected value.

In order to maintain the comparative advantage in the supply of an audit, the auditor must correctly anticipate the shifts in production-investment decisions of the auditee. This argument is not to say that auditors are forced to anticipate shifts in the absence of information. Since the existing audit will involve monitoring and arbitrating investments in new projects and payments to factors (including consumption by the manager), the details of the firm's prospective production-investment decisions will often be revealed to the auditor. In other words, in monitoring and arbitrating resource flows, the incumbent auditor is able to request information of management in the conduct of the audit. Additionally, if costs of switching auditors are large, the auditee may signal plans directly to the incumbent auditor. Also possible is that the incumbent auditor could influence both the type and number of production-investment changes by their auditees via the supply of non-audit advice.

Investments in Fixed and Variable Factors

The audit production process requires investments in human capital (knowledge and expertise) and non-human capital (equipment and offices) by the audit firm. Within both human and non-human capital, the production process may be executed with both fixed and variable factor investments.

As with firms in general, audit firms face a tradeoff between the fixed and variable components of their production function. Investment in fixed factors implies investment in a resource with an upfront outflow of cash and the expectation of particular economies of scale and scope that are subsequently reflected in lower variable audit costs. In contrast, the auditor in contracting with variable factors avoids the fixed investment but faces higher variable costs with respect to the resource. Consistent with the explanation developed earlier (i.e. auditor attributes are derived from

auditee attributes), auditors would not be indifferent about their choices between these types of factors in supplying either (or all of) contracting competence, technical competence, independence, geographical proximity and non-audit services depending on demands within the auditors present or anticipated auditee base. Moreover, we will argue that an interdependency between these auditor attributes exists such that a change in the mix of fixed and variable factors for the supply of one of these attributes will have spillover effects to the supply of other attributes.

The relationship argued to exist between production-investment attributes of the auditee and the demand for contracting competence implies that contracting competence will be a necessary condition for the auditor to be the efficient supplier. Furthermore, an increasing demand for contracting competence by an auditee implies that the auditor will invest in specialized human capital with knowledge and expertise in the factor contracts and related production-investment opportunities of the auditee. In making the decision to invest in fixed or variable factors, to meet the variation in this demand, the auditor will be increasingly more likely to select fixed factors, such as selecting and writing long-term contracts with a team of staff having the requisite requirements, than to select variable factors e.g. hiring staff as consultants. Auditees that become more specialized in their production-investment opportunities are likely to be facing increasingly complex accounting and non-accounting problems and possibly an increasingly difficult regulatory environment. The value of the auditor to the auditee in these circumstances will be dependent upon the timeliness of the auditor's response to the problems. This in turn implies that the auditor has available specialized personnel when auditee "problems" arise. In contrast, if the auditor attempts to address this "flexibility" demand of the

auditee by employment of only (lower specificity) variable factors (e.g. casual consultants) to avoid fixed costs, other costs emerge. These costs, for example, would include monitoring borne by the audit firm in ensuring that the consultant acts to maximise the value of the audit and the risk that the consultant is not available when required.

The investment by an audit firm in a highly specific fixed factor means that any excess capacity must be utilized across other audit engagements including providing non-audit services to exploit any economies of scale or scope. In contrast, variable factors are not associated with scale economies where there are opportunities to utilise the excess capacity of a factor from another supplier. With the specialized fixed factor, efficient utilization will be associated with auditees in the auditor's portfolio which are distinguished by commonalities in their demand for this specialization. If investment in fixed factors is required to attain increasing contracting competence it will be unlikely that there will be any audit firm with a comparative advantage in the audit technologies for all types of production-investment decisions. There are limits to the process of investing in the range of audit technologies for all auditee production-investment opportunities because the investments in factors are interrelated (e.g. investments to maintain high levels of independence cannot be unbundled to supply low independence where this is demanded), and diseconomies of contracting arise with increases in the size and numbers of fixed factors of production.

Following our proposition that the portfolio of auditees held by the auditor will be specialized according to some common auditee production-investment decisions,[27] larger audit firms have the opportunity to utilize excess capacity following investments in fixed factors than do smaller firms.

This opportunity emerges because larger firms will be specialized across a large number of auditees having commonality in their production-investment decisions. The opportunities for redeployment of resources is greater. For example, if the demand for a steel industry specialist within an audit firm's auditee portfolio falls, the contracting competence of the auditor may be utilized on manufacturing auditees, particularly those who contract for purchase or sale of steel products. Excess capacity of specialized human capital can also be utilized by the provision of non-audit services. Non-audit services are also dependent on contracting competence and with fixed costs of human capital sunk against the provision of the audit, the marginal cost of providing some non-audit services by larger firms may be low. Additional efficiency associated with non-audit services may also arise because of the large fixed investment in learning the firm specific attributes of large auditees - again these costs are sunk against the audit and lower the cost of provision of other (non-audit) services.

While traditionally the auditing research literature has questioned the issue of auditor independence where there is joint supply of audit and non-audit services, the value of a particular auditor's reputation for independence in conduct of the audit ensures audit firms are careful not to erode the value of this attribute. Audit firms typically arrange their organisations to protect this independence reputation by establishing separate divisions yet allow staff transfers between divisions (to utilise excess capacity), which facilitates internal "trading" of the competence but at the same time separates specialized personnel providing the audit technology from those providing the non-audit services. Consistent with protecting investments in independence, auditing divisions are run as partnerships whereas management consulting arms are typically

incorporated.[28] In this sense partners in auditing provide a larger collateral bond than they otherwise would if the audit firm were incorporated.

The general proposition that emerges from this section is that increased investment in highly specific fixed factors to supply specialized contracting competence to auditee firms is related to increased investments by audit firms to supply larger quantities of other products as part of, or in association with, the audit. The proposition effectively articulates the reasons for the relationship between audit firm size, provision of joint audit products and audit quality which is frequently offered as an underlying assumption in the literature [see for example Palmrose 1986, Healy and Lys, 1986].

Audit Quality, Quantity and Brand Name

Our propositions suggest a schema which reconciles the not well understood relationship between quantities of audit products and the quality of those products. The separation of the different product demands of auditees within the audit product imply that the auditor's production function will be multidimensional and audit quality can be related to increases in quantity along each attribute. This proposition represents an application of the proposition developed initially by Lancaster [1966]. In effect, by increasing the quantity of any attribute ceteris paribus within the product, the quality of the product rises. Simunic and Stein [1987] have also applied Lancaster's proposition to auditing. Under this approach a specific brand or a product of a specific audit quality demanded is defined with respect to a vector of quantities of particular characteristics it contains.[29]

A difficulty associated with audits is that observation of quality with respect to competence and independence and therefore credible assurances in this regard are difficult to provide. An asymmetry exists in the information set between the auditor and auditee with respect to the ability of the auditor to observe the states, judge the "fairness" of the accounting technology applied to reveal those dates and to then report where the accounting technology does not support such a view. For other types of economic goods ex ante observability difficulties with respect to quality are overcome by provision of guarantees, warranties etc. [Barzel, 1982; Klein and Leffler, 1981]. These mechanisms operate effectively because quality is revealed on consumption of the good. However, if the auditor has not been competent or fails to report where the accounting technology is inappropriate, these outcomes are not revealed with production of the audit report (i.e. the asymmetry persists).[30] Ex post, observation of quality is limited to cases where the existence of incompetence/lack of independence is revealed by legal action against the auditor [Kellog, 1986; Simunic and Stein, 1987, p. 20; Palmrose, 1988]. The courts' preparedness to rule against auditors in legal actions acts as a deterrant to auditors reducing the levels of required competence and independence. Furthermore, in decisions by the courts, negligence due to independence or incompetence is rarely distinguished adding support for the claim that independence and competence are closely tied and there appears to be little benefit for the claimholder in making the separation.

Consistent with the argument that the selection of an appropriate auditor reduces the costs of contracting, information asymmetry about auditor quality is reduced in the auditor selection process because of associations between observable attributes of audit firms and quality. The

literature describes two attributes of market structure in auditing that are important here; audit firms are categorized into industry specialisation categories [Eichenseher and Danos, 1981; Danos and Eichenseher, 1988][31] as well being either a member of the "Big 8" or the "Non Big 8".[32] Recognition of the audit firm as an industry specialist[33] brings some assurance of quality with respect to a contracting and technical competence in a class of production-investment decisions.[34] We have argued that assurances of quality with respect to competence in a given specialisation increase with the size of the audit firm. The larger firms have a greater propensity to invest in highly specific fixed factors to supply contracting and technical competence because excess capacity can be used more efficiently (than smaller firms) due to the larger auditee base with commonalities in the auditee production-investment decisions. Moreover, because of the interrelationship between the investments in fixed factors associated with contracting competence and those associated with the other audit products, a larger audit firm brings an assurance of higher quality with respect to supplying independence, competence, proximity and non-audit services across a large number of auditees. Big 8 audit firms will therefore have a higher reputation than do the smaller audit firms for a given industry specialisation.[35]

Independence and competence are difficult to sell to claimholders on the basis of management (or auditor) promises but, on the other hand, the value of competence and independence can be expected to rise when the auditor is able to bring some assurance of being a credible supplier (reputation). It would be expected that acquisition of reputations by audit firms would emerge from factors related to signalling competence and independence over time such as avoiding lawsuits, screening auditees to

avoid explicit or implicit associations with low reputation directors or managers, avoiding ownership of auditees' stocks and avoiding trading on insider information available from auditees[36].

Larger audit firms are expected to be more competent and independent because the supply of a less than an expected level of competence and independence to any particular auditee will reduce the value of the audit firm across a larger number of auditees [De Angelo, 1981b]. As we previously note, other organizational relationships within audit firms also indicate an expected association between audit firm size and reputation. Audit firms are organized as partnerships and large audit firms have a large number of partners. Consequently, a collateral bond exists as insurance against any lack of competence and independence and the bond consists not only of the assets of the partnership and the partner's assets [Ng, 1978; Wallace, 1980; Benston, 1985] but also the partner's human capital [Fama, 1980; Fama and Jensen, 1983] is tied to the firm's reputation and any reduction in audit firm reputation will reduce the value of the partner's human capital in the market for auditors. Furthermore, Watts and Zimmerman [1986, p. 318] argue that with large firms, mutual monitoring of partners will increase as the reputation of the audit firm increases. Since the organisation of audit firms means that the negligence of one partner may affect the assets of other partners, mutual monitoring between partners with respect to technical and contracting competence is expected. The implication of the argument is that, ceteris paribus, auditee contracting costs can fall when auditors are employed offering similar specialisations but with higher quantities of competence and independence (and therefore higher quality).

In summary, the suggestion here is that the larger audit firms offer higher quality (relative to the smaller firms) because of their larger quantities of each and all of proximity (as reflected by the geographical dispersion of audit firm offices), independence (as reflected in the larger number of partners) and non-audit services as well as, within their defined specialisations, larger quantities of contracting and technical competence. However, within groups [e.g., within the Big 8], audit firms are heterogeneous (differentiated) with respect to the supply of particular types of contracting and technical competence in auditing classes of auditee production-investment decisions. Some assurance of the difference in competence is signalled via differences in brand name for auditee industry specialisation. These arguments imply that switches between auditors of different sizes are explained by attempts to shift to different quality auditors. Furthermore, switches by auditees between Big Eight firms and more generally switches between auditors of approximately equivalent size, ceteris paribus, are not explained by attempts to shift to higher quality auditors but, instead by demand for an auditor with a different specialisation.

Auditor Investment Strategies

We now turn to the issue of how audit firms can respond to changes in demands of auditees. Where there are expected changes in the production-investment decisions for the auditee which are short run (viz., contracts which are written with factors of low specificity) the auditor, if possible, will embrace variable productive factors to meet such changes. However, if changes in production-investment decisions of the auditee are expected by the auditor to be long run, the auditor will have to invest via long term contracts to supply the products demanded. The auditor faced

with expected shifts in auditee demand must anticipate both the expected returns and costs of the investment in technology.

(1) The expected returns from an investment. While auditor anticipation of auditee demand changes represents a necessary condition for optimal investment by the auditor, because of portfolio considerations, it is not a sufficient condition. Even though the value of fees from an individual auditee in the auditor's portfolio may be expected to rise in future periods, the relative value of that auditee in the portfolio may fall with the result that investment strategies, other than which may be appropriate for a growing auditee, may not be appropriate across the auditee base. In short, the anticipation of marginal shifts in production-investment decisions by other auditees impacts on the relative expected weight of any particular auditee in the auditor's portfolio in future periods.

(2) The expected cost of the investment. Auditor investments can be made via:

(2a) Factor Markets. This investment strategy involves the direct purchase of factors from their respective markets, which are combined with existing factors (if appropriate) to provide the new products attributes required. This strategy is one of internal growth [e.g., Alchian, 1984, p. 35]. Internal growth through the factor markets is a relatively slow process compared to other available strategies. The nature of these problems relates to our previous argument about identifying factor specificity. It is possible that auditee changes occur faster than an auditor can make the required investments through investments directly in factor markets. Moreover, some factors (e.g., independence) may not be directly available in these markets which further retards the investment process. Consequently it would seem that this strategy is more likely to be used

where the marginal cost of investing in the new factors is low because the audit firm already holds other (underutilized) factors required for the supply of the audit products.

(2b) Sub-Contracting with Other Audit Firms. Contracting arrangements may evolve between audit firms with each retaining its separate identity. Sub-contracting arrangements may be such that they allow either separately or in combination: a sharing of fixed costs (for example, staff training); utilization (pooling) of excess capacity between audit firms; or, the provision of a particular technology by an auditor when investment in that set of factors is not justified by expected returns from any particular auditee or collection of auditees. The investing auditor may be able to acquire factors which may not be directly available from the primary factor markets (e.g., those needed to supply independence). Where the size of the client base makes it infeasible to invest in fixed factors, the sub-contracting alternative allows the possibility of short run investments for low specificity variable factors. Other modifications of these sub-contracting arrangements can evolve such as consortium (a federation of audit firms where the associate firms use the one firm name unrelated to any of the partners in either of those firms). Other characteristics can include joint development of manuals and exchange in the use of offices, yet with each associate firm retaining autonomy in the running of its own operations.

A variation of the consortium arrangement is an association of audit firms with one or two audit firms dominating the association. The dominant firm(s) provide specialist advice on the satellite firms' audits and these firms, in return, audit the dominant firms' auditees in their respective geographical locations. The satellite firms use the staff training facilities

of the dominant firm. This form of association is similar to a franchise agreement. Franchise agreements in the retail product markets typically involve the franchisee contracting for the right to use a national firm name, national advertising and national training programs in exchange for a share of profits to the franchisor. It would be expected that a feature of the franchise agreement would be provisions for the establishment of quality control standards and monitoring of performance of the franchisee.[37]

(2c) Mergers/Acquisitions. This investment strategy involves investing in factors of production through another firm. The strategy results in combining of auditees into a new portfolio. A merger between firms is more likely where it is less costly for the participating firms to trade internally for the factors required to provide the audit products to their auditees with the anticipated demand shifts. The lower the costs of contracting by trading internally between the firms (compared to the costs of contracting under alternative investment strategies such as sub-contracting), the lower the costs of producing the audits for the auditees undergoing these changes. Mergers (in general) can also be associated with economies of scale in production. A merger investment by an audit firm may involve additional investment in fixed factors, and the audit firm will be placed in a position where an increase in the auditee base (expected fees) is simultaneously associated with the increase of the fixed costs. In other words, if the investment is such that the audit firm now faces decreasing unit costs with successive outputs, a merger facilitates increasing output and at the same time allows the firm to offer its product(s) at lower cost.

In adopting an investment strategy, the possibility exists that the auditor in seeking to maximize the value of the portfolio of auditees held,

may not correctly anticipate production-investment decision changes by any auditee or group of auditees. The magnitude of the loss which is experienced by the auditor in these situations will be determined by whether the costs imposed on the auditee will be sufficient to induce a switch to another supplier and the extent to which the incumbent auditor can replace this auditee with auditees demanding the auditor's product attributes. Also, the possibility exists that despite a failure of the incumbent auditor to invest in factors in response to anticipated changes by the auditee (as the auditee would expect the auditor to do), the auditor will remain the least cost supplier in that no other product offered in the market suits the auditee better. In other words an auditee does not have the opportunity to unbundle the audit product of the auditor into its product attributes to establish a configuration that maximizes the value of the audit.

IV PRODUCT DIFFERENTIATION AND AUDIT PRICING

A number of propositions with respect to audit quality have emerged from the previous sections. Since a positive relationship between price and quality is expected [Klein and Leffler, 1981] our propositions should allow predictions with respect to audit prices in situations where different audit quality is expected. Furthermore, since a considerable body of pricing literature has now emerged, the extent to which the evidence supports (or contradicts) our predictions can be considered.

The audit pricing literature has dichotomized audit firms into size categories (typically Big 8 and Non-Big 8) and tested various hypotheses about fees charged by these firms to "large" and "small" auditees. We have made the argument in this paper that Big 8 audit firms are expected to invest to supply greater quantities of the audit products of contracting and

technical competence, independence, non-audit services and proximity within a given specialisation. In turn, the investment to supply each of these attributes increases audit quality. In contrast, while smaller Non-Big 8 audit firms will invest in factors to provide contracting competence for their auditee base, it is unlikely that they will invest in the same quantities of the other attributes, particularly independence and proximity. As a consequence the quality of the audit offered by smaller Non-Big 8 audit firms is lower than that for a Big 8 audit firm. Since none of these inputs are acquired costlessly Big 8 firms (compared to Non-Big 8 firms), are expected, on average to provide higher priced audits to auditees to reflect the higher cost of providing the audit.

Economies of scale considerations also affect this pricing proposition. We argued earlier that the supply of audit product attributes of Big 8 firms is likely to be accompanied by Big 8 firm investment in fixed factors to reflect the auditee demand for an increasingly specialized audit product. Investments in fixed factors not only imply increasing auditor size but shifts in the long run average cost curve, ceteris paribus, downward and to the right reflecting the benefits of economies of scale with a larger auditee base. Consequently, the benefits of economies of scale are expected to work in the opposite direction, and for large firms ceteris paribus this will reduce audit prices.

However, investments in factors for small auditors will not be described by the same process. Small auditors will invest in fixed factors only so far as investment in these factors can be recovered across the auditee base of (typically) small auditee firms. The nature of the fixed factors will be different as these auditors invest "from the bottom up" in factors (e.g. computer equipment) suited to the auditee base. In contrast,

small auditees of Big 8 auditors share in the economies of investment in fixed factors from "the top down" in that the investments (for example, regional offices and specialized personnel) are directed at large auditees. However, when Non-Big 8 audit firms are forced to service large auditees they are expected to substitute variable factors and (compared with Big 8 auditors) will suffer diseconomies of scale in provision of these audits.

Our predictions with respect to a comparison of expected prices between Big 8 and Non-Big 8 audit firms can now be summarised. With respect to large auditees, Big 8 auditors would command a higher price for provision of higher quality audits than Non-Big 8 auditors. However, economies of scale advantages of the Big 8 group in audits of large auditees would operate to lower the price charged by Big 8 auditors compared with the Non-Big 8 auditor group. Moreover, diseconomies of scale arising from the necessity to invest in variable factors for large auditees and suffered by the small auditors in these audits would operate to raise prices for this group relative to provision by larger auditors.

In the absence of information about cost functions for both groups of auditors it is difficult to hypothesize about the relative magnitude of each of these effects. Consequently, while it is expected that the price differential earned by Big 8 auditors would be reduced because of the economies/diseconomies considerations, whether or not this difference between the two groups disappears completely can only be resolved empirically.

The research evidence from the audit pricing literature suggests that price differences between Big 8 and Non-Big 8 auditors do not exist with audits of large auditees. The evidence indicates that for large companies (mean assets > $100million US) the large (Big 8) audit firms do not obtain

a higher price than small (Non-Big 8) audit firms [Simunic, 1980; Simon, 1985; Palmrose, 1986; Francis and Stokes, 1986].

With respect to audits of small auditees, while the Big 8 price difference for quality would remain, economies of scale from the investments in fixed factors by both groups of auditors would operate with the effect that any price difference between the groups of audit firms would be likely to remain. However, because larger auditors invest in fixed factors from "the top down", diseconomies of scale arise for larger auditors from their necessity to invest in variable factors for servicing small auditees, and this would operate to raise prices for this group relative to provision by smaller auditors. Whilst it is expected that the price differential earned by Big 8 auditors would be reduced because of these considerations, as before, whether or not the price difference between the two groups disappears completely can only be resolved empirically. The research evidence suggests the price difference remains. For small companies (mean assets < $100 million US) large (Big 8) audit firms do obtain a higher price than small (Non-Big 8) audit firms [Francis, 1984; Francis and Stokes, 1986; Palmrose, 1986; Francis and Simon, 1987[38]].[39] Simon and Francis [1988, p. 263] report that, across these studies, the prices of Big 8 audit firms have been consistently estimated at 16% to 19% higher than Non-Big 8 prices.

If there are diseconomies of scale suffered by small (large) auditors in audits of large (small) auditees the question arises as to why do we observe large (small) auditees using small (large) auditors? One explanation could be that inefficient producers are observed in the short run but in the long run these inefficient producers would be driven out of the market to be replaced by more efficient producers [Francis and Stokes, 1986].

Alternatively, if for some large (small) auditees other monitoring mechanisms efficiently substitute for external auditing at the margin, then these firms may be able to efficiently utilise small (large) auditors. Moreover, costs of switching are important in the retention/switch decision where auditee attributes change and the distinction between Big and Small in the auditee and auditor market is at the margin, arbitrary.

V CONCLUSIONS

The purpose of this paper has been to provide an explanation of the nature of differences in the audit products supplied by audit firms. Relying upon the explanation that observed specialisation by auditee firms in product markets is a function of the contracts written to combine factors of production, and since auditing is one such factor, we have argued that the nature of the audit product will derive many of its attributes from the nature of the auditee firm's production-investment decisions. The demand for auditor contracting competence and technical competence (i.e., the demand for an audit technology) was argued to derive from the demand by auditee firms for monitoring and arbitrating the production of accounting information to reduce the costs of contracting through the firm. In addition, the demand for independence is derived from the arbitration demand, and together with auditor proximity and non-audit services, these product attributes are demanded to reduce the costs of contracting by auditee firms.

The separation of the product attributes within the audit product implies that the auditor's production function is multidimensional and that audit quality can be related to increases in the quantity of one or more product attributes. The interdependence between the product attributes implies that a change in the mix of fixed and variable factors in the

investment in any attribute (or a combination of attributes) may have spillover effects to the other attributes.

Auditee assurances of the audit quality resulting from auditor investments emerges via brand names. We attempted to reconcile the approaches taken in the literature to explain brand name reputations and the evidence on audit pricing with the structure of the market for audits implied by our propositions.

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FOOTNOTES

1 See for example [Burton and Roberts, 1967; Carpenter and Strawser, 1971; Bedingfield and Loeb, 1974; Chow and Rice, 1982; De Angelo, 1982; Nichols and Smith, 1983; Palmrose, 1984; Schwartz and Menon, 1985; Healy & Lys, 1986; De Fond, 1987; Danos and Eichenseher, 1988; Williams, 1988; Johnson and Lys, 1988].

2 Auditors are distinguished by size differences such as 'Big Eight' and 'Small' while auditees are identified as 'large' or 'small' (for example, on the basis of mean asset size). Differences in prices (or the lack of them) are identified between 'Big Eight' and 'Small' auditors [Simunic, 1980; Francis, 1984; Firth, 1985; Simon, 1985; Palmrose, 1986; Francis and Stokes, 1986; Francis and Simon, 1987], and within the 'Big Eight' auditors [Simunic, 1980]. The differences are observed across countries. Firth [1985] used New Zealand data; Francis [1984] and Francis and Stokes [1986] Australian data, while the remainder of the studies listed above used U.S. data.

3 For example, in the U.S. the Metcalf Committee [1977], the Cohen Commission and the Dingell Committee have all investigated competition in the audit industry. Among other things concentration, increased competition and price cutting were identified as leading to an erosion in the quality of audits. For a review of these arguments, see Dopuch and Simunic [1982].

4 Contracting costs include costs incurred by buyers and sellers in searching for a party interested in contracting, negotiating the

contract, executing the contract in an acceptable form, monitoring and enforcing performance and making the contracted payoffs [Ball, 1988, p. 41].

5 Alchian [1984, p. 36] defines the quasi-rent specific to a resource as the return on the investment cost that is non-salvagable if the other resources to which it is specifically dependent in the coalition, disappear.

6 In this sense the firm holds no general assets as firms will only contract with factors (and vice versa) when there is, ex ante, the possibility of value added. This departs from Alchian's [1984, p. 39] definition of a firm. Alchian [p. 39] in defining the firm states "A firm is a coalition of interspecific resources owned in common, and some generalized inputs,..." (emphasis added). Implied by this definition is that "generalized inputs" have no specificity. However, an apparent inconsistency emerges with Alchian's attempt to operationalize specificity with respect to particular contracts (e.g., with labor). Alchian argues [p. 41] (with) "generalized labor ... no one has significant effect on the salvageable value of any of the coalition's assets, even though the set of laborers ... as a set would seriously affect the coalition value if they all refused to deal with the coalition" (emphasis Alchian's). Implied now is that generalized labor is of low specificity.

7 See Ball [1988, p.2] for other major contributors to the literature in this area.

[8] The operational form of this proposition has appeared elsewhere in the literature. For example, Spence [1974] (although not in this context) suggests some details of the mechanisms by which the representation of economies of scale in contracting may emerge for the firm. Spence argues [p. 112] that firms are mechanisms for screening and monitoring suppliers more efficiently than consumers where firms have information advantages on suppliers' ability to perform certain tasks. See also Klein, Crawford and Alchian [1978, p. 315].

[9] It is important to note that a firm's economies of scale in contracting are different from economies of scale in production. Economies of scale in contracting may exist independently of economies in production and vice versa. Furthermore, economies of scale in production are available to both consumers and firms [Riordan and Williamson, 1985].

[10] This proposition has been recognised by many researchers. For example Jensen and Meckling [1976] argue that managers have incentives to provide financial statements and to have their accuracy testified by an independent outside auditor. See Watts and Zimmerman [1986] for a review of the literature that posits accounting and external auditing as integral to contracting through firms.

[11] Other mechanisms could be used by firms to reveal the state of outcomes of production-investment decisions, e.g., contracts with labor on piece rates, and progress payments to construction contractors on

a percentage of completion basis where revelation of the states is dependent on the report of (for example) an engineer. Moreover, it cannot be concluded that the accounting technology is more efficient because of the frequency of its use, as much of present accounting practice is regulation induced. However there is evidence that, in the absence of regulation, accounting technologies are used voluntarily (e.g.,[Holthausen and Leftwich, 1983]) and vary in response to contract types [Zimmer, 1986; Whittred, 1987].

12 Although not argued from within the framework Ijiri [1975, p. 37] offers some insights into this process:

> "... the value of a firm is a subjective measure not because it is not registered in external reality, but because there is a wide variety of figures that are assigned by persons measuring the value".

13 See, for example, Leftwich, [1983]; Whittred and Zimmer, [1986]. Watts and Zimmerman, [1986] provide a survey of evidence of the use of accounting numbers in firm contracts.

14 An outcome of this proposition is that the ex ante contracting explanations for accounting choice (for example, [Zimmer, 1986; Whittred, 1987]) and the ex post opportunistic behaviour explanations (for a review see [Holthausen and Leftwich, 1983]) are applicable only in so far as states (including opportunistic behaviour by claimholders) are not fully anticipated prior to performance of the contracts. With positive contracting costs, full anticipation of states

is not always expected. Fama [1980] and Diamond [1985] recognize the existence of alternative mechanisms to control ex post (unexpected) opportunism in labour markets and debt markets respectively. However, the argument here would predict that the extent to which control of unexpected opportunism is left to ex post settling in a market is inversely related to the specificity of a factor in a coalition.

15 Monitoring is used here to encompass the activities of fraud detection and prevention and those activities identified by Alchian and Demsetz' [1972, p. 782] description of the role of monitoring in the firm: to measure output performance, apportion rewards and observe behaviour of inputs).

16 Other monitoring and arbitrating mechanisms do exist and can be used by the firm e.g. internal auditors [Maher and Cheh, 1985], outside directors, compensation committees, internal control systems, courts of law. Again it cannot be concluded that external auditing is the more efficient monitoring and arbitrating mechanism because of its frequency of use, as like accounting, much of present auditing practice is regulation induced. However, there is evidence that, in the absence of regulation, external auditing is used (e.g. [Watts, 1977; Watts and Zimmerman, 1983; Chow, 1982]).

17 This demand for monitoring appears to be aligned with descriptions of demand for control (see e.g. [Simunic, 1980; Dopuch and Simunic, 1982; Simunic and Stein, 1987]).

18 Williamson [1975, p. 31], Cheung [1983, p. 8] and Ball [1988, p.11] use arbitration in similar contexts to the one presented here. Ball also refers to the arbitration function as an auditing technology. The term audit technology is used later in this paper to embrace contracting and technical competence. The demand for arbitration appears to be aligned with descriptions of demand for credibility (see e.g. [Dopuch and Simunic, 1982; Simunic and Stein, 1987]).

19 The application of the principle of materiality by the auditor is relevant to both the monitoring and arbitrating role. In monitoring the revelation of states the auditor is required to make judgements on deviations between the revealed states and the expected revelations given particular states have occurred. Within a monitoring role the auditor must make judgements on the extent to which errors affect payoffs to the contracting parties given the accounting technology has been correctly applied. When unanticipated events arise the auditor must make judgements within the arbitration role about the extent to which payoffs to any party are unsettled.

20 Cheung [1983, p. 8] provides an example which demonstrates both the difficulty (cost) of measuring the Marginal Value Product of each factor and the way that the problem can be resolved through arbitration. He describes ... "riverboat pulling in China before the communist regime, when a large group of workers marched along the shore towing a good-sized wooden boat. The unique interest of this example is that the collaborators actually agreed to the hiring of a monitor to whip them. The point here is that even if every puller

were perfectly 'honest', it would still be too costly to measure the effort each has contributed to the movement of the boat, but to choose a different measurement agreeable to all would be so difficult that the arbitration of an agent is essential." The whip handler is able to recognize the specific resources brought to the coalition by each of the boat pullers and reacts to particular observed states accordingly and so will know which of the pullers to hit as (say) marshes and hills are encountered.

21 In some countries, e.g. United Kingdom and Australia, audit opinions are couched in terms of "truth and fairness". Truth in the sense above means that actual revelation of an expected state is in accord with the expected revelation given that state occurs. Truth is related to the monitoring role of the auditor and truth in any absolute sense is not implied. Similarly we do not attach any regulatory meaning to descriptions such as "subject to ..." in the argument above. It is not surprising, however, that tighter specifications of "truth" and "fairness" have failed to emerge in regulations applicable across all auditee firms.

22 This is consistent with the general model specified by Watts and Zimmerman [1986]. They argue that the probability of an auditor reporting a breach conditional upon any breach occurring depends on the joint probability that the auditor discovers the breach and having discovered a breach, reports it. The first probability reflects competence of the auditor while the second reflects the independence of the auditor.

23 Financing contracts which emerge in the firm do so, at least in part, because of the control (governance) they can bring in protecting claimholder payoffs. There is a growing body of evidence which recognizes the supply of governance as a potential determinant of capital structure. For example, the control functions of debt are reviewed in Jensen [1986]. For other applications consistent with this theme see Thatcher [1985]. Furthermore it is not suggested that each of the contracts associated with financing investments relies on the same levels of auditor competence in monitoring and arbitrating. To the extent that the claimholders are able to anticipate opportunistic behaviour by other claimholders (including managers) and have an efficient mechanism to control that behaviour (e.g., personal guarantees by directors, internal audits and external directors) external auditor competence is less valuable.

24 This does not imply that audit firms offer uniformity with respect to contracting competence and the other audit product demands of auditees.

25 For example, Francis and Wilson [1988] argue that as the diversity of shareholding increases the demand for auditor independence increases.

26 A potentially anomalous observation, given this argument, is the provision of non-audit services to auditees by audit firms that are not the incumbent auditors. An auditee may exploit the comparative advantage of particular audit firms with respect to providing non-audit services relating to marginal changes in the auditee's

production-investment decisions. However, given this demand it does not follow that the provider of these non-audit services has contracting competence sufficient for conduct of the audit across the entire range of existing and anticipated production-investment decisions of the auditee.

[27] The types of production-investment decisions may be highly correlated with a particular output classification (e.g., industry type) but this need not necessarily always be the case. This proposition stands in contrast with any argument that there is a trade-off between gains from specialization and portfolio diversification. It has been argued above that gains from contracting specializations explain both auditee production-investment decisions and (as a consequence) auditor technologies. The gains from portfolio diversification come not from a decision by the auditor to hold auditees across industries, but because investment decisions and contract type(s) that the audit firm specializes in, exist across industries. Conversely, contracts will differ between auditee firms within an industry. For example, contracts described on the basis of a firm being in the 'Oil and Gas' industry would be expected to differ depending on whether the firm is a producer or explorer. A competing explanation is that if auditor returns are tied to auditee returns then observed diversification by auditors across auditee industries is a mechanism to reduce portfolio risk. This argument is not considered further.

28 Where independence reputation is not valued by auditees, the incumbent audit firms are expected to be small with staff responsible for providing both audit and non-audit services.

29 Simunic and Stein have argued:

"With differentiated audit services, quality of service can be compared using any dimension of interest if the quantities of the suppressed characteristics are at least equal. For example, an audit service described by the vector {2, 8, 5} (for a set of characteristics) is of higher quality than the service {2, 5, 5}, and of lower quality than the service {2, 9, 5}, but not comparable in quality to the service {1, 10, 5}" [Simunic and Stein, 1987, p. 10].

30 Assurances are difficult to sell to claimholders on the basis of auditor promises that audits are in accord with generally accepted auditing standards [Simunic and Stein, 1987, pp. 18-19].

31 Eichenseher and Danos [1981] develop a model to explain auditor concentration in a given industry which argues there is expertise related economies of scale for auditors in dealing with the regulatory complexity faced by auditees. Audit firms make investments in expertise related to the regulations and once this expertise is acquired, additional auditees can be audited at lower marginal cost than the cost to audit the first (or first few) auditees. They find empirical support for their argument in tests of association between concentration and two sources of regulatory complexity. They [Danos and Eichenseher, 1988] provide an explanation and evidence for

bounds to this process (i.e., at the limit why one audit firm does not audit an entire industry) induced by the aversion of a auditee to accept an auditor of a close competitor.

32 Francis and Wilson [1988] summarise the auditing literature using this brand name classification. See also Ettredge, et al., [1988].

33 This recognition can arise through sponsoring conferences, producing industry publications, and advertising.

34 Industry specialisation is an output classification proxying for competence in a class of production-investment decisions [inputs].

35 This is not to argue that smaller audit firms could not offer larger quantities of the audit product attributes. All audit firms are bound by registration requirements to offer minimum levels of competence and independence. Smaller firms could offer large quantities of audit product attributes in the short run by injecting additional variable factors or acquiring additional fixed factors to match the larger firms. But their audit product would not be competitively priced given their smaller auditee base. See a further discussion of this point in section IV.

36 For the audit firm there appears to be no short run method of acquiring reputation (with the possible exception of merging with high reputation firms).

[37] The economics of franchising is considered in more detail by Mathewson and Winter [1985] and Norton [1988].

[38] Francis and Simon [1987] also show the Big 8 higher price exists with respect to both the second tier national audit firms and the local/regional audit firms. There is no evidence of a price differential between the second-tier firms and the local/regional audit firms.

[39] Firth's [1985] New Zealand study did not find a significant difference in the prices although this has been attributed to institutional restrictions in the use of Big 8 accounting firm names in New Zealand prior to 1983. The restrictions suggest the Big 8 were not differentiated producers from the Non-Big 8.