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Transaction costs and competition among audit firms in local markets☆

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ABSTRACT

We develop a measure to capture an audit firm's competitive position in a local audit market based on the transaction costs of changing audit firms included in DeAngelo's (1981) multi-period audit pricing model. Our competition measure reflects the size difference between the largest audit firm in a market specified by client industry at the city level and the other audit firms operating in that market. We find that audit fees of a client decrease as this size difference increases. This result suggests that smaller audit firms charge lower audit fees because of their competitive disadvantage to the local largest firm.

1. Introduction

We develop a measure to capture an audit firm's competitive position in a local audit market based on the transaction costs of changing audit firms included in DeAngelo's (1981) multi-period audit pricing model. Audit markets in the U.S. and elsewhere have clearly become more concentrated since the late 1980s after several rounds of consolidation among the largest public accounting firms (Ferguson et al., 2014). The nature of competition among audit firms has been of concern to regulators (e.g., Subcommittee on Reports, Accounting and Management of the Commission on Government Operations U.S. Senate, 1977; Government Accountability Office [GAO], 2003, 2008) and of interest to researchers (e.g., Dopuch and Simunic, 1980). Regulators' concerns center on the possibility that a lack of competition among audit firms will lead to higher audit prices, lower audit quality, and hence a lower quality of financial reporting by companies. Auditor competition is therefore an important issue, but to understand the nature of competition, it is essential for auditors' competitive positions to be properly measured.

We develop our measure based on the effects of variations in the size of suppliers (audit firms) in a market on audit service production and pricing. It is well known that client companies retain their audit firms for multiple years, rather than

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changing them every few years, presumably because the transaction costs (i.e., audit firm learning costs and client-incurred switching costs) of audit firm change are non-trivial. This leads to the multi-period pricing of audit services analyzed in DeAngelo (1981), Magee and Tseng (1990), and Sabac and Simunic (2001). We argue that the competitive pressure on any incumbent audit firm's fees depends fundamentally upon the ease with which the audit firm's clients can switch to a competing audit firm. If the transaction costs are low, the ability of the incumbent audit firm to extract economic rents from clients is limited;[1] conversely, high costs of changing auditors give an incumbent auditor greater pricing power. We conjecture that transaction costs are decreasing in the relative operational size differences among competing audit firms in a market. The greater the operational size difference between the largest available supplier (auditor) and the incumbent supplier, the lower will be the transaction costs for a client of the incumbent firm to switch to the largest supplier and hence the lower the incumbent's audit fee.

In any study of price competition, it is important to identify the boundaries of the market within which competition occurs. We first consider competition in MSA-Industry markets that are defined by U.S. Metropolitan Statistical Areas (MSA, U.S. Census Bureau definition) and client two-digit Standard Industrial Classification (SIC). We measure an audit firm's operational size in an MSA-Industry market as the total audit fees the audit firm receives in this market, which basically captures the industry-specific size of staff and facilities involved in performing the audits in this market. Beginning with the paper by Craswell et al. (1995), a large literature in the economics of auditing posits that the two-digit SIC industry in which a client operates is important in defining a market for audits. That is, specialized, two-digit-industry-specific knowledge is assumed to be necessary for an audit firm to compete within a market. Based on the premise that all audit firms with clients in an industry have the necessary expertise to audit their clients properly, an audit firm's relative operational size within an industry should be the most relevant determinant of the transaction costs of auditor change in the industry.

We combine these arguments with the simple multi-period audit pricing model in DeAngelo (1981) to develop empirical predictions concerning audit fees as a function of the size of the conjectured costs of audit firm change. Our arguments predict that, ceteris paribus, audit fees charged by an incumbent audit firm that does not have the largest operation in an MSA-Industry market are a decreasing function of the relative size of its operation. That is, for any audit firm operating in an MSA-Industry market, *ceteris paribus*, audit fees will decrease as the relative size of the operation decreases. This effect is captured by our variable DIFFERENCE, which measures differences in audit firm market shares within MSA-Industry markets. We define DIFFERENCE as the total audit fees earned by the largest audit firm in an MSA-Industry market, minus the total audit fees earned by the incumbent audit firm, scaled by total audit fees earned by all audit firms in this market.

We next consider the possibility that the relevant boundaries of local audit markets are simply defined by geographic U.S. Metropolitan Statistical Areas, without considering client industry. While prior literature normally incorporates client industry in the definition of audit markets, the appropriate definition of industry is not obvious. Many differences at the 2-digit industry level may not be relevant to auditors. For example, whether an audit client manufactures "textile mill products" (SIC industry 22) or "apparel & other textile products" (SIC industry 23) or "lumber and wood products" (SIC industry 24) may not matter. Since many industries identified by the 2-digit SIC codes have similar business processes and accounting practices, audits of companies in specific industries may not require unique industry expertise. In this case, auditor competition may not be bounded by client industry. To consider this possibility, we also test our competition measure using a simple geographic definition of markets as defined by U.S. Metropolitan Statistical Areas. However, given the importance of client industry in prior research, we expect that the operational size in an MSA-Industry market is more relevant to determining audit fees than the operational size in a geographic MSA market.

Although an audit firm's operations *outside* an MSA-Industry market likely do not have the same impact on transaction costs compared to operations *within* the market, it is plausible that the operations outside a market can still affect the magnitude of transaction costs, particularly for the largest audit firm within an MSA-Industry market. If the largest firm in an MSA-Industry market also has the largest operations outside the MSA-Industry market, its competitive advantage within an MSA-Industry market may increase, allowing it to charge relatively higher audit fees. We posit that the transaction costs of an audit firm are the lowest in an MSA-Industry market if the firm has the largest operations both in the MSA-Industry market and outside the market. We examine three measures of operations outside of an MSA-Industry market: (i) operations in the same MSA but in other industries, (ii) operations in the same industry but in all other MSAs, and (iii) operations outside of the MSA.

We test our audit pricing hypotheses using U.S. public company audit fee data from 2000–2011. We find that the audit fee charged by an incumbent audit firm decreases as the size difference between the largest audit firm in an MSA-Industry market and the incumbent audit firm increases. *Ceteris paribus*, an audit firm with DIFFERENCE equal to the average in our sample charges fees 7.6% lower than the largest audit firm in the MSA-Industry market. Importantly, the operational size difference between the largest audit firm in an MSA-Industry market and the incumbent audit firm is not associated with lower audit quality proxied by abnormal accruals, suggesting that our measure of competitive position captures market power rather than audit quality differences. Moreover, we show that competition occurs mainly within an MSA-Industry market rather than a purely geographic MSA market. Finally, we show that the size of operations outside an MSA-Industry market of the largest audit firm in the MSA-Industry market support the dominant firm's competitive position within the MSA-Industry market.

[1] In the limit, if the transaction costs of auditor change are zero, then audits would simply be purchased and priced independently each period.