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The effect of concentration and regulation on audit fees: An application of panel data techniques☆

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ABSTRACT

The financial audit – which is mandatory for publically traded companies – plays an important role in the transparency and efficiency of global capital markets. Yet, the cost of complying with the laws and regulations requiring financial statement review by external auditors can be substantial. Moreover, the supply-side of the audit market is dominated by a few firms. As a result, policymakers in many countries have an interest in considering the cost of additional regulation as well as ensuring that the concentrated nature of the audit market does not result in anti-competitive pricing. The goal of this paper is to provide new estimates of the extent to which regulation and market concentration have contributed to higher audit fees using a panel data approach. To accomplish this we use U.S. data from 2000 to 2010, a period that includes a large change in market concentration as a result of the collapse of the third largest auditor in 2002. In addition, the passage of the Sarbanes–Oxley Act (SOX) in 2002 in response to a series of accounting scandals, allows us to exploit an abrupt change in the regulatory environment. We find that the cost of additional regulation has been substantial and persistent. In addition, our results support the notion that the burden is larger for smaller firms. This was the rationale for exempting the smallest firms from the most costly provisions of SOX by the Dodd–Frank Wall Street Reform and Consumer Protection Act (Dodd Frank). However, our results suggest that greater market concentration has only a very small impact on the fees of large clients, suggesting that fears that market power would generate higher fees are largely unwarranted.

1. Introduction

Because transparency and investor confidence are important to capital market efficiency, policymakers have encouraged the accurate dissemination of information via mandated financial statement audits for publically traded companies. However, the cost of complying with the laws and regulations requiring financial statement overview are substantial. In the United States each year public companies pay an average of $11 billion in audit fees. In addition, the provision of audit services is concentrated in the hands of a few dominant auditors in most developed countries. This has raised the attention of regulators, producing government inquiries in the United States, a review by the Competition Commission of the United Kingdom and the consideration of proposals to remove barriers to entry for small auditors by the European Commission. Clearly, policymakers also have an interest in ensuring compliance costs are reasonable and that public companies can access audit services in a well-functioning audit market. This paper seeks to shed light on two important factors potentially influencing audit fees: (1) changes in market concentration, including the collapse of one of the largest public accounting firms and (2) regulatory changes, namely the recent internal control requirement mandated by the

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Sarbanes–Oxley Act (SOX). Rigorous analysis of these factors should provide further guidance to policymakers and researchers as they address issues surrounding regulation and the concentrated nature of the audit market.

To address these questions we exploit variation that resulted from two events in the United States in the early 2000s. The first was the failure of Arthur Andersen (AA) in 2002, whose collapse in the wake of the Enron scandal left just four large suppliers of audit services. Given the emphasis placed on the merits of effective competition, the increasingly tight oligopoly in the audit service industry raises concerns about non-competitive pricing behavior. While traditional industrial organization theory (Bain, 1956) suggests that adverse effects would surface in highly concentrated industries, more recent theories hypothesize that such industries can still be very price competitive. In addition, empirical studies of the audit industry have not reached consensus on whether or not the handful of dominant auditors are able to exert market power. The second important event was the passage of the Sarbanes–Oxley (SOX) Act in 2002, enacted in response to the accounting scandals of this period. One of the major provisions of the legislation, which we examine in this paper, requires company management to assess the effectiveness of its internal controls over financial reporting in each annual report filed with SEC and to have an external auditor provide an opinion on that assessment — known as auditor attestation.[2]

To provide policymakers with estimates of the cost of SOX's internal control review requirement, as well as the impact of greater concentration in the audit industry, we employ an unbalanced panel dataset containing observations on several thousand auditor clients from 2000 to 2010. To separately estimate the impact of overall concentration and the effect of the internal control review, we exploit differences in when clients implement the internal control review and variations in the level of concentration in the audit market at the level of the client's industry.

We employ panel data methods that allow researchers to identify and measure effects that are not detectable in pure cross-sectional and time series designs. In general, the existence of data on audit fees across auditors' clients and over time allows researchers the opportunity to use techniques that enhance the validity of parameter estimates and hypothesis tests by providing more variability, less collinearity among variables, more degrees of freedom and efficiency and the opportunity to account for heterogeneity across clients explicitly. The fixed effect specification also helps to mitigate some of the concerns over omitted variable bias inherent in the more standard cross-sectional audit fee model dominant in the accounting literature (Hay et al., 2006). Despite the advantages of the panel data methodology, this approach has not been fully leveraged by researchers looking to explain audit fees. As such, a contribution of this paper is providing more precise estimates using econometric techniques and data that go beyond the existing literature.

We find that the internal control review requirement can account for a great deal of the increase in audit fees since 2002 and that regulation of a similar magnitude would likely result in a similarly high cost of compliance. In addition, our results lend some support to the view expressed by policymakers in the United States that the SOX internal control review is disproportionately burdensome for smaller clients and warranted the exemption from the auditor attestation requirement granted by the 2010 Dodd–Frank Act. In addition, for small clients we find that market concentration has no effect on audit pricing while for large clients greater concentration is associated with a very small increase in audit fees.

The paper proceeds as follows: The next section provides background on the audit market, and Section 3 discusses the link between audit fees and auditor size. Section 4 describes our methodology. In Section 5 we discuss our data and present the results in Section 6. We make concluding remarks in Section 7.

2. The market for audit services

The audit market changed dramatically in 2002 when one of the largest auditors, Arthur Andersen (AA), collapsed due to improprieties related to its audits of the Enron Corporation. Prior to its collapse, Arthur Andersen, along with PriceWaterhouseCoopers, Ernst and Young, KPMG and Deloitte and Touche accounted for 96.8% of the fees paid by publicly traded companies for audit services. This group is often referred to as the Big 5 prior to the collapse of AA, and the Big 4 afterwards. In the four years after AA failed, its market share was largely absorbed by the remaining top-tier auditors, suggesting that an already tight oligopoly had become even tighter.

The basis for the concern over non-competitive market power during this period is clear from the Herfindahl–Hirschman Index (HHI), which measures the extent of market concentration within an industry. Fig. 1 plots the index and the average fees paid by clients during the year. In 2000, the HHI was between 1500 and 2500, a range the U.S. Department of Justice the Federal Trade Commission (2010) defines as moderately concentrated. At this level of concentration the U.S. Department of Justice the Federal Trade Commission (2010) states that an “increase in the HHI of more than 100 points potentially raises significant competitive concerns” (Section 5.3). The 350 point increase after the collapse of AA was above this threshold, and coincided with a large increase in audit fees. Since 2004 there has been a reversal of this trend, although both fees and the HHI remain elevated above their pre-AA failure levels. It is important to note that market concentration is only an indicator of the extent to which audit firms can exercise power and, significant concentration does not necessarily imply that anticompetitive behavior is occurring. For example, competition in an oligopoly can be intense and result in competitive prices, innovation, and high-quality products. Because market shares may not fully reflect the competitive significance of firms in the market, the relationship between concentration and audit fees is largely an empirical question.

After AA's failure, the Sarbanes–Oxley (SOX) Act puts additional regulations in place to prevent future accounting scandals and associated losses to investors. Our analysis concentrates on the most costly, of SOX's provisions, Section 404, which requires public companies to review their internal financial controls and have their auditors attest to their adequacy. Accelerated filers, defined as

[2] The auditor attestation process involves the external auditor's testing and evaluation of the company's internal control over financial reporting and relevant documentation in order to provide an opinion on the effectiveness of the company's internal control over financial reporting.