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**The Effect of Mandatory Audit Firm Rotation on Audit Quality,
Audit Fees and Audit Market Concentration:
Evidence from India**

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Abstract

In India, the government introduced mandatory audit firm rotation following calls to improve audit quality and auditor independence in the wake of the Satyam accounting scandal. The absence of strong institutional mechanisms to prevent and detect audit failure in a timely manner has led the government to require periodical audit firm rotation. Evidence from firms for the years 2014 to 2017 suggests that mandatory audit firm rotation does not appear to have improved audit quality, reduced audit costs and increased audit market competition.

Keywords: auditor changes; audit fees; audit quality; audit market concentration

JEL Classification: M42, M48

I. INTRODUCTION

This paper examines the association between mandatory audit firm rotation, audit quality, audit fees, and audit market concentration in India. We provide evidence about the following questions: (1) Is there an association between mandatory audit firm rotation and audit quality? (2) Is mandatory audit firm rotation followed by initial year audit fee discounting? (3) What is the effect of mandatory audit firm rotation on audit market concentration? These questions are important because of the rising role of India in the global economy, the distinctive characteristics of the audit market in India, the features of India's accounting, auditing and corporate governance institutions, and the efficacy of mandatory audit firm rotation as a means of enhancing audit quality and increasing competition in the audit market in India and in other countries.

The rapid growth of India's economy has resulted in a surge in the country's trade and investment exchanges with other countries. Rising foreign direct and portfolio investment since the economic reforms began in 1991 has attracted international accounting firms to the country. However, unlike many other jurisdictions, the global Big Four and other large global firms do not dominate the audit market in India. The supply side of the Indian audit market is crowded by a large number of proprietorships and partnerships.¹ In 2017, the Big Four network firms accounted for 17 percent of the 7,606 listed and unlisted companies for which we could get auditor and remuneration data from the Prowess database; however, they received 26 percent of audit fees and 31 percent of total audit and non-audit fees paid by the companies.²

This contrasts with other major jurisdictions e.g. the Big Four audit 44 percent of public companies and 99 percent of the S&P 500 companies in the US and 61 percent in the European Union (Audit Analytics 2016, 2017). Unlike developed countries and other big economies, the Indian audit market is characterized by the presence of a very large number of accounting firms with many of them auditing just one listed company or no listed company.

¹ An advocacy group for local firms estimated that as at April 1, 2001, there were 11,195 partnerships of which 7,161 had two partners; 86 partnerships had 10 or more partners; besides there were 31,144 proprietorships (The Chartered Accountants Action Committee for Level Playing Field [CAAC] 2002).

² Firms in the Big Four network are: (a) Deloitte: A F Ferguson & Co., A F Ferguson Associates, C C Chokshi & Co., Deloitte, Haskins & Sells LLP, Fraser & Ross, and S B Billimoria & Co., P C Hansotia & Co., M Pal & Co., Touche Ross & Co.; (b) EY: S R B & Associates, S R B C & CO. LLP, S R Batliboi & Associates LLP, S R Batliboi & Co. LLP, S V Ghatalia & Associates; (c) KPMG: B S R & Associates LLP, B S R & Co. LLP; (d) PwC: Lovelock & Lewes, Price Waterhouse, Price Waterhouse & Co., Dalal & Shah LLP, RSM & Co. These were Indian firms that became part of the network by mergers and acquisitions.

Foreign accounting firms are not allowed to practice in India, as foreign investment is not permitted in accounting, auditing and bookkeeping, taxation and legal services. As a result, foreign firms work in India by lending their names to local firms. Indian accounting firms have lobbied against the use of foreign brand names by local firms calling them ‘surrogates’ of the Big Four and complained that foreign firms violate the country’s foreign investment policy and foreign exchange management law. In February 2018, the Supreme Court of India directed the government of India to examine their complaints and take appropriate action. Further, the government of India has called for the creation of four Indian Big Four firms of global standing that would make the Big Eight by 2022. Indian firms have stated that they are losing market share because foreign investors require that the auditor should be part of an international network. The government has responded by stipulating joint audits in such cases. Similar to India’s outsourcing firms, Indian accounting firms may attempt to transform themselves into global operations, given the availability of skilled labour at costs much lower than in developed countries.

Indian accounting and auditing standards follow the International Financial Reporting Standards (IFRS) and the International Standards of Auditing (ISA) with some modifications. Beginning April 1, 2016, listed companies and companies above a specified size must follow Indian Accounting Standards (Ind AS), the Indian version of IFRS. However, the quality of accounting and auditing is far from reassuring. Most auditors’ reports are clean. There are hardly any going concern exceptions even for companies that have defaulted on payment of loans, interest or taxes or have undergone major debt restructuring. The auditor’s additional report on internal financial controls is mere boilerplate and seldom mentions any internal control weaknesses, even though there are frequent reports of fraud, bribery, tax evasion and other breaches of law in companies. Shareholder litigation against auditors was unheard of in India until it was recently allowed by *The Companies Act 2013*. High family ownership and extensive related party transactions raise questions about the reliability of company financial reports.

Enforcement of laws in general and regulations to protect investors in particular are weak. While many institutions exist, the legal procedures are complex and time-consuming. The Satyam Computer accounting scandal is typical of how the legal and regulatory systems function.³ The scandal came to light in January 2009 when the chairman and CEO of the

³ In 2016, India ranked 66 among 113 countries in the World Justice Project’s Rule of Law Index. It ranked 77 out of 113 countries for regulatory enforcement and 93 out of 113 for civil justice (World Justice Project 2016).

company issued a public announcement. But after a delay of nine years the Securities and Exchange Board of India (SEBI) nine years banned Price Waterhouse – PwC’s Indian audit unit – from auditing listed companies for two years and ordered disgorgement of Rs 130 million (\$2 million) (SEBI 2018). Throughout this period there were numerous interventions in courts and other forums. In contrast, in separate proceedings the Public Company Accounting Oversight Board (PCAOB) and the Securities and Exchange Commission (SEC) ordered Price Waterhouse to pay fines totalling \$7.5 million besides censure and other measures in April 2011 (PCAOB 2011; SEC 2011). Very few auditors have been punished by The Institute of Chartered Accountants of India (ICAI) and the disciplinary processes take a long time.⁴

Mandatory audit firm rotation is potentially an important tool to strengthen auditor independence, enhance audit quality, increase audit market competition, reduce auditing cost, and compensate for India’s serious institutional deficiencies. India presents a mix of weak law enforcement, dominance of family-owned enterprises, rapid economic growth, growing two-way international trade and investment, strong common law traditions and independent judiciary, and zero shareholder litigation against auditors and directors. Audit firm rotation is a unique experiment to understand how businesses and auditors respond to market, legal and reputation considerations in such a setting. India provides an interesting setting to study whether rotation can help in improving the standards of auditing. This paper is related to previous research on mandatory audit firm rotation in other countries (e.g. Kwon, Lim, and Simnett 2014; Huang, Raghunandan, Huang, and Chiou 2015; Cameran, Francis, Marra, and Pettinicchio 2015; Corbella, Florioa, Gottib, and Mastrolia 2015).

Section II describes the auditing institutional arrangements in India. Section III reviews prior literature and develops our research questions. Section IV follows with a description of the models and data. After a discussion of results in Section V, Section VI concludes.

⁴ In a speech to a gathering of chartered accountants on July 1, 2017, the Prime Minister of India highlighted that during the last 11 years, only 25 CAs had been prosecuted, more than 1,400 cases were pending for years and a single case takes years to settle. (“Modi criticises ICAI’s poor record on disciplinary cases”, *The Times of India*, July 2, 2017).

II. INSTITUTIONAL ARRANGEMENTS FOR AUDITING IN INDIA

The Companies Act, a national law, regulates the functioning of companies in India. It specifies auditors' qualifications, functions, rights and duties and the manner of their appointment, removal and remuneration. Auditors of government companies are appointed by the Comptroller and Auditor-General of India (CAG), a constitutional functionary. Auditors of government banks and insurers are appointed by the board of directors from a panel approved by the CAG and industry regulators. Auditors of private sector companies, banks and insurers are appointed by the shareholders on the recommendation of the board of directors for one year at a time.

Indian legislators and policymakers have long been concerned with the threat to auditor independence resulting from the proximity of auditors to clients. Business groups tend to have the same audit firm for all their group companies for a long time. For example, A F Ferguson & Co. was the auditor of many companies of the Tata Group including Tata Steel, Tata Motors and Tata Power for many decades, until it became a part of Deloitte and then Deloitte, Haskins & Sells became the auditor of many Tata Group companies. A report suggests that 25 percent of listed companies have had the same auditor for over ten years (IIAS 2012).⁵ In 1975 *The Companies Act 1956* was amended to limit the number of company audits to 20 for an individual auditor or per partner of an audit firm. Reasons for the ceiling included the need to reduce the cosy relationship between auditors and clients, end the nexus between business groups and audit firms, and reduce the dominance of auditing by a few large firms.

Another institutional arrangement to reduce audit market concentration is the system of joint audit. Government companies and banks and all insurers must have joint auditors. While private sector companies and banks can also appoint joint auditors, most of them have sole auditors. Government companies and all banks and insurers are subject to audit firm rotation and a cooling-off period of at least three years before reappointment. The median audit firm tenure for government entities is three years versus seven years for private sector companies.

In 2002, a non-official committee recommended rotation of audit partner after two terms of three years each (Confederation of Indian Industry [CII] 2002). In the wake of the Satyam accounting scandal, the government issued the Corporate Governance Voluntary

⁵ Auditor tenures have been much longer in some companies. Hindalco Industries, a member of the Aditya Birla group, has had the same auditor for over 50 years. Two of the three joint auditors of Reliance Industries, India's largest company and part of the Mukesh Ambani group, have continued for over 35 years. The tenure of the auditors of the construction and engineering company Larsen & Toubro is more than 30 years.

Guidelines (Ministry of Corporate Affairs 2009) that recommended audit partner rotation after three years and audit firm rotation after five years and a cooling-off period of three years for partners and five years for firms.

In 2010, the Standing Committee on Finance of the Lok Sabha (the Lower House of Parliament) recommended audit firm rotation citing the Satyam accounting scandal in 2009 for private sector companies (Lok Sabha Secretariat 2010). *The Companies Act 2013*, a comprehensive revision of the previous 1956 law, includes a requirement for audit firm rotation. As explained, while mandatory audit firm rotation is not new in India, the requirement for mandatory audit firm rotation introduced by *The Companies Act 2013* is much wider in scope and applies to both listed and non-listed companies in the private sector. The change was part of the set of measures intended to improve accounting and audit quality, strengthen auditor independence, and raise the standards of corporate governance in the wake of the Satyam accounting scandal.

The Companies Act 2013 mandates audit firm rotation after a maximum of two five-year terms if the audit firm is a partnership and after one five-year term if the audit firm is a proprietorship. There should be no common partners in the outgoing and incoming audit firms. Appointments will be for a fixed five-year term. The requirement took effect from April 1, 2014 with a three-year transition. Thus, while companies can implement for rotation for fiscal year ending March 31, 2015, 2016 or 2017, rotation will be required from fiscal year ending March 31, 2018 onwards. Curiously, India has introduced mandatory audit firm rotation when some countries have either withdrawn the requirement (e.g. Brazil, Canada, Korea and Singapore) or dropped the proposal (e.g. U.S.). Three explanations are possible for the introduction of mandatory audit firm rotation in India:

1. *Response to crisis*: The government wanted to show that it was taking measures to improve audit quality in the wake of the Satyam accounting scandal in 2009. In this case, mandatory audit firm rotation was a hurried and ill-considered response .
2. *Dissatisfaction with self-regulation*: The accountants' self-regulatory body, the ICAI, is conflicted in acting against its members for low audit quality. Rotation requires the new auditor to review the previous auditor's judgment. This may be easier to achieve than getting the ICAI to tidy up its disciplinary processes.

3. *Compensating for legal and cultural gaps:* Weak law enforcement, slow and ineffective legal procedures, and shareholder apathy are pervasive and persistent problems in India.⁶ Bringing in a fresh pair of eyes every now and then may be a way to work around the problems.

III. LITERATURE REVIEW AND RESEARCH QUESTIONS

Audit Firm Rotation, Auditor Independence and Audit Quality

Prior research indicates that the cosy relationship between the auditor and the client resulting from long audit tenure can weaken auditor independence and lower audit quality. A widespread view is that rotation increases audit quality by improving auditor independence. The basis for this view is that while the incumbent auditor may be reluctant to report a breach in the client's accounting system, the new auditor faces no such constraints. In fact, the new auditor can increase its reputation and rewards by exposing a fraud not discovered or reported by the previous auditor. Regulators believe that a fresh pair of eyes can be relied on to bring out fraud long concealed by or from management. The European Commission's fact sheet on mandatory auditor rotation states: "An excessive familiarity between the management of a company and its audit firm, risks of conflicts of interest, and threats to the independence of statutory auditors can challenge the ability of statutory auditors to exert thorough professional scepticism" (European Commission 2014). The Public Company Accounting Oversight Board (PCAOB 2011) noted that "setting a limit on the continuous stream of audit fees that an auditor may receive from one client would free the auditor, to a significant degree, from the effects of management pressure and offer an opportunity for a fresh look at the company's financial reporting."

Evidence on the effect of mandatory audit firm rotation on audit quality is mixed. Italy has had mandatory audit firm rotation for the largest listed companies since 1975 and for all listed companies since 1980. Until 2010, the auditor was to be appointed for a three-year term with the option of two more three-year terms i.e. a maximum of nine years. Evidence from Italy is inconsistent: Cameran, Prencipe, and Trombett (2016) find that audit quality is lower in the first two three-year periods compared to the third (i.e. the last) one and Cameran, Francis, Marra, and Pettinicchio (2015) report that for companies audited by a Big Four audit firm the quality of audited earnings is lower in the first three years following rotation, relative to later

⁶ *The Companies Act 2013* permits class action against auditors in certain cases but there have been no reports of any suits filed so far.

years of auditor tenure. In contrast, Corbella, Florioa, Gottib, and Mastroliia (2015) find improvement in audit quality following audit firm rotation for companies audited by a non-Big Four audit firm. South Korea had mandatory audit firm rotation every six years from 2006 to 2010 for listed companies. Kim, Lee, and Lee (2015) note that newly rotated auditors are more likely to issue first-time going-concern audit opinions to financially distressed firms during their first-year financial statement audit compared with firms that had voluntary audit firm change. However, Kwon, Lim, and Simnett (2014) find that audit quality did not significantly change compared with pre-2006 long-tenure audit situations and voluntary post-rotation situations. Spain had audit firm rotation from 1988 to 1995. Ruiz-Barbadillo, Gomez-Aguilar, and Carrera (2009) find no evidence that mandatory rotation is associated with a higher likelihood of issuing going-concern opinions; the rotation requirement was dropped before it was to become effective in 1997.⁷

The U.S. has not had mandatory audit firm rotation. In 2014, the PCAOB abandoned its efforts to mandate rotation after fierce opposition.⁸ In the absence of audit firm rotation, U.S. studies have examined the effect of auditor tenure and auditor changes.⁹ In general, the evidence suggests that audit quality is lower in the initial years of engagement (e.g. Geiger and Raghunandan 2002; Myers, Myers, and Omer 2003; Carcello and Nagy 2004; Ghosh and Moon 2005; Carey and Simnett 2006). Manry, Mock, and Turner (2008) suggest that increased partner tenure is associated with higher audit quality, implying that longer tenures lead to higher audit quality. The National Commission on Fraudulent Financial Reporting (NCFRR 1987) examined 42 cases brought by the Securities and Exchange Commission against independent accountants from July 1981 to August 1986 and stated that these cases "revealed that a significant number involved companies that had recently changed their independent public accountants...." (p. 54). The positive association between tenure and audit quality indicates the role of auditor competency due to client-specific knowledge. However, more recent studies suggest that long tenure is either not associated with earnings quality (Knechel and Vanstraelen 2007) or negatively associated (Davis, Soo, and Trompeter 2009). The negative association between tenure and audit quality indicates that auditor independence may be compromised because

⁷ In 2001, the Monetary Authority of Singapore (MAS) required mandatory auditor rotation for banks incorporated in Singapore not to appoint the same audit firm for more than five years. The requirement was suspended in 2008, and was discontinued in 2017. In place of rotation MAS requires local banks to re-tender audits every 10 years.

⁸ Emily Chasan, "PCAOB's Auditor Rotation Project is Essentially Dead", *CFO Journal*, February 5, 2014.

⁹ According to Audit Analytics (2015), the average auditor tenure in U.S. companies is 16 years and the median is 11 years.

of the familiarity between the auditor and the client. While the evidence is mixed, overall the view appears to be that mandatory audit firm rotation does not increase audit quality.

However, because of the serious weaknesses in India's institutions, auditors would not expect to be punished for low quality work. Incoming auditors under mandatory audit firm rotation would have no incentive to be stricter than outgoing auditors. Given the low chances of an audit failure being detected and punished, incoming auditors are unlikely to bring to light any problems. In sum, we do not expect significant improvement in audit quality following rotation. Therefore, our first research question is:

RQ1: Does mandatory audit firm rotation have an effect on audit quality?

Mandatory Audit Firm Rotation and Audit Fees

Prior research suggests that initial fee discounting occurs in a competitive market (e.g. DeAngelo 1981; Chan 1999, Ghosh and Lustgarten 2006; Choi, Kim, Kim, and Zang 2010; Huang, Raghunandan, Huang, and Chiou 2015). Audit firms are under pressure to maintain market share by winning new clients to replace clients lost due to mandatory audit firm rotation. In general, this should drive down the audit fee. However, rotation leads to a sudden increase in the demand for audit services. Since acquiring competence and building reputation take considerable time, the supply of audit services cannot increase in the short run. The resulting mismatch should lead to an increase in audit fee. Gerakos and Syverson (2015) argue that for U.S. publicly traded firms mandatory audit firm rotation would cost \$2.7 billion if rotation were required after ten years and \$4.7-5.0 billion if rotation were required after four years.

The supply side of the Indian audit market is characterized by undifferentiated quality as a result of which auditors compete largely on fee and relationships.¹⁰ While this was the situation even when undercutting was prohibited by *The Chartered Accountants Act 1949*, the prohibition was lifted in 2006. Therefore, we would expect even more intense fee-based competition as a result of mandatory audit firm rotation. Further, an accounting industry grouping representing local firms stated that the Big Four and non-Big Four network firms “with their deep pockets (esp. due to the subsidizing their audit practice with other services rendered by other entities) heavily resort to undercutting as an entry strategy” (Bombay Chartered Accountants' Society [BCAS] undated). However, in a survey on the effect of

¹⁰ Sankar Ramamurthy. “A call to account”, *Indian Express* April 17, 2015.

rotation by Grant Thornton (2016), 52 percent of the respondents expected a fee increase between 10 and 25 percent; 16 percent expected a fee decrease of up to 10 percent; 33 percent saw no effect. Further, *The Companies Act 2013* has expanded the responsibilities of auditors by requiring them to report on the adequacy and effectiveness of internal financial control systems and on any fraud committed by officers or employees of a company. The additional risks associated with these requirements could lead to a higher audit risk premium. Also, anecdotal evidence suggests that while audit firms consider price to be important, price is not the only consideration in selecting an audit firm.¹¹

While the Big Four do not dominate the Indian audit market as a whole, they audit many of the large listed companies. Since large companies are more likely to engage large audit firms, the demand for the services of the Big Four is likely to increase more than that of the non-Big Four. Besides, companies that are listed overseas, are the subsidiaries of foreign companies or have significant investment in equity or debt by foreign private equity, venture capital or mutual funds, engage the Big Four. The scarcity and quality premium for the Big Four would mean that the Big Four are likely to have a larger fee increase than the non-Big Four.¹² We also expect some of the large companies currently audited by the non-Big Four to appoint Big Four firms. In sum, we expect a significant increase in audit fee following rotation. Therefore, our second research question is:

RQ2: Is higher audit fee associated with mandatory audit firm rotation?

Mandatory Audit Firm Rotation and Audit Market Concentration

Audit market concentration has received a lot of attention after the collapse of Andersen following the accounting scandals in Enron and WorldCom and the collapse of large financial institutions in the financial crisis – all audited by the Big Four. Legislators and regulators have long argued that mandatory audit firm rotation should be used to stimulate competition and reduce concentration in the audit market (e.g. Metcalf 1976, European Parliament 2014). They believe that rotation reduces risks to the financial system, since no audit firm can become too

¹¹ “Audit rotation to make big networks like EY, Deloitte, PwC and KPMG lose their biggest clients”, *The Economic Times* May 3, 2016.

¹² On January 10, 2018, SEBI banned the PwC firms from auditing listed companies for two years from April 1, 2018 for the Satyam accounting scandal. The Securities Appellate Tribunal ordered the ban to begin from April 1, 2019. The resulting uncertainty and the reputational damage suffered by the PwC firms could result in companies avoiding those firms.

big to fail. Also, if there are only a handful of very large firms, regulators may hesitate to take tough action for audit failures for fear of reducing the number of firms even further.

The audit market is characterized by market failure for many reasons. One, bigger firms with a global presence benefit from network externalities by getting new clients when their client expands operations. Two, they have economies of scale that smaller firms cannot ever hope to match. Three, they have economies of scope by offering audit and non-audit services to their clients and can subsidize audits to get non-audit business. Four, association with bigger firms is “addictive” for clients because switching costs are high and switching entails reputational damage. Last, shareholder apathy ensures that auditor appointment and remuneration are not closely related to audit quality. In addition, the demand for auditing is not voluntary but is the result of a legal requirement. In these conditions, big audit firms are bound to grow and small firms are bound to decline. Therefore, audit market concentration is a serious public policy issue.

Mandatory audit firm rotation may appear to provide increased opportunities for some firms to provide audit services to public companies. There are several reasons why things may work differently in practice. First, smaller audit firms find it difficult to compete for the audits of large national and multinational companies because of factors such as lack of capacity and capital limitations (General Accounting Office 2003). Second, companies may appoint large audit firms because of considerations such as capital market expectations, geographical spread, specialized industry expertise, debt contract stipulations, comfort of board and audit committee, and audit firm’s reputation. Mandatory audit firm rotation will not be sufficient to respond to these considerations. Further, even among the big audit firms competition will become less intense because a company looking to appoint a new auditor because of mandatory audit firm rotation will have one firm less to choose from. Also, companies usually do not want to appoint their rival’s auditor. Further, mandatory audit firm rotation would require firms to incur substantial start-up costs in acquiring expertise that may make it uneconomical for small firms to accept new clients. All of these would reduce competition and choice for companies.

A report for the Big Four concluded that mandatory audit firm rotation may weaken competition in Europe (Copenhagen Economics 2012). Bleibtreu and Stefani (2018) show that the regulators’ goals of simultaneously decreasing client importance and audit market concentration are in direct conflict and, therefore, the rotation system might have unintended consequences.

In general, the non-Big Four support mandatory audit firm rotation and the Big Four oppose the idea.¹³ In the U.S., the AICPA has consistently opposed rotation.¹⁴ In India, the ICAI has flip-flopped on rotation in response to the competing lobbies of big, medium and small firms. At one time, it opposed rotation but later changed its stand and said that rotation should be restricted to the top 100 listed entities.¹⁵ Medium and small audit firms benefit from the current system of rotation in government-owned banks, insurers and companies and for this reason they support rotation. These audits work on a system of central allocation by the CAG and the RBI. The Big Four do not get these audits. In contrast, the mandatory audit firm rotation introduced by *The Companies Act 2013* is meant to work on a market-based mechanism in which clients rather than a central authority will select the auditors. Therefore, rotation may expose medium and small firms to direct competition from the Big Four. Despite their lower cost of operation, medium and small firms apprehend that they will lose out to the Big Four and other big firms.

In India, claims about the superior audit quality of the Big Four have been questioned following the Satyam accounting scandal. Even so, local firms are concerned that there has been a “perceptible shift towards the multinational firms” and mandatory audit firm rotation threatens to speed up client exodus.¹⁶ Local firms have argued that because of price-based competition mandatory audit firm rotation was expected to have an adverse impact on them. An industry association (Bombay Chartered Accountants’ Society [BCAS] undated) claimed that over 70 percent of the clients of local firms will move to the MAFs (multi-national accounting firms). It wanted mandatory audit firm rotation to be restricted to only the top 100 listed entities (by market capitalization). The Big Four are said to be better prepared for dealing with the effect of rotation.¹⁷ In the Grant Thornton survey (2016) 58 percent of the respondents prefer a large firm with international presence; this goes up to 65 percent in listed companies; 35 percent prefer a large Indian firm. Thus, it appears that mandatory audit firm rotation will

¹³ See, for example, Adam Jones, “Big Four’s rivals welcome audit shake-up”, *Financial Times* February 22, 2013; PwC, “Point of View Mandatory audit firm rotation – other changes would be better for investors” March 2013.

¹⁴ “AICPA Opposes PCAOB’s Mandatory Audit Firm Rotation Proposal”, January 9, 2012. Available at: <https://www.aicpa.org/advocacy/cpaadvocate/2012/aicpaopposespcaobsmandatoryauditfirmrotationproposal.html>. In 2013, the AICPA successfully lobbied to get the Audit Integrity and Job Protection Act passed by the House of Representatives. The Act prohibits mandatory audit firm rotation.

¹⁵ See, for example, Rajiv Goel, “ICAI to make rotation of auditors mandatory”, *The Economic Times* September 18, 2002; K R Srivats, “ICAI refers auditor rotation issue to internal panel”, *The Hindu Business Line* July 22, 2004; Sidhartha, “ICAI to opt for rotation of auditors”, *Business Standard* January 28, 2013.

¹⁶ “Government sets up expert group to look into auditing industry”, *The Economic Times* October 5, 2016.

¹⁷ “Compulsory rotation, likely direct entry of foreign MNCs spell bad times for Indian auditors”, *The Economic Times* September 13, 2016.

increase audit market concentration. The foregoing discussion leads us to our third research question:

RQ3: Is mandatory audit firm rotation likely to result in higher audit market concentration?

IV. DATA AND METHOD

Panel A of Table 1 presents our sample selection process. We consider observations in the NSE listed and permitted companies in the Prowess database. The database is maintained by the Centre for Monitoring Indian Economy (CMIE), an established information services organization. We hand collect audit firm data from company annual reports and annual general notices to identify audit firm changes resulting from mandatory rotation. After deleting observations with missing accounting, market or auditor data, we have 4,087 firm-years. The number of observations differs for our three research questions because of somewhat different data requirements.

Panel B of Table 1 presents the distribution of sample firms differs across industries. This is broadly line with the composition of the industries in the initial sample.

Audit Quality

We use discretionary accruals to measure audit quality. Following Becker, DeFond, Jiambalvo, and Subramanyam (1998) and Reynolds and Francis (2000), we measure discretionary accruals (*DACC*) as the residuals from the modified Jones model (Dechow, Sloan, and Sweeney 1995). In line with Kothari, Leone, and Wasley (2005), we control for operating performance. Our final specification of the accruals model is as follows:

$$TACC_{it}/TA_{t-1} = \beta_1 (1/TA_{t-1}) + \beta_2 (\Delta REV - \Delta REC)/TA_{t-1} + \beta_3 PPE/TA_{t-1} + \beta_4 NI/TA_{t-1} + \varepsilon, \quad (1)$$

where *TACC* is total accruals, calculated as net income before extraordinary items less net cash flow from operating activities, *TA* is total assets, ΔREV is change in revenue, ΔREC is change in accounts receivable, *PPE* is gross property, plant and equipment, and *NI* is net income (net profit).

The model is estimated for each year and industry. Using the estimates of β_1 , β_2 , β_3 , and β_4 , we calculate *DACC* for firm *i* in year *t* as the difference between *TACC* and the value of *TACC* predicted from the model.

We use absolute accruals because prior research suggests that earnings management is used to either increase or decrease earnings (Dichev, Graham, Harvey, and Rajgopal 2012). Further, we have no directional prediction for discretionary accruals.

Our audit quality model is as follows:

$$\begin{aligned}
 DACC = & \beta_0 + \beta_1 ROTATION + \beta_2 BIG4 + \beta_3 LNMVE + \beta_4 TENURE \\
 & + \beta_5 DEBTTOEQUITY + \beta_6 LIQ + \beta_7 ROA + \beta_8 OWNER + \beta_9 INVTA \\
 & + Year + Industry + \varepsilon
 \end{aligned}
 \tag{2}$$

All the variables are defined in Appendix A. The variable of interest is *ROTATION*.

Audit Fee

We use the following audit fee model, based on prior research (Simunic 1980; Ferguson, Francis, and Stokes 2003; Francis and Wang 2005; Choi, Kim, Kim, and Zang 2010; Kwon, Lim, and Simnett 2014; Corbella, Florioa, Gottib, and Mastrolia 2015):

$$\begin{aligned}
 LNAP = & \beta_0 + \beta_1 ROTATION + \beta_2 BIG4 + \beta_3 LNTA + \beta_4 TENURE \\
 & + \beta_5 DEBTTOASSETS + \beta_6 LIQ + \beta_7 RECTA + \beta_8 INVTA + \beta_9 ROA \\
 & + \beta_{10} STDDEVRES + \beta_{11} OWNER \\
 & + Year + Industry + \varepsilon
 \end{aligned}
 \tag{3}$$

All the variables are defined in Appendix A. The variable of interest is *ROTATION*.

Audit Market Concentration

We provide descriptive evidence for audit market concentration in the context of audit firm rotation based on audit firm market shares and Herfindahl index values.

V. RESULTS

Descriptive Statistics

Panel A of Table 2 provides the descriptive statistics for our audit quality model. In general, the mean and median values for *TENURE* are similar to those cited earlier in this paper. The 75th percentile value for *DEBTTOEQUITY* suggests that even firms in the top half of the sample are moderately leveraged. The high standard deviation reflects the industry diversity of the sample firms, ranging from consumer goods and technology (zero or low leverage) to construction and infrastructure (high leverage). The mean and median values for *LIQ* indicate that the firms have reasonable liquidity. Combined with the mean and median values of *ROA*,

they suggest that the samples are financially sound. The mean and median values for *OWNER* indicate that a single group, often the founder's family, has control over the firms. The mean and median values of *INVT*A indicate that inventories form a moderate portion of sample firms' assets. The relatively high values of standard deviation for many variables signifies the variety of firms and industries in the sample.

Panel B of Table 2 provides the descriptive statistics for our audit fee model. *AF* ranges widely because of differences in firm size and industry, reflecting the differential pricing of audit workload and risk. *TENURE* is distributed similar to that in our audit quality model. *DEBTTOASSETS* confirms the finding for leverage from *DEBTTOEQUITY*. *LIQ*, *RECTA*, and *INVT*A, all proxies for audit risk, are in line with the variation in audit fee. *ROA* and *OWNER* are similar to those in our audit quality model. The higher standard deviation of *OWNER* is due to non-availability of data for some firms. The mean and median values for *TENURE* are similar to those cited earlier in this paper.

Univariate Analysis

Table 3 presents the results of univariate analysis of the sample. Panel A provides data about the audit quality measure for *ROTATION* and *NO ROTATION* firms. Both the mean and the median for *ROTATION* firms are lower than those for *NO ROTATION* firms, suggesting that audit quality is positively associated with audit firm rotation. However, the differences are not statistically significant (one-way ANOVA p-value of 0.337).

Panel B of Table 3 presents mean audit fee and mean total auditor payments for *ROTATION* firms before and after rotation. For Big Four clients both mean audit fee and mean total payments (i.e. sum of audit and non-audit fees) declined. For non-Big Four clients mean audit fee declined but total payments increased. For all sample firms audit fee increased, while total payments declined.

Panel C of Table 3 presents the changes audit fee and total payments in categories of sample firms. The values are based on the mean of *percentage changes* for the firms, unlike in Panel B. The results should be interpreted with caution because of the small base effect in some cases. For clients changing from one Big Four to another Big Four firm the change in both audit fee and total payments declined. There are striking variations among the Big Four firms. In general, clients moving to Deloitte from other Big Four firms faced an increase, while those moving to EY faced a decrease. Moving from Big Four to non-Big Four firms attracted substantial fee increase, while moving from non-Big Four to Big Four firms resulted in

substantial fee decrease. These results are in line with the fee premium charged by Big Four firms. Moving from a non-Big Four firm to another non-Big Four firm resulted in substantial fee increase. While there is no obvious economic explanation for this result, analysis of the changes reveals that it is the effect of moving to relatively larger firms among the non-Big Four. In some ways this is an echo of the fee change for movement from a non-Big Four firm to a Big Four firm.

Regression Analysis for Audit Quality

Table 4 presents the results of the regression analysis for audit quality for all firms and separately for positive and negative *DACC* firms. *DACC* is the dependent variable in this regression. The coefficient on the variable of interest, *ROTATION*, is negative for both positive and negative *DACC* firms, indicating that audit quality is positively associated with audit firm rotation, but it is not significant. Again, the negative coefficient on *BIG4* suggests that firms audited by the Big Four firms have higher audit quality; the results are moderately significant. The negative coefficient on *TENURE*, moderately significant, shows that audit quality is increasing in audit firm tenure.

Regression Analysis for Audit Fees

Table 5 presents the results of our audit fee regression. *LNAP* is the dependent variable in this regression. *LNAP* consists of both audit and non-audit fees. The reason for using *LNAP* is that the classification of some items fees as audit or non-audit is not consistent across companies. For example, tax audit fee is included as part of audit fees in some cases but as part of non-audit fees in others.¹⁸ The coefficient on the variable of interest, *ROTATION*, is positive, indicating that audit fee is positively associated with audit firm rotation, but it is not significant. The positive coefficient on *BIG4* suggests that the Big Four firms have higher audit fee; it is highly significant. The positive coefficient on *TENURE* shows that audit fee is increasing in audit firm tenure but it is not significant. The negative coefficient on *SOLE* indicates that joint audits are costlier than sole audits; it is highly significant.

Analysis for Audit Market Concentration

Table 6 presents the results of our audit market concentration analysis. Panel A presents the share of the Big Four and non-Big Four firms from 2013 to 2017. While the Big Four audit less than a third of the sample firms, they account for nearly two-thirds of audit fees and audit

¹⁸ We used *LNAP* as an alternative to *LNAP*. The results are similar.

payments. Their share, measured in market capitalization, sales and assets is high. Crucially, their market share has increased over the period 2013 to 2017.

Panel B provides the values of the Herfindahl index for the period 2013 to 2017. Over this period, the index has increased suggesting greater audit market concentration.

VI. CONCLUSIONS

Concerns about auditor independence and audit quality have prompted led legislators and regulators to reform the institutional arrangements for auditing. Low audit quality and lack of independence have been attributed to auditors' long association with clients resulting in a familiar and cosy relationship. Mandatory audit firm rotation is among the measures recommended to improve auditor independence. Some countries require mandatory audit firm rotation, and India is one of them. The evidence presented in this paper suggests that mandatory audit firm introduced in India since April 1, 2014 has not improved audit quality. Further, mandatory audit firm rotation does not seem to have had a significant effect on audit fees. Finally, mandatory audit firm rotation is found to be associated with higher audit market concentration. Overall, it appears that more detailed analyses of the costs and benefits are necessary before implementing radical solutions to address the problems of low audit quality.

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APPENDIX A

Variable Definitions

Variable		Definition
<i>DACC</i>	=	discretionary accruals, measured as the residual from the modified Jones model, adjusted by controlling for operating performance (ROA);
<i>ROTATION</i>	=	1 when there is an audit firm change due to mandatory audit firm rotation, and 0 otherwise;
<i>BIG4</i>	=	1 if a firm engages one of the Big Four audit firms, and 0 otherwise;
<i>LN MVE</i>	=	natural logarithm of market value of equity;
<i>TENURE</i>	=	number of years an audit firm has been external auditor of a client;
<i>DEBTTOEQUITY</i>	=	ratio of debt over equity;
<i>LIQ</i>	=	ratio of current assets over current liabilities;
<i>ROA</i>	=	ratio of net income (net profit) over total assets (return on assets);
<i>OWNER</i>	=	percentage of ownership held by the largest shareholder;
<i>LNAP</i>	=	natural logarithm of audit and non-audit fees;
<i>LN TA</i>	=	natural logarithm of total assets;
<i>LN AP</i>	=	natural logarithm of audit fees;
<i>DEBTTOASSETS</i>	=	ratio of debt to assets;
<i>RECTA</i>	=	ratio of receivables over total assets;
<i>INVTA</i>	=	ratio of inventories over total assets;
<i>STDDEVRES</i>	=	standard deviation of residuals from the market model, estimated by daily returns during the year;
<i>SOLE</i>	=	1 if a firm engages a sole audit firm, and 0 otherwise;
<i>BETA</i>	=	firm's systematic risk reported by Prowess;

TABLE 1
Sample Selection

	Number of Firms
Panel A: Sample Selection Process	
Prowess observations in 2017	1,893
Excluded:	78
a. Financial services	128
b. Government companies	87
c. Sales less than Rs 1,000 million	293
d. Accounting, market or auditor data not available	43
Total firms for analysis	1,264
Panel B: Sample Distribution by Industries	
Two-digit NIC	
01	21
08	10
10	56
11	26
13	77
14	24
16	9
17	19
19	10
20	115
21	66
22	41
23	50
24	83
25	19
26	12
27	46
28	44
29	7
30	65
32	16
34	36
35	13
41	27
42	69
46	92
47	11
49	5
50	7
51	3
52	19

55	18
58	8
59	14
61	15
62	53
64	22
70	10
71	6
79	6
86	14
	1,264

TABLE 2
Descriptive Statistics

Variable	Mean	Standard Deviation	25th Percentile	Median	75th Percentile
Panel A: Audit Quality (n = 4,087)					
<i>DACC</i>	0.05	0.05	0.02	0.04	0.07
<i>LN MVE</i>	8.74	2.03	7.35	8.60	10.07
<i>TENURE</i>	11.15	5.47	6.00	12.00	16.00
<i>DEBTTOEQUITY</i>	0.77	18.24	0.13	0.57	1.27
<i>LIQ</i>	1.68	2.64	0.98	1.27	1.73
<i>ROA</i>	0.04	0.10	0.00	0.04	0.09
<i>INVTA</i>	0.16	14.00	0.06	0.14	0.22
<i>OWNER</i>	62.12	9.96	54.43	61.06	69.98
Panel B: Audit Fee (n = 4,037)					
<i>AF</i>	4.11	8.09	0.80	2.00	4.30
<i>LNAF</i>	0.68	1.24	-0.11	0.69	1.50
<i>LNTA</i>	9.23	1.41	8.22	9.04	10.09
<i>TENURE</i>	11.15	5.48	6.00	12.00	16.00
<i>DEBTTOASSETS</i>	0.30	0.25	0.11	0.28	0.43
<i>LIQ</i>	2.68	22.17	0.94	1.25	1.84
<i>RECTA</i>	0.18	0.14	0.07	0.15	0.25
<i>INVTA</i>	0.16	0.13	0.06	0.14	0.22
<i>ROA</i>	0.05	0.10	0.00	0.04	0.09
<i>STDDEVRES</i>	0.03	0.02	0.02	0.03	0.03
<i>OWNER</i>	59.20	16.38	53.47	60.30	69.54

TABLE 3
UNIVARIATE ANALYSIS

Panel A: Discretionary Accruals (DACC)						
Type of Auditor Change	N		Mean		Median	
Rotation	161		0.047449		0.036647	
No rotation	3,926		0.051536		0.036943	
Panel B: Mean Audit Fee and Total Payments (in millions of rupees)						
	Before Rotation		After Rotation		Change (%)	
Firm Category	Audit Fee	Total Payments	Audit Fee	Total Payments	Audit Fee	Total Payments
Big Four	7.56	11.65	6.07	8.19	- 19.81	- 29.70
Non-Big Four	1.87	2.37	1.96	2.28	- 5.04	3.56
<i>All</i>	3.56	5.12	3.74	4.84	5.00	- 5.56
Panel C: Change in Audit Fee and Total Payments (Change %)						
Audit Firm Category Change		Audit Fee		Total Payments	n	
<i>From</i>	<i>To</i>					
<i>A. Big Four</i>		<i>Big Four</i>				
Deloitte	EY		- 8.57	- 16.82		4
Deloitte	KPMG		26.60	0.61		4
EY	Deloitte		- 9.57	- 00.08		1
EY	KPMG		24.51	- 31.80		2
KPMG	Deloitte		21.84	19.57		2
KPMG	EY		9.09	7.14		1
KPMG	PwC		- 13.66	- 8.96		2
PwC	Deloitte		27.97	56.47		1
PwC	EY		- 1.67	- 9.62		5
PwC	KPMG		- 5.60	- 12.21		4
	<i>Mean</i>		- 5.16	- 5.43		26
<i>B. Big Four</i>		<i>Non-Big Four</i>				
Deloitte	Various firms		- 30.68	- 39.11		3
EY	Various firms		- 2.76	- 21.68		3
PwC	Various firms		- 33.11	- 25.42		3
	<i>Mean</i>		- 26.07	- 26.49		9
<i>C. Non-Big Four</i>		<i>Big Four</i>				
Various firms	Deloitte		158.33	191.18		10
Various firms	EY		129.02	105.61		6
Various firms	KPMG		138.55	126.59		7
Various firms	PwC		63.13	17.68		2
	<i>Mean</i>		138.14	138.68		25
<i>D. Non-Big Four</i>		<i>Non-Big Four</i>				
Various firms	Various firms		29.16	18.74		58
	<i>Mean all firms</i>		42.75	35.37		118

TABLE 4
AUDIT QUALITY ANALYSIS

Variable	All		+ DACC		– DACC	
	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Intercept	2.754	0.079	6.056	0.012	– 0.008	0.997
<i>ROTATION</i>	– 0.006	0.167	– 0.008	0.232	– 0.006	0.356
<i>BIG4</i>	– 0.006	0.003	– 0.008	0.021	– 0.005	0.062
<i>TENURE</i>	– 0.000	0.006	– 0.001	0.026	– 0.000	0.086
<i>LN MVE</i>	– 0.002	0.006	– 0.002	0.031	– 0.001	0.128
<i>SOLE</i>	0.002	0.551	0.003	0.624	0.000	0.996
<i>DEBT TO EQUITY</i>	0.000	0.288	0.000	0.143	0.000	0.358
<i>LIQ</i>	– 0.001	0.120	0.000	0.390	– 0.001	0.174
<i>ROA</i>	0.023	0.022	0.051	0.001	0.003	0.839
<i>OWNER</i>	0.000	0.646	0.000	0.364	0.000	0.906
<i>INVTA</i>	– 0.011	0.150	0.001	0.915	– 0.023	0.030
<i>Year</i>	Controlled		Controlled		Controlled	
<i>Industry</i>	Controlled		Controlled		Controlled	

TABLE 5
AUDIT FEE ANALYSIS

Variable	Coefficient	p-value
Intercept	295.641	0.000
<i>ROTATION</i>	0.127	0.147
<i>BIG4</i>	0.836	0.000
<i>TENURE</i>	0.002	0.554
<i>SOLE</i>	- 0.238	0.001
<i>LNMVE</i>	0.189	0.000
<i>DEBTOASSETS</i>	0.347	0.000
<i>RECTA</i>	- 0.516	0.000
<i>INVTA</i>	- 0.428	0.005
<i>ROA</i>	- 0.691	0.001
<i>BETA</i>	0.073	0.005
<i>STDDEVRES</i>	- 13.506	0.000
<i>OWNER</i>	- 0.006	0.000
<i>Year</i>	Controlled	
<i>Industry</i>	Controlled	

TABLE 6
AUDIT MARKET CONCENTRATION ANALYSIS

Panel A: Market Share of Big Four and Non-Big Four Firms							
Year	Audit Firm Category	Clients	Market Cap	Audit Fees	Audit Payments	Sales	Assets
2013	<i>Big Four</i>						
	Deloitte	10.25	39.88	25.54	27.01	27.34	18.92
	EY	6.48	10.89	13.36	11.68	8.06	6.98
	KPMG	3.38	11.98	6.86	6.64	6.75	3.68
	PwC	5.32	11.33	12.79	13.05	10.44	5.18
	<i>Total</i>	<i>25.44</i>	<i>74.08</i>	<i>58.55</i>	<i>58.38</i>	<i>52.59</i>	<i>34.75</i>
	<i>Non-Big Four</i>	<i>74.56</i>	<i>25.92</i>	<i>41.45</i>	<i>41.62</i>	<i>47.41</i>	<i>65.25</i>
	<i>Total</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>
2014	<i>Big Four</i>						
	Deloitte	10.69	42.05	28.56	29.59	29.08	29.35
	EY	6.49	10.97	12.40	11.24	8.08	9.86
	KPMG	3.72	12.49	6.78	6.49	8.17	5.84
	PwC	5.06	11.31	10.40	10.64	9.58	6.82
	<i>Total</i>	<i>25.95</i>	<i>76.83</i>	<i>58.15</i>	<i>57.96</i>	<i>54.90</i>	<i>51.87</i>
	<i>Non-Big Four</i>	<i>74.05</i>	<i>23.17</i>	<i>41.85</i>	<i>42.04</i>	<i>45.10</i>	<i>48.13</i>
	<i>Total</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>
2015	<i>Big Four</i>						
	Deloitte	10.48	37.72	27.51	29.03	29.16	29.71
	EY	7.05	12.41	12.84	11.68	9.35	12.15
	KPMG	4.00	17.19	9.00	8.72	10.44	6.84
	PwC	5.05	8.49	9.61	9.91	8.61	6.62
	<i>Total</i>	<i>26.57</i>	<i>75.81</i>	<i>58.97</i>	<i>59.35</i>	<i>57.56</i>	<i>55.34</i>
	<i>Non-Big Four</i>	<i>73.43</i>	<i>24.19</i>	<i>41.03</i>	<i>40.65</i>	<i>42.44</i>	<i>44.66</i>
	<i>Total</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>
2016	<i>Big Four</i>						
	Deloitte	10.76	38.39	30.07	31.28	30.73	33.12
	EY	7.20	12.70	13.38	13.08	10.15	13.74
	KPMG	4.32	19.23	8.39	8.64	11.14	6.95
	PwC	4.80	8.98	9.43	9.26	8.91	6.59
	<i>Total</i>	<i>27.09</i>	<i>79.32</i>	<i>61.26</i>	<i>62.27</i>	<i>60.93</i>	<i>60.39</i>
	<i>Non-Big Four</i>	<i>72.91</i>	<i>20.68</i>	<i>38.74</i>	<i>37.73</i>	<i>39.07</i>	<i>39.61</i>
	<i>Total</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>
2017	<i>Big Four</i>						
	Deloitte	10.99	35.66	28.42	29.54	32.49	28.98
	EY	8.01	17.43	17.19	15.69	13.63	19.78
	KPMG	5.13	15.32	8.56	8.33	10.67	7.61
	PwC	4.93	7.51	9.00	10.20	6.60	5.46
	<i>Total</i>	<i>29.06</i>	<i>75.93</i>	<i>63.17</i>	<i>63.76</i>	<i>63.39</i>	<i>61.83</i>
	<i>Non-Big Four</i>	<i>70.94</i>	<i>24.07</i>	<i>36.83</i>	<i>36.24</i>	<i>36.61</i>	<i>38.17</i>
	<i>Total</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>

Panel B: Herfindahl Index					
Year	Market Capitalization	Audit Fees	Audit Payments	Sales	Assets
2013	20.13	10.68	11.08	10.08	6.32
2014	21.97	11.48	11.82	11.03	10.86
2015	19.68	11.27	11.83	11.57	11.68
2016	20.97	12.75	13.38	12.77	14.09
2017	18.86	12.95	13.25	14.23	13.56