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## Audit Firm Tenure and Audit Quality in a Constrained Market

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## ABSTRACT

We examine the relation between audit quality and audit firm tenure in the Iranian audit market, which is constrained by government policies that create intense competition for clients among many small audit firms. We develop arguments that these circumstances create cost pressures that entrench low audit quality and render auditors' plans more predictable to managers wishing to misstate their accounts. Using publicly available data for the audits of listed companies in Iran prior to mandatory audit firm rotation and the incidence of misstated financial reports identified by the Iranian Association of Certified Public Accountants Inspection Office, we find that the likelihood of a misstatement is lowest in the first two years of audit firm tenure. We also find that the likelihood of misstatement is not associated with the year preceding a mandatory audit firm rotation, suggesting outgoing auditor effort is not sensitive to the prospect of subsequent revelations of deficiencies. Although our results from a pre-mandatory rotation period show that frequent rotations appear to improve the financial reporting quality in our sample, we are wary of interpreting these results as support for the mandatory audit firm rotation policy in Iran. Rather, we suggest this is a peculiar consequence of deficiencies in audit quality inherent in the Iranian market.

## 1. Introduction

This paper examines the relation between audit firm tenure and audit quality in the Iranian audit market. The effect of audit firm tenure on audit quality, and thus on the quality of financial reports, has been the subject of a long debate among professionals and regulators. Regulators around the world have considered mechanisms aimed to improve auditor independence, including mandatory auditor rotation at both the partner and firm level (Firth, Rui, & Wu, 2012).

Proponents of mandatory audit firm rotation emphasize the auditor independence hypothesis to argue that audit quality tends to decline with audit firm tenure because longer tenure can increase economic dependency on the client (DeAngelo, 1981; Raghunathan, Lewis, & Evans, 1994), induce auditor complacency (AICPA, 1992; GAO, 2003; Johnson, Khurana, & Reynolds, 2002; Shockley, 1981), and increase familiarity threats to auditor independence (AICPA, 1992; Arel, Brody, & Pany, 2005). By limiting tenure, mandatory audit firm rotation can reduce the likelihood of economic dependency, familiarity, and complacency (Mautz & Sharaf, 1961).

Opponents of mandatory audit firm rotation refer to economic bonding arising from fee dependence to argue against mandatory rotation. To the extent that auditors low-ball audit fees (DeAngelo, 1981), audit firms are more likely to accede to their clients'

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demands in the initial years of tenure for fear of threats of dismissal and loss of future quasi-rents (Geiger & Raghunandan, 2002). Thus, as audit firms earn those quasi-rents with increase in tenure, they are more likely not to acquiesce to clients' demands in the later years of tenure, which may tend to increased audit quality (Arel et al., 2005). Also, it is argued that audit quality tends to increase with audit firm tenure because the auditor gains a better understanding of the client's systems, internal controls, business, and industry environment (Beck, Frecka, & Solomon, 1988; Geiger & Raghunandan, 2002).

However, both sides of the audit firm rotation debate are predicated on assumptions regarding institutions and market conditions that attach substantial value to auditor independence and competence. These assumptions might not hold for immature audit markets where supply and demand conditions do not encourage or facilitate auditor independence, auditor competence, audit effort, or auditors' investments in improving audit quality. Low investments in training, licensing, and oversight of auditors; the absence of sufficiently strong market mechanisms that reward or punish differences in audit quality; and limited audit firm resources may result in low levels of auditor independence or otherwise impede audit quality regardless of audit firm tenure.

We examine these concerns using data from the Iranian audit market, which has functioned in its current form for < 20 years. The potential weaknesses of audits in an underdeveloped market may also be exacerbated in the absence of beneficial spill-overs from international audit firms and networks. The Iranian market is a constrained market characterized by auditors' very limited exposure to legal sanctions, regulations that exclude international accounting firms, and intense competition among many small firms (see Azizkhani, 2012; Bagherpour, Monroe, & Shailer, 2014). Auditor competition in the Iranian market is strongly price based, which adversely affects audit firms' finances (Bozorg Asl, 2012) and their capacity to employ experienced staff and invest in risk-based audit technologies (Safar, Bayati, Arjomandi, SareRaz, & Nikookar, 2013). Competition among private auditors for private-sector clients is also concentrated by restricting the audits of state-owned entities (where government ownership exceeds 50%) to the Iranian Audit Organization (IAO). Our interest in the Iranian audit market is also motivated by the introduction of mandatory audit firm rotations for listed companies every four years, commencing in 2011.<sup>1</sup> Because this short rotation horizon may compound the negative consequences for audit quality associated with financially constrained audit firms, we examine audit quality in relation to audit firm tenure prior to the introduction of the mandatory rotation policy, using misstatements in financial reports that were identified through the inspection process of the Iranian Association of Certified Public Accountants (IACPA). The IACPA inspections identify cases where the auditor failed to detect or report material misstatement.<sup>2</sup> Misstatements are used in prior studies as a measure of audit quality (e.g., Bishop, Hermanson, & Houston, 2013; Church & Shefchik, 2012; Hermanson, Houston, & Rice, 2007; Hribar, Kravet, & Wilson, 2014) and are considered superior to other measures because they do not suffer from measurement errors associated with other proxies (DeFond & Zhang, 2014). We also argue that using misstatements identified by systematic investigations by the regulator avoids the problem of unrevealed misstatements that might otherwise exist in markets with weak audit functions.<sup>3</sup>

Proponents of mandatory audit firm rotation argue that audit quality can be improved by rotation because the incoming audit firm provides a fresh perspective to the audit (Chi, Huang, Liao, & Xie, 2009). However, the Iranian audit market has deficiencies in auditor training, is denied spillover benefits from international accounting firms, lacks evidence of domestic demand for high-quality audits, and has intense price competition among auditors that discourages investment in audit technologies and skilled, experienced senior auditors. These factors have contributed to a general absence of risk analysis in audit planning, with almost all private audit firms continuing to use standardized systems-based auditing approaches (Safar et al., 2013). This reliance on standardized systems-based audits results in audit firms applying routine audit programs with little or no modification across clients or from year to year. Consequently, a manager wishing to manipulate financial reports might soon identify the auditor's methods and tests and avoid predictable forms or areas of scrutiny. Therefore, we expect that a manipulative manager is most constrained when the audit is least predictable, which is likely to be the first year or two of an audit firm's tenure, before managers observe the auditor's standard audit program.

Using publicly available data for the audits of listed companies in Iran prior to mandatory audit firm rotation and using the incidence of misstated financial reports identified through the inspection process of the IACPA, we find that, consistent with our argument, the likelihood of a misstatement is lowest in the first two years of the audit firm tenure. We also find that the likelihood of misstatement is not lower in the year preceding a mandatory audit firm rotation, which suggests that outgoing audit firms are not motivated to invest in higher audit effort or quality, and that the audit firm does not strongly associate future prospects or their market reputation with revealed audit quality. We do not suggest that these results provide any support for the mandatory audit firm rotation policy in Iran. Rather, we suggest they are indicative of more fundamental audit quality deficiencies that are inherent in the Iranian market.

This study contributes to the literature in at least two ways. First, we develop arguments pertaining to the relation between audit quality and tenure that have not been previously canvassed in the literature, and which we contend are more important in emerging markets in jurisdictions with weak institutions than in more developed markets. Second, we examine the relation between audit firm tenure and financial statement quality in a market that is constrained by policies that exclude international audit firms and discourage practitioners from investing in audit quality. In combination, these contributions may open broader debates about audit firm

<sup>1</sup> Among jurisdictions that require audit firm rotation, short rotation periods seem more evident in less developed markets, with mandated periods of five years in Brazil since 1999 and China since 2010, and six years in Korea since 2003. The European Parliament approved mandatory audit firm rotation every ten years for EU-listed companies in 2014.

<sup>2</sup> The IACPA's inspection process also identifies audits where the auditor failed to collect sufficient evidence to support an audit opinion; however, these cases are not reported as misstated financial reports.

<sup>3</sup> We are grateful to an anonymous referee for drawing our attention to this advantage of our misstatement measure.

tenure and audit quality in less mature audit markets.

Our findings have implications for policymakers, auditors, and users of financial reports. With the wave of recent interest in investment in the Iranian Economy resulting from lifting U.S. sanctions in 2016 and the Iranian Government's initiatives to attract foreign investors, the Iranian stock market is receiving attention from international investors. An important issue for investors entering foreign capital markets is how the auditors and audit quality affect information quality and asymmetry (Firth et al., 2012). Also, our results may have implications for policy development in other transitional and emerging markets where institutions and market conditions do not encourage or facilitate auditor independence or auditor investment in improving audit quality, and where audit markets exhibit intense competition among small audit firms. However, given the unique features of the Iranian audit market (especially the absence of international accounting firms), applying the results in this study to other jurisdictions requires considerable caution.

The remainder of this paper is organized as follows. We describe the background and relevant aspects of the Iranian audit market and relate this to the prior literature to develop our hypotheses. Section 3 then describes our research method and data. This is followed by our main results, discussion, and additional tests in Section 4. The final section provides concluding remarks.

## 2. Background and hypotheses

### 2.1. Background

Prior to the Islamic Revolution in 1979, both national and international accounting firms operated in Iran. Since the revolution, international accounting firms have been banned from operating in Iran. In 1987, three state-affiliated audit firms (Nationalized Industries and Plan Organization, Mostazafan Foundation, and Shahed) were merged to create the Iranian Audit Organization (IAO), which became the sole provider of audit services to nationalized companies. Alongside the IAO, a few private accounting firms that were members of the Iranian Institute of Certified Accountants (IICA) were permitted to provide audit services to non-state-owned companies (Bagherpour et al., 2014). In 1988, to promote economic growth and efficiency, Iran commenced a series of 5-year plans that included privatization policies. These privatization policies increased the number of companies listed on the Tehran Stock Exchange (TSE) and therefore increased the demand for audit services. The IAO was soon challenged by an increasing workload in providing audit services to a growing number of state-owned and privately owned companies, resulting in significant audit delays (Azizkhani, 2012). To address this problem, the Iranian Parliament passed the "Using the Services of Certified Public Accountants" Act in 1993, but this Act did not become effective until late 2001 because of administrative delays in incorporating the Iranian Association of Certified Public Accountants (IACPA).<sup>4</sup>

Following the establishment of the IACPA in late 2001, many small private firms were licensed to provide audit services to listed companies, although the audit of companies with > 50% state ownership remained restricted to the IAO. The number of private audit firms competing in the listed companies' audit market grew quickly. In late 2001, there were 402 licensed auditors, of which 309 auditors were sole practitioners who were mostly providing services to small, non-listed clients, and 93 individuals were in an unknown number of partnerships that were the potential competitors for the audits of listed companies (Bagherpour et al., 2014); under IACPA rules, an audit firm licensed to audit listed companies must have a minimum of three CPAs. From 2001 to 2003, there was a 38% increase in the number of licensed private-sector auditors who were partners in audit firms (Bagherpour et al., 2014). By December 2015, 267 private audit firms were listed as members of the IACPA (MohammadRezaee & Saleh, 2016). As a result of this growth, the audit market rapidly evolved away from IAO dominance. The market share of the IAO decreased from 73% in 1998 to 24% in 2004, three years after the establishment of the IACPA (Azizkhani, 2012), and to 18% in 2010 (Azizkhani, Sami, & Amirkhani, 2017). Throughout the 15 years of private-sector audit firm development in Iran, we do not observe the emergence of any large audit firms. This market structure suggests there has been continuously intense competition among small private audit firms for the available clients.

Iranian listed companies are typified by concentrated ownership, where controlling shareholders are usually directors and often the chief executive officers, and reliance on bank financing. Combined with weak regulatory support for minority shareholders to monitor companies' activities and operations, these circumstances contribute to a lack of market demand for audit quality (Mashayekhi & Mashayekh, 2008). The demand for audit services is mainly driven from legal requirements such as the Trade Law and the IAO Establishment Act of 1983. In addition, Iranian auditors have relatively little litigation risk (Bagherpour et al., 2014; Hassas Yeganeh, 2006; Mahmoudi, 2010). Article 154 of the Trade Law stipulates that the auditors must pay incurred losses to clients and third parties if those losses are caused by auditor negligence; however, there are no publicly reported cases of prosecution of auditors for negligence. The main risk for auditors in the case of audit failure is that the IACPA may suspend or cancel their CPA designation, although these cases are also rare (Mahmoudi, 2010). The absence of significant litigation risk reduces incentives for auditors to maintain their independence (Shu, 2000) or audit quality. In this environment, it is likely that the external audit is largely viewed as a legal requirement that imposes costs on companies without much benefit (Hovansian Far, 2010). However, the Iranian Securities and

<sup>4</sup> Under the Using the Services of Certified Public Accountants Act that was passed in 1993, excluding companies with > 50% government ownership, companies are permitted to obtain their assurance services from private audit firms who are members of the IACPA. Consequently, after the establishment of the IACPA in 2001, many listed companies switched from the IAO to the members of the IACPA for their audits, which led to a significant decrease in the workload of the IAO. The market share of the IAO decreased from 73% in 1998 to 24% in 2004, three years after the establishment of the IACPA (Azizkhani, 2012).

Exchange Organization (SEO) and the IACPA appear to be increasing their efforts to monitor the audits of listed companies. For example, the SEO established the “Auditing and Financial Reporting” office, which is responsible for the registration of “SEO’s Trusted Auditors” and monitoring the audit reports of listed companies (SEO, 2005). Deficiencies in the audit reports of listed companies identified by this office are referred to the IACPA Audit Inspection office for further investigation and disciplinary action.<sup>5</sup>

## 2.2. Hypotheses

Proponents of mandatory audit firm rotation argue that periodic rotation of audit firms brings a fresh perspective to the audit (Chi et al., 2009) and reduces the economic bonding between audit firms and clients (DeAngelo, 1981), which then enhances auditor independence and audit quality (GAO, 2003). The proposal to mandate audit firm rotation is based on the belief that it promotes auditors' objectivity because the new audit firm is not influenced by prior judgments, compromises, or relationships. A new audit firm brings a fresh set of eyes and has the opportunity to raise issues that have been overlooked or settled in the past (Tan, 1995). Proponents of mandatory audit firm rotation see this fresh perspective as a counter to long-term auditor-client relationships that could harm the auditor's independence and, in turn, audit quality. This position is supported by evidence that mandatory audit firm rotation enhances audit quality and financial reporting quality (e.g., Cahan & Zhang, 2006; Firth et al., 2012; Nagy, 2005), particularly among smaller audit firms (Azizkhani, Monroe, & Shailer, 2013). Alternatively, the opponents of mandatory rotation of audit firms argue that audit quality increases with tenure as auditors gain client-specific knowledge (Beck et al., 1988; Geiger & Raghunandan, 2002). This argument is supported by evidence that audit quality and the quality of financial reporting increases with audit firm tenure (e.g., Carcello & Nagy, 2004; Geiger & Raghunandan, 2002; Ghosh & Moon, 2005). However, there is also evidence that differences in institutional factors can explain the differences in accounting and audit quality (Ball, Kothari, & Robin, 2000; Francis & Wang, 2008; Khurana & Raman, 2004).

While these competing hypotheses can be argued in relation to any audit market, we propose another line of reasoning that is based on the characteristics of the Iranian market. Essentially, we argue that the circumstances of the Iranian audit market give rise to the prospect that managers intent on manipulating financial statements are better able to anticipate and circumvent audit plans of incumbent auditors, compared to new auditors, because of the intense cost pressures on auditors, the lack of incentives for investing in higher quality audit technologies, and the consequential reliance on more predictable standardized systems-based audit programs.

The effects of independence and client knowledge related to audit firm tenure are based on assumptions regarding institutions and market structure that highly value auditor independence and competence. However, the nature of supply and demand factors in the Iranian audit market do not substantially encourage or facilitate auditor independence, audit effort, or auditor investments in improving audit technologies. The presence of many small audit firms driving intense supplier price-based competition in the market discourages investment in audit technologies, the employment of skilled senior staff, and adequate training of junior staff (Safar et al., 2013). Combined with low demand for quality audits and weak mechanisms for rewarding or punishing differences in audit quality, these factors do not encourage auditor independence or high levels of engagement-specific risk analysis and audit planning, regardless of audit firm tenure.

The emphasis on price-based competition, rather than quality, in the Iranian audit market may be exacerbated by mandatory audit firm rotation. Iran's policy of mandatory audit firm rotation after four years of audit firm tenure was introduced in 2007, with the first compulsory rotations required in 2011. The stated intention of this policy is to reduce audit firms' incentives to develop long-term relationships with their clients so that their independence, objectivity, and professional skepticism may be improved. The four-year cut-off period has been criticized by the profession as too short. DailamiPour (2012) questions “why 4 years and not 5, 6, 7 years like other countries around the world” (p.3) and claims that, according to a member of the SEO's committee responsible for this policy, the four-year cut-off was chosen to increase the opportunities for small audit firms to obtain clients. We argue that in the absence of other policies to promote audit quality, short tenure rotations among small audit firms maintain or exacerbate the intensity of price-based competition.

The intense competition weakens audit firms' revenue streams (Bozorg Asl, 2012). For example, in 2010, Iran's 210 private audit firms competed for the total revenues (from all sources) of \$92 million. Of this, 57% went to 21% of the firms (44 firms), leaving the other 166 firms sharing less than \$40 million (Bozorg Asl, 2012). The resulting cost pressures induce audit firms to largely employ junior accounting students on a casual basis (Hoshi, 2012). This implies weak supervision and a general lack of audit team experience, which is likely to negatively impact the quality of audits (Carcello, Hermanson, & McGrath, 1992). Combined with deficiencies in the education and training of auditors, the absence of spillovers from international accounting firms, and little market demand for high-quality audits, the intense price competition that discourages investments in audit technologies and skilled, experienced senior staff has contributed to a general absence of informed use of risk analyses in audit planning, with most private auditors continuing to use standardized systems-based auditing approaches (Safar et al., 2013). A fundamental assumption of systems-based auditing is that if the management relies on their systems, then it is also appropriate for the auditor to rely on the same systems (Woodrow, 1997). This is likely to exacerbate threats to audit quality and, we suggest, renders audit plans of incumbent auditors more predictable by managers wishing to manipulate financial reports.

Reliance on systems-based audits without risk-based auditing approaches causes auditors to generally apply routine audit programs with little or no modification across clients or from year to year. Ghaviandam (2013) provides anecdotal evidence that one of

<sup>5</sup> For more details about the Iranian audit market and audit environment, see Bagherpour et al. (2014) and MohammadRezaee, Mohd-Saleh, Jaffar, and Sabri (2015).

the factors contributing to low-quality audits in Iran is the use of routine audit programs under systems-based audits. In addition, we held informal discussions with six CEOs and CFOs of TSE-listed firms, and they commented that their auditors use static audit programs; their awareness of such issues is consistent with our contention that auditor behavior in Iran becomes more predictable after the first year of audit firm tenure. The risks associated with this behavior are exacerbated by low audit engagement resourcing arising from cost pressures, meaning an auditor is less likely to obtain sufficient comprehensive audit evidence to test assertions and is more likely to rely on previous results in accepting the reliability of the client's systems. In these circumstances, a manager wishing to manipulate financial reports might soon identify the auditor's methods and plans, thus becoming more able to avoid predictable forms or areas of scrutiny. In this respect, a manipulative manager is most constrained when the audit is least predictable, which is likely to be in the first year or two of the engagement following a change in auditors. Therefore, we expect misstated financial reports to be less likely in the early years of audit firm tenure, as expressed in the following hypothesis:

**H1.** *The likelihood of a misstated financial report is lower in the early years of audit firm tenure.*

It can be argued that our first hypothesis is also consistent with the argument that rotation of audit firms reduces the economic bonding between the audit firm and the client and brings a fresh perspective to the audit, which results in enhanced auditor independence and, in turn, audit quality. However, most prior research concerned with the auditor fresh perspective/independence hypothesis suggests that familiarity or incumbency threats to independence take several years to have any identifiable impact on audit quality. For example, Chi and Huang (2005), Boone, Khurana, and Raman (2008), and Davis, Soo, and Trompeter (2009) find that audit quality deteriorates after 4.6 to 14 years of audit firm tenure. The auditor independence argument, which is concerned with auditor behavior, is supported by results that show an incumbent auditor scheduled for mandatory rotation in the next year may be sensitive to the reputational consequences of the incoming auditor revealing previous audit deficiencies; for example, Lennox, Wu, and Zhang (2014) find that the frequency of audit adjustments is higher during the departing partner's final year of tenure prior to mandatory audit partner rotation in China.

If the threat of such revelations influences the planning and conduct of the audit for the outgoing audit firm's final year of engagement, the likelihood of misstatements will be reduced for that year, as expressed in the following hypothesis:

**H2.** *The likelihood of a misstated financial report is lower in the final year of audit firm tenure before mandatory rotation.*

If both H1 and H2 are supported, this will imply that auditor independence is the critical audit quality issue in the Iranian market. If H1 is supported but H2 is not, this will lend weight to our argument that it is the reduced predictability of the plans of the new audit firm, rather than the auditor's independence, that is enhanced by audit firm rotations in the Iranian market.

### 3. Research design

#### 3.1. Model

We test our hypotheses using the following model, based on Carcello and Nagy (2004):

$$MISSTATED = \beta_0 + \beta_1 TENURE + \beta_2 FINALYEAR + \beta_3 LnTA + \beta_4 LnAGE + \beta_5 MTB + \beta_6 BDOUT + \beta_7 BDSIZE + \beta_8 DUALITY + \varepsilon \quad (1)$$

where:

*MISSTATED* = 1 if the company audited by a private audit firm is charged with misstated financial reports and identified by the IACPA as an auditor failure, and 0 otherwise;

*TENURE* = various measures of audit firm tenure. We variously use the continuous measure of audit firm tenure and various indicators of short tenure, where *TENURE* is set equal to 1 if the length of audit firm tenure is no more than one year, two years, three years, and 0 otherwise;

*FINALYEAR* = 1 if the audit firm in year *t* is scheduled for mandatory rotation at the end of the audit in year *t* + 1 (audit firm tenure ≥ 4 years), and 0 otherwise;

*LnTA* = natural logarithm of total assets;

*LnAGE* = natural logarithm of the number of years the company has been listed on the TSE;

*MTB* = end-of-fiscal-year ratio of market value of equity to book value of equity;

*BDOUT* = the proportion of external (non-executive) directors on the board;

*BDSIZE* = the number of directors on the board;

*DUALITY* = 1 if the chairman and CEO positions are held by the same persons, and 0 otherwise.

#### 3.1.1. Dependent variable: misstated financial statements

The dependent variable *MISSTATED* indicates cases of misstated financial reports audited by private audit firms published in 2010 that were identified by the IACPA Inspection Office in 2011 as auditor failures.

#### 3.1.2. Tenure variables

Consistent with prior research (e.g., Carcello & Nagy, 2004; Johnson et al., 2002; Myers, Myers, & Omer, 2003), we variously use indicator variables that identify short tenure as audit firm tenure of one year, two years or less, and three years or less to test H1, and variable *FINALYEAR* to test H2. To measure audit firm tenure, we searched backwards through a company's annual reports to identify

the first year the auditor's report is signed by the 2010 incumbent auditor. We first estimate our model measuring *TENURE* continuously as the number of consecutive years that the audit firm has audited the client, then using indicator variables for short, medium, and long tenure.

### 3.1.3. Control variables

Consistent with [Carcello and Nagy \(2004\)](#), we control for variables that prior research shows affect the probability of fraudulent financial reporting. These controls are: firm size using the natural logarithm of total assets (*LnTA*), because prior research shows that smaller firms are more prone to fraud ([Beasley, Carcello, & Hermanson, 1999](#)); listing age (*LnAGE*), because prior research finds that fraudulent financial reporting is more likely in firms that have more recently been listed in national stock exchanges ([Beneish, 1999](#); [Carcello & Nagy, 2004](#)); market-to-book ratio (*MTB*), because an expectation to achieve high growth may increase the probability that management will engage in fraudulent accounting practices ([Carcello & Nagy, 2004](#)); the percentage of external (non-executive) directors on the board (*BDOUT*), because prior research finds that firms with a higher proportion of external directors are less likely to engage in fraudulent financial reporting ([Beasley, 1996](#); [Carcello & Nagy, 2004](#); [Uzun, Szweczyk, & Varma, 2004](#)); the number of directors on the board (*BDSIZE*), because prior research finds a positive association between board size and fraudulent reporting ([Beasley, 1996](#); [Carcello & Nagy, 2004](#)); and whether the same person holds the positions of chairman and CEO of the firms (*DUALITY*), because prior research finds higher incidence of fraudulent reporting in firms where the same person holds both positions ([Beasley, 1996](#); [Carcello & Nagy, 2004](#); [Dechow, Sloan, & Sweeney, 1996](#)).<sup>6</sup>

### 3.2. Sample

Our population of interest is the 420 publicly traded Iranian companies that were audited by private-sector audit firms in 2010.<sup>7</sup> The year is dictated by the availability of misstatement data. The IACPA inspects all audited financial reports of listed firms in the TSE every year; the reports are not normally publicly available, but we obtained access to the IACPA's inspection reports produced in 2011; from these, we identified 40 cases where companies audited by private-sector audit firms had misstated financial reports issued for the 2010 financial year. Our discussion with members of the IACPA's Inspection Office confirmed that the identified misstated financial reports are only those where the auditor failed to detect or report a material misstatement in financial reports. We obtained company financial data from RDIS (the online database of the SEO), TADBIRPARDAZ, and RAH AVARD NOVIN databases.<sup>8</sup> Corporate governance data are hand collected. After excluding cases with missing financial or corporate governance data, our final sample consists of 343 firms, of which 33 had identified misstated reports.<sup>9</sup>

Types of misstatements identified by the IACPA's Inspection Office are summarized in [Table 1](#). Most cases involved overstatements of profit, with 37% identified as revenue overstatements, 31% as understatements of expenses and liabilities, and 18% as revenue recognition and tax-related issues. The remaining cases had issues concerning contingent liabilities, disclosure of related-party transactions, or consolidations (e.g., failing to include a subsidiary).<sup>10</sup>

### 3.3. Descriptive statistics

The frequency distribution of *TENURE* and descriptive statistics for all variables in the misstatement model are reported in [Table 2](#). All continuous variables are winsorized at the 1st and 99th percentiles.<sup>11</sup> Panel A reports the frequency of audit firm tenure across the range of one to ten years (ten years is the maximum possible tenure in 2010, given that relevant auditor licensing was introduced in 2001). Around 43% of companies have audit tenures of three years or less, with a substantial proportion (19% of the total sample) having new auditors (tenure of 1 year). Panel B reports the distribution of *MISSTATED* by audit firm tenure, which shows around 30.3% of identified *MISSTATED* cases are firms with *TENURE* of three years or less. The descriptive statistics in Panel C show that audit firm tenure has a mean of 5.2 and median of 5 years. Approximately half of the audits in our sample (51%) are in the final year of the audit firm tenure before mandatory rotation in 2011 (tenure of  $\geq 4$  years); 66% of the board members are non-executives (*BDOUT*) on average, and the chairman and CEO positions are held by the same person in 19% of the sample.

Pearson correlation coefficients are reported in [Table 3](#). The correlations between *MISSTATED* and either *TENURE* or *FINALYEAR* are not significant. *MISSTATED* is positively correlated with *DUALITY* and negatively correlated with company size (*LnTA*), listing age (*LnAGE*), and board size (*BDSIZE*). The largest correlations between the independent variables are between *LnAGE* and *TENURE*

<sup>6</sup> We also control for companies reporting losses (*LOSS*), stock returns (*RETURN*), and government ownership (*GOWN*), and include an indicator variable to measure financial stress (*STRESS*). None of these variables are significant, and their inclusion or omission does not affect the results for our test variables. We do not control for audit committee characteristics because audit committees are not required in Iran and were rarely used during our study period.

<sup>7</sup> Publicly traded companies are listed on the Tehran Stock Exchange (TSE) or on the OTC market.

<sup>8</sup> The RDIS database is available at [www.rdis.ir](http://www.rdis.ir). TADBIRPARDAZ and RAHAVARD NOVIN are two commercial Iranian databases that contain financial data of listed firms.

<sup>9</sup> As reported in the sensitivity analysis, we also use the model in [Hribar et al. \(2014\)](#) to test the robustness of our results using a larger sample size.

<sup>10</sup> The types of misstatements in our sample appear to have a greater impact on reported profits (86% of cases) compared to those described for other jurisdictions. For example, 55% of misstatements for U.S. firms reported in [Hermanson et al. \(2007\)](#) and [Bishop et al. \(2013\)](#) are cases with assets, revenue, and profit overstatements.

<sup>11</sup> Our results are unchanged when we estimate our model using non-winsorized variables.

**Table1**  
Types of misstatements.

Items in misstated financial reporting (37 cases)	%
Income and assets recognition: Restatements (prior adjustments), overstated income, and current assets	37
Understatement of expenses/liabilities: Capitalization of current expenditures, deferred items	31
Improper revenue recognition and tax problems	18
Inadequate disclosure, improper consolidated financial reports, inadequate disclosure of related party transactions & contingent liabilities	14

**Table2**  
Descriptive statistics.

Panel A: Distribution of TENURE (n = 343)										
	1	2	3	4	5	6	7	8	9	10
Frequency	65	41	43	26	32	12	13	15	23	73
% of cases	19.0	11.9	12.5	7.6	9.3	3.5	3.8	4.4	6.7	21.3
Cumulative %	19.0	30.9	43.4	51.0	60.3	63.8	67.6	72.0	78.7	100
Panel B: Distribution of MISSTATED over TENURE (n = 33)										
	1	2	3	4	5	6	7	8	9	10
Frequency	2	3	5	4	5	4	3	2	2	3
% of cases	6.1	9.1	15.1	12.1	15.1	12.1	9.1	6.1	6.1	9.1
Cumulative %	6.1	15.2	30.3	42.4	57.5	69.6	78.7	84.8	90.9	100
Panel C: Descriptive statistics										
Variable	Mean	Median	SD	Min	Max					
TENURE	5.19	5	3.41	1	10					
FINALYEAR	0.51	1	n.a.	0	1					
LnTA	13.555	13.405	1.604	10.648	17.682					
LnAGE	2.493	2.565	0.627	0	3.637					
MTB	1.800	1.464	1.737	-2.505	7.098					
BDSIZE	5.18	5	0.702	3	11					
BDOUT	0.655	0.600	0.208	0.14	0.8					
DUALITY	0.19	0	n.a.	0	1					

*MISSTATED* equals 1 if the company audited by a private audit firm is charged with misstated financial reports and identified by the IACPA as an auditor failure, and 0 otherwise; *TENURE* is the number of years the firm is audited by the current auditor; *FINALYEAR* equals 1 if the auditor in year  $t$  is scheduled for mandatory rotation at the end of the audit in year  $t + 1$  (audit firm tenure  $\geq 4$  years); *LnTA* is the natural logarithm of the firm's total assets; *LnAGE* is the natural logarithm of the firm's listing age in TSE; *MTB* is the end-of-fiscal-year ratio of market value of equity to book value of equity; *BDSIZE* is the number of directors on the board; *BDOUT* is the proportion of outside (or non-executive) directors on the board; *DUALITY* is 1 if the chairman and CEO positions are held by the same person, 0 otherwise. All continuous variables are winsorized at the 1st and 99th percentiles.

(0.30) and between *LnTA* and *LnAGE* (0.20); these do not suggest that collinearity is likely to be an issue in our model. We also test for multicollinearity effects using variance inflation factors and condition indices. The results do not identify any significant multicollinearity effects for our regression results.

## 4. Results

### 4.1. Univariate comparisons

We compare the means of independent variables in our model for firms with and without misstated financial reports, as reported in Table 4. The mean differences are not significant for *TENURE* and *FINALYEAR*, but there are significant differences for some control variables. On average, compared to companies that do not have identified misstatements, companies with misstatements have smaller boards, are smaller in terms of total assets, have smaller listing ages, and are more likely to have the same person holding the positions of CEO and chair of the board, confirming the appropriateness of controlling for these effects in our model.

### 4.2. Multivariate analysis

The results for the logistic regression model used to estimate the relation between audit firm tenure and misstated financial

**Table 3**  
Correlation matrix.

Variable	1	2	3	4	5	6	7	8
1 MISSTATED								
2 TENURE	0.029							
3 FINALYEAR	-0.008	-0.010						
4 LnTA	-0.088**	0.067*	0.018					
5 LnAGE	-0.129***	0.301***	-0.021	0.202***				
6 MTB	0.003	0.077*	-0.030	0.055	0.004			
7 BDOUT	0.007	-0.091**	-0.031	0.025*	-0.026	-0.058		
8 BDSIZE	-0.047*	-0.059	0.005	0.051*	-0.012	0.007	0.118**	
9 DUALITY	0.076**	0.065*	0.002	0.032*	0.021	0.001	0.014**	-0.132***

\*, \*\*, and \*\*\* denote significance levels of 10%, 5%, and 1%, respectively. Number of observations is 343.

MISSTATED equals 1 if the company audited by a private audit firm is charged with misstated financial reports and identified by the IACPA as an auditor failure, and 0 otherwise; TENURE is the number of years the firm is audited by the current auditor; FINALYEAR equals 1 if the auditor in year  $t$  is scheduled for mandatory rotation at the end of the audit in year  $t + 1$  (audit firm tenure  $\geq 4$  years). LnTA is the natural logarithm of the firm's total assets; LnAGE is the natural logarithm of the firm's listing age in TSE; MTB is the end-of-fiscal-year ratio of market value of equity to book value of equity; BDSIZE is the number of directors on the board; BDOUT is the proportion of outside (or non-executive) directors on the board; DUALITY is 1 if the chairman and CEO positions are held by the same person, 0 otherwise. All continuous variables are winsorized at the 1st and 99th percentiles.

**Table 4**  
Differences in variable means for misstated versus non-misstated firms.

Variable	Misstated (n = 33)	Non-misstated (n = 310)	Differences in means
	(1)	(2)	
	Mean (std. dev)	Mean (std. dev)	(1-2)
TENURE	5.19 (2.828)	5.24 (3.468)	-0.05
FINALYEAR	0.53 (n.a.)	0.51 (n.a.)	0.02
LnTA	13.25 (1.459)	13.58 (1.617)	-0.33*
LnAGE	2.47 (0.641)	2.71 (0.418)	-0.24*
MTB	1.840 (1.750)	1.422 (1.587)	0.418*
BDSIZE	5.12 (0.492)	5.19 (0.721)	0.07
BDOUT	0.661 (0.206)	0.654 (0.208)	0.07
DUALITY	0.21 (n.a.)	0.17 (n.a.)	0.04**

\*, \*\*, and \*\*\* denote significance levels of 10%, 5%, and 1%, respectively.

MISSTATED equals 1 if the company audited by a private audit firm is charged with misstated financial reports and identified by the IACPA as an auditor failure, and 0 otherwise; TENURE is the number of years the client is audited by the current auditor; FINALYEAR equals 1 if the auditor in year  $t$  is scheduled for mandatory rotation at the end of the audit in year  $t + 1$  (audit firm tenure  $\geq 4$  years); LnTA is the natural logarithm of the firm's total assets; LnAGE is the natural logarithm of the firm's listing age in TSE; MTB is the end-of-fiscal-year ratio of market value of equity to book value of equity; BDSIZE is the number of directors on the board; BDOUT is the proportion of outside (or non-executive) directors on the board; DUALITY is 1 if the chairman and CEO positions are held by the same person, 0 otherwise. All continuous variables are winsorized at the 1st and 99th percentiles.

reports are reported in Table 5. All models are significant ( $p < .001$ ), and the pseudo- $R^2$  ranges from 0.07 to 0.10. The non-significant results for the Hosmer-Lemeshow goodness-of-fit tests (Hosmer & Lemeshow, 2000) suggest the data fit the model well. To assess the accuracy of our models in discriminating between misstated and non-misstated cases, we use the receiver operating characteristic (ROC) curve analysis (Zweig & Campbell, 1993). The areas under the ROC curve in our models range from 0.74 to 0.77, suggesting a fair level of accuracy for our models in discriminating misstated and non-misstated cases.

In our first regression, we estimate the relation between misstatements and audit firm tenure using a continuous measure of TENURE, as reported in column 1 of Table 5, and we do not find a significant relation (the relation is also not significant using the natural log of tenure). We then estimate short-tenure effects by using indicator variables in cases where audit firm tenure is one year (column 2), two years or less (column 3), and three years or less (column 4). All three indicators of short tenure have a negative coefficient, but the effects are significant (on a two-tail basis) only for the tenure indicators of one year and two years or less. These results provide support for our first hypothesis, which predicted a lower likelihood of misstated financial reports in the early years of audit firm tenure. The results for FINALYEAR are not significant in columns 2 and 3 and thus do not support H2, which predicted a lower likelihood of misstated financial reports in the year preceding mandatory audit firm rotation.

Because the base case for the short tenure indicators assumes all longer tenures have uniform effects on the likelihood of misstatements, we also estimate the model using indicators for a medium tenure (3 to 6 years) and a long tenure (7 or more years), with a short tenure of 2 years or less as the base case, without the correlated FINALYEAR indicator, as reported in column 5. This also provides a reasonable distribution of cases across the short, medium, and long tenure groups (31%, 33%, and 36%, respectively). The results show that the risk of misstatement is higher in medium tenure engagements than in short tenure engagements.

The coefficients for several control variables are significant across regressions 1-5. The likelihood of companies having their



Table 5

Logistic regression (n = 343).

Variable	Pred	1		2		3		4		5	
		Tenure as number of years		Short tenure (= 1 year)		Short tenure (≤ 2 years)		Short tenure (≤ 3 years)		Medium and long tenure	
		Coefficient	p value forWald Chi-Sq	Coefficient	p value forWald Chi-Sq	Coefficient	p value forWald Chi-Sq	Coefficient	p value forWald Chi-Sq	Coefficient	p value forWald Chi-Sq
TENURE Continuous	-	0.004	0.447	-	-	-	-	-	-	-	-
TENURE ≤ 1 year	-	-	-	-1.609	0.016	-	-	-	-	-	-
TENURE ≤ 2 years	-	-	-	-	-	-1.133	0.020	-	-	-	-
TENURE ≤ 3 years	-	-	-	-	-	-	-	-0.293	0.411	-	-
TENURE ≥ 3-6 years	+	-	-	-	-	-	-	-	-	1.588	0.001
TENURE ≥ 7 years	+	-	-	-	-	-	-	-	-	0.464	0.191
FINALYEAR	-	-	-	-0.117	0.383	-0.208	0.115	-0.060	0.250	-	-
LnTA	-	-0.173	0.073	-0.173	0.072	-0.174	0.074	-0.183	0.063	-0.187	0.061
LnAGE	-	-0.691	0.018	-0.620	0.023	-0.618	0.020	-0.668	0.022	-0.794	0.011
MTB	+	0.116	0.085	0.107	0.082	0.113	0.078	0.117	0.080	0.100	0.087
BDSIZE	+	-0.341	0.329	-0.265	0.230	-0.141	0.350	-0.132	0.356	-0.239	0.248
BDOUT	-	-0.277	0.383	-0.379	0.323	-0.035	0.312	-0.042	0.486	-0.200	0.412
DUALITY	+	0.564	0.041	0.562	0.040	0.569	0.032	0.561	0.046	0.572	0.043
Constant	-	-0.133	0.000	-0.425	0.001	-1.071	0.000	-1.695	0.002	-3.899	0.086
LR chi <sup>2</sup> (6)			11.15		18.62		18.47		12.09		18.77
Pseudo R <sup>2</sup>			0.072		0.075		0.073		0.067		0.102
ROC curve area			0.772		0.749		0.742		0.772		0.769
Hosmer-Lemeshow statistic (prob > χ <sup>2</sup> )			325.07 (0.581)		360.79 (0.909)		354.34 (0.943)		374.65 (0.794)		357.88 (0.944)

MISSTATED equals 1 if the company audited by a private audit firm is charged with misstated financial reports and identified by the IACPA as an auditor failure, and 0 otherwise; TENURE is the number of years the client is audited by the current auditor; FINALYEAR equals 1 if the auditor in year  $t$  is scheduled for mandatory rotation at the end of the audit in year  $t + 1$  (audit firm tenure  $\geq 4$  years); LnTA is the natural logarithm of the firm's total assets; LnAGE is the natural logarithm of the firm's listing age in TSE; MTB is the end-of-fiscal-year ratio of market value of equity to book value of equity; BDSIZE is the number of directors on the board; BDOUT is the proportion of outside (or non-executive) directors on the board; DUALITY is 1 if the chairman and CEO positions are held by the same person, 0 otherwise. All continuous variables are winsorized at the 1st and 99th percentiles.

financial reports identified as misstated increases as market-to-book ratio (MTB) and DUALITY increase and decreases as size (LnTA) and listing age (LnAGE) increase. These effects are generally consistent with Carcello and Nagy (2004).

#### 4.3. Robustness to alternative model specification

In our main analysis, following Carcello and Nagy (2004), we used model 1, but lost 66 observations because of missing data for some corporate governance variables. In this section, we assess the robustness of our results using an alternate specification (model 2), based on Hribar et al. (2014), that results in fewer missing cases.

$$\begin{aligned}
 MISSTATED = & \beta_0 + \beta_1 TENURE + \beta_2 FINALYEAR + \beta_3 SOFTASSETS + \beta_4 LOSS + \beta_5 \Delta REC + \beta_6 \Delta INV + \beta_7 \partial CFO + \beta_8 \partial OPI \\
 & + \beta_9 ABACC + \beta_{10} \Delta EARNINGS + \beta_{11} \Delta OPCASH + \beta_{12} LnTA + \varepsilon
 \end{aligned} \quad (2)$$

where:

SOFTASSETS = total assets minus cash, property, plant and equipment, divided by total assets;

LOSS = 1 if the client reported loss in the current year, 0 otherwise;

ΔREC = change in accounts receivable from year  $t - 1$  to year  $t$ ;

ΔINV = change in inventory from year  $t - 1$  to year  $t$ ;

∂CFO = standard deviation of cash flows from operation for years  $t - 2$  to  $t$ ;

∂OPI = standard deviation of operating earnings before interest and tax for years  $t - 2$  to  $t$ ;

ABACC = the absolute value of abnormal accruals, measured as the residuals using the modified Jones model that controls for differences in performance (as described in Kothari, Leone, & Wasley, 2005);

ΔEARNINGS = change in net profit (loss) from year  $t - 1$  to year  $t$ ;

ΔOPCASH = change in cash from operations from year  $t - 1$  to year  $t$ , measured as the change in operating income minus the change in accounts receivable;

LnTA = natural logarithm of firms' total assets.

All other variables are defined as in model 1.

This model represents a different approach to that underlying model 1 because the control variables emphasize accounting-based measures in place of the corporate governance variables. Model 2 controls for SOFTASSETS (assets that are neither cash nor PP&E)

because assets with balance sheet values that are subject to changes in assumptions and forecasts increases the managers' flexibility to manage short-term earnings. Prior research finds that firms with a higher proportion of soft assets are more likely to have misstated financial reports (e.g., Dechow, Ge, Larson, & Sloan, 2011; Richardson, Sloan, Soliman, & Tuna, 2005). *LOSS* is included because prior research shows that poor financial performance is associated with earnings manipulations (Beasley, 1996; Bell, Szykowny, & Willingham, 1991), which may increase the likelihood of misstatements. We include the change in receivables ( $\Delta REC$ ) and change in inventory ( $\Delta INV$ ) because Dechow et al. (2011) show that firms with higher reported change in accounts receivables and inventory are more likely to misstate financial reports. Consistent with Jayaraman (2008), we include the standard deviations of cash flows and operating income, calculated over the prior three years (respectively  $\partial CFO$  and  $\partial OPI$ ), to control for operating volatility (Hribar et al., 2014). There is evidence that the volatility in operating income and cash flows from operations are positively related to fraudulent financial reporting (Hribar et al., 2014). Furthermore, there is evidence that earnings are primarily manipulated via the accrual component of earnings (Dechow et al., 2011), and prior research shows that earnings quality is negatively associated with fraudulent financial reporting (Hribar et al., 2014). Thus, consistent with Warfield, Wild, and Wild (1995), as we are only interested in the magnitude of the deviation around expected accruals, we control for the absolute value of abnormal accruals (*ABACC*) and expect a positive association between *ABACC* and misstatement in financial reports. Consistent with Francis and Gunn (2015), we estimate abnormal accruals using the modified Jones model that controls for differences in accounting performance as described in Kothari et al. (2005); the model and our results are summarized in Appendix A. This model is estimated by year (for 2001–2010) and industry (based on the Tehran Stock Exchange's 25 industry classifications) using all available firm-year observations from our data sources where we had a minimum of ten observations for each industry-year.<sup>12</sup> We also control for the effects of change in earnings ( $\Delta EARNINGS$ ) and change in net cash from operations ( $\Delta OPCASH$ ) because prior research shows that managers prefer to show positive earnings growth (Beneish, 1999; Burgstahler & Dichev, 1997; Hribar et al., 2014), and Dechow et al. (2011) find that misstatements are negatively associated with change in income and change in operating cash income. As in model 1, we include *LnTA* to control for firm size because larger firms are expected to be more visible (and, therefore, less likely to engage in manipulative practices) and because fraud is more prevalent among smaller firms (Carcello & Nagy, 2004).

Because model 2 does not include the restrictive governance variables, we obtain a larger sample (406 observations) that includes 37 cases of identified misstated financial reports. The frequency distribution of *TENURE* and descriptive statistics for all variables in the misstatement model (model 2) are reported in Table 6. All continuous variables are winsorized at the 1st and 99th percentiles.<sup>13</sup> As reported in Panel A, the year distribution of *TENURE* is slightly different, with a higher incidence of shorter tenure cases, as indicated by the mean of 4.7 and a median of four years (compared to 5.2 and 5 years, respectively, for the sample used for estimating model 1). Almost half of the companies (48%) have an audit tenure of three years or less, including 24% that have new auditors (tenure of 1 year). The distribution of *MISSTATED* by *TENURE* reported in Panel B shows that 32.4% of *MISSTATED* cases have *TENURE* of three years or less (compared to 30.3% for the model 1 sample). As shown in Panel C, 52% of companies are in the final year of audit firm tenure before mandatory rotation in 2011 (*TENURE*  $\geq 4$  years), 14% reported losses, and the mean change in earnings is around 43%. Soft assets are substantial, being around 40% of total assets on average.

The regression results for model 2 are reported in Table 7. The explanatory power of the regressions is comparable to the results for model 1, with pseudo- $R^2$  ranging from 0.13 to 0.16, and areas under the ROC curve ranging from 0.81 to 0.83, suggesting a good level of accuracy for our models in discriminating misstated and non-misstated cases.

The results for the tenure variables are consistent with our results in model 1. The coefficient for the continuous measure of audit firm tenure is not significant, and coefficients for the short audit firm tenure indicator variables are significantly negative for tenure of one year and tenure of two years or less, but it is not significant for tenure of three years or less. The coefficients for *FINALYEAR* are not significant. Also, the results for medium tenure (3 to 6 years) and long tenure (7 or more years), with a short tenure of 2 years or less as the base case and without the correlated *FINALYEAR* indicator, confirm that medium tenure has a higher risk of misstatements than short tenure engagements.

The coefficients for several control variables are significant across all regressions. *SOFTASSETS*, *LOSS*, changes in accounts receivables ( $\Delta REC$ ), and changes in operating cash flows ( $\Delta OPCASH$ ) are associated with a higher likelihood of misstatement, which is generally consistent with prior research (e.g., Dechow et al., 2011; Hribar et al., 2014).<sup>14</sup>

<sup>12</sup> When we exclude the absolute value of discretionary accruals (*ABACC*) from the model, our results for tenure variables are unchanged. We also re-estimate our model using the abnormal accruals (signed accruals). We find that there is a negative association (significant at 10% level) between abnormal accruals and misstatement in financial reports. Our further analysis shows that this negative association is driven by cases where abnormal accruals are negative (income-decreasing accruals), but the relation between positive abnormal accruals and *MISSTATED* is not significant. This result shows that firms with income-decreasing abnormal accruals are less likely to have misstated financial reports.

<sup>13</sup> We also only winsorized the standard deviation of cash flows ( $\partial CFO$ ) and the standard deviation of operating income ( $\partial OPI$ ) at the 1st and 99th percentiles because these two variables have more outliers than other continuous variables (these variables have maximums that are > 15 standard deviations above their means). Then, we used these winsorized variables to estimate model 2. The results for our tenure variables are unchanged.

<sup>14</sup> We also control for government ownership (as the percentage of shares owned by the government) in model 2. While Chen, Firth, Gao, and Rui (2006) find ownership type (government versus private ownership) is less relevant in explaining fraud in China, there is evidence from prior research that government ownership is positively associated with earnings management in the form of related-party transactions (Chen & Yuan, 2004). The descriptive statistics for this variable shows that the mean (median) government ownership in our sample is 2.5% (0%). The results for estimating model 2, controlling for government ownership, show that our results for tenure variables are unchanged and the result for government ownership is not significant.

**Table 6**

Descriptive statistics for model 2.

Panel A: Distribution of <i>TENURE</i> (n = 406)										
	1	2	3	4	5	6	7	8	9	10
Frequency	96	53	46	31	34	14	15	17	23	77
% of cases	23.65	13.05	11.33	7.64	8.37	3.45	3.69	4.19	5.67	18.97
Cumulative %	23.65	36.70	48.03	55.67	64.04	67.49	71.18	75.37	81.03	100

  

Panel B: Distribution of <i>MISSTATED</i> over <i>TENURE</i> (n = 37)										
	1	2	3	4	5	6	7	8	9	10
Frequency	2	4	6	4	6	4	3	2	2	4
% of cases	5.4	10.8	16.2	10.8	16.2	10.8	8.2	5.4	5.4	10.8
Cumulative %	5.4	16.2	32.4	43.2	59.4	70.2	78.4	83.8	89.2	100

  

Panel C: Descriptive statistics (n = 406)					
Variable	Mean	Median	SD	Min	Max
<i>TENURE</i>	4.71	4	3.40	1	10
<i>FINALYEAR</i>	0.52	1	n.a.	0	1
<i>SOFTASSETS</i>	0.399	0.385	0.21	0.04	0.89
<i>LOSS</i>	0.14	0	n.a.	0	1
$\Delta$ REC	0.19	0.13	0.499	-0.736	1.641
$\Delta$ INV	0.031	0	0.812	-1.117	1.332
$\partial$ CFO	0.065	0.051	0.065	0	0.317
$\partial$ OPI	0.117	0.009	0.479	-0.000	2.950
ABACC	0.062	0.046	0.053	0.000	0.195
$\Delta$ EARNINGS	0.429	0	0.796	-1.146	2.462
$\Delta$ OPCASH	0.291	0.173	0.869	-1.652	2.171
LnTA	13.60	13.41	1.617	10.648	17.682

*MISSTATED* equals 1 if the company audited by a private audit firm is charged with misstated financial reports and identified by the IACPA as an auditor failure, and 0 otherwise; *TENURE* is the number of years firm is audited by the current auditor; *FINALYEAR* equals 1 if the auditor in year *t* is scheduled for mandatory rotation at the end of the audit) in  $t + 1$  (audit firm tenure  $\geq 4$  years); *SOFTASSETS* is the proportion of total assets that are not cash or property, plant and equipment; *LOSS* equals 1 if the client reported a loss in the current year and zero otherwise;  $\Delta$ REC is the change in receivables;  $\Delta$ INV is the change in inventories;  $\partial$ CFO is the standard deviation of the previous three years' net cash flow from operations,  $\partial$ OPI is the standard deviation of the firms' previous three years' operating profit before tax and financial expense; ABACC is the absolute value of abnormal accruals, measured as the residuals using performance-adjusted Jones model (Kothari et al., 2005);  $\Delta$ EARNINGS is change in net profit (loss);  $\Delta$ OPCASH is the change in cash from operations, measured as the difference between operating income and change in accounts receivables. LnTA is the natural log of total assets. All continuous variables are winsorized at the 1st and 99th percentiles.

#### 4.4. Additional analysis

We assess the robustness of our main results in model (1) to additional audit firm effects by performing additional analyses that include the effects of audit firm experience, audit effort, and the IACPA's assessment of audit firm quality. Untabulated results for these additional analyses reveal our reported results are robust to the additional controls.

First, because tenure may proxy for auditor experience, we re-estimate our models while controlling for audit firm experience, measured as the number of listed companies that each audit firm had as audit clients in 2010.<sup>15</sup> Missing data for this variable reduces our sample to 341 firms. The coefficient for the audit firm experience variable is negative and significant, but the tenure effects are similar to our main results.

Second, we re-estimate our models after including abnormal audit fees to proxy for additional audit effort that may affect an audit firm's ability to prevent misstatements. Hribar et al. (2014) show that abnormal audit fees are incrementally informative for predicting restatements, fraud, and SEC comment letters. We estimate abnormal audit fees using 2132 firm-year observations, which represent all firms listed on the TSE with available audit fee data in 2001–2010. We estimate a traditional audit fee model (see Hay, Knechel, & Wong, 2006) and use the residuals from this model as abnormal audit fees; details for the audit fee model and descriptive statistics of the relevant sample are reported in Appendix B.<sup>16</sup> Missing audit fee data reduces the sample size to 223 companies. The coefficient for abnormal audit fees is not significant, and results for audit firm tenure are consistent with our main results. We also test whether particularly high or low abnormal fees have any significant relation with misstatements using indicator variables to identify

<sup>15</sup> The results are the same if we use the auditor's number of clients in each industry.

<sup>16</sup> The R-squared statistic of 54% for our audit fee model compares favorably with the explanatory power reported in prior audit fee studies in Iran (for example, 0.482 in Pourheidari and Shouraki (2015); 0.53 in Azizkhani et al. (2017); and 0.451 in Hazrati and Pahlavan (2011)).

Table 7

Logistic regression of model 2 (n = 406).

Variable	Pred	1		2		3		4		5	
		Tenure as number of years		Short tenure (= 1 year)		Short tenure (≤ 2 years)		Short tenure (≤ 3 years)		Medium and long tenure	
		Coefficient	p value forWald Chi-Sq	Coefficient	p value forWald Chi-Sq	Coefficient	p value forWald Chi-Sq	Coefficient	p value forWald Chi-Sq	Coefficient	p value forWald Chi-Sq
<i>TENURE</i> Continuous	–	0.040	0.230	–	–	–	–	–	–	–	–
<i>TENURE</i> ≤ 1 year	–	–	–	–1.606	0.019	–	–	–	–	–	–
<i>TENURE</i> ≤ 2 years	–	–	–	–	–	–1.150	0.017	–	–	–	–
<i>TENURE</i> ≤ 3 years	–	–	–	–	–	–	–	–0.295	0.425	–	–
<i>TENURE</i> = 3–6 years	+	–	–	–	–	–	–	–	–	0.647	0.032
<i>TENURE</i> ≥ 7 years	+	–	–	–	–	–	–	–	–	0.456	0.174
<i>FINALYEAR</i>	–	–	–	–0.816	0.412	–0.762	0.440	–	–	–	–
<i>SOFTASSETS</i>	+	1.559	0.041	2.287	0.028	2.191	0.002	1.972	0.028	1.861	0.062
<i>ABACC</i>	+	1.767	0.258	1.930	0.283	1.698	0.308	1.691	0.305	1.701	0.306
<i>LOSS</i>	+	0.841	0.069	0.553	0.059	0.580	0.064	0.671	0.075	0.601	0.106
<i>ΔREC</i>	+	1.240	0.000	1.685	0.003	1.702	0.001	1.614	0.002	1.494	0.004
<i>ΔINV</i>	+	0.194	0.395	0.535	0.230	0.283	0.308	0.384	0.242	0.439	0.217
<i>∂CFO</i>	–	–0.000	0.295	–0.000	0.267	–0.000	0.258	–0.000	0.293	–0.000	0.316
<i>∂OPI</i>	+	–0.000	0.442	–0.000	0.466	–0.000	0.458	–0.000	0.492	–0.000	0.470
<i>ΔEARNINGS</i>	–	–0.018	0.370	–0.064	0.378	–0.026	0.456	–0.093	0.340	–0.091	0.344
<i>ΔOPCASH</i>	+	0.886	0.000	1.105	0.000	1.172	0.000	1.134	0.000	1.094	0.000
<i>LnTA</i>	–	–0.140	0.082	–0.113	0.182	–0.152	0.165	–0.148	0.151	–0.129	0.175
Constant		–2.020	0.246	–2.476	0.243	–2.808	0.347	–2.191	0.323	–2.402	0.239
LR chi2			32.35		38.47		38.95		32.76		34.56
Pseudo R <sup>2</sup>			0.136		0.157		0.158		0.131		0.146
ROC curve area			0.816		0.824		0.831		0.817		0.828
Hosmer-Lemeshow statistic (prob > $\chi^2$ )			365.18 (0.872)		361.85 (0.852)		345.06 (0.954)		361.19 (0.902)		352.23 (0.944)

*MISSTATED* equals 1 if the company audited by a private audit firm is charged with misstated financial reports and identified by the IACPA as an auditor failure, and 0 otherwise; *TENURE* identifies various measures (as indicated) of the number of consecutive years an audit firm has audited the sample company; *FINALYEAR* equals 1 if the auditor in year  $t$  is scheduled for mandatory rotation at the end of the audit in  $t + 1$  (audit firm tenure  $\geq 4$  years); *SOFTASSETS* is the proportion of total assets that are not cash or property, plant, and equipment; *ABACC* is the absolute value of abnormal accruals, measured as the residuals using the performance-adjusted Jones model (Kothari et al., 2005); *LOSS* equals 1 if the client reported a loss in the current year and 0 otherwise; *RESTATE* is the absolute value of restatements divided by total assets; *ΔREC* is the change in receivables; *ΔINV* is the change in inventories; *∂CFO* is the standard deviation of the previous three years' net cash flow from operations; *∂OPI* is the standard deviation of the firms' previous three years' operating profit before tax and financial expense; *ΔEARNINGS* is change in net profit (loss); *ΔOPCASH* is the change in cash from operations, measured as the difference between operating income and change in accounts receivables; *LnTA* is natural logarithm of the total assets. All continuous variables are winsorized at the 1st and 99th percentiles.

the top and bottom quartiles of abnormal audit fees; neither of the indicator variables is significant, and the results for the audit firm tenure variables are consistent with our main results.

Third, we examine the effect of audit firm quality on the likelihood of misstatements using the IACPA's ranking of audit firms as a measure for audit firm quality. The IACPA annually reports the quality of audit firms using four groups based on its undisclosed ranking of audit firms using quality control factors. We add indicator variables for these quality groupings for 2010 and re-estimate our Model 1. The coefficients for these grouping variables are not significant, and the results for audit firm tenure are similar to our main results. We also include the interactions between each of the indicator variables for tenure and audit firm quality (IACPA's ranking of audit firms) and re-estimate our models to test whether the relation between audit firm tenure and misstatement is stronger for lower-quality audit firms (lower-ranked audit firms), because lower quality auditors might be more likely to use the same audit programs from year to year. The results show that the coefficients for these interactions are not significant, and the results for audit firm tenure are similar to our reported results.

## 5. Implications and conclusion

Calls for mandatory audit firm rotation are generally based on the expectation that audit quality and the quality of financial reports increases as the new audit firm brings “fresh eyes” to the audit and the new auditor is more independent of the client. Opponents of mandatory audit firm rotation argue that rotation leads to a reduced audit quality due to the auditor's lack of client-specific knowledge. However, we contend that both arguments are predicated on assumptions regarding institutions and market conditions that highly value and facilitate auditor independence and competence. Recent studies show that institutional and market development factors such as legal environment and market structure affect audit quality. We argue that in some immature audit markets, conditions do not substantially encourage or facilitate auditor independence or quality. Lower investments in training, licensing, and oversight of auditors; the absence of sufficiently strong market mechanisms that reward or punish differences in audit

quality; and limited audit firm resources may produce relatively low levels of auditor independence or otherwise impede audit quality. With respect to the Iranian market, we argue that such circumstances have induced the observed general absence of risk-based audit practices and increased the predictability of incumbent auditors' programs, which increases managers' opportunities for misstating audited financial reports. Consequently, managers are more constrained when the audit is least predictable in the early years of the engagement following the change in auditors. Our results are consistent with this proposition.

We find that the likelihood of identified misstatements in financial reports is significantly lower in the first two years of audit firm tenure compared to longer tenure periods, but not in the year preceding audit firm rotation. While the new auditor result also seems consistent with the "fresh eyes" contention, the absence of any pre-rotation effect (which is associated with audit firms' concerns for their reputation or liability) indicates that it is more likely that management behavior is driving the result, rather than audit firm behavior. Therefore, we conclude that our results may be indicative of a fundamental problem arising from intense fee-based competition among small firms with scant resources, which prevents firms from investing in superior audit technologies and planning.

While we suggest that other emerging markets may also be susceptible to adverse competition effects and underinvestment problems in relation to auditing capabilities, we caution against generalizing our results to audit markets that do not share the characteristics of the Iranian audit market, such as the absence of international audit firms, low litigation risk, or the weak demand for quality audit services. Also, while our evidence from a pre-mandatory audit firm rotation period in Iran shows that new auditors improve audit quality, the consequences of mandatory audit firm rotations in Iran cannot be empirically established here because our examination is necessarily limited to a period for which we had access to misstatement data, when auditor changes were voluntary. Thus, further research is needed to evaluate the impact that frequent auditor changes caused by mandatory audit firm rotation policy may have on audit quality.

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## Appendix A

TableA1

Descriptive statistics for variables used to estimate discretionary accruals (*ABACC*) ( $n = 5641$ ).

Variable	Mean	Median	Std. dev	Min	Max
<i>TACC</i>	0.01	0.02	0.48	-14.29	9.46
<i>PPE</i>	0.24	0.19	0.20	0.00	0.98
<i>TA</i> (billion Rials)	4661	331	33,500	100	862,000
$\Delta INCOME$	0.10	0.00	0.44	-5.04	7.70
<i>ROA</i>	0.10	0.09	0.13	-0.15	0.36
<i>ABACC</i>	0.00	0.00	0.28	-5.88	4.77

Consistent with Francis and Gunn (2015), we use the following model to estimate discretionary accruals (*ABACC*):

$$TACC = \beta_0 + \beta_1 PPE + \beta_2 \Delta INCOME + \beta_3 ROA + \varepsilon,$$

where *TACC* = earnings before extraordinary items-cash flows from operating activities; *PPE* is net property, plant, and equipment;  $\Delta INCOME$  is change in the firm's annual sales; *ROA* is the firm's net profit to total assets;  $\varepsilon$  is the model's residual which is our measure of abnormal accruals. All variables are scaled by lagged total assets. The model is estimated cross-section for 10 years (2001 – 2010) for 25 TSE industry classification groups. All continuous variables are winsorized at the 1st and 99th percentiles.

## Appendix B

TableB1

Estimation of abnormal audit fees (AAF).

Descriptive Statistics for the Variables Used in the Audit Fee Model ( $n = 2132$ )					
Variables	Mean	Median	Std. Dev	min	max
<i>LnAF</i>	5.36	5.30	0.82	2.20	8.61
<i>CR</i>	1.23	1.08	0.86	0.02	11.21

(continued on next page)

TableB1 (continued)

Descriptive Statistics for the Variables Used in the Audit Fee Model( $n = 2132$ )					
Variables	Mean	Median	Std. Dev	min	max
INV	0.25	0.23	0.16	0.00	0.85
FGN	0.03	0.01	0.04	0.00	1.03
REC	0.28	0.28	0.16	0.00	0.99
ROE	0.38	0.35	0.74	-5.97	6.36
AUDIT	0.28	0.00	-	0.00	1.00
LEV	0.87	0.71	1.17	0.02	17.52
SWITCH	0.17	0.00	-	0.00	1.00
LOSS	0.20	0.00	-	0.00	1.00
PEAK	0.75	1.00	-	0.00	1.00
MERGER	0.10	0.00	-	0.00	1.00
RESTATE	-2.94	-2.88	2.76	-12.07	0.57
LnTA	12.48	12.29	1.54	7.75	19.40

TableB2

Audit fee model

$$\ln(AF) = b_0 + b_1CR_{\geq} + b_2INV + b_3FGN + b_4REC + b_4ROE + b_5AUDIT + b_6LEV + b_7SWITCH + b_8LOSS + b_9PEAK + b_{10}MERCER + b_{11}RESTATE + B_{12}SIZE + \Sigma b_jYear + \Sigma b_jIndustry + \varepsilon$$

	Pred. sign	b	t stat	p value
CR	-	-0.037	-5.03	< 0.001
INV	+	0.439	4.66	< 0.001
FGN	+	1.062	3.64	< 0.001
REC	+	0.229	2.59	0.010
ROE	?	-0.010	-1.6	0.100
AUDIT	+	0.286	9.01	< 0.001
LEV	+	-0.066	-5.13	< 0.001
SWITCH	?	0.024	0.71	0.477
LOSS	?	-0.073	-2.50	0.046
PEAK	+	0.080	2.50	0.012
MERGER	+	0.158	3.63	< 0.001
RESTATE	+	0.001	3.67	< 0.001
SIZE	+	0.141	16.51	< 0.001
Constant		2.782	4.76	< 0.001
Industry fixed effect		included		
Year fixed effect		included		
Adj R <sup>2</sup>		54.04%		
n		2132		

$\ln(AF)$  is the natural logarithm of audit fees;  $CR$  is the client's current ratio measured as the current assets divided by the current debts;  $INV$  is calculated as total inventories divided by total assets;  $FGN$  is the value of foreign prepayments to total assets;  $REC$  equals total accounts receivable to total assets;  $ROE$  equals net income before tax and financial expense, divided by total equity;  $AUDIT$  equals 1 if the client audit firm has a big share in the capital and zero otherwise;  $LEV$  is the ratio of total debts to total assets;  $SWITCH$  equals 1 if a company changed its auditor in year  $t$  and zero otherwise.  $LOSS$  equals 1 if the client reported a loss in year  $t-1$  and zero otherwise;  $PEAK$  equals 1 if the fiscal year does end in 20 March;  $MERGER$  equals to 1 if there is a merger in the financial period and zero otherwise;  $RESTATE$  is the value of restatements scaled by total assets; and  $SIZE$  equals the natural log of total assets. All continuous variables are winsorized at the 1st and 99th percentiles.

## References

- American Institute of Certified Public Accountants (AICPA) (1992). *SEC practice section: Statement of position regarding mandatory rotation of audit firms of publicly held companies*. New York: AICPA.
- Arel, B., Brody, R. G., & Pany, K. (2005). Audit firm rotation and audit quality. *The CPA Journal*, 75, 36–39.
- Azizkhani, M. (2012). Auditor type and earnings quality: Evidence from Iran. *Quarterly Journal of Securities and Exchanges*, 16(4), 222–246.

- Azizkhani, M., Monroe, G., & Shailer, G. (2013). Audit partner tenure and cost of equity capital. *Auditing: A Journal of Practice & Theory*, 32, 183–202.
- Azizkhani, M., Sami, H., & Amirkhani, K. (2017). *Competition effects on audit quality and pricing in a non-Big 4 market (working paper)*. Ilam University.
- Bagherpour, M., Monroe, G., & Shailer, G. (2014). Government and managerial influence on auditor switching under partial privatization. *Journal of Accounting and Public Policy*, 33(4), 372–390.
- Ball, R., Kothari, S. P., & Robin, A. (2000). The effect of international institutional factors on properties of accounting earnings. *Journal of Accounting and Economics*, 29, 1–51.
- Beasley, M. S. (1996). An empirical analysis of the relation between board of director composition and financial statement fraud. *The Accounting Review*, 71(4), 443–465.
- Beasley, M. S., Carcello, J. V., & Hermanson, D. R. (1999). *Fraudulent financial reporting 1987–1997: An analysis of U.S. public companies*. Committee of Sponsoring Organizations of the Treadway commission. Jersey City, NJ: AICPA.
- Beck, P. J., Frecka, T. J., & Solomon, I. (1988). A model of the market for MAS and audit services: Knowledge spill-overs and auditor-audit fee bonding. *Journal of Accounting Literature*, 7, 50–64.
- Bell, T. B., Szykowny, S., & Willingham, J. (1991). *Assessing the likelihood of fraudulent financial reporting: A cascaded logit approach (working paper)*. Montvale: KPMG peat Marwick.
- Beneish, M. D. (1999). The detection of earnings manipulation. *Financial Analysts Journal*, 55(5), 24–36.
- Bishop, C. C., Hermanson, D. R., & Houston, R. W. (2013). PCAOB inspections of international audit firms: Initial evidence. *International Journal of Auditing*, 17, 1–18.
- Boone, J. P., Khurana, I. K., & Raman, K. (2008). Audit firm tenure and the equity risk premium. *Journal of Accounting, Auditing and Finance*, 23, 115–140.
- Bozorg Asl, M. (2012). Another look at the income distribution of audit firms. *Donya-e-Eqtesad*, 17–18, 5 march. In Persian <http://www.donya-e-eqtesad.com>.
- Burgstahler, D., & Dichev, I. (1997). Earnings management to avoid earnings decreases and losses. *Journal of Accounting and Economics*, 24, 99–126.
- Cahan, S. F., & Zhang, W. (2006). After Enron: Auditor conservatism and ex-Anderson clients. *The Accounting Review*, 81, 49–82.
- Carcello, J. V., Hermanson, R., & McGrath, N. (1992). Audit quality attributes: The perceptions of audit partners, preparers, and financial statement users. *Auditing: A Journal of Practice & Theory*, 11, 1–15.
- Carcello, J. V., & Nagy, A. (2004). Audit firm tenure and fraudulent financial reporting. *Auditing: A Journal of Practice & Theory*, 23(2), 55–69.
- Chen, C. W., & Yuan, H. (2004). Earnings management and capital resource allocation: Evidence from China's accounting-based regulation of right issues. *The Accounting Review*, 79(3), 645–665.
- Chen, G., Firth, M., Gao, D. N., & Rui, O. M. (2006). Ownership structure, corporate governance, and fraud: Evidence from China. *Journal of Corporate Finance*, 24, 424–448.
- Chi, W., & Huang, H. (2005). Discretionary accruals, audit firm tenure and audit partner tenure: Empirical evidence from Taiwan. *Journal of Contemporary Accounting and Economics*, 1(1), 65.
- Chi, W., Huang, H., Liao, Y., & Xie, H. (2009). Mandatory audit partner rotation, audit quality and market perception: Evidence from Taiwan. *Contemporary Accounting Research*, 26(2), 359–391.
- Church, B. K., & Shefchik, L. (2012). PCAOB inspections and large accounting firms. *Accounting Horizons*, 26, 43–63.
- Dailamipour, M. (2012). Mandatory audit firm rotation. *Donya-e-Eqtesad*, 14, 10–11, July. (In Persian) <http://www.donya-e-eqtesad.com>.
- Davis, R., Soo, B., & Trompeter, G. (2009). Auditor tenure and the ability to meet or beat earnings forecasts. *Contemporary Accounting Research*, 26(2), 517–548.
- Deangelo, L. E. (1981). Auditor independence, low-balling and disclosure regulation. *Journal of Accounting and Economics*, 3(2), 113–127.
- Dechow, P., Ge, P., Larson, C., & Sloan, R. (2011). Predicting material accounting misstatements. *Contemporary Accounting Research*, 28, 17–82.
- Dechow, P., Sloan, R. G., & Sweeney, A. P. (1996). Detecting earnings management. *The Accounting Review*, 70(2), 193–225.
- Defond, M., & Zhang, J. (2014). A review of archival auditing research. *Journal of Accounting and Economics*, 58(2–3), 275–326.
- Firth, M., Rui, O. M., & Wu, X. (2012). How do various forms of auditor rotation affect audit quality? Evidence from China. *The International Journal of Accounting*, 47, 109–138.
- Francis, J., & Gunn, J. L. (2015). *Industry accounting complexity and earnings properties: Does auditor industry expertise matter? (working paper)*. University of Missouri-Columbia.
- Francis, J., & Wang, D. (2008). The joint effect of investor protection and big 4 audits on earnings quality around the world. *Contemporary Accounting Research*, 25, 157–191.
- Geiger, M., & Raghunandan, K. (2002). Auditor tenure and audit reporting failures. *Auditing: A Journal of Practice & Theory*, 21, 67–78.
- General Accounting Office (2003). *Public accounting firms: Required study of the potential effects of mandatory audit firm rotation*. Washington, DC: Government Printing Office.
- Ghaviandam, A. (2013). Obstacles and challenges of implementing risk-based auditing in Iran. *Hesabdar*, 65, 60–64 (in Persian).
- Ghosh, A., & Moon, D. (2005). Auditor tenure and perceptions of audit quality. *The Accounting Review*, 80(2), 585–612.
- Hassas Yeganeh, Y. (2006). Corporate governance in Iran. *Hesabdar*, 32, 2–39 (in Persian).
- Hay, D., Knechel, R., & Wong, N. (2006). Audit fees: Ameta-analysis of the effect of demand and supply attributes. *Contemporary Accounting Research*, 23, 141–191.
- Hazrati, F., & Pahlavan, Z. (2011). An examination of the relation between audit fees and audit quality in listed firms in Tehran stock exchange. *Quarterly Journal of Management Accounting*, 14(5), 13–24 (in Persian).
- Hermanson, R., Houston, R., & Rice, J. C. (2007). PCAOB inspections of smaller CPA firms: Initial evidence from inspection reports. *Accounting Horizons*, 21(2), 137–152.
- Hoshi, A. (2012). A concern related to the lack of proper income distribution between auditors. *Donya-e-Eqtesad*, no. 14 march, 19–20 (in Persian): <http://www.donya-e-eqtesad.com>.
- Hosmer, D., & Lemeshow, S. (2000). *Applied logistic regression* (2nd ed.). New York, NY: John Wiley & Sons.
- Hovansian Far, G. (2010). Forced auditing: Its quality and fees. *Donya-e-Eqtesad*, no. 26 February, 12–13 (In Persian): [www.donya-e-eqtesad.com](http://www.donya-e-eqtesad.com).
- Hribar, P., Kravet, T., & Wilson, R. (2014). A new measure of accounting quality. *Review of Accounting Studies*, 19, 506–538.
- Jayaraman, S. (2008). Earnings volatility, cash flow volatility, and informed trading. *Journal of Accounting Research*, 46(4), 809–851.
- Johnson, V., Khurana, I., & Reynolds, J. (2002). Audit firm tenure and the quality of financial reports. *Contemporary Accounting Research*, 19(4), 637–660.
- Khurana, I. K., & Raman, K. K. (2004). Litigation risk and the financial reporting credibility of big 4 versus non-big 4 audits. *The Accounting Review*, 79(2), 473–495.
- Kothari, S. P., Leone, A., & Wasley, C. (2005). Performance matched discretionary accrual measure. *Journal of Accounting and Economics*, 39, 163–197.
- Lennox, C., Wu, X., & Zhang, T. (2014). Does mandatory rotation of audit partners improve audit quality?. *The Accounting Review*, 89(5), 1775–1803.
- Mahmoudi, M. (2010). Going concern audit report and litigation against auditor. *Iranian CPA Journal*, 10(2), 79–87.
- Mashayekhi, B., & Mashayekh, S. (2008). Development of accounting in Iran. *The International Journal of Accounting*, 43, 66–86.
- Mautz, R. K., & Sharaf, H. A. (1961). The philosophy of auditing. *American Accounting Association monograph No. 6*. Sarasota, FL: American Accounting Association.
- Mohammadrezaee, F., Mohd-Saleh, N., Jaffar, R., & Sabri, M. S. (2015). The effects of auditor market liberalization and auditor type on audit opinions: The Iranian experience. *The International Journal of Auditing*, 20, 87–100.
- Mohammadrezaee, F., & Saleh, M. N. (2016). Audit report lag: The role of auditor type and increased competition in the audit market. *Accounting and Finance* (forthcoming).
- Myers, J., Myers, L., & Omer, T. C. (2003). Exploring the term of the auditor-client relationship and the quality of earnings: A case for mandatory auditor rotation? *The Accounting Review*, 78(3), 779–799.
- Nagy, A. (2005). Mandatory audit firm turnover, financial reporting quality, and client bargaining power: The case of Arthur Andersen. *Accounting Horizons*, 19(2), 51–68.
- Pourheidari, O., & Shouraki, G. M. (2015). Audit fees stickiness and the level of competition in audit market: Evidence from Iran. *Quarterly Journal of Empirical Research in Accounting*, 12(47), 1–21 (in Persian).
- Raghunathan, B., Lewis, B., & Evans, J. (1994). An empirical investigation of problem audits. *Research in Accounting Regulation*, 8, 35–58.

- Richardson, S. A., Sloan, R. G., Soliman, M. T., & Tuna, I. (2005). Accrual reliability, earnings persistence, and stock prices. *Journal of Accounting and Economics*, 39(3), 437–485.
- Safar, M. J., Bayati, F., Arjomandi, H., Sareraz, A., & Nikookar, A. (2013). Risk based auditing: Challenges for adopting risk-based auditing in Iran. *Hesabdar*, 65, 28–42.
- Security Exchange Organization (2005). *Regulations for accepting audit firms in the capital market (second version)*. Iran: Securities Market Act.
- Shockley, R. A. (1981). Perceptions of auditors' independence: An empirical analysis. *The Accounting Review*, 56(4), 785–800.
- Shu, S. Z. (2000). Auditor resignations: Clientele effects and legal liability. *Journal of Accounting and Economics*, 29(2), 173–205.
- Tan, H. T. (1995). Effects of expectations, prior involvement, and review awareness on memory for audit evidence and judgement. *Journal of Accounting Research*, 33, 113–135.
- Uzun, H., Szewczyk, S. H., & Varma, R. (2004). Board composition and corporate fraud. *Financial Analysts Journal*, 60, 33–43.
- Warfield, T. D., Wild, J. J., & Wild, K. L. (1995). Managerial ownership, accounting choices and the informativeness of earnings. *Journal of Accounting and Economics*, 20, 61–91.
- Woodrow, M. (1997). The audit process in practice. In M. Sherer, & S. Turley (Eds.). *Current issues in auditing* (pp. 222–224). (3rd ed.). London: Sage Publications.
- Zweig, M. H., & Campbell, G. (1993). Receiver-operating characteristic (ROC) plots: A fundamental evaluation tool in clinical medicine. *Clinical Chemistry*, 39(4), 561–577.