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Money laundering and audit fees

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We investigate the association between state-level money laundering sentences and audit fees in the US. Money laundering measures a broad category of offenses involving financial transactions using funds or monetary instruments gained through criminal activities and tax evasion. We find that firms headquartered in US states with high rates of money laundering sentences pay more audit fees. Our results suggest that auditors incorporate, as a fee premium, the higher risks involved when clients operate in those states. Our result remains robust to alternative specifications of money laundering proxies, and to the inclusion of a number of firm-level and state-level control variables. We also conduct two-stage least squares and propensity score matching analysis to mitigate the endogeneity problem that might arise from omitted variables, reverse causality, or model misspecification problems.

Keywords: money laundering; audit fees; audit risk; social capital

1. Introduction

This paper investigates the association between state-level money laundering sentences, an important and unexplored source of clients' business risk, and audit fees in the US. Money laundering, a criminal act aimed at concealing or obfuscating the nature, source, location, or movement of money derived from unlawful activities, is pervasive and estimated to be 2–5% of global gross domestic product (GDP), or $800 billion to $2 trillion in current US dollars (The United Nations Office on Drugs and Crime [UNODC] 2016). Money laundering has damaging effects on the economy for a number of reasons, including economic distortions, monetary instability, vulnerability of the financial system, increased corruption, and socio-economic instability (Drayton 2002, Dowers and Palmreuther 2003). Money laundering is a global problem, including in the US, although there are variations in money laundering

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sentences across US states.[1] We examine the response of auditors to such variations in money laundering sentences, from the perspective of audit pricing.

We conceptualize our research objectives from the perspective of auditor assessment of client risk, in particular, the auditor-perceived business risk of clients (Public Company Accounting Oversight Board [PCAOB] AU 12 2010) and its effects on audit fees. During the 1990s, several leading audit firms adopted a business risk-based audit approach, which required a comprehensive understanding of clients' industries, business models, strategies, and processes (Bell et al. 2008). Prior studies confirm that external auditors behave in accordance with the audit risk model: i.e. expand their tests, increase budgeted audit hours, and increase audit fees for riskier clients (Bedard 1989, Mock and Wright 1993, 1999; O'Keefe et al. 1994, Hackenbrack and Knechel 1997, Morgan and Stocken 1998, Bell et al. 2001, Felix et al. 2001, Johnstone and Bedard 2001). Bedard and Johnstone (2004) and Bell et al. (2008) find that clients with high risk assessments are associated with high planned levels of audit evidence and high recommended billing rates. Other studies that document a positive association between client risk and audit fees include Pratt and Stice (1994), Beaulieu (2001), and Kim and Fukukawa (2013).

Prior research, however, has mostly concentrated on firm-specific risks that have the potential to increase the risk of material misstatements, e.g. the risk of financial statement manipulation (Gul et al. 2003, Bedard and Johnstone 2004). Our study, on the other hand, focuses on auditor-fee considerations related to an important but unexplored source of client business risk: high rates of money laundering sentences in the US state where a firm is headquartered. From an audit risk perspective, we hypothesize that audit risk, and the associated audit fees, will be higher for firms headquartered in states with high rates of money laundering sentences. This is premised on the risk-based auditing thesis, whereby auditors need to assess the overall business risk of the client: the risk of money laundering in the present case.

Money laundering can affect audit fees in two ways: first, through the deterioration in financial reporting quality and, second, through the amplification of audit risk other than financial reporting quality. Statement of Auditing Standards (SAS) 54 requires the auditor to be aware of the possibility that illegal acts with indirect effects on financial statements have taken place.[2] According to SAS 54, the auditor's responsibility to detect and report misstatements resulting from such illegal acts should be regarded the same as that for misstatements caused by fraudulent activities. This, therefore, suggests that money laundering increases risks associated with financial misstatements and, hence, demands additional audit efforts and, therefore, higher audits fees.

With respect to the second point above, auditors arguably perceive clients headquartered in states with high rates of money laundering sentences as being riskier. Prior research has shown that the local culture of the states in which firms are headquartered affects managerial behaviour (Hilary and Hui 2009, McGuire et al. 2012, Smith 2016, Call et al. 2017). If auditors feel that management is more prone to misbehaviour, e.g. to the undertaking of activities related to money laundering, then they are more likely to exercise professional scepticism, thus, demanding additional audit efforts, and increased audit fees.

Using a large sample of US data, we document a positive association between audit fees and money laundering sentences. Our results are economically significant as well. We document a 2.2% increase in audit fees for one standard deviation increase in money laundering sentences. We then examine whether damaged financial reporting quality for firms headquartered in high money-laundering states increase audit fees. We fail to find any such evidence. Therefore, we conclude that money laundering increases audit fees by amplifying the overall business risk unrelated to financial reporting quality. Our result is robust to the use of

alternative money laundering proxies, and to the inclusion of a number of firm-level and state-level control variables, e.g. social capital and education. We also conduct two-stage least squares and propensity score matching (PSM) analysis to mitigate the endogeneity problem that might emanate from omitted variables, reverse causality, or model misspecification problems.

We contribute to the voluminous literature on the determinants of audit fees (Hay et al. 2006) by exploring a hitherto untested audit-fee determinant. Although the audit-fee response to firm-level business risk has been extensively tested, very scant empirical research exists that has examined how risks emanating from broader economy-level operations affect the audit fees. Lyon and Maher's (2005) paper is an exception. They test the effect on audit fees of client business risk in the form of foreign official bribing, and document a positive association between the two. We extend this nascent literature by investigating the effect of state-level money laundering sentences on the audit fees paid by firms headquartered in those states. Our finding is consistent with an audit market where audit firms knowingly assess business risk at the client level, then pass its expected costs on to the client in the form of higher audit fees.

Our paper is closest in spirit to Jha and Chen (2015) who document a negative association between social capital and audit fees. One may argue that money laundering represents a form of social capital and, hence, our study may not provide new insights. However, we argue that money laundering is distinct from social capital. In contrast to social capital, which captures perceptions of norms and values, money laundering is measurable and observable in terms of the number of actual sentences as well as in dollar amounts (see the UNODC estimates above). Jha and Chen (2015) contend that auditors judge the trustworthiness of their clients based on where the firm is headquartered and charge audit fees accordingly. We, on the other hand, contend that auditors assess potential audit complexity and audit risk based on state-level, observable money laundering sentences, which they then take into consideration in determining audit fees.

The remainder of the paper proceeds as follows. In the following section, we review the related literature and develop our hypothesis. Section 3 explains the research design issues. Sample selection, descriptive statistics, and regression results are presented in Section 4. Section 5 concludes the paper.

2. Prior literature and hypothesis development

According to Simunic (1980), audit fees can be modelled as follows:

$$E(C) = cq + E(d) \times E(\theta),$$

where *E(C)* is the auditor's expected total costs of the audit engagement or the audit fees; c is the cost of the production factors; q is the quantity of resources that the auditor uses to perform the audit. $E(d)$ is the expected present value of future losses that might occur from a particular period's audit, and $E(\theta)$ is the likelihood that the auditor will have to pay for such losses. Thus, audit fees are expected to consist of two factors: a resource cost factor (cq) and an expected loss factor ($E(d) \times E(\theta)$). Pratt and Stice (1994) note that, in a competitive market, auditors will use judgement to assess the expected loss factor, and to expend resource costs to the point where the marginal cost of an additional unit of cost is equal to the marginal reduction in expected losses.

In order to address the risk of expected losses emanating from clients' business risk during the 1990s adequately, some leading audit firms adopted business risk auditing

> … that calls for the use of expanded evidentiary bases, more comprehensive risk assessments, deployment of professionals who possess the requisite knowledge and competencies to perform these more complex risk assessments, and the redirection of audit resources in accord with such assessed risks. (Bell et al. 2008, p. 730)

Beasley et al. (1999, p. 43) suggest that 'effective pre-engagement screening of potential risks … may lead to better consideration of overall audit risk.' The professional auditing standards encourage auditors to plan and perform an audit in order to obtain reasonable assurance that the financial statements are free of material misstatements (PCAOB 2010). To accomplish this task, auditors plan the nature, timing, and extent of audit procedures, after considering, among other factors, the degree of risk of material misstatement in financial reporting.

However, clients' risk assessment beyond the risk of material misstatements is an important component in the audit planning process. Arens and Loebbecke (2000, p. 262) define business risk as 'the risk that the auditor or audit firm will suffer harm because of a client relationship even though the audit report rendered for the client was correct.' Houston et al. (2005) characterize non-audit risks as residual litigation risk and non-litigation risk (e.g. losses from damaged reputation, unpaid fees, and a reduction in future audit engagements). Certain types of potential losses, referred to as residual auditor business risk (Kannan et al. 2014), result from non-audit risks that cannot be reduced to acceptable levels, even with additional investments in audit resources. In the presence of non-audit risk, auditors increase the audit's scope, and assign a fee premium (Stanley 2011). We consider clients' business risk: conceptualized as clients' operation in states with high rates of money laundering sentences, as one such non-audit risk. Above-average risk should motivate auditors either to charge an insurance premium to cover future losses, or to increase audit efforts to mitigate future litigation or reputation losses, or both (Simunic 1980, Pratt and Stice 1994, Simunic and Stein 1996, Bell et al. 2001, Seetharaman et al. 2002).[3]

Money laundering is considered a criminal act undertaken for the purpose of concealing the nature, source, location, or movement of money gained from unlawful activities, e.g. tax evasion (McDowell 2001, Zdanowicz 2004). The process of laundering money may occur through

> … the shrewd exploitation of a complex, interweaving web of secrecy, jurisdictions and/or tax havens, the manipulation of the concept of legal persons and legal arrangements to concoct 'shell companies' that can operate as covers for corrupt individuals, the abuse of loopholes in existing anti-money laundering legislation, the weak implementation of these rules, and the corruption of authorities … . (Taveres 2013, p. 2)[4]

Money laundering has a crippling effect on the economy because of: (1) economic distortions arising from inefficient investments; (2) monetary instability brought about by unexplained changes in money demand and volatility (World Bank 2003); (3) vulnerability of financial systems to sudden withdrawal of money (Bartlett 2002); (4) loss of substantial tax revenues and, thereby, government's ability to curtail criminal activities (United Nations 1998, McDowell 2001, James 2002); and (5) increased corruption, crime, and socio-economic instability as a result of increased criminal activity (Melnik 2001, Drayton 2002, Dowers and Palmreuther 2003). In the US, *Federal Sentencing Statistics of District, Circuit and State* presents data on money laundering, thus, enabling us to derive the number of corporate money laundering sentences for each state in each year. From an audit risk perspective, we hypothesize that audit risk, and the associated audit fees, will be higher for firms headquartered in states with high rates of money laundering sentences. This is premised on the risk-based auditing thesis, whereby auditors need to assess the overall business risk of the client. Melnik (2001) notes that in a number of instances auditors have been successful in discovering their clients' illegal acts, including money laundering. An

example was the Bank of Credit and Commerce International scandal (for details see Melnik 2001, p. 153).

Money laundering can affect audit fees in at least two ways: first, through the deterioration in financial reporting quality and, second, through the amplification of audit risk other than financial reporting quality. With respect to the former, SAS 54 stipulates that auditor's responsibility to detect and report misstatements resulting from illegal acts, e.g. money laundering, should be regarded the same as that for misstatements caused by fraudulent activities. Hence, money laundering activities increase risks associated with financial misstatements, thus, demanding additional audit efforts and, therefore, higher audit fees.

Money laundering can also affect audit fees by increasing overall firm risk that may be unrelated to the financial reporting quality. Auditors arguably perceive clients headquartered in states with high rates of money laundering sentences as being riskier. Prior research has shown that the local culture of the states in which firms are headquartered affects managerial behaviour (Hilary and Hui 2009, McGuire et al. 2012). If auditors feel that management is more prone to misbehaviour, e.g. undertaking activities related to money laundering, then it can be surmised that auditors would exercise more professional scepticism. This would be done to reduce litigation risk as well as risks of loss of reputation in the event that their clients are found to be involved in money laundering activities. All these eventually increase auditors' perceived business risk of clients.[5] In order to minimize such risk, auditors would expend more audit effort, which might include obtaining a more detailed understanding of the questionable transactions, the business reasons behind the transactions, and the parties involved (Melnik 2003). Since audit efforts drive audit costs (Simunic 1980), we conjecture that auditors will charge higher audit fees for clients headquartered in states with high rates of money laundering sentences. This is consistent with a business risk auditing approach and also with prior evidence that audit firms charge higher audit fees for clients with operations in countries where the payment of bribes is considered to be an acceptable business practice (Lyon and Maher 2005). Therefore, we hypothesize that:

H1: *Ceteris paribus*, audit fees will be higher for firms headquartered in states with high rates of money laundering sentences.

3. Research design

3.1 *Sample selection and data source*

Our sample comprises all US publicly listed firms for the 2000–2014 period. We began with data from 2000 because this is the earliest year for which Audit Analytics (AA) provides audit-fee data for the US. We deleted 66,759 firm-year observations with non-matched CIK codes of AA with COMPUSTAT, and 15,427 firm-year observations with missing STATE names. Consistent with extant research we further deleted 4873 and 14,617 firm-year observations from the utilities (two-digit SIC codes 48–49) and financial (two-digit SIC codes 60–69) industries, respectively. We further deleted a total of 28,582 firm-year observations with missing control variables to arrive at a final sample of 46,801 firm-year observations during the 2000 to 2014 period. Financial data were collected from COMPUSTAT. State-level money laundering data are collected from the US sentencing system (www.ussc.gov). Panel A, Table 1, details the sample selection procedure and Panel B reports the industry distribution of the sample. Firm-year observations come from a wide variety of industries, with two-digit SIC codes 35–39 (29%) commanding the largest industry representation in our sample, as reported in Panel B, Table 1.

3.2. *Independent variable: money laundering*

Money laundering is a term used to describe a broad category of offenses involving financial transactions with funds or monetary instruments gained through criminal activity. Title 18 of the US Code establishes different types of money laundering violations (Government Publishing Office 2015). For instance, Title 18 [Subsection (a) (2), U.S.C. 1956] considers any transaction of monetary instruments/funds to or from the US with: (1) intent to promote the carrying of specified unlawful activity or (2) knowledge that the monetary instruments/funds represent the proceeds of unlawful activity, e.g. where such transaction was designed (wholly/ in part) to conceal/ disguise the nature of the proceeds, or to avoid a state or federal transaction-reporting requirement.

However, relevant statutes have been applied to a broader range of conduct than the Commission expected (ussc.gov 2015).[6] For example, the statutory phrase 'to promote the carrying on of specified unlawful activity' has not been limited to offenses in which the defendant 'encouraged' or 'facilitated' the commission of further crimes. While under United States v. Montoya, 945 F.2d 1068 (9th Cir. 1991), once the defendant has committed the underlying offense, showing that the defendant desired to 'make use of the funds,' is sufficient to establish an intent to 'promote … specified unlawful activity.' Given the relevant statutory language, there is scope for a broad interpretation and, as such, the US Sentences Commission received significant public comment contending that certain offenses qualified technically as 'money laundering,' even where the conduct was frequently incidental to, or a part of, an underlying crime (ussc.gov 2015). [7]

The US Sentences Commission provides a primary offense category of 33 offenses for each state/circuit from 1995 to until 2015, including money laundering offenses.[8] We hand-collect money laundering cases for each state, and each year from 2000 to 2014 from the annual report of *Federal Sentencing Statistics of District, Circuit and State*. However, the annual report presents the data for all sentences reported in the federal courts for both individual and corporate offenders. We subtract the number of money laundering cases involving individual offenders from the aggregate money laundering cases to determine the number of corporate money laundering sentences for each state in each year.[9] Since the numbers of money laundering sentences are likely to be greater in states with more business establishments and larger populations, it is logical to use scaled measures of money laundering sentences. We use two such measures: (a) the total number of money laundering sentences for state *i* and year *t*, scaled by the number of firms in state *i* and year *t* (ML_FIRM), and (b) the total number of money laundering sentences for state *i* and year *t* scaled by state population (in 100,000) (ML_POP).

It is well established in the criminology literature that the number of reported crimes (in our case the number of money laundering sentences) is a function of (a) the actual number of money laundering activities, and (b) the detection rate of such activities by authorities (Smit et al. 2004). Since the resources required to detect all the money laundering cases are scarce, the number of money laundering cases detected often lag behind the actual instances. However, some states may perform better in detecting a greater number of money laundering cases than other states. We illustrate this with couple of examples.

(a) The actual number of money laundering incidents in a state may be significantly higher because of certain characteristics. For example, the number of business establishments, including banks (often considered to be an active player in money laundering schemes) in certain states may be much larger (e.g. New York) than in others (e.g. Idaho). At the same time, New York is likely to have a much larger resource base (e.g. a much larger GDP) for detecting money laundering activities, compared to states with an inadequate resource base. Therefore, a close match between the actual number of money laundering cases

and money laundering sentences may exist. States like California, Florida, and Texas belong to this category.

(b) A close match between actual money laundering incidents and money laundering sentences may also be evidenced, albeit in an opposite direction to the case above. For example, the actual number of money laundering cases, in itself, may be very small for reasons related to much less business activity, e.g. Alaska. Available resources, therefore, may be directed towards prosecuting other crimes. Given the wildlife diversity and the state's endeavour to conserve the environment, state-level resources in Alaska would be more important for prosecuting natural environment violation-related crimes (see USSC.org).

3.3 *Regression model*

The seminal audit-fee model of Simunic (1980) shows that audit fees depend on the clients' audit resource requirements, the cost of those resources and the potential risks of the audit engagement. We use the conventional audit-fee model, with an emphasis on controlling for fee determinants associated with firm risk, client characteristics, and audit and auditor characteristics (Simunic 1980, Choi et al. 2010, Asthana and Boone 2012, Blankley et al. 2012). Importantly, we control for state-level variables documented to be associated with audit fees (Jha and Chen 2015). We then estimate the following audit-fee model:

$$\begin{aligned}\text{AF\_LN} = {} & \gamma_0 + \gamma_1 \text{ML\_FIRM(ML\_POP)} + \gamma_2 \text{BIG4} + \gamma_3 \text{SPEC} + \gamma_4 \text{GC} + \gamma_5 \text{ICW} + \gamma_6 \text{ARL} \\ & + \gamma_7 \text{TENURE} + \gamma_8 \text{BUSY} + \gamma_9 \text{SIZE} + \gamma_{10} \text{COMPLEX} + \gamma_{11} \text{DEBT} + \gamma_{12} \text{ROA} \\ & + \gamma_{13} \text{SPI} + \gamma_{14} \text{LOSS} + \gamma_{15} \text{MERGER} + \gamma_{16} \text{MTB} + \gamma_{17} \text{SEG\_GEO} + \gamma_{18} \text{SEG\_BUS} \\ & + \gamma_{19} \text{FOREIGN} + \gamma_{20} \text{LIT} + \gamma_{21} \text{TPL\_DUM} + \gamma_{22} SC + \gamma_{23} \text{LN\_FIRM} \\ & + \gamma_{24} \text{LITERACY} + \text{INDUSTRY\_FE} + \text{YEAR\_FE} + \varepsilon. \end{aligned} \tag{1}$$

AF_LN is the natural log of audit fees. ML_FIRM and ML_POP are the scaled money laundering measures. BIG4 is an indicator variable that equals 1 if the firm is audited by Deloitte & Touche, Ernst & Young, KPMG, or PricewaterhouseCoopers, and 0 otherwise; SPEC is state-level auditor industry specialization. An auditor is defined as a state industry leader if, in a particular year, the auditor has the largest market share in a two-digit SIC industry and if its market share is at least 10 percentage points greater than the second largest industry leader in a national (city) audit market in the respective states; GC is an indicator variable that equals 1 if the firm receives a going-concern opinion, and 0 otherwise; ICW is an indicator variable coded 1 if the firm had any material weakness in internal controls, 0 otherwise. We do not include ICW in our baseline regression, rather report separately, as the sample size shrinks by about 42%; ARL is the natural log of number of calendar days between fiscal year-end to date of the audit's report; TENURE is the natural log of the duration of the auditor–client relationship; BUSY is an indicator variable that equals 1 if the firm's fiscal year-end is December 31 and 0 otherwise; SIZE is the Natural log of total assets; COMPLEX is firm complexity measured as the sum of the firm's receivables and inventory divided by its total assets; DEBT is measured as the sum of total debt over total assets; ROA is net income before extraordinary items, divided by total assets; SPI is an indicator variable that equals 1 if the firm reports special items, and 0 otherwise; LOSS is an indicator variable that equals 1 if the firm's net income before extraordinary items is negative, and 0 otherwise; MERGER is an indicator variable that equals 1 if the firm had a merger or acquisition, and 0 otherwise; MTB is market value of its equity divided by the book value of its equity; SEG_GEO

Table 1. Sample selection and industry distribution.

Panel A	
Initial sample (2000–2014)	177,059
Less: Non-matched CIK	(66,759)[a]
Less: Missing information on STATE name	(15,427)
Less: Regulated industries (two-digit SIC 48–49)	(48,73)
Less: Financial institutions (two-digit SIC 60–69)	(14,617)
Less: Missing values on various control variables	(28,582)
Final sample	46,801

Panel B: Industry distribution

Code	Industry	Observations	% Observations
1–14	Agriculture & mining	3,327	7.11
15–17	Building construction	647	1.38
20–23	Food & kindred products; textile mill products	1,931	4.13
24–27	Lumber, furniture, paper, and printing	1,542	3.29
28–30	Chemical, petroleum, and rubber & allied products	6,691	14.30
31–34	Metal	1,845	3.94
35–39	Machinery, electrical, computer equipment	13,531	28.91
50–59	Wholesale goods, building materials; store merchandise, home furniture	5,599	11.96
70–79	Business services	8,554	18.28
80–99	Others	3,134	6.70
	Total	46,801	100.00

[a]AA covers the population of SEC registrants whereas COMPUSTAT does not. Therefore, AA provides a substantially larger sample.

and SEG_BUS are the natural log of the number of firm's business and geographic segments; FOREIGN is the percentage of foreign sales to total sales; and LIT is an indicator variable coded 1 if firm-year observations belong to biotechnology, computers, electronics, and retailing, and 0 otherwise.

The firm-level litigation (LIT) variable above, however, fails to capture differences in litigation across states which may provide an alternative explanation for the hypothesized positive association between audit fees and money laundering sentences. In more litigious states, money laundering is detected, and also litigation risk is higher for the auditors, thus increasing audit fees. To rule out this possibility we include state liability scores developed by Gaver et al. (2012) and Pacini et al. (2000), with higher (lower) scores indicating a more expansive (narrow) definition of third parties to whom the auditor owes a duty of care. Following Gaver et al. (2012), we measure third-party liability standards with an indicator variable, TPL_DUM, set to 1 if the auditor is subject to the more expansive standards of restatement (greater than or equal to 4 on a nine-point scale), and to 0 otherwise. A caveat is in order with respect to the validity of this measure. The third-party liability indices were constructed for the 1993–2004 time period, although subsequent research has assumed that these indices are also valid during the subsequent time periods (Anantharaman et al. 2016).

Audit fees are higher for firms with higher client complexity (larger size, more mergers and acquisitions, higher market-to-book ratio, a larger foreign sales percentage, and more business segments); higher financial risk (higher leverage, lower ROA, a loss, larger special items); higher inherent risk (a larger amount of inventory and receivables); and engagement attributes

(with a fiscal year end on 31 December and a larger gap between the fiscal year end and the earnings announcement date).

We also include some state-level control variables in order to mitigate omitted variables problem (Jha and Chen 2015, Jha and Cox 2015, Brushwood et al. 2016). SC is the social capital calculated using two variants of social norms and two measures of networks for the years 1997, 2005, and 2009, as used in Jha and Chen (2015). It is intuitive to argue that the money-laundering risk will be lower in states with high social capital. If money laundering is another form of social capital, then the inclusion of a social capital variable will subsume the effects of money laundering. LN_FIRM is the natural logarithm of the number of firms. We include this variable in the ML_POP model alone since ML_FIRM is already scaled by number of firms. Finally, LITERACY is the percentage of persons 25 years and over with a bachelor's degree or higher in the US county population.

Our primary variables of interest are ML_FIRM and ML_POP and we expect a significantly positive coefficient for these variables to support our hypothesis that audit firms will charge higher audit fees for clients headquartered in states with high rates of money laundering sentences than for clients from low-level money laundering sentencing states.

4. Empirical results

4.1. *Descriptive statistics*

Panel A, Table 2 reports the descriptive statistics for the dependent variable: Audit fees (AF_LN), main independent variables: ML_FIRM and ML_POP, and control variables. The mean (median) audit-fee (AF_LN) is13.03 (13.05). ML_FIRM has a mean (median) value of 0.12 (0.09) for the sample. The corresponding value for ML_POP is 1.46 (1.20). Descriptive statistics on the control variables reveal that Big 4 firms audit about 71% of the firm-year observations, 6% of the sample firms receive a going-concern (GC) opinion and 12% restate their financial statements. Sample firms, on average, report negative earnings (mean ROA of −0.08 and mean LOSS of 0.41). About 41% of the firm-year observations have revenue from foreign operations.

Panel B, Table 2, exhibits the number of money laundering sentences in each state for each year from 2000 to 2014. For the whole sample period, the number of money laundering sentences was higher in New York (1742 cases), Texas (1724 cases), Florida (1483), and California (1174). The highest number of money laundering sentences in a single state-year was reported in 2008 (159 cases) in New York. We observe a wide variation in the number of money laundering sentences (Panel B, Table 2). For example, a total of 1742 money laundering sentences were reported in the state of New York, while the corresponding number was only 41 in the state of Idaho. This variation could be a function of (i) a greater intensity of money laundering activities given the size and population of New York, as well as the much greater number of business establishments in New York compared with Idaho, and (ii) the larger pool of available resources for detecting and reporting money laundering cases in New York compared with Idaho.

Panel C reports the percentage distribution of money laundering sentences across years and states. A total of 49.86% of the money laundering sentences were rendered in four states: New York, Texas, Florida, and California.

4.2. *Correlation results*

The correlation results are presented in Table 3. We find a positive and significant correlation between ML_FIRM and audit fees (AF_LN) (correlation 0.02, $p < .01$). The correlation between ML_POP and AF_LN is also positive and significant (correlation 0.02, $p < .01$). The

Table 2. Descriptive statistics.

Panel A: Descriptive statistics

Variables	*N*	Mean	S.D.	0.25	Median	0.75
AF_LN	46,801	13.03	1.55	11.97	13.05	14.07
AF (in millions)	46,801	1.35	3.22	0.16	0.46	1.28
ML (numbers)	46,801	49.50	44.92	12.00	26.00	88.00
ML_FIRM	46,801	0.12	0.10	0.06	0.09	0.17
ML_POP	46,801	1.46	0.90	0.80	1.20	1.90
BIG 4	46,801	0.71	0.45	0.00	1.00	1.00
SPEC	46,801	0.23	0.42	0.00	0.00	0.00
GC	46,801	0.06	0.24	0.00	0.00	0.00
LN_ARL	46,801	4.12	0.4	3.97	4.16	4.33
ARL (in days)	46,801	65.77	35.13	52.00	63.00	75.00
BUSY	46,801	0.60	0.49	0.00	1.00	1.00
TENURE	46,801	1.89	0.88	1.39	1.95	2.56
ICW	27,434	0.10	0.30	0.00	0.00	0.00
ASSETS (in millions)	46,801	2215.82	8407.49	46.17	217.82	1033.71
SIZE	46,801	5.49	2.25	3.88	5.54	7.04
COMPLEX	46,801	0.26	0.20	0.10	0.23	0.38
DEBT	46,801	0.17	0.21	0.00	0.09	0.27
ROA	46,801	−0.08	0.46	−0.10	0.03	0.10
SPI	46,801	0.14	0.35	0.00	0.00	0.00
LOSS	46,801	0.41	0.49	0.00	0.00	1.00
MERGER	46,801	0.12	0.33	0.00	0.00	0.00
MTB	46,801	3.98	6.36	1.26	2.16	3.91
SEG_GEO	46,801	1.02	0.97	0.00	0.69	1.79
SEG_BUS	46,801	0.93	1.01	0.00	0.69	1.79
FOREIGN	46,801	0.41	0.49	0.00	0.00	1.00
LIT	46,801	0.41	0.49	0.00	0.00	1.00
TPL_DUM	46,801	0.75	0.44	0.00	1.00	1.00
|DAC|	43,507	0.13	0.15	0.03	0.08	0.16
|REM|	38,274	0.86	1.19	0.18	0.42	0.95
RESTATE	46,801	0.12	0.33	0.00	0.00	0.00
SC	46,801	−0.34	0.68	−0.87	−0.49	−0.02
LITERACY	46,801	82.88	4.27	79.9	82.60	86.6

Table 2. Continued

Panel B: Distribution of money laundering sentences among the states

State	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Total	% Distribution
AL	13	8	13	4	10	8	9	4	9	4	7	10	12	3	0	114	0.93
AR	5	4	2	2	1	2	10	8	5	5	7	6	2	11	3	73	0.59
AZ	37	11	51	54	53	34	20	27	17	17	48	43	61	27	37	537	4.37
CA	105	105	88	57	75	69	69	90	63	55	87	92	58	77	84	1174	9.56
CO	3	2	8	7	6	13	7	6	3	6	6	3	11	7	5	93	0.76
CT	3	2	6	4	6	8	4	5	8	12	14	6	5	5	5	93	0.76
DE	2	2	3	0	1	1	1	2	1	1	1	3	4	0	2	24*	0.20
FL	123	133	107	93	90	135	91	102	112	85	68	70	82	95	97	1483	12.08
GA	14	17	27	3	15	13	9	24	21	9	30	21	25	11	23	262	2.13
IA	9	4	1	7	1	3	5	5	10	5	8	6	3	2	1	70	0.57
ID	2	1	0	4	5	3	2	0	1	4	1	0	3	7	8	41	0.33
IL	25	18	44	20	14	15	27	21	7	12	6	16	9	8	13	255	2.08
IN	15	15	10	11	12	14	3	15	2	3	10	3	10	8	7	138	1.12
KS	3	3	3	4	1	2	2	4	5	2	7	18	2	6	5	67	0.55
KY	5	8	2	9	3	5	4	2	4	12	12	6	4	19	9	104	0.85
LA	3	11	10	5	2	3	5	5	10	4	7	4	4	9	-	82	0.67
MA	12	13	24	13	13	18	10	12	9	3	3	10	13	11	13	177	1.44
MD	7	7	8	12	9	9	6	11	16	22	14	10	19	5	15	170	1.38
ME	2	0	1	0	0	1	1	0	2	2	1	3	0	3	4	20	0.16
MI	26	16	10	8	18	27	22	25	18	15	19	16	14	7	12	253	2.06
MN	11	17	5	4	16	6	2	6	8	4	3	11	6	12	5	116	0.94
MO	20	10	15	6	10	9	8	15	19	14	15	25	19	12	14	211	1.72
MS	2	3	12	7	6	12	9	4	6	1	5	7	5	6	0	85	0.69
MT	5	2	2	9	2	1	1	1	4	0	0	0	3	0	0	30	0.24
NC	16	30	18	45	15	21	23	12	26	13	21	29	16	25	39	349	2.84
ND	1	0	1	2	0	1	1	1	1	1	2	0	0	3	0	14	0.11
NE	1	2	1	1	0	1	2	3	0	0	1	1	3	2	4	22	0.18
NH	1	2	1	3	0	0	-	-	-	-	-	1	1	-	0	9	0.07
NJ	21	46	17	13	17	33	26	25	29	26	22	20	14	15	16	340	2.77
NM	0	1	1	1	3	4	5	2	0	2	4	4	6	4	0	37	0.30
NV	28	13	18	6	4	8	7	12	7	4	6	13	19	23	1	169	1.38
NY	141	139	132	130	125	122	139	128	159	111	89	110	65	55	97	1742	14.18
OH	12	8	9	25	20	15	26	27	35	22	17	13	23	25	24	301	2.45
OK	6	4	1	6	4	4	5	5	5	5	6	2	4	18	11	86	0.70
OR	3	8	9	4	8	10	1	7	7	5	3	15	0	5	6	91	0.74
PA	17	35	16	19	26	14	19	24	25	21	17	23	29	22	43	350	2.85
RI	1	0	0	1	1	2	0	1	1	3	1	3	2	2	4	22	0.18
SC	11	5	12	4	5	10	11	0	13	6	17	7	3	9	5	118	0.96
SD	6	1	2	0	0	0	0	0	1	0	1	3	0	1	1	16	0.13
TN	28	26	29	28	25	22	18	15	15	10	16	14	14	10	21	291	2.37

(*Continued*)

Table 2. Continued.

Panel B: Distribution of money laundering sentences among the states

State	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Total	% Distribution
TX	133	71	113	74	93	102	136	108	102	149	132	112	136	143	120	1724	14.04
UT	0	0	1	3	4	4	6	6	11	3	0	0	0	5	0	43	0.35
VA	28	27	21	26	27	20	46	22	27	44	18	25	21	34	16	402	3.27
VT	2	1	0	2	2	0	5	6	3	0	3	2	1	1	0	28	0.23
WA	8	8	12	18	16	46	25	23	14	20	18	17	11	15	16	267	2.17
WI	7	4	5	4	8	12	8	13	12	2	4	3	14	5	7	108	0.88
WV	14	18	3	2	7	5	1	0	4	0	9	3	1	3	4	74	0.60
WY	0	0	1	1	0	0	0	0	0	0	0	0	2	2	-	6	0.05
Total	937	861	875	761	779	867	837	834	857	744	786	809	759	778	797	12,2811	100.00

Table 2. Continued

Panel C: Percentage distribution of money laundering sentences across years and states

State	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Annual average (%)
AL	1.39	0.93	1.49	0.53	1.28	0.92	1.08	0.48	1.05	0.54	0.89	1.24	1.58	0.39	0.00	0.92
AR	0.53	0.46	0.23	0.26	0.13	0.23	1.19	0.96	0.58	0.67	0.89	0.74	0.26	1.41	0.38	0.60
AZ	3.95	1.28	5.83	7.10	6.80	3.92	2.39	3.24	1.98	2.28	6.11	5.32	8.04	3.47	4.64	4.42
CA	11.21	12.20	10.06	7.49	9.63	7.96	8.24	10.79	7.35	7.39	11.07	11.37	7.64	9.90	10.54	9.52
CO	0.32	0.23	0.91	0.92	0.77	1.50	0.84	0.72	0.35	0.81	0.76	0.37	1.45	0.90	0.63	0.77
CT	0.32	0.23	0.69	0.53	0.77	0.92	0.48	0.60	0.93	1.61	1.78	0.74	0.66	0.64	0.63	0.77
DE	0.21	0.23	0.34	0.00	0.13	0.12	0.12	0.24	0.12	0.13	0.13	0.37	0.53	0.00	0.25	0.19
FL	13.13	15.45	12.23	12.22	11.55	15.57	10.87	12.23	13.07	11.42	8.65	8.65	10.80	12.21	12.17	12.02
GA	1.49	1.97	3.09	0.39	1.93	1.50	1.08	2.88	2.45	1.21	3.82	2.60	3.29	1.41	2.89	2.13
IA	0.96	0.46	0.11	0.92	0.13	0.35	0.60	0.60	1.17	0.67	1.02	0.74	0.40	0.26	0.13	0.57
ID	0.21	0.12	0.00	0.53	0.64	0.35	0.24	0.00	0.12	0.54	0.13	0.00	0.40	0.90	1.00	0.34
IL	2.67	2.09	5.03	2.63	1.80	1.73	3.23	2.52	0.82	1.61	0.76	1.98	1.19	1.03	1.63	2.05
IN	1.60	1.74	1.14	1.45	1.54	1.61	0.36	1.80	0.23	0.40	1.27	0.37	1.32	1.03	0.88	1.12
KS	0.32	0.35	0.34	0.53	0.13	0.23	0.24	0.48	0.58	0.27	0.89	2.22	0.26	0.77	0.63	0.55
KY	0.53	0.93	0.23	1.18	0.39	0.58	0.48	0.24	0.47	1.61	1.53	0.74	0.53	2.44	1.13	0.87
LA	0.32	1.28	1.14	0.66	0.26	0.35	0.60	0.60	1.17	0.54	0.89	0.49	0.53	1.16	0.00	0.66
MA	1.28	1.51	2.74	1.71	1.67	2.08	1.19	1.44	1.05	0.40	0.38	1.24	1.71	1.41	1.63	1.43
MD	0.75	0.81	0.91	1.58	1.16	1.04	0.72	1.32	1.87	2.96	1.78	1.24	2.50	0.64	1.88	1.41
ME	0.21	0.00	0.11	0.00	0.00	0.12	0.12	0.00	0.23	0.27	0.13	0.37	0.00	0.39	0.50	0.16
MI	2.77	1.86	1.14	1.05	2.31	3.11	2.63	3.00	2.10	2.02	2.42	1.98	1.84	0.90	1.51	2.04
MN	1.17	1.97	0.57	0.53	2.05	0.69	0.24	0.72	0.93	0.54	0.38	1.36	0.79	1.54	0.63	0.94
MO	2.13	1.16	1.71	0.79	1.28	1.04	0.96	1.80	2.22	1.88	1.91	3.09	2.50	1.54	1.76	1.72
MS	0.21	0.35	1.37	0.92	0.77	1.38	1.08	0.48	0.70	0.13	0.64	0.87	0.66	0.77	0.00	0.69
MT	0.53	0.23	0.23	1.18	0.26	0.12	0.12	0.12	0.47	0.00	0.00	0.00	0.40	0.00	0.00	0.24
NC	1.71	3.48	2.06	5.91	1.93	2.42	2.75	1.44	3.03	1.75	2.67	3.58	2.11	3.21	4.89	2.86
ND	0.11	0.00	0.11	0.26	0.00	0.12	0.12	0.12	0.12	0.13	0.25	0.00	0.00	0.39	0.00	0.12
NE	0.11	0.23	0.11	0.13	0.00	0.12	0.24	0.36	0.00	0.00	0.13	0.12	0.40	0.26	0.50	0.18
NH	0.11	0.23	0.11	0.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.13	0.00	0.00	0.07
NJ	2.24	5.34	1.94	1.71	2.18	3.81	3.11	3.00	3.38	3.49	2.80	2.47	1.84	1.93	2.01	2.75
NM	0.00	0.12	0.11	0.13	0.39	0.46	0.60	0.24	0.00	0.27	0.51	0.49	0.79	0.51	0.00	0.31
NV	2.99	1.51	2.06	0.79	0.51	0.92	0.84	1.44	0.82	0.54	0.76	1.61	2.50	2.96	0.13	1.36
NY	15.05	16.14	15.09	17.08	16.05	14.07	16.61	15.35	18.55	14.92	11.32	13.60	8.56	7.07	12.17	14.11
OH	1.28	0.93	1.03	3.29	2.57	1.73	3.11	3.24	4.08	2.96	2.16	1.61	3.03	3.21	3.01	2.48
OK	0.64	0.46	0.11	0.79	0.51	0.46	0.60	0.60	0.58	0.67	0.76	0.25	0.53	2.31	1.38	0.71
OR	0.32	0.93	1.03	0.53	1.03	1.15	0.12	0.84	0.82	0.67	0.38	1.85	0.00	0.64	0.75	0.74
PA	1.81	4.07	1.83	2.50	3.34	1.61	2.27	2.88	2.92	2.82	2.16	2.84	3.82	2.83	5.40	2.87
RI	0.11	0.00	0.00	0.13	0.13	0.23	0.00	0.12	0.12	0.40	0.13	0.37	0.26	0.26	0.50	0.18
SC	1.17	0.58	1.37	0.53	0.64	1.15	1.31	0.00	1.52	0.81	2.16	0.87	0.40	1.16	0.63	0.95
SD	0.64	0.12	0.23	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.13	0.37	0.00	0.13	0.13	0.12

(*Continued*)

Table 2. Continued.

Panel C: Percentage distribution of money laundering sentences across years and states

State	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Annual average (%)
TN	2.99	3.02	3.31	3.68	3.21	2.54	2.15	1.80	1.75	1.34	2.04	1.73	1.84	1.29	2.63	2.35
TX	14.19	8.25	12.91	9.72	11.94	11.76	16.25	12.95	11.90	20.03	16.79	13.84	17.92	18.38	15.06	14.13
UT	0.00	0.00	0.11	0.39	0.51	0.46	0.72	0.72	1.28	0.40	0.00	0.00	0.00	0.64	0.00	0.35
VA	2.99	3.14	2.40	3.42	3.47	2.31	5.50	2.64	3.15	5.91	2.29	3.09	2.77	4.37	2.01	3.30
VT	0.21	0.12	0.00	0.26	0.26	0.00	0.60	0.72	0.35	0.00	0.38	0.25	0.13	0.13	0.00	0.23
WA	0.85	0.93	1.37	2.37	2.05	5.31	2.99	2.76	1.63	2.69	2.29	2.10	1.45	1.93	2.01	2.18
WI	0.75	0.46	0.57	0.53	1.03	1.38	0.96	1.56	1.40	0.27	0.51	0.37	1.84	0.64	0.88	0.88
WV	1.49	2.09	0.34	0.26	0.90	0.58	0.12	0.00	0.47	0.00	1.15	0.37	0.13	0.39	0.50	0.59
WY	0.00	0.00	0.11	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.26	0.26	0.00	0.05

*We used money laundering sentences for states in which the firms are headquartered rather than incorporated.

Table 3. Pearson correlation matrix.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
AF_LN (1)	–																								
ML_FIRM (2)	***0.02***	–																							
ML_POP (3)	***0.02***	***0.18***	–																						
BIG4 (4)	***0.48***	***−0.06***	***−0.04***	–																					
SPEC (5)	***0.19***	***−0.03***	***−0.10***	***0.34***	–																				
GC (6)	***−0.24***	***0.02***	0.01	***−0.21***	***−0.08***	–																			
ARL (7)	***−0.08***	***0.07***	−0.01	***−0.28***	***−0.10***	***0.18***	–																		
BUSY (8)	***0.05***	0.01	***−0.02***	***0.05***	0.01	0.00	0.00	–																	
TENURE (9)	***0.28***	***0.02***	***−0.03***	***0.21***	***0.10***	***−0.11***	***−0.09***	***−0.08***	–																
SIZE (10)	***0.76***	***0.02***	***−0.09***	***0.51***	***0.20***	***−0.29***	***−0.30***	***0.04***	***0.28***	–															
COMPLEX (11)	***−0.02***	***0.04***	***0.04***	***−0.07***	***−0.06***	***−0.08***	***0.02***	***−0.14***	***0.06***	***−0.15***	–														
DEBT (12)	***0.25***	***0.09***	***−0.05***	***0.15***	***0.05***	***−0.08***	***−0.03***	***0.05***	***0.08***	***0.19***	***−0.07***	–													
ROA (13)	***0.25***	***0.03***	***−0.04***	***0.16***	***0.05***	***−0.38***	***−0.13***	***−0.05***	***0.16***	***0.29***	***0.19***	***0.10***	–												
SPI (14)	***0.04***	***0.02***	−0.01	0.01	0.00	0.00	0.01	0.00	***0.03***	***0.03***	0.01	***0.03***	***0.08***	–											
LOSS (15)	***−0.27***	***−0.06***	***0.04***	***−0.16***	***−0.05***	***0.26***	***0.15***	***0.07***	***−0.20***	***−0.40***	***−0.18***	***−0.07***	***−0.48***	***−0.11***	–										
MERGER (16)	***0.25***	***0.02***	***−0.04***	***0.08***	***0.03***	***−0.06***	0.00	***0.02***	***0.09***	***0.21***	***−0.04***	***0.10***	***0.06***	0.01	***−0.07***	–									
MTB (17)	***−0.09***	−0.01	0.01	***−0.10***	***−0.03***	***0.19***	***0.04***	***0.06***	***−0.08***	***0.07***	***−0.12***	***0.06***	***−0.30***	−0.01	***0.13***	***−0.03***	–								
SEG_GEO (18)	***0.44***	***−0.06***	***−0.03***	***0.22***	***0.04***	***−0.15***	***−0.12***	***−0.02***	***0.21***	***0.35***	***0.13***	***0.02***	***0.19***	***0.03***	***−0.18***	***0.13***	***−0.11***	–							
SEG_BUS (19)	***0.31***	***0.04***	−0.01	***0.09***	***0.03***	***−0.09***	***−0.02***	***−0.02***	***0.19***	***0.21***	***0.12***	***0.13***	***0.14***	***0.05***	***−0.17***	***0.10***	***−0.11***	***0.30***	–						
FOREIGN (20)	***0.51***	***−0.07***	***−0.02***	***0.27***	***0.09***	***−0.15***	***−0.10***	0.00	***0.18***	***0.42***	***0.07***	***0.04***	***0.18***	***0.03***	***−0.18***	***0.19***	***−0.08***	***0.59***	***0.20***	–					
LIT (21)	***−0.05***	***−0.08***	***0.03***	***0.04***	***0.03***	***0.02***	***−0.03***	***−0.06***	***−0.07***	−0.01	***−0.17***	***−0.21***	***−0.14***	***−0.04***	***0.16***	0.01	***0.09***	***−0.05***	***−0.16***	***−0.03***	–				
TPL_DUM (22)	0.01	0.00	−0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	−0.01	0.01	−0.01	0.00	0.00	0.00	0.01	–			
SC (23)	***−0.03***	***−0.27***	***0.03***	***0.03***	0.00	−0.05	***−0.07***	***−0.02***	***0.04***	0.01	***0.05***	***0.02***	0.06	0.00	***−0.06***	***−0.02***	***−0.05***	0.00	***0.04***	0.01	***−0.11***	−0.01	–		
LN_FIRM (24)	***0.03***	0.01	***0.05***	0.00	***−0.08***	0.01	***0.02***	0.01	***−0.03***	0.00	***−0.04***	***−0.10***	***−0.06***	−0.01	***0.08***	0.00	***0.02***	***0.05***	***−0.09***	***0.04***	***0.13***	0.00	***−0.45***	–	
LITERACY (25)	***0.08***	***−0.33***	***0.36***	***−0.05***	−0.01	0.00	***0.11***	0.00	***0.02***	0.00	***−0.04***	***−0.12***	***−0.05***	***−0.02***	***0.07***	***0.09***	***0.04***	***0.05***	−0.01	***0.11***	***0.12***	0.00	***0.11***	***0.02***	–

Notes: Bold and italicized correlation coefficients are significant at $p < .001$. Variable definitions are in Appendix.

correlation between ML_FIRM and ML_POP and BIG4 is significantly negative ($p < .01$). Consistent with prior literature, we also find significant correlations between AF_LN and control variables ($p < .01$ or better). For instance, AF_LN is correlated positively with SIZE, BIG4, DEBT, ROA, SEG_GEO, SEG_BUS, and FOREIGN.

4.3. *Regression results*

Regression results are reported in Table 4. We use ordinary least square (OLS) with standard errors clustered at the firm level. Column (1) presents results using ML_FIRM as a proxy for money laundering. The coefficient on ML_FIRM is positive and significant (coefficient 0.228, $p < .01$). This result is consistent with the hypothesized positive association between audit fees and money laundering. In terms of economic significance, the reported coefficient implies a 2.2% increase in audit fees for one standard deviation change in ML_FIRM, calculated as [0.10 (SD of ML_FIRM)* 0.228 (regression coefficient on ML_FIRM)]. Alternatively, a firm headquartered in a state with money laundering sentences in the 75th percentile (4.48) pays 103% of the audit fees paid by a firm headquartered in a state with money laundering sentences in the 25th percentile (exp (0.228*0.17)/exp (0.228*0.06)), *ceteris paribus*.

In terms of the regression coefficients for the control variables, we find a significant association between AF_LN, and almost all the control variables. With respect to the sign and significance of the state-level variables, we find that the coefficient on TPL_DUM is significantly positive which is consistent with state-level litigation risk affecting audit fees. The coefficient on SC is significantly negative, which is consistent with Jha and Chen (2015) (coefficient −0.10, *t*-statistic −7.39, $p < .01$). The coefficient on LITERACY, too, is positive and significant at $p < .01$.

Column (2) provides firm fixed-effects (FFE) regression results. We use FFE models to control for the effects of variables that are time-invariant. The coefficient on ML_FIRM is significantly positive (coefficient 0.24, *t*-statistic 4.59, $p < .01$). Column (3) includes ICW as an additional explanatory variable. Although the inclusion of ICW reduces the sample size substantially, the FFE regression confirms that the coefficients on both the ML_FIRM and ML_POP are positive and significant (coefficients are 0.09 and 0.012 respectively, both significant at better than the 5% level). The coefficient on ICW, too, is significantly positive.

We re-estimate Model (1) but use ML_POP as opposed to ML_FIRM and report the results in Columns (4) to (6). The coefficients on ML_POP across all three models are positive and significant with coefficients ranging from a high of 0.032 (Column 4) to a low of 0.012 (Column 6). In terms of economic significance, the reported coefficient on ML_POP implies a 2.88% increase in audit fees for a one standard deviation change in ML_POP, calculated as [0.90 (SD of ML_POP)*0.032 (regression coefficient on ML_POP)]. Alternatively, a firm headquartered in a state with money laundering sentences in the 75th percentile pays 103% of the audit fees paid by a firm headquartered in a state with money laundering sentences in the 25th percentile, *ceteris paribus*. Taken together, we find support for our hypothesis that firms headquartered in states with high rates of money laundering sentences pay significantly higher audit fees.

4.4. *The channel through which money laundering affects audit fees*

As mentioned in Section 2, money laundering can affect audit fees in two ways: first, through deterioration of financial reporting quality, and second, through the amplification of audit risk other than financial reporting quality. Given that 'money laundering is trying to legitimize the proceeds of illegal activities while maintaining the value of the acquired assets' (Chong and Lopez-de-Silanes 2015), it can impair the quality of accounting information, thus requiring greater audit efforts to detect improprieties.

Table 4. Money laundering and audit fees.

		(1)	(2)	(3)	(4)	(5)	(6)
Variables	Sign	OLS AF_LN	FFE AF_LN	FFE AF_LN	OLS AF_LN	FFE AF_LN	FFE AF_LN
ML_FIRM	+	0.228***	0.236***	0.086**	–	–	–
		[3.19]	[4.59]	[2.48]			
ML_POP	+	–	–	–	0.032***	0.017***	0.012***
					[4.30]	[3.90]	[3.03]
BIG4	+	0.456***	0.278***	0.416***	0.579***	0.304***	0.398***
		[25.43]	[14.67]	[16.06]	[30.66]	[16.73]	[16.27]
SPEC	+	0.024	0.014	−0.023**	−0.010	0.031***	−0.018**
		[1.59]	[1.22]	[−2.43]	[−0.65]	[2.72]	[−2.08]
GC	+	0.031	0.033	0.031	−0.044	0.001	−0.005
		[0.97]	[1.11]	[1.29]	[−1.44]	[0.04]	[−0.21]
ICW	+	–	–	0.147***	–	–	0.139***
				[12.28]			[11.75]
ARL	+	0.446***	0.427***	0.244***	0.264***	0.372***	0.238***
		[25.76]	[29.94]	[10.72]	[15.44]	[26.88]	[10.68]
BUSY	+	0.109***	0.050**	0.004	0.115***	0.061***	0.003
		[7.10]	[2.44]	[0.21]	[7.47]	[3.08]	[0.17]
TENURE	?	0.032***	0.044***	0.038***	0.005	0.041***	0.035***
		[4.46]	[7.59]	[6.25]	[0.73]	[7.27]	[6.03]
SIZE	+	0.433***	0.205***	0.128***	0.410***	0.233***	0.180***
		[82.63]	[30.89]	[19.16]	[75.64]	[32.97]	[23.37]
COMPLEX	+	0.689***	0.192***	0.154***	0.609***	0.184***	0.193***
		[14.32]	[3.32]	[2.60]	[12.83]	[3.28]	[3.49]
DEBT	+	1.131***	0.462***	0.512***	1.076***	0.728***	0.777***
		[26.61]	[10.96]	[14.24]	[27.38]	[17.29]	[20.68]
ROA	–	−0.135***	−0.074***	−0.036**	−0.131***	−0.083***	−0.050***
		[−8.17]	[−5.15]	[−1.97]	[−8.17]	[−5.75]	[−2.73]
SPI	+	0.057***	0.010	−0.008	0.067***	0.010	−0.006
		[4.85]	[1.43]	[−1.32]	[5.73]	[1.43]	[−1.02]
LOSS	+	0.227***	0.075***	0.062***	0.222***	0.046***	0.040***
		[17.82]	[8.23]	[8.35]	[17.57]	[5.18]	[5.38]

(*Continued*)

Table 4. Continued.

Variables	Sign	(1) OLS AF_LN	(2) FFE AF_LN	(3) FFE AF_LN	(4) OLS AF_LN	(5) FFE AF_LN	(6) FFE AF_LN
MERGER	+	0.152***	0.068***	0.085***	0.124***	0.088***	0.072***
		[11.57]	[7.73]	[11.53]	[9.10]	[10.22]	[10.44]
MTB	–	−0.029***	−0.013***	−0.010***	−0.029***	−0.011***	−0.009***
		[−25.99]	[−15.26]	[−11.38]	[−25.56]	[−14.12]	[−10.75]
SEG_GEO	+	0.128***	0.079***	0.060***	0.136***	0.074***	0.055***
		[13.25]	[5.72]	[4.76]	[13.90]	[5.52]	[4.50]
SEG_BUS	+	0.110***	0.063***	0.023**	0.113***	0.057***	0.024***
		[14.09]	[5.95]	[2.52]	[14.17]	[5.60]	[2.75]
FOREIGN	+	0.356***	0.225***	0.135***	0.325***	0.207***	0.121***
		[21.37]	[14.62]	[7.87]	[19.40]	[14.08]	[7.54]
LIT	+	−0.049*	–	–	−0.035	–	–
		[−1.87]			[−1.34]		
TPL_DUM	+	0.026***	0.017***	0.002	0.023***	0.016***	0.002
		[3.06]	[2.67]	[0.41]	[2.84]	[2.60]	[0.56]
SC	–	−0.099***	0.066***	−0.019	−0.007	−0.168***	−0.079***
		[−7.39]	[4.40]	[−1.35]	[−0.42]	[−7.32]	[−3.62]
LN_FIRM	+	–	–	–	0.005	3.010***	1.230***
					[0.24]	[22.49]	[10.34]
LITERACY	–	0.044***	0.230***	0.049***	−0.013***	0.086***	0.012***
		[13.01]	[37.56]	[8.35]	[−4.15]	[40.19]	[6.24]
Constant		6.694***	6.701***	−5.344***	8.728***	−35.178***	−5.358***
		[31.89]	[78.45]	[−3.58]	[26.73]	[−21.06]	[−3.58]
Firm FE		No	Yes	Yes	No	Yes	Yes
Industry FE		Yes	No	No	Yes	No	No
Year FE		Yes	Yes	Yes	Yes	Yes	Yes
Observations		46,703	46,703	27,434	46,801	46,801	27,434
Adj. R^2		0.74	0.42	0.22	0.75	0.45	0.25

Notes: All continuous variables are winsorized at the top and bottom 1% of their respective distributions. Robust *t*-statistics in brackets. ***$p < .01$, **$p < .05$, *$p < .10$. Variable definitions are in Appendix. The FFE models did not generate any coefficient for LIT, because FFE regression does not include industry effect.

Extant research on the determinants of audit fees, documents an increase in audit fees for clients with poor reporting quality (Bedard and Johnstone 2004, Greiner et al. 2017). To investigate whether the association between money laundering and audit fees captures business risk rather than audit failure risk, we conduct regression analyses using three earnings quality proxies as the dependent variables, with money laundering proxies as the independent variables. Results are presented in Columns (1)–(6) in Table 5. The first three columns present regression results using absolute discretionary accruals (|DAC|), absolute real earnings management (|REM|), and accounting restatements (RESTATE) as the earnings quality proxies, and ML_FIRM as the money laundering construct. Columns (4)–(6) do the same using ML_POP as the money laundering proxy. We interact ML with the respective earnings quality proxies to determine whether money laundering increases audit fees through the financial reporting quality channels.

We find that the coefficients on the respective earnings quality variables are significantly positive (Columns 1–3) suggesting that poor quality financial reports increase audit fees (Becker et al. 1998, Fan and Wong 2005, Choi et al. 2016, Greiner et al. 2017). Importantly, none of the interactive variables is significant across Columns (1)–(3). For example, the coefficient on the interactive variable ML × |DAC| is −0.328 for ML_FIRM, and −0.00 for ML_POP, respectively. The non-significance of ML ×|REM| and ML × RESTATE is also evident for both ML proxies. The coefficients on ML × |REM| (coefficients ranging from 0.217 to 0.272) and ML_POP (coefficients ranging from 0.011 to 0.038) continue to be positive and significant variables. Therefore, we conclude that money laundering affects audit fees by amplifying business risk rather than risks related to financial misrepresentation.

4.5. *Endogeneity tests*

Our analysis so far suggests a positive association between money laundering sentences and audit fees. However, the sign, magnitude, and statistical significance of these estimates may be biased if our regression estimates suffer from omitted variables, reverse causality, or model misspecification problems (Woolridge 2002). Therefore, we use an instrumental variable technique to validate our interpretation of the results documented in Table 4. Motivated by prior criminology studies (e.g. Reuter and Truman 2004, Spapens 2008, De Sanctis 2014), we use state-level sentences relating to gambling and lottery (GAM & LOT) as our instrument.

Reuter and Truman (2004) note that gambling and lotteries are important avenues for money laundering. In particular, he explains how chips used in the casino business, and lotteries in horse tracks, can be used for money laundering purposes. De Sanctis (2014) also posits that owing to the large monetary transactions involved, lotteries and gambling industries are attractive sectors for money laundering. He also notes that the gambling sector provides attractive opportunities to convert illicit cash, through electronic or cash transactions, into legitimate earnings easily. In a similar study, Spapens (2008) notes that criminal organizations may penetrate the legal betting and gaming sector to launder criminal money. These studies, thus, suggest that gambling and lotteries may serve as attractive avenues for money laundering. Therefore, it is reasonable to expect that state-level money laundering sentencing (our endogenous variable) is highly correlated with state-level gambling and lottery-related sentencing (GAM & LOT – instrumental variable). On the other hand, it is unlikely that firm-level audit fees affect state-level gambling and lottery-related sentencing. It is also unlikely that the state-level gambling and lottery-related sentencing affects audit fees other than through money laundering sentencing rates in the states where the firms are headquartered. Thus, the essential requirements of the instruments are satisfied.

Table 6, Section I reports that coefficients on the instrumental variable are highly positive and significant ($p < .001$), suggesting that the included instrumental variable (GAM & LOT) is

Table 5. Money laundering and audit fees: financial reporting misstatements channel.

		(1)	(2)	(3)	(4)	(5)	(6)
Variables	Sign	OLS ML_FIRM	OLS ML_FIRM	OLS ML_FIRM	OLS ML_POP	OLS ML_POP	OLS ML_POP
ML	+	0.272***	0.252***	0.217***	0.038***	0.011**	0.028***
		[3.81]	[3.30]	[2.88]	[4.40]	[2.29]	[3.77]
|DAC|	+	0.085***	–	–	−0.005	–	–
		[2.59]			[−0.16]		
|REM|	+	–	0.015***	–	–	0.009*	–
			[3.27]			[1.84]	
RESTATE	+	–		0.103***	–	–	0.043**
				[6.67]			[2.18]
ML × |DAC|	?	−0.318	–	–	−0.000	–	–
		[−1.26]			[−0.02]		
ML × |REM|	?	–	−0.022	–	–	−0.000	–
			[−0.66]			[−0.03]	
ML × RESTATE	?	–	–	0.095	–	–	0.019
				[0.91]			[1.60]
BIG4	+	0.426***	0.420***	0.456***	0.396***	0.524***	0.579***
		[23.39]	[22.10]	[25.39]	[20.60]	[44.56]	[30.69]
SPEC	+	0.028*	0.028*	0.024	0.044***	0.001	−0.010
		[1.83]	[1.68]	[1.59]	[2.98]	[0.10]	[−0.67]
GC	+	0.110***	0.106***	0.031	0.016	0.052*	−−0.043
		[3.30]	[2.97]	[0.98]	[0.44]	[1.70]	[−1.39]
ARL	+	0.463***	0.472***	0.446***	0.390***	0.283***	0.262***
		[26.00]	[25.79]	[25.68]	[21.95]	[16.48]	[15.36]
BUSY	+	0.099***	0.110***	0.109***	0.127***	0.110***	0.114***
		[6.29]	[6.75]	[7.10]	[8.36]	[12.34]	[7.41]
TENURE	?	0.025***	0.019**	0.032***	0.019**	−0.007	0.006
		[3.41]	[2.40]	[4.46]	[2.50]	[−1.56]	[0.84]
SIZE	+	0.439***	0.440***	0.433***	0.460***	0.420***	0.410***
		[83.72]	[80.98]	[82.52]	[76.39]	[126.81]	[75.57]
COMPLEX	+	0.664***	0.655***	0.689***	−1.116***	0.585***	0.609***
		[13.59]	[13.21]	[14.32]	[−24.75]	[19.63]	[12.84]
DEBT	+	1.132***	1.127***	1.131***	−0.125***	1.096***	1.075***
		[26.41]	[24.14]	[26.61]	[−3.57]	[41.34]	[27.37]

ROA	−	−0.167***	−0.151***	−0.134***	−0.337***	−0.176***	−−0.131***
		[−8.98]	[−7.24]	[−8.16]	[−13.36]	[−8.69]	[−8.20]
SPI	+	0.050***	0.050***	0.057***	0.037***	0.059***	0.067***
		[4.28]	[4.00]	[4.86]	[3.28]	[5.55]	[5.68]
LOSS	+	0.223***	0.231***	0.227***	0.157***	0.225***	0.221***
		[17.59]	[17.12]	[17.80]	[12.48]	[21.64]	[17.51]
MERGER	+	0.144***	0.147***	0.152***	0.132***	0.123***	0.124***
		[10.83]	[10.51]	[11.59]	[10.57]	[11.69]	[9.10]
MTB	−	−0.029***	−0.030***	−0.030***	0.006***	−0.029***	−0.029***
		[−23.06]	[−21.02]	[−25.99]	[6.48]	[−24.94]	[−25.64]
SEG_GEO	+	0.128***	0.123***	0.128***	0.093***	0.128***	0.136***
		[13.01]	[12.28]	[13.24]	[10.05]	[25.24]	[13.88]
SEG_BUS	+	0.106***	0.102***	0.110***	0.064***	0.105***	0.112***
		[13.55]	[12.79]	[14.08]	[8.66]	[27.51]	[14.08]
FOREIGN	+	0.351***	0.358***	0.356***	0.315***	0.319***	0.324***
		[20.83]	[20.63]	[21.36]	[18.54]	[33.11]	[19.37]
LIT	+	−0.079***	−0.064**	−0.048*	0.085***	−0.063***	−0.034
		[−2.95]	[−2.38]	[−1.85]	[3.29]	[−4.91]	[−1.28]
TPL_DUM	+	0.027***	0.033***	0.025***	0.029	0.030***	0.023***
		[3.20]	[3.66]	[3.06]	[3.28]	[3.32]	[2.80]
SC	−	−0.107***	−0.108***	−0.099***	−0.134***	−0.075***	−0.007
		[−7.87]	[−7.54]	[−7.37]	[−10.34]	[−9.69]	[−0.46]
LN_FIRM	+	−	−	−	0.094***	0.069***	0.005
					[4.22]	[10.30]	[0.26]
LITERACY	−	0.045***	0.045***	0.044***	0.032***	6.239***	−0.013***
		[13.14]	[12.54]	[12.98]	[13.67]	[23.51]	[−4.13]
Constant		6.745***	6.666***	6.715***	5.265***	8.593***	8.741***
		[32.13]	[29.71]	[32.00]	[19.74]	[24.73]	[26.78]
Industry FE		Yes	Yes	Yes	Yes	Yes	Yes
Year FE		Yes	Yes	Yes	Yes	Yes	Yes
Observations		43,507	38,274	46,810	43,507	38,274	46,801
Adj. R^2		0.74	0.74	0.74	0.76	0.78	0.75

Notes: All continuous variables are winsorized at the top and bottom 1% of their respective distributions. Robust *t*-statistics in brackets. ***$p < .01$, **$p < .05$, *$p < .10$. Variable definitions are in Appendix.

Table 6. Endogeneity test: 2SLS regression.

I: First-stage regressions	ML_FIRM	ML_POP
Explanatory variable		
Instrument		
GAM & LOT	0.002***	0.056***
	(39.08)	(105.62)
All variables in main specification	Yes	Yes
Industry and Year FE	Yes	Yes
Observation	46,703	46,593
Adj. R^2	0.732	0.753
Under-identification test		
Kleibergen-Paaprk LM statistic	436.65	622.45
p-value	0.000	0.000
Weak identification test		
1st stage *F*-statistic	1527.58	11155.58
II: Second-stage regressions		
Explanatory variable	AF_LN	AF_LN
Potentially endogenous variable		
ML_FIRM	1.35***	–
	(3.50)	
ML_POP	–	0.035**
		(2.45)
Unreported control variables included in the regression		
All variables in main specification	Yes	Yes
Industry and Year FE	Yes	Yes
Observations	46,703	46,593

Notes: GAM & LOT is the state-level gambling and lottery-related offenses retrieved from the annual report of *Federal Sentencing Statistics of District, Circuit and State*. Robust *t*-statistics in brackets. ***$p < .01$, **$p < .05$, *$p < 0.10$.

associated significantly with state-level money laundering. As far as the weak instrument issue is concerned, we do not find any evidence of a weak instrument because the *F*-statistic of the coefficient of the instrument GAM & LOT from the first stage regression is far greater than 10.[10]

Results in Table 6, Section II, suggest that the relationship between money laundering and audit fees remains robust after accounting for the endogenous relationship between money laundering and audit fees. For example, the estimated coefficients (and *p* values) are 1.35 ($p < .01$) for the ML_FIRM, and 0.035 ($p < .05$) for the ML_POP measures of money laundering. These results, thus, suggest that endogeneity cannot explain away the documented relationship between the money laundering and audit fees.

4.6. *Propensity score matching*

Firms may non-randomly choose the location of their headquarters in states with less corporate regulation, or close to their production plants. Selection bias arises when the incidence of money laundering is correlated with the error term of the audit-fee model. To the extent that the locations of the headquarters of the firms are the result of non-random choices, standard OLS assumptions are violated, and the least squares coefficients of the money laundering variables could be biased. The PSM methodology (Rosenbaum and Rubin 1983, 1985) provides an alternative method for controlling for self-selection by matching sample firms with control

firms with similar characteristics according to a function of covariates. We select the optimal match based on the nearest neighbour (NN) technique of the PSM procedure. The NN approach, with replacement, picks a single control firm according to the closest propensity score. We follow prior literature (e.g. Heckman et al. 1997, Austin 2011) in relying on this procedure in an attempt to control for differences in characteristics between firms headquartered in states with high (HML) versus low (LML) rates of money laundering sentences.

In our setting, the basic approach to PSM is to first model the propensity of money laundering on its firm-specific determinants. We divide our sample into two groups based on the yearly mean level of ML sentences. We consider the group with HML as the treated group, and those with LML as the control group.

We include a set of firm characteristics that may explain the likelihood that a given firm will be involved in money laundering activities.[11] Importantly, inclusion of these controls ensures proper balance between treated and untreated subjects in the matched sample, which is one of the key criteria for PSM (Austin 2011). One important aspect of PSM is to examine the distribution of measured baseline covariates between treated and untreated subjects within the propensity score matched sample. If, after conditioning on the propensity score, no systematic differences exist in baseline covariates between treated and untreated subjects, this indicates that the propensity score model has been correctly specified (Austin 2011). In Table 7 Panel A, none of the included covariate is significantly different between HML versus LML sub-samples, providing strong support for our estimation.

Table 7 Panel B shows regression results for PSM following the NN approach. As shown in columns (1) and (2), we continue to find positive and significant coefficients on both ML_FIRM and ML_POP (the coefficients are 0.27 and 0.25, respectively, both significant at $p < .01$), consistent with our baseline regression results. Thus, our results are robust to corrections for the self-selection problem. The results imply that auditors charge higher audit fees for clients headquartered in HML sentencing states than for those headquartered in LML sentencing states.

PSM methodologies range from one-to-one to one-to-many, as discussed by Tucker (2010), and there is no single best matching approach. As a robustness check, we also use average treatment effect (ATE) and find our result to be consistent with the NN approach (Columns 3 and 4).

In an additional test, we further divided the sample into quartiles and defined the top (bottom) quartile as more (less) prone to money laundering, leaving the middle two quartiles out of the sample. Our PSM analysis using this specification provides results consistent with those in Table 7 (coefficients 0.034, $p < .01$ and 0.03, $p < .01$), as per the NN and ATE methods, respectively (untabulated).

4.7. *Additional analyses*

We performed a number of sensitivity tests to check the robustness of our reported results.

(a) State fixed effect

We control for state fixed effects in our regression specifications to allay the concern that time-invariant characteristics specific to a certain state might bias the documented positive association between money laundering and audit fees. Results are reported in Panel A of Table 8. The coefficient on ML_FIRM continues to be positive (coefficient 0.014, *t*-statistic 2.27, $p < .05$). The corresponding coefficient on ML_POP is 0.021 (*t*-statistic 4.08, $p < .01$).

(b) Change in money laundering cases across time and audit fees

Our data reveal that the number of reported money laundering cases fluctuated over time in a given state (see Panel B, Table 2). In order to see whether audit fees change in response to changes in money laundering activities, we perform a change analysis whereby we regress changes in audit fees on changes in ML and changes in other control variables (Panel B, Table 8). We

Table 7. PSM tests.

Panel A: Propensity-matched variables

	(1)	(2)	(3)
	NN	NN	NN
Variable	Treated	Control	*t*-statistic
SIZE	5.279	5.275	0.13
COMPLEX	0.258	0.267	0.16
DEBT	0.141	0.140	0.34
ROA	−0.107	0.114	1.16
SPI	0.129	0.134	−1.16
SEG_GEO	0.979	0.979	0.05
SEG_BUS	0.902	0.902	−0.00
LIT	0.413	0.413	−0.12
LN_FIRM	12.366	12.367	−0.11

Panel B: Regression analysis

		NN		ATE	
		(1)	(2)	(3)	(4)
Variables	Sign	AF_LN	AF_LN	AF_LN	AF_LN
ML_FIRM	+	0.268***	–	0.245***	–
		[4.71]		[2.98]	
ML_POP	+	–	0.016***	–	0.013**
			[2.90]		[2.00]
BIG4	+	0.468***	0.542***	0.478***	0.525***
		[31.96]	[40.28]	[24.79]	[33.25]
SPEC	+	0.027**	−0.006	0.013	−0.013
		[2.13]	[−0.59]	[0.93]	[−0.94]
GC	+	0.008	−0.065**	−0.026	−0.071**
		[0.22]	[−2.24]	[−0.50]	[−1.99]
ARL	+	0.458***	0.215***	0.477***	0.247***
		[24.17]	[11.26]	[18.37]	[9.77]
BUSY	+	0.119***	0.111***	0.128***	0.123***
		[10.11]	[10.75]	[8.20]	[9.53]
TENURE	?	0.027***	0.008	0.031***	0.014**
		[4.36]	[1.37]	[4.01]	[2.21]
SIZE	+	0.429***	0.432***	0.433***	0.435***
		[105.95]	[92.78]	[89.22]	[82.07]
COMPLEX	+	0.699***	0.531***	0.678***	0.542***
		[18.80]	[12.25]	[15.17]	[10.84]
DEBT	+	1.161***	1.373***	1.210***	1.417***
		[33.72]	[44.22]	[27.67]	[42.04]
ROA	–	−0.130***	−0.126***	−0.134***	−0.132***
		[−7.16]	[−7.08]	[−5.53]	[−6.14]
SPI	+	0.048***	0.054***	0.060***	0.049***
		[3.25]	[3.99]	[3.18]	[3.23]
LOSS	+	0.227***	0.181***	0.224***	0.170***
		[17.44]	[14.74]	[13.10]	[12.23]
MERGER	+	0.144***	0.131***	0.144***	0.142***
		[10.86]	[8.88]	[8.92]	[8.94]

(*Continued*)

Table 7. Continued.

Panel B: Regression analysis

		NN		ATE	
		(1)	(2)	(3)	(4)
Variables	Sign	AF_LN	AF_LN	AF_LN	AF_LN
MTB	−	−0.031***	−0.020***	−0.029***	−0.020***
		[−25.66]	[−18.95]	[−19.10]	[−16.93]
SEG_GEO	+	0.131***	0.127***	0.126***	0.128***
		[20.39]	[20.81]	[15.30]	[18.53]
SEG_BUS	+	0.111***	0.105***	0.111***	0.104***
		[21.82]	[22.86]	[17.26]	[19.42]
FOREIGN	+	0.361***	0.293***	0.347***	0.293***
		[28.75]	[25.09]	[22.70]	[20.71]
LIT	+	−0.036**	0.022	−0.039*	0.010
		[−2.20]	[1.45]	[−1.93]	[0.54]
TPL_DUM	+	0.013	0.011	0.028	0.028
		[0.96]	[0.92]	[0.65]	[0.66]
SC	−	−0.086***	−0.059***	−0.082***	−0.063***
		[−8.18]	[−6.52]	[−6.62]	[−6.04]
LN_FIRM	+	−	0.069***	−	0.065***
			[7.55]		[6.12]
LITERACY	−	0.040***	0.007**	0.039***	0.006*
		[14.68]	[2.52]	[13.40]	[1.86]
Constant		6.716***	6.457***	6.607***	6.370***
		[55.77]	[18.49]	[42.13]	[15.80]
Industry and Year FE		Yes	Yes	Yes	Yes
Observations		35,682	35,063	24,441	25,488
Adj. R^2		0.73	0.76	0.73	0.78

Notes: Robust *t*-statistics in brackets. ***$p < .01$, **$p < .05$, *$p < .10$. Variable definitions are in Appendix.

find the coefficient on ΔML_FIRM to be positive and significant (coefficient 0.053, *t*-statistic 2.11, $p < .05$). The corresponding coefficient on ΔML_POP is 0.011 with a *t*-statistic of 2.93 (significant at $p < .01$). This is consistent with the prediction that audit fees do respond to changes in state-level money laundering risks.

(c) Corporate relocations, money laundering, and audit fees

Although results tabulated in Panel B of Table 8 exploit the effects associated with over-time changes in money laundering sentences on audit fees, they do not focus exclusively on firms with headquarter relocations that may have implications for auditors for reassessing clients' business risks. We conduct such an analysis in this section. If the extent of money laundering sentences in states where firms are headquartered contributes to business risk that increases audit fees, one would expect audit fees to increase (decrease) after a firm relocates its headquarters to a different state with a higher (lower) level of money laundering sentences. Accordingly, we conduct a test in which we compare the over-time changes in audit fees, before and after relocation, between firms with a money laundering-increasing relocation and firms with a money laundering-decreasing relocation.

We collect corporate headquarter addresses from a firm's 10-K filings in EDGAR. We require that all relocated firms have data for the year immediately preceding and immediately after the relocation year. We identify 640 headquarter relocations in our sample. To avoid confounding time windows, we exclude another 224 firms with multiple relocation events during the

Table 8. Additional tests.

Panel A: State fixed effects and the association between money laundering and audit fees

	State FE	State FE	State FE	State FE
	ML_FIRM	ML_FIRM [ICW model]	ML_POP	ML_POP [ICW model]
Variables	(1)	(2)	(3)	(4)
ML	0.014**	−0.074	0.021***	0.021***
	[2.27]	[−1.35]	[4.08]	[5.42]
Other control variables	Yes	Yes	Yes	Yes
Industry and Year FE	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes
Observations	46,801	27,368	46,801	27,368
Adj. R^2	0.74	0.82	0.76	0.74

Panel B: Does change in audit fees respond to a change in ML risks?

Variables	Predicted sign	(1)	(2)
ΔML_FIRM	+	0.053**	–
		[2.11]	
ΔML_POP	+	–	0.011***
			[2.93]
ΔOther control variables		YES	YES
Industry FE		Yes	Yes
Year FE		Yes	Yes
Observations		39,082	39,082
Adj. R^2		0.04	0.04

Panel C: Evidence from money laundering changing corporate relocations.

	(1)	(2)
	ML_FIRM	ML_POP
After	0.018	−0.085
	[0.24]	[−1.28]
Money_laundering_increasing_relocation	−0.133	−0.119
	[−1.63]	[−1.56]
After * Money_laundering_increasing_relocation	0.230**	0.249**
	[2.07]	[2.30]
Other controls	Yes	Yes
Industry FE	Yes	Yes
Observations	832	832
Adj. R^2	0.84	0.85

Panel D: Do Big 4 firms charge a higher fee premium for operating in states with high rate of money laundering sentences?

		ML_FIRM	ML_POP
Variables	Predicted sign	(1)	(2)
ML	+	−0.151	0.014*
		[−1.17]	[1.69]
BIG4	+	0.384***	0.501***
		[15.47]	[31.98]
ML*BIG4	+	0.573***	0.014*
		[3.90]	[1.72]
Other control variables		Yes	Yes
Industry FE		Yes	Yes
Year FE		Yes	Yes
Observations		46,801	46,801
Adj. R^2		0.73	0.75

Notes: After is a dummy variable that equals one if the firm-year observation is from the period after the relocation; it equals zero otherwise. Money_laundering_increasing_relocation is a dummy variable that equals one if a firm relocated its headquarters to a different state with a higher level of money laundering sentences; it equals zero otherwise. Robust *t*-statistics in brackets. ***$p < .01$, **$p < .05$, *$p < .10$. Variables are defined in Appendix.

sample period, and rely on a sample that contains 416 firms, a total of 832 firm-year observations, with unique money laundering-change relocation.

In the regression model for this analysis, we replace the baseline money laundering variables of Table 4 with After, Money_laundering_increasing_relocation, and the interaction variable: After × Money_laundering_increasing_relocation. After is a dummy variable that equals one if the firm-year observation is from the period after the relocation; it equals zero otherwise. Money_laundering_increasing_relocation is a dummy variable that equals one if a firm relocated its headquarters to a different state with a higher level of money laundering sentences; it equals zero otherwise. Our main variable of interest is the coefficient of the interaction variable because it provides an estimate of the difference in the over-time change in audit fees between firms with a money laundering-increasing relocation and firms with a money laundering-decreasing relocation, across the two periods. Panel C of Table 8 reports the results. Across both models, we find that the coefficients on the interaction variable are positive and statistically significant (coefficient 0.23, $p < .05$ and .249, $p < .05$ for the ML_FIRM and ML_POP variables, respectively). These results show that firms with a money laundering-increasing relocation display significantly higher audit fees when compared to firms with a money laundering-decreasing relocation.

(d) Money laundering, auditor litigation risk, and audit fees: further test

We included TPL_DUM in our baseline regressions to rule out the possibility that it is litigation risk that drives the positive association between audit fees and state-level money laundering sentences. We found that the coefficients on both the money laundering variables continued to be positive and significant even after controlling for TPL_DUM. In an additional test (untabulated) we include a dummy variable LAWSUIT; that equals 1 for firm-years with litigation against the firm, and 0 otherwise. We derived the data from AA. We consider lawsuits classified as Accounting and Auditing Enforcement Release (AAER), accounting malpractice, or Financial Reporting on the AA database. Our choice of litigation against the firms, as opposed to litigation against the auditors, stems from the fact the former represents a comprehensive measure of the client risk faced by auditors (Jha and Chen 2015). Untabulated results reveal that the coefficients on LAWSUIT are positive and statistically significant for both ML_FIRM and ML_POP models (coefficients 0.16 and 0.10, both significant at $p < .01$). Importantly, we continue to find positive and significant coefficients on ML for our baseline regressions.

(e) Do Big 4 audit firms charge a fee premium for operating in high money laundering states?

Money laundering-related lawsuits are likely to reflect the level of states' money laundering activities. Auditors may require a fee premium to compensate for the higher risk of litigation in those states. This is more applicable to Big 4 audit firms, since it is well known that these firms are vulnerable to litigation threat because of their 'deep pocket' phenomena. In order to investigate whether fee premium increases for clients of Big 4 firms operating in states with money laundering sentences, we interact ML with a BIG4 variable, and rerun Equation (1). Column (1) in Panel D of Table 8 reveals that the coefficient on the interactive variable ML_FIRM*BIG4 is positive and significant (coefficient 0.573, *t*-statistic 3.90, $p < .01$). The coefficient is also positive and marginally significant for ML_POP*BIG4 (Column 2) (coefficient 0.014, *t*-statistic 1.72, $p < .10$). This suggests that Big 4 auditors demand an incremental fee premium for auditing clients headquartered in states with high money laundering sentences.

(f) First time audit engagement, money laundering risks, and audit fees

Prior literature finds evidence of fee discounting by audit firms to attract new audit clients (e.g. Simon and Francis 1988, Craswell and Francis 1999), which is more pronounced for small than for large audit firms. This is because small auditors compete solely on the basis of price rather than audit quality: a practice that is similar across small auditors. To rule out the possibility that low-balling affects audit fees irrespective of money laundering risk, we interact ML with AUDIT_First_time, and rerun the regression. The interactive coefficient, although negative, is

statistically insignificant (coefficient −0.009, *t*-statistic −0.75) (untabulated). The number of first time engagements in our sample, however, is only 6%. Importantly, the coefficients on both ML_FIRM and ML_POP continue to be positive and significant (untabulated).

(g) Additional state-level control variables

We included a set of state-level control variables in our primary regression estimation to lessen the omitted variable concern. In an additional test we also included two additional variables: bribery (BRIBE) and robbery (ROBBERY), representing the overall business climate relevant for assessing the money laundering risk. Untabulated results reveal the coefficient on ML_FIRM is positive and significant (coefficient 0.18, *t*-statistic 2.33, $p < .05$). The coefficient on BRIBE loads into the regression with a positive coefficient (coefficient 0.76, *t*-statistic 5.76, $p < .01$) so is the coefficient on ROBBERY. Findings remain relatively unchanged when the same procedure is followed for ML_POP (coefficient 0.029, *t*-statistic 2.79, $p < .01$). The positive and significant coefficient on money laundering, even after controlling for the state-level overall business risk, provides further corroborative evidence for auditors' pricing of clients' business risk.

5. Conclusions

In this paper, we examine the effects of money laundering: a criminal act aimed at concealing the nature, source, location, or movement of money derived from unlawful activities; on auditors' decision to charge higher audit fees. Our study is motivated by a lack of research on risks emanating from broader economy-level operations: the risks of operating in states with high money laundering sentencing rates in the US. Our study documents an increase in audit fees for clients headquartered in high money laundering risk states. Our results are nontrivial as well. We document a 2.2% increase in audit fees for a one standard deviation increase in the money laundering sentencing rate. Our results are robust to the inclusion of a number of state-level controls, including social capital (Jha and Chen 2015).

We contribute to the audit-fee literature by investigating a hitherto unexplored audit fees determinant. Prior evidence by Lyon and Maher (2005) finds that audit fees are higher for clients operating in countries where the bribing of officials is an accepted norm. We consider a more egregious form of criminal act: money laundering. We also contribute to understanding the economic consequences of money laundering activities. Although the professional literature on money laundering has alluded to a number of its adverse economic effects, to the best of our knowledge, we are the first to relate money laundering with auditors' response to clients' business risk and, hence, to audit fees.

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No potential conflict of interest was reported by the authors.

Notes

1. United States Sentencing Commission (https://www.ussc.gov/).
2. The accounting profession became involved in combating money laundering activities as early as 1990s in response to government requests (Abel and Gerson 2001). At the beginning of the millennium, the US government reiterated its plans to involve the accounting profession in anti-money-laundering initiatives. It is generally expected that there will be significant increases in accountants' anti-

money-laundering responsibilities, e.g. development of an anti-money-laundering infrastructure (Melnik 2003).

3. Although we investigate the relation between auditor fees and risk drivers, we cannot address which components of audit fees are affected: a limitation consistent with research in this area (Lyon and Maher 2005).
4. Chernykh and Mityakov (2015) use Russian banks' mandatory reports to the Central Bank, and document a positive relation between banks' offshore activities and tax evasion for non-financial companies connected to such banks. Additional analysis reveals that offshore banking is also related to money laundering and accounting fraud. These banks themselves evade taxes and perform less banking activity (e.g. lending and deposit-taking).
5. This, of course, does not necessarily suggest that all corporations in the high money laundering states will engage in money laundering activities equally. It reflects a mere possibility, thus providing a red flag to external auditors to be more sceptical. Jha and Chen (2015) document a negative association between social capital and financial misrepresentation. However, the findings do not necessarily imply that all firms in low social capital counties, e.g. are likely to commit financial misrepresentation, including financial statement fraud. Existing literature in accounting and finance investigating the effects of social capital on various organizational outcomes, e.g. debt contracting, financial reporting quality, CSR practices, and tax avoidance, is also framed in a relative, not in an absolute, sense (e.g. Jha and Cox 2015, Jha 2017, Hasan et al. 2017a,b).
6. http://www.ussc.gov/research-and-publications/research-projects-and-surveys/miscellaneous/summary-findings.
7. Practitioners asserted that although such 'money laundering' conduct reflected little or no additional harm to society, a money laundering charge could result in a significantly higher guideline sentence than it would if the underlying offense alone were charged.
8. Some of the other offense categories include murder, manslaughter, kidnapping/hostage taking, sexual abuse, assault, robbery, arson, drugs, burglary, auto theft, larceny, fraud, and bribery.
9. Corporate data-file provides no state code or code for the offenders' type.
10. For a single endogenous regressor, an *F*-statistic below 10 is a cause for concern (Staiger and Stock 1997, p. 557).
11. In particular, we include following determinants of money laundering in the first stage model for PSM procedures: SIZE, COMPLEX, ROA, SPI, SEG_GEO, SEG_BUS, LEV, and LIT.

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Appendix. Variable definitions.

Variables	Definition
AF_LN	Natural log of audit fees (AF)
ML_FIRM	Total number of money laundering sentences for state *i* and year *t* divided by number of firms in the respective states. The commission provides a primary offense category of 33 offenses for each state/circuit from 1995 up to date. We hand-collect money-laundering cases for each state, and each year from 1995 to 2014 from the annual report of Federal Sentencing Statistics of Distract, Circuit and State
ML_POP	Total number of money laundering sentences for state *i* and year *t* per 100,000 population
BIG4	An indicator variable that equals 1 if the firm is audited by Deloitte & Touche, Ernst & Young, KPMG, or PricewaterhouseCoopers, and 0 otherwise
SPEC	Audit firm industry specialization. An auditor is defined as a state industry leader if, in a particular year, the auditor has the largest market share in a two-digit SIC industry and if its market share is at least 10 percentage points greater than the second largest industry leader in a national (city) audit market. We determine auditors' national and city leadership in each industry for each of our sample years
GC	An indicator variable that equals 1 if the firm receives a going-concern opinion, and 0 otherwise
RESTATE	An indicator variable that equals 1 if the firm has a financial statement restatement and 0 otherwise
ARL	The natural log of number of days between the fiscal year-end and the annual earnings announcement date
BUSY	An indicator variable that equals 1 if the firm's fiscal year-end is 31 December and 0 otherwise
TENURE	The duration of the auditor–client relationship in years starting from 1982. We take the natural logarithm of TENURE
ICW	An indicator variable coded 1 if the firm had any material weakness in internal controls, 0 otherwise
SIZE	Natural log of total assets
COMP	Firm complexity measured as the sum of the firm's receivables and inventory divided by its total assets
DEBT	Firm leverage measured as the sum of total debt over total assets
ROA_	The firm's return-on-assets calculated as net income before extraordinary items, divided by beginning-of-the-year total assets
SPI	An indicator variable that equals 1 if the firm reports special items, and 0 otherwise

(*Continued*)

Appendix. Continued.

Variables	Definition
LOSS	An indicator variable that equals 1 if the firm's net income before extraordinary items is negative, and 0 otherwise
MERGER	An indicator variable that equals 1 if the firm had a merger or acquisition, and 0 otherwise
MTB	The firm's market-to-book ratio defined as its market value of equity divided by the book value of its equity
SEG_GEO	The natural log of the number of a firm's geographic segments
SEG_BUS	The natural log of the number of a firm's business segments
FOREIGN	The percentage of foreign sales to total sales
LIT	An indicator variable coded 1 if firm-year observations belong to biotechnology (SIC codes 2833–2836 and 8731–8734), computers (SIC codes 3570–3577 and 7370–7374), electronics (SIC codes 3600–3674), and retailing (SIC codes 5200–5961), and zero otherwise
TPL_DUM	Following Gaver et al. (2012), we measure third-party liability standards with an indicator variable, TPL_DUM, set to 1 if the auditor is subject to the more expansive standards of restatement (greater than or equal to 4 on a nine-point scale), and to 0 otherwise. Gaver et al. (2012) and Pacini et al. (2000) developed the state liability scores with higher (lower) scores indicating a more expansive (narrow) definition of third parties to whom the auditor owes a duty of care
|DAC|	The residuals from a cross-sectional estimation of the modified Jones model, controlling for firm performance (Dechow et al. 1995, Kothari et al. 2005). We estimate the model for all firms in the same industry (using the SIC two-digit industry code) with at least eight observations in an industry in a particular year
|REM|	Real earnings management is the sum of ACFO - APROD + ADISX; where ACFO is the level of abnormal cash flows from operations, APROD is the level of abnormal production costs, and ADISX is the level of abnormal discretionary expenses (Roychowdhury 2006). Abnormal cash flows from operations, measured as the difference between actual and predicted cash flow from operations. We multiply the residuals by −1 so that higher values indicate income-increasing REM. Abnormal production cost, measured as the difference between actual and predicted production cost, where production costs are measured as the sum of the cost of goods sold plus the change in inventory. Abnormal discretionary expenses, measured as the difference between actual and predicted discretionary expenses. We multiply the residuals by −1 so that higher values indicate income-increasing REM
SC	A social capital index using two variants of social norms and two measures of networks for each county for the years 1997, 2005, and 2009 (Jha and Chen 2015). The two measures of social norms are voter turnout in presidential elections, and the census response rate. Higher values for these variables represent higher social capital. The two measures of networks are the number of social and civic associations and the number of nongovernment organizations (NGO) in counties. Social and civic associations include the physical fitness facilities, public golf courses, religious organizations, sports clubs, managers and promoters, political organizations, professional organizations, business associations, and labour organizations in the county. Both of these measures are normalized by the population in the county. A principal component analysis is used to construct an index of social capital for each county for the years 1997, 2005, and 2009. A linear interpolation fills the missing years in the years 2000–2004; and 2006–2008, and 2010–2014.
LN_FIRM	Natural logarithm of the number of business establishments in US states retrieved from the Statistics of U.S. Businesses (SUSB) website available at http://www.census.gov/programs-surveys/susb.html
LITERACY	This variable is the percentage of persons 25 years and over with a bachelor's degree or higher in the US state population. Source: Census Bureau