Voluntary Audits versus Mandatory Audits

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ABSTRACT: Exploiting a natural experiment in which voluntary audits replace mandatory audits for U.K. private companies, we analyze whether imposing audits suppresses valuable information about the types of companies that would voluntarily choose to be audited. We control for the assurance benefits of auditing to isolate the role signaling plays by focusing on companies that are audited under both regimes. These companies experience no change in audit assurance, although they can now reveal for the first time their desire to be audited. We find that these companies attract upgrades to their credit ratings because they send a positive signal by submitting to an audit when this is no longer legally required. In contrast, companies that dispense with being audited suffer downgrades to their ratings because avoiding an audit sends a negative signal and removes its assurance value.

Keywords: voluntary audits; mandatory audits; credit ratings.

Data Availability: All data are available from public sources.

I. INTRODUCTION

Requiring independent audits is an important policy mechanism available to governments to regulate the supply of reliable accounting information to investors (Barton and Waymire 2004). Information is a public good and, as with all public goods, there is a concern that too little would be supplied under private contracting.[1] According to this market

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[1] Firms operating in an unregulated environment, understandably, focus on their own costs and benefits without considering the socially optimal level of disclosure. Zingales (2009) stresses that firms disclose sub-optimally because firm-level benefits from disclosure are smaller than the society-level benefits. Given that the private and social values of information can diverge, regulation is frequently justified on the grounds that this induces positive externalities (e.g., Dye 1990; Admati and Pfleiderer 2000; Lambert et al. 2007). However, other theory implies that, rather than maximizing social welfare, mandating disclosure of accounting information can generate negative externalities (e.g., Fishman and Hagerty 1989). Leuz and Wysocki (2008) review this literature.

failure argument, companies should be compelled to have their financial statements audited to ensure that outsiders have access to reliable accounting information. In the other direction, requiring audits suppresses the signal that is conveyed when companies exercise their discretion in choosing whether to be audited (e.g., Watts 1977; Chow 1982; Melumad and Thoman 1990; Sunder 2003). We provide empirical evidence on the merits of these competing arguments by analyzing economic outcomes for private companies stemming from a regime switch from mandatory to voluntary audits.

Prior research seldom examines the situation in which audits are purchased voluntarily, although there are exceptions. Blackwell et al. (1998) find that debt pricing is cheaper for private companies whose financial statements are voluntarily audited rather than unaudited. Similarly, there is evidence that privately held companies have their financial statements audited in order to obtain loans (Allee and Yohn 2009). Importantly, these prior studies compare voluntarily audited companies with unaudited companies. To our knowledge, ours is the first study to directly compare voluntary audits with mandatory audits. In a natural experiment, we analyze a regime change from mandatory to voluntary auditing for privately held companies in the United Kingdom. The purpose of our analysis is to isolate whether this regime change permitted firms to signal new information about their types.

Requiring audits makes it more difficult for companies to convey their types through their decision on whether to appoint an auditor. In Melumad and Thoman's (1990) theory, companies pursuing loans choose whether to submit to an audit. The economy in their set-up is composed of companies with unobservable risk types. Lenders then draw rational inferences about a company's type, conditional on its decision of whether to purchase an audit. Melumad and Thoman (1990) demonstrate that some companies elect to hire auditors because lenders conclude that only the high-risk types of borrowers would choose not to be audited. In other words, the decision to hire an auditor is informative, as it indicates that the company is more likely to be a low-risk type. In contrast, avoiding an audit divulges to lenders that the company is more likely to be a high-risk type. In their stylized model, costly auditing permits a separating equilibrium in which only the low-risk types of borrowers appoint auditors. It follows that the company's decision to appoint (not appoint) an auditor sends an incrementally positive (negative) signal about its credit risk, holding constant any assurance benefits provided by an audit.

External audits are imposed on all publicly traded companies in the U.S. and the U.K., although these countries differ in their policies toward private companies. In contrast to the U.S., where audits of private companies remain voluntary, they were mandatory for all U.K. private companies until 1994, at which point they became voluntary for very small private companies. Audits subsequently became voluntary in the U.K. for larger private companies in 2004. We exploit the more recent change in the audit requirement that permits larger private companies to opt out of an audit for the first time in 2004. For each company in our sample, audits were mandatory in 2003 and voluntary afterward.

Our primary contribution, made possible by the U.K. regime change, is to isolate whether the switch to voluntary auditing in 2004 yields incrementally valuable information about the company's type beyond what could already be surmised during the mandatory regime. We focus on the inferences drawn by a credit rating agency because their ratings are a major source of information for lenders. Ratings are assigned to virtually all private companies in the U.K. by Qui Credit Assessment Limited.[2] We expect that the credit rating agency partly infers the company's type by observing its choice of whether to be audited.

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[2] Later, we outline prior research validating that Qui's ratings reliably capture borrower credit quality.

To gauge whether voluntary audits reveal new information about borrowers' types, we examine the changes in credit ratings after the transition from mandatory to voluntary audits. This unique setting enables us to distinguish between the assurance and signaling benefits of an audit. In particular, when a company voluntarily chooses to remain audited, there is no change in audit assurance because the company is audited under both the mandatory and voluntary regimes. However, such a company transmits a positive signal when it chooses to be audited voluntarily. Consequently, to the extent that a voluntary audit communicates the company's low-risk type, we expect to observe an increase in credit ratings for the companies that elect to remain audited.

We stress that our empirical predictions do not rest on the highly stylized modeling in Melumad and Thoman (1990), where every audited (unaudited) company is a good (bad) type. Rather, our predictions are grounded in the more general premise that, everything else constant, the low-risk (high-risk) types have stronger (weaker) incentives to be audited (Titman and Trueman 1986). Accordingly, the decision on whether to be audited sends a signal about the *average* type of company making that choice, although the signal is not necessarily indicative of every company's true type. For example, a low-risk type may abandon an audit when this becomes permissible if it does not require additional financing, which more credible financial statements can facilitate.[3] In this situation, the company could rationally conclude that the cost of the audit outweighs its benefits. The upshot is that the decision on whether to be voluntarily audited becomes an informative, albeit noisy, indicator of the company's true type when auditing is no longer mandatory.[4]

In regressions that control for company characteristics and macroeconomic conditions, we provide strong, robust evidence that credit ratings rise for companies that continue being audited during the first year of the voluntary regime. We interpret this evidence as implying that these companies enjoy ratings upgrades because their decision to remain audited conveys an incrementally positive signal about their credit risk. The level of audit assurance appears stable for these companies during the transition from mandatory to voluntary audits, insofar as we find that their audit fees and auditor choices do not change following the regime switch.

We also examine the impact of the regime switch on credit ratings for the companies that choose to opt out of the audit. For these companies, the decision to abandon the audit not only communicates that the company is more likely to be a high-risk type of borrower, but also sacrifices the assurance that had been provided under the mandatory regime. For both reasons, we expect that ratings decline for companies that dispense with an audit when this becomes permissible. Consistent with this prediction, we find that credit ratings drop when companies

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[3] Although some research indicates that banks often will only grant loans to private companies that supply audited financial statements (e.g., Allee and Yohn 2009), banks also rely heavily on their debt monitoring and customer relationship activities to collect information on borrowers (e.g., Diamond 1984; Fama 1985; Petersen and Rajan 1994; Berger and Udell 1995). Reinforcing that signaling remains imperfect even under the voluntary regime, some low-risk types may abandon an audit when this becomes permissible in 2004 if, for example, they can borrow without submitting to an audit because the bank protects its interests through direct monitoring (Diamond 1991; Rajan 1992; Rajan and Winton 1995; Ang et al. 2000; Houston and James 2001). This is another situation in which a low-risk type of company rationally elects to avoid an audit after evaluating the tradeoffs.

[4] Companies would choose to be audited when the economic benefits of continuing to subject their financial statements to an external audit exceed the cost. Importantly, the signaling motive is only one possible reason for a company's choice on whether to remain audited when this is no longer required by law. For example, a company may choose to remain audited if it sufficiently values the business advice provided by the auditor (e.g., Chow 1982). Similarly, supplying audited financial statements may be a condition for a private company to secure debt financing. Accordingly, the company's decision to be voluntarily audited amounts to a noisy, rather than a perfect, signal of its underlying type.

abandon the audit, which conveys a negative signal about their type and reduces financial reporting credibility; i.e., both signaling and the drop in assurance are responsible for their ratings falling.

Our evidence on credit ratings is summarized as follows. During the mandatory regime, the companies that later choose to be audited receive credit ratings that are approximately eight percentage points higher than companies that choose not to be audited. After auditing becomes voluntary, the companies that remain audited receive a further two-point boost to their ratings, while unaudited companies suffer a four-point reduction. Consequently, the spread in credit ratings widens following the switch away from mandatory audits because the ratings agency is better able to distinguish borrowers' types. During the voluntary regime, the audited companies receive credit ratings that are 14 points higher than the unaudited companies. This is comprised of the initial spread during the mandatory regime (i.e., eight points) plus the increase in the spread when auditing becomes voluntary (i.e., six points). To provide some perspective on the materiality of these results, the mean (median) credit rating over our sample period is 67 (69) points on a 100-point scale.[5] Collectively, our evidence suggests that the switch to voluntary auditing had a first-order economic impact on credit ratings.

Our study is the first to isolate that the voluntary purchase of an audit generates new information about the company's type, holding constant the assurance value that stems from having the financial statements audited. Extant evidence indicates that audited companies enjoy less costly debt financing and less credit rationing than do companies that are not audited (Blackwell et al. 1998; Allee and Yohn 2009). However, this does not resolve whether voluntary audits facilitate signaling, because the benefits from being audited rather than unaudited are almost certainly partly attributable to the value of audit assurance. Accordingly, research to date does not fully disentangle whether the benefits of voluntary audits stem from a positive signal or from audit assurance.[6] In contrast, we identify the signaling value of voluntary audits by exploiting an experimental setting in which the regulatory regime switches from mandatory to voluntary auditing. Specifically, the companies that voluntarily choose to continue with the audit undergo no change in audit assurance because they are audited in both regimes, although these companies send a positive signal under the voluntary regime by choosing to retain their auditor.

Our analysis provides empirical support for the argument that the mandatory requirement suppresses information that is conveyed when companies are allowed to choose whether to be audited (Melumad and Thoman 1990; Sunder 2003). Moreover, additional tests indicate that the opt-out companies were only passively complying with the audit requirement—evident in their attempts to reduce costs through auditor choice and fees—under the mandatory regime. In other words, it is difficult to force companies to privately contract for stringent audits if they would choose not to be audited voluntarily. However, we caution that our research on private companies cannot contribute valid insights on the relative merits of voluntary and mandatory audits for public companies.

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[5] In another way to gauge economic importance, we evaluate the influence of the upgrade (downgrade) of two (four) points for companies that keep (abandon) the audit on the credit rating agency's assignment of companies to five broad risk categories. We find that 13.7 percent of the companies in our sample move up a major category after attracting two additional points by remaining audited in 2004. In contrast, 19.2 percent move down to a lower category after losing four points by opting out of an audit when this becomes permissible.

[6] Extant evidence from the audit fee literature suggests that audits by the Big 4 firms are more valuable than those provided by non-Big 4 firms, although past studies have not attempted to disentangle whether this is attributable to a positive signal from hiring a more costly Big 4 audit firm. For example, the fee premiums earned by Big 4 firms might reflect greater audit assurance rather than a positive signal.

Section II outlines prior theory and evidence in developing our hypotheses. Section III covers our research design, while Section IV describes our results. Section V concludes.

II. HYPOTHESES DEVELOPMENT

The objective of this study is to shed light on the importance of different legal requirements governing audits. The rationale behind regulators imposing mandatory audits is that companies have insufficient private incentives to voluntarily provide reliable financial information.[7] Reflecting that mandatory auditing may be socially optimal, theory implies that information underproduction can arise because of positive externalities (e.g., Dye 1990; Admati and Pfleiderer 2000) and because financial statements constitute a public good that will be under-supplied in a free market (e.g., Gonedes and Dopuch 1974; Beaver 1998). The arguments in favor of regulation rather than the free market were influential in the U.K., where private companies are required to make their financial statements publicly available and, until recently, those statements also had to be independently audited (Aranya 1974; Dedman and Lennox 2009). On the other hand, it remains unclear whether private incentives for the demand and supply of audits are insufficient, particularly as private markets for other forms of certification services are ubiquitous in the economy (Jamal and Sunder 2008). Moreover, voluntarily submitting to an audit enables companies to credibly communicate their types, whereas mandatory audits deprive investors of this signal.

Private companies provide an opportune setting for analyzing the assurance and signaling benefits of auditing, given that their information structure is typically poor relative to public companies. For example, Brav (2009) holds that debt contracting is more sensitive to information for private companies than for their public counterparts. Reinforcing that this testing ground suits our inquiry, Fenn (2000) and Santos (2006) report that lenders demand higher yields on private companies' debt to compensate for the worse information asymmetry that they suffer.[8] This evidence squares with Graham et al.'s (2005) finding from a survey of chief financial officers that—compared with public companies—private companies are more inclined to manipulate earnings to preserve their credit ratings and to avoid violating bond covenants, rendering their financial statements less informative for the debt contracting process. It follows that the links between auditing and credit ratings are likely to be strong in private companies, increasing the power of our tests.

Analyzing credit ratings maps into our research questions that focus on the benefits of auditing under the mandatory and voluntary regimes.[9] Prior research shows that perceptions of information risk affect credit ratings and that reliable accounting numbers facilitate debt contracting (e.g., Watts 1977; Smith and Warner 1979; Leftwich 1983; Francis et al. 2005; Yu 2005). This is particularly

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[7] Importantly, Dye (1990) and Leftwich (2004), among others, stress that advocates for mandatory financial reporting do not argue that firms will supply no information unless compelled or that managers' incentives are irrelevant to reporting decisions. Indeed, the reduction in agency (Jensen and Meckling 1976), information (Botosan 1997), and liquidity (Welker 1995) costs can convince managers to divulge high-quality information voluntarily.

[8] Similarly, Pagano et al. (1998) report that firms' borrowing costs fall after going public, which they attribute to the greater accounting transparency that ensues. Indeed, Givoly et al. (2010) report that public firms have more conservative earnings than private firms. Prior research implies that debt contracting is partly responsible for the demand for conservative financial reporting (e.g., Leftwich 1983; Holthausen and Watts 2001).

[9] The demand for voluntary audits predates regulations requiring audits. Companies have been voluntarily appointing independent auditors since at least the 13th century (Watts and Zimmerman 1983), which implies that the private benefits of auditing often exceed their costs. Benston (1969) reports that 82 percent of U.S. public companies purchased audits shortly before the Securities Acts of 1933 and 1934, which introduced mandatory auditing of financial statements. Chow (1982) examines the voluntary audit decision made by large U.S. public companies in 1926.

relevant to U.K. private companies that rely heavily on trade credit and other forms of loan financing (Brav 2009). In fact, prior research finds that companies relax accounting-based covenants by managing their earnings through accounting changes (Sweeney 1994) and discretionary accruals (DeFond and Jiambalvo 1994). Moreover, recent research uses credit ratings to measure the perceived benefits of Big 4 versus non-Big 4 audits (e.g., Mansi et al. 2004), including in private companies (e.g., Fortin and Pittman 2007). Another upside to analyzing credit ratings is that the data are publicly available even for companies that have no debt in their capital structures.

In our two hypotheses, we consider how companies' credit ratings change after auditing is no longer mandatory. We expect that the switch from mandatory to voluntary audits allows companies to better reveal their types through their choice on whether to subject their financial statements to an external audit. Our identification strategy exploits the U.K. private company setting in order to provide insight on whether companies experience an increase in their credit ratings when they elect to remain audited under the voluntary regime. In the absence of an audit requirement, a company can incur the cost of engaging an auditor to signal to outsiders that it is more likely to be a low-risk type.[10] More formally, Melumad and Thoman's (1990) theory implies that the decision to hire an auditor conveys useful information about the company's type when audits are voluntary. A mandatory audit regime prevents outsiders from learning more about a company's type by observing its decision on whether to have an audit. Requiring audits prevents companies from exploiting this signaling mechanism, although they can partly reveal their type through auditor choice even when auditing is mandatory.

Under the voluntary regime, a company that continues to pay the cost of the audit is able to signal that it is more likely to be a low-risk type. In our sample, the audit fee is a material expense relative to the profits that the companies generate.[11] Consequently, the decision to bear the cost of an audit enables the low-risk types to better differentiate themselves from the high-risk types. Importantly, the assurance value of an audit remains constant for companies that are audited in *both* the mandatory and voluntary regimes. Therefore, any change in the credit rating caused by the switch from mandatory to voluntary audits will be attributable to a signaling effect rather than a change in audit assurance. Given the positive signal stemming from the decision to remain audited, we predict that companies enjoy an upgrade to their ratings if they choose not to opt out:

H1: Credit ratings rise for companies that switch from mandatory audits to voluntary audits.

For two reasons, we expect that credit ratings drop for companies that choose to stop being audited. First, their decision to opt out conveys a negative message because outsiders are able to more clearly distinguish between them and the types of companies that choose to be audited voluntarily. Second, by foregoing the audit, these companies lose any assurance benefits that existed when they were audited involuntarily during the mandatory regime. These dynamics are behind our second prediction:

H2: Credit ratings fall for companies that switch from mandatory audits to no audits.

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[10] However, we concede that another perspective holds that high-risk companies may submit to an audit to signal their commitment to refrain from diverting corporate resources from lenders (see discussion in Fan and Wong [2005]).

[11] The median company in our sample pays audit fees of £4,000 and earns operating profits of £78,000 during the final year of the mandatory regime. We expect that this audit cost will dissuade some companies, particularly the high-risk types, from continuing with the audit in 2004.

III. RESEARCH DESIGN

Transition from the Mandatory to the Voluntary Regime

We test the predictions in H1 and H2 by estimating a model that explains credit ratings in the final year of the mandatory regime (2003) and the initial year of the voluntary regime (2004) for the companies that keep the audit and the companies that opt out of the audit:[12]

$$RATING_{it} = \mu_0 + \mu_1 OPTOUT_i + \mu_2 OPTOUT_i \times SWITCH_t + \mu_3 SWITCH_t + \mu_4 X_{it} + w_{it}, \quad (1)$$

where:

$RATING_{it}$ = company i's credit rating in year t;

$OPTOUT_i$ = 1 if company i chooses not to be audited, and 0 if company i chooses to be audited;

$SWITCH_t$ = 1 if audits are voluntary ($t = 2004$), and 0 if audits are mandatory ($t = 2003$); and

X_{it} = a vector of time-varying control variables for company i.

In this set-up, $OPTOUT_i$ takes the value 1 in both 2003 and 2004 if the company opts out of the audit once it ceases to be mandatory; $OPTOUT_i$ equals 0 in both years if the company keeps the audit. (There is no time subscript, t, on the $OPTOUT_i$ variable because its values have the same coding in each year.) The effect of the switch from mandatory to voluntary audits is captured through the time-varying regime switch variable, $SWITCH_t$, which equals 1 for every company in 2004, and 0 for every company in 2003.

To clarify the intuition for the coefficients in Equation (1), we illustrate the model's predictions for the two types of company in each regime. For companies that keep the audit, credit ratings are determined by setting $OPTOUT_i$ equal to 0 in Equation (1):

$$RATING_{it} = \mu_0 + \mu_3 SWITCH_t + \mu_4 X_{it} + w_{it}.$$

We expect under H1 that credit ratings will rise for companies that remain audited when this becomes voluntary in 2004 because electing to have an audit conveys incremental information about the company's lower credit risk. Although these companies experience no change in audit assurance, their decision to be audited voluntarily conveys a positive signal about their risk types when audits are no longer compulsory. Consequently, we predict that $\mu_3 > 0$.

For companies that opt out of the audit, credit ratings are determined by setting $OPTOUT_i$ equal to 1 in Equation (1):

$$RATING_{it} = \mu_0 + \mu_1 + (\mu_2 + \mu_3)SWITCH_t + \mu_4 X_{it} + w_{it}.$$

Abandoning an audit indicates both that the company is of greater credit risk and also removes the assurance value that accompanies an audit. Both effects are expected to lead to lower credit ratings for the companies that opt out of the audit in 2004. Therefore, we predict under H2 that $\mu_2 + \mu_3 < 0$. In summary, we predict that $\mu_3 > 0$ (H1) and $\mu_2 + \mu_3 < 0$ (H2) in Equation (1).

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[12] We focus on the regime switch in 2004 rather than the one in 1994 because by 2004, the credit rating agency whose ratings we analyze had accumulated ten years of experience in assessing the credit risks of audited and unaudited companies. In any event, we cannot examine the effect of the 1994 change in regulation because our data source provides financial statement information for the most recent ten years only.

Control Variables

Our set of control variables (X_{it}) follows recent research on the determinants of credit ratings (e.g., Ashbaugh-Skaife et al. 2006; Fortin and Pittman 2007):

AGE_{it} = company i's age in year t;
LTS_{it} = log of total sales;
LTA_{it} = log of total assets;
$INTCOV_{it}$ = interest expense divided by earnings before interest and taxation. The $INTCOV_{it}$ ratio is capped at an upper bound of 2.00 to handle outliers, and we assign a value of 2.00 to the $INTCOV_{it}$ ratio if earnings are non-positive;[13]
$LIQUIDITY_{it}$ = (current assets − inventory) divided by current liabilities; and
$LEVERAGE_{it}$ = total liabilities divided by total assets.

Following prior research, we expect that credit ratings are higher for companies that are older (AGE_{it}), larger (LTS_{it} and LTA_{it}), have greater interest coverage ($INTCOV_{it}$), higher liquidity ($LIQUIDITY_{it}$), and lower leverage ($LEVERAGE_{it}$).

Sample Formation and Description

The U.K. has long diverged from the U.S. by requiring private companies to have their financial statements audited.[14] However, in an effort to reduce the burden of regulation, the U.K. made it permissible after 1994 for private companies to avoid having an audit if their sales did not exceed £1m and their total assets did not exceed £1.4m. A subsequent amendment to the Companies Act relaxed these size thresholds, allowing more private companies to qualify for the audit exemption. Specifically, companies with fiscal years ending after January 30, 2004, were allowed to avoid an audit if their sales did not exceed £5.6m and total assets did not exceed £2.8m. This shift in exemption eligibility thresholds enables us to assemble a sample of companies that were affected by the regime switch in 2004.

We compile the sample from the Financial Analysis Made Easy (FAME) database. All public companies must be audited, regardless of their size, so we require that each sample company is private. For companies belonging to a group, auditor hiring decisions are routinely made by the ultimate owner rather than at the company level, so we impose the restriction that the company is independent; i.e., it does not belong to a corporate group. To ensure that each private company was required to undergo an audit prior to January 30, 2004, we select companies for which sales ≥ £1m and total assets ≥ £1.4m in 2003. Next, we confine the sample to companies that qualified for the audit exemption after January 30, 2004 (i.e., sales ≤ £5.6m and total assets ≤ £2.8m). Certain types of regulated companies—insurance companies, investment advisors, mortgage arrangers, trade unions, and employers' associations—are required to have an audit even if they fall within these size thresholds, so we exclude these companies from the sample. Finally, we require that

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[13] In specifying *INTCOV*, we follow prior research that caps variables based on accounting ratios that can suffer from small denominators or negative values for earnings (e.g., Dechow 1994; Petersen and Rajan 1994; Efendi et al. 2007). Although companies that generate more cash from their operations are in a better position to service their debts, data constraints prevent us from analyzing whether our core results are sensitive to replacing this income-based interest coverage measure with one based on cash flows from operations. However, prior research examining the determinants of credit ratings, including for private companies (e.g., Petersen and Rajan 1994; Fortin and Pittman 2007), routinely controls for interest coverage with an income-based measure. Our regressions control for the company's cash holdings using the *LIQUIDITY* variable.

[14] More generally, this setting is unique in other ways, including that both private and public companies must publicly file annual financial statements that follow the same accounting standards in order to comply with U.K. disclosure regulations. Similarly, both types of companies are subject to the same tax laws in the U.K.

financial statement data are available for both the year prior to January 30, 2004, and the next year. After applying these data screens, we are left with 5,139 unique companies. By design, each company in the sample was required to have an audit in 2003, but not in 2004. There are two observations per company, with the first pertaining to the final year of the mandatory audit regime (2003) and the second to the initial year of the voluntary regime (2004). Of the 5,139 companies, 3,440 (67 percent) remain audited in the first year of the voluntary regime, while 1,699 (33 percent) choose to become unaudited once this option becomes available.

Descriptive Statistics

Table 1 documents the industry composition of the sample companies. There are 1,414 companies (26.3 percent) operating in the business services sector and 1,221 (23 percent) in the wholesale and retail trade sector. Other industries that are well represented include construction (748 companies) and manufacturing (719 companies). Our research design controls for differences between industries by specifying indicator variables for each industry sector.

The credit rating scores issued by Qui Credit Ltd. are provided in the FAME database. Ratings are on a numerical scale between 0 and 100 that quantifies the agency's assessment of the likelihood of corporate failure within the next 12 months. The $RATING_{it}$ variable corresponds to the company's credit score, with higher ratings representing a lower perceived risk of financial failure.

Table 2 presents descriptive statistics for 2003 (the final year of the mandatory regime) and 2004 (the first year of the voluntary regime). The motivation for this analysis is to investigate whether there are important changes in the macroeconomic environment or other time-varying factors that could confound the comparison of credit ratings in the two regimes. The first row of Table 2 shows that the mean credit rating increases from 64.51 in 2003 to 68.37 in 2004. This ratings improvement is highly significant ($p < 0.01$) and is consistent with a general improvement in the economic environment between 2003 and 2004. Further, we find a significant improvement in liquidity between 2003 and 2004 ($p < 0.01$).

Given the evidence in Table 2 that economic conditions improved between 2003 and 2004, we control for the resulting increase in credit ratings by subtracting the sample mean values of credit ratings in each year. For example, we measure the deviation between company i's credit rating in 2003 and the mean rating given to every other company in 2003 ($RATING_{i2003} - RATING_{.2003}$).

TABLE 1

Industry Composition of the Sample Companies

U.K. SIC Code	Industry	Companies
0001–0999	Agriculture, hunting, forestry, and fishing	79
1000–1499	Mining	12
1500–3999	Manufacturing	719
4000–4499	Electricity, gas, and water supply	3
4500–4999	Construction	748
5000–5499	Wholesale and retail trade	1,221
5500–5999	Hotels and restaurants	148
6000–6499	Transport, storage, and communication	338
7000–7499	Business services	1,414
7500–7999	Public services and defense	3
8000–9999	Other service activities	454
	Total	5,139

TABLE 2

Variable Means during the Final Year of the Mandatory Audit Regime (2003) and the First Year of the Voluntary Audit Regime (2004)

	Mandatory Audit Regime ($SWITCH_t = 0$)		Voluntary Audit Regime ($SWITCH_t = 1$)		t-statistics for Differences in Means
	Observations	Mean	Observations	Mean	
$RATING_{it}$	5,139	64.51	5,139	68.37	9.32***
$INTCOV_{it}$	5,139	0.48	5,139	0.46	−1.03
LTS_{it}	5,139	7.36	5,139	7.33	−1.31
LTA_{it}	5,139	6.82	5,139	6.84	1.07
$LIQUIDITY_{it}$	5,139	1.48	5,139	1.58	2.73***
$LEVERAGE_{it}$	5,139	0.70	5,139	0.69	−0.52

*, **, *** Statistically significant at the 10 percent, 5 percent, and 1 percent levels, respectively (two-tailed).
The $LIQUIDITY_{it}$ and $LEVERAGE_{it}$ variables are winsorized because otherwise they would suffer from outliers. The other variables do not need to be winsorized as they do not suffer from outliers.

Variable Definitions:
$RATING_{it}$ = the credit score (from 1 to 100, where a higher score implies a better rating) for company i in year t;
$SWITCH_t$ = 1 if audits are voluntary (2004), and 0 if audits are mandatory (2003);
$INTCOV_{it}$ = interest expense divided by earnings before interest and taxation (the $INTCOV_{it}$ ratio is capped at 2.00, and we assign a value of 2.00 if earnings before interest and taxation is negative);
LTS_{it} = log of total sales (£000);
LTA_{it} = log of total assets (£000);
$LIQUIDITY_{it}$ = quick ratio ((current assets − inventory)/current liabilities);
$LEVERAGE_{it}$ = total liabilities divided by total assets;
LAF_{it} = log of audit fees (£000); and
$BIG4_{it}$ = 1 if the company is audited by a Big 4 audit firm, 0 otherwise.

We similarly measure the cross-sectional variation in credit ratings during 2004 using the variable $RATING_{i2004} − RATING_{.2004}$.[15] Likewise, we purge all control variables of any yearly effects ($X_{it} − X_{.t}$), such that the modified credit ratings model in Equation (1) becomes:

$$RATING_{it} - RATING_{.t} = \mu_0 + \mu_1 OPTOUT_i + \mu_2 OPTOUT_i \times SWITCH_t + \mu_3 SWITCH_t$$
$$+ \mu_4(AGE_{it} - AGE_{i.}) + \mu_5(LTS_{it} - LTS_{i.}) + \mu_6(LTA_{it} - LTA_{i.})$$
$$+ \mu_7(INTCOV_{it} - INTCOV_{i.}) + \mu_8(LIQUIDITY_{it} - LIQUIDITY_{i.})$$
$$+ \mu_9(LEVERAGE_{it} - LEVERAGE_{i.}) + w_{it}. \tag{1'}$$

Table 3 presents a correlation matrix for the variables in our study. Consistent with past research, we find that credit ratings are significantly higher for companies that are older, larger, and have better liquidity, whereas they are lower for companies that have worse interest coverage and

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[15] In our study, H1 is more important than H2 because H1 involves the companies for which we are able to isolate the role that signaling plays in shaping credit ratings, whereas H2 involves the companies for which we cannot isolate the signaling effect from the assurance effect. Given that H1 is relatively more important, we take a conservative approach in our tests by adjusting credit ratings downward in 2004 to adjust for the improvement in the macro-economy. This adjustment ensures that the rise in credit ratings for companies that continue being audited does not stem from an improvement in the macro-economy. Conversely, we concede that this adjustment makes our tests of H2 less conservative because the unadjusted credit ratings fall by less than the adjusted ratings.

TABLE 3

Correlation Matrix
(n = 10,278)

	1	2	3	4	5	6	7	8	9
1. $RATING_{it}$	1.000								
2. $OPTOUT_i$	**−0.270**	1.000							
3. $SWITCH_t$	**0.092**	0.000	1.000						
4. AGE_{it}	**0.265**	**−0.071**	**0.031**	1.000					
5. $INTCOV_{it}$	**−0.321**	**−0.040**	−0.010	**0.039**	1.000				
6. LTS_{it}	**0.029**	**−0.068**	−0.013	**−0.081**	**−0.084**	1.000			
7. LTA_{it}	**0.234**	**−0.180**	0.011	**0.212**	0.046	−0.045	1.000		
8. $LIQUIDITY_{it}$	**0.156**	−0.025	**0.027**	**0.096**	**−0.055**	**−0.314**	**0.131**	1.000	
9. $LEVERAGE_{it}$	**−0.269**	**0.057**	−0.005	**−0.180**	**0.116**	**0.113**	**−0.346**	**−0.247**	1.000

The correlations shown in bold are statistically significant at the 1 percent level.
The $LIQUIDITY_{it}$ and $LEVERAGE_{it}$ variables are winsorized because otherwise they would suffer from outliers. The other variables do not need to be winsorized, as they do not suffer from outliers.

Variable Definitions:
$RATING_{it}$ = the credit rating score (from 1 to 100, where a higher score implies a better rating) for company i in year t;
$OPTOUT_i$ = 1 if company i chooses to opt out of the audit, and 0 if company i continues to be audited;
$SWITCH_t$ = 1 if audits are voluntary (2004), and 0 if audits are mandatory (2003);
AGE_{it} = the age of company i in year t;
$INTCOV_{it}$ = interest expense divided by earnings before interest and taxation (the $INTCOV_{it}$ ratio is capped at 2.00, and we assign a value of 2.00 if earnings before interest and taxation is negative);
LTS_{it} = log of total sales (£000);
LTA_{it} = log of total assets (£000);
$LIQUIDITY_{it}$ = quick ratio ((current assets − inventory)/current liabilities); and
$LEVERAGE_{it}$ = total liabilities divided by total assets.

higher leverage. This supports the evidence in Doumpos and Pasiouris (2005) that Qui's credit ratings are accurate indicators of default risk. The other correlations are also as expected; e.g., older companies tend to have higher leverage because they are better known by lenders.

IV. RESULTS

Univariate Evidence

Table 4, Panel A, reports descriptive statistics for 2003 and 2004, focusing on the 3,440 companies that remain audited following the regime switch. The first three rows reveal that neither the audit fees paid by these companies nor their choice of audit firm changed significantly, implying that audit assurance was stable between 2003 and 2004 for the companies that kept the audit. More importantly, Panel A shows that credit ratings are 5.00 points above the mean in 2004, but only 2.97 points above the mean in 2003. In short, the companies that voluntarily continued with an audit enjoyed an average upgrade of two points to their credit ratings, consistent with H1. Panel B reports descriptive statistics for the 1,699 companies that cease to be audited following the regime switch. We find a dramatic fall in credit ratings between 2003 and 2004 for these companies. Their mean credit rating was 6.01 points below the mean in 2003, whereas it was 10.13 points below the mean in 2004. Accordingly, consistent with H2, these companies suffered a relative downgrade of just over four points in their credit ratings.

TABLE 4

Descriptive Statistics after Partitioning the Sample by the Company's Decision on Whether to be Audited and the Prevailing Audit Regime
(Mandatory Audits in 2003, Voluntary Audits in 2004)

Panel A: Companies that Keep the Audit When Auditing Becomes Voluntary ($OPTOUT_i = 0$)

	Final Year of the Mandatory Audit Regime ($SWITCH_t = 0$)		First Year of the Voluntary Audit Regime ($SWITCH_t = 1$)		t-statistics for Differences in Means
	Observations	Mean	Observations	Mean	
$BIG4_{it}$	3,440	0.08	3,440	0.07	−0.92
$Audit\ fees_{it}$ (£000)	3,440	5.68	3,440	5.80	1.09
LAF_{it}	3,440	1.52	3,440	1.53	1.17
$RATING_{it} - RATING_{.t}$	3,440	2.97	3,440	5.00	4.02***
$AGE_{it} - AGE_{.t}$	3,440	0.82	3,440	0.82	0.00
$INTCOV_{it} - INTCOV_{.t}$	3,440	0.03	3,440	0.02	−0.51
$LTS_{it} - LTS_{.t}$	3,440	0.04	3,440	0.05	0.56
$LTA_{it} - LTA_{.t}$	3,440	0.09	3,440	0.10	0.27
$LIQUIDITY_{it} - LIQUIDITY_{.t}$	3,440	0.03	3,440	0.04	0.04
$LEVERAGE_{it} - LEVERAGE_{.t}$	3,440	−0.02	3,440	−0.02	−0.41

Panel B: Companies that Opt Out of the Audit When Auditing Becomes Voluntary ($OPTOUT_i = 1$)

	Final Year of the Mandatory Audit Regime ($SWITCH_t = 0$)		First Year of the Voluntary Audit Regime ($SWITCH_t = 1$)		t-statistics for Differences in Means
	Observations	Mean	Observations	Mean	
$RATING_{it} - RATING_{.t}$	1,699	−6.01	1,699	−10.13	−6.49***
$AGE_{it} - AGE_{.t}$	1,699	−1.67	1,699	−1.67	0.00
$INTCOV_{it} - INTCOV_{.t}$	1,699	−0.05	1,699	−0.03	0.77
$LTS_{it} - LTS_{.t}$	1,699	−0.08	1,699	−0.11	0.90
$LTA_{it} - LTA_{.t}$	1,699	−0.19	1,699	−0.20	0.36
$LIQUIDITY_{it} - LIQUIDITY_{.t}$	1,699	−0.07	1,699	−0.07	0.05
$LEVERAGE_{it} - LEVERAGE_{.t}$	1,699	0.04	1,699	0.05	−0.49

Panel C: The Final Year of the Mandatory Audit Regime ($SWITCH_{.t} = 0$)

	Companies That Keep the Audit When Auditing Becomes Voluntary ($OPTOUT_i = 0$)		Companies That Opt Out of the Audit When Auditing Becomes Voluntary ($OPTOUT_i = 1$)		t-statistics for Differences in Means
	Observations	Mean	Observations	Mean	
$BIG4_{it}$	3,440	0.08	1,699	0.02	−8.16***
$Audit\ fees_{it}$ (£000)	3,440	5.68	1,699	4.27	−11.87***
LAF_{it}	3,440	1.52	1,699	1.26	−13.32***
$RATING_{it}$	3,440	67.48	1,699	58.50	−13.64***
AGE_{it}	3,440	18.81	1,699	16.32	−5.11***

(continued on next page)

TABLE 4 (continued)

	Companies That Keep the Audit When Auditing Becomes Voluntary ($OPTOUT_i = 0$)		Companies That Opt Out of the Audit When Auditing Becomes Voluntary ($OPTOUT_i = 1$)		t-statistics for Differences in Means
	Observations	**Mean**	**Observations**	**Mean**	
$INTCOV_{it}$	3,440	0.50	1,699	0.42	−3.50***
LTS_{it}	3,440	7.40	1,699	7.28	−4.21***
LTA_{it}	3,440	6.91	1,699	6.64	−12.80***
$LIQUIDITY_{it}$	3,440	1.51	1,699	1.41	−1.87*
$LEVERAGE_{it}$	3,440	0.68	1,699	0.74	3.63***

Panel D: The First Year of the Voluntary Audit Regime ($SWITCH_t = 1$)

	Voluntarily Audited Companies ($OPTOUT_i = 0$)		Unaudited Companies ($OPTOUT_i = 1$)		t-statistics for Differences in Means
	Observations	**Mean**	**Observations**	**Mean**	
$RATING_{it}$	3,440	73.38	1,699	58.25	−28.49***
AGE_{it}	3,440	19.81	1,699	17.32	−5.12***
$INTCOV_{it}$	3,440	0.48	1,699	0.43	−2.25***
LTS_{it}	3,440	7.39	1,699	7.23	−5.47***
LTA_{it}	3,440	6.93	1,699	6.64	−13.37***
$LIQUIDITY_{it}$	3,440	1.62	1,699	1.51	−1.78*
$LEVERAGE_{it}$	3,440	0.67	1,699	0.75	4.46***

*, **, *** Statistically significant at the 10 percent, 5 percent, and 1 percent levels, respectively (two-tailed).
The $LIQUIDITY_{it}$ and $LEVERAGE_{it}$ variables are winsorized because otherwise they would suffer from outliers. The other variables do not need to be winsorized, as they do not suffer from outliers.

Variable Definitions:
$OPTOUT_i = 1$ if company i chooses to opt out of the audit, and 0 if company i continues to be audited;
$BIG4_{it} = 1$ if the company is audited by a Big 4 audit firm, 0 otherwise;
$BIG4_{.t}$ = the mean value of $BIG4_{it}$ across all companies in year t;
LAF_{it} = log of audit fees (£000);
$LAF_{.t}$ = the mean value of LAF_{it} across all companies in year t;
$RATING_{it}$ = the credit rating score (from 1 to 100, where a higher score implies a better rating) for company i in year t;
$RATING_{.t}$ = the mean value of $RATING_{it}$ across all companies in year t;
AGE_{it} = the age of company i in year t;
$AGE_{.t}$ = the mean value of AGE_{it} across all companies in year t;
$INTCOV_{it}$ = interest expense divided by earnings before interest and taxation (the $INTCOV_{it}$ ratio is capped at 2.00 and we assign a value of 2.00 if earnings before interest and taxation is negative);
$INTCOV_{.t}$ = the mean value of $INTCOV_{it}$ across all companies in year t;
LTS_{it} = log of total sales (£000);
$LTS_{.t}$ = the mean value of LTS_{it} across all companies in year t;
LTA_{it} = log of total assets (£000);
$LTA_{.t}$ = the mean value of LTA_{it} across all companies in year t;
$LIQUIDITY_{it}$ = quick ratio ((current assets − inventory)/current liabilities);
$LIQUIDITY_{.t}$ = the mean value of $LIQUIDITY_{it}$ across all companies in year t;
$LEVERAGE_{it}$ = total liabilities divided by total assets; and
$LEVERAGE_{.t}$ = the mean value of $LEVERAGE_{it}$ across all companies in year t.

Panel C reports the mean values of each variable during the final year of the mandatory regime. The companies that chose to be audited when audits became voluntary received significantly higher credit ratings during the mandatory regime. The mean rating assigned to these companies was 67.48, as compared to 58.50 for the companies that later opted out; this nine-point difference is highly significant (p < 0.01). Panel D reports the mean values of each variable during the first year of the voluntary audit regime. Interestingly, we find that the spread in credit ratings between the companies that choose to be audited and those that opt out is larger in 2004, when auditing was no longer mandatory. The mean rating for the voluntarily audited companies is 73.38, as compared to 58.25 for the companies that chose not to have their financial statements audited. The difference in the ratings assigned to these two types of companies is more than 15 points during the voluntary regime (73.38 minus 58.25), compared with only nine points in the previous year (67.48 minus 58.50). This corroborates our earlier evidence and the predictions in H1 and H2 on the impact of the regime switch on the spread in credit ratings between the two types of companies.

Regression Results

Table 5 presents the estimation results for Equation (1′). Our first hypothesis is tested using the μ_3 coefficient, which captures the effect of the regime switch on the credit ratings of companies that continue with the audit ($OPTOUT_i = 0$). This coefficient is positive (1.89) and highly significant (p < 0.01) in Model 1. Economically, this implies that credit ratings increased by nearly two points between 2003 and 2004 for the companies that continued to be audited in the voluntary regime. This is consistent with our prediction that the decision to retain an auditor voluntarily conveys a favorable message about the company's credit risk. For these companies, there was apparently no significant change in audit assurance because the companies were audited in both years and their auditor choice and audit fees remained constant. Moreover, these companies did not experience any significant changes in their financial characteristics that might otherwise explain the change in their credit ratings (Table 4). Consistent with H1, the increase in credit ratings suggests that companies transmit a positive signal about their credit risk by voluntarily remaining audited. This is important because it supports the argument that voluntary auditing permits a signaling role that is absent when audits are required by law.

The coefficient on the $OPTOUT_i$ variable gauges the credit rating difference during the final year of the mandatory audit regime ($SWITCH_t = 0$) between companies that subsequently remain audited or opt out. The coefficient on this variable is negative and highly significant ($\mu_1 = -7.47$; p < 0.01) in Model 1. This reinforces the evidence from the univariate tests that opt-out companies were already recognized by the ratings agency as being relatively high-risk companies even before auditing became voluntary. In particular, these companies had credit ratings in 2003 that were nearly eight points lower than the companies that subsequently kept the audit.

The $OPTOUT_i \times SWITCH_t$ coefficient captures the impact of the regime switch on the spread in credit ratings between the two types of company. The coefficient is −5.72 and highly significant (p < 0.01). Therefore, the regime switch is associated with a relative decline of nearly six credit points for opt-out companies relative to the companies that keep the audit. This suggests that the regime switch provided new information to the ratings agency, leading to a larger spread in credit ratings between the two types of companies.

We test H2 by adding the coefficients on $SWITCH_t$ and $OPTOUT_i \times SWITCH_t$. The summation, $\mu_2 + \mu_3$, captures the effect of the regime switch on the credit ratings of companies that opt out of the audit ($OPTOUT_i = 1$). The results indicate that the credit ratings of these companies fall by nearly four points ($-5.72 + 1.83 = -3.83$ in Model 1). This is consistent with the H2 prediction that the ratings agency downgraded these companies both due to the loss of audit assurance and the negative signal stemming from their decision to abandon the audit.

TABLE 5

The Effect of the Switch from Mandatory to Voluntary Audits on Credit Ratings (2003–2004)

$$RATING_{it} - RATING_{.t} = \mu_0 + \mu_1 OPTOUT_i + \mu_2 OPTOUT_i \times SWITCH_t + \mu_3 SWITCH_t$$
$$+ \mu_4(AGE_{it} - AGE_{i.}) + \mu_5(LTS_{it} - LTS_{i.}) + \mu_6(LTA_{it} - LTA_{i.})$$
$$+ \mu_7(INTCOV_{it} - INTCOV_{i.}) + \mu_8(LIQUIDITY_{it} - LIQUIDITY_{i.})$$
$$+ \mu_9(LEVERAGE_{it} - LEVERAGE_{i.}) + w_{it} \qquad (1')$$

	Model 1		Model 2		Model 3		Model 4	
	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat
$OPTOUT_i$	−7.47	−13.15***	−8.98	−14.02***	−7.51	−13.23***	−8.98	−14.02***
$OPTOUT_i \times SWITCH_t$	**−5.72**	**−10.32*****	**−6.15**	**−10.42*****	**−5.77**	**−10.32*****	**−6.15**	**−10.42*****
$SWITCH_t$	**1.89**	**5.83*****	**2.03**	**5.94*****	**1.94**	**5.84*****	**2.03**	**5.94*****
$AGE_{it} - AGE_t$	0.27	20.10***			0.27	19.96***		
$INTCOV_{it} - INTCOV_{.t}$	−9.19	−34.36***			−9.24	−34.23***		
$LTS_{it} - LTS_{.t}$	1.12	4.74***			1.04	4.41***		
$LTA_{it} - LTA_{.t}$	3.06	9.87***			2.96	9.50***		
$LIQUIDITY_{it} - LIQUIDITY_{.t}$	0.81	7.14***			0.82	7.20***		
$LEVERAGE_{it} - LEVERAGE_{.t}$	−5.00	−11.12***			−5.06	−11.19***		
$\mu_3 = 0$	F = 34.04***		F = 35.26***		F = 34.04***		F = 35.26***	
$\mu_2 + \mu_3 = 0$	F = 72.52***		F = 73.35***		F = 72.52***		F = 73.35***	
R^2	30.2%		7.8%		30.2%		7.8%	
Observations	10,278		10,278		10,278		10,278	

*, **, *** Statistically significant at the 10 percent, 5 percent, and 1 percent levels, respectively (two-tailed).
Industry dummy variables are included (see Table 1), but the coefficients and the intercept are not tabulated.
Under H1, $\mu_3 > 0$. Under H2, $\mu_2 + \mu_3 < 0$. Models 1 and 2 are estimated on the full sample of 10,278 observations. Models 3 and 4 are estimated after dropping the 176 companies that change auditor between 2003 and 2004. The t-statistics are reported with standard errors that are adjusted for heteroscedasticity and clustering on each company.
Bold indicates effect of the switch from mandatory to voluntary audits on credit ratings (2003–2004).
The $LIQUIDITY_{it}$ and $LEVERAGE_{it}$ variables are winsorized because otherwise they would suffer from outliers. The other variables do not need to be winsorized, as they do not suffer from outliers.

Variable Definitions:
$RATING_{it}$ = the credit rating score (from 1 to 100, where a higher score implies a better rating) for company i in year t;
$OPTOUT_i$ = 1 if company i chooses to opt out of the audit, and 0 if company i continues to be audited;
$SWITCH_t$ = 1 if audits are voluntary (2004), and 0 if audits are mandatory (2003);
AGE_{it} = the age of company i in year t;
$INTCOV_{it}$ = interest expense divided by earnings before interest and taxation (the $INTCOV_{it}$ ratio is capped at 2.00, and we assign a value of 2.00 if earnings before interest and taxation is negative);
LTS_{it} = log of total sales (£000);
LTA_{it} = log of total assets (£000);
$LIQUIDITY_{it}$ = quick ratio ((current assets − inventory)/current liabilities); and
$LEVERAGE_{it}$ = total liabilities divided by total assets.

Model 2 in Table 5 presents estimation results after dropping the control variables from the regression. The coefficient estimates are very similar to those reported in Model 1. The $OPTOUT_i$ coefficient is −8.98 (compared with −7.47 in Model 1), the $OPTOUT_i \times SWITCH_t$ coefficient is −6.15 (compared with −5.72), while the $SWITCH_t$ coefficient is 2.03 (compared with 1.89). The results for our two hypotheses remain highly significant. Our finding that the results are very similar, regardless of whether we include control variables in the credit ratings model, is comforting, as it suggests that the results are unlikely to be affected by extraneous independent

variables. In other words, when observable measures of financial condition are omitted from the credit ratings model, the results on our treatment variables are virtually identical. It follows that the treatment variables are largely orthogonal to observable proxies for financial distress, mitigating concerns about an omitted variable problem.

Models 3 and 4 present the results for the same specifications after excluding the 176 cases in which companies change auditors between 2003 and 2004. We drop these observations to minimize the possibility that there is a change in audit assurance in this situation. The results are very similar, supporting our conclusion that the change in credit ratings is driven by the signal stemming from the decision to be audited rather than from the company's choice of auditor.[16]

The results for the control variables are generally consistent with prior research that examines the determinants of private company credit ratings (e.g., Fortin and Pittman 2007). In particular, companies have better credit ratings when they are older (AGE_{it}) and larger (LTS_{it}, LTA_{it}). In addition, companies attract worse ratings when they have lower interest coverage ($INTCOV_{it}$), higher leverage ($LEVERAGE_{it}$), and lower liquidity ($LIQUIDITY_{it}$).[17]

Figure 1 summarizes our evidence regarding the impact of the regime switch on credit ratings for the two types of companies. During the mandatory regime, the companies that later chose to be audited received credit ratings that were approximately eight percentage points higher than those that did not. After auditing becomes voluntary, the companies that remain audited receive a further two-point boost to their ratings, while the unaudited companies suffer a four-point penalty. Consequently, the spread in credit ratings widens after the switch away from mandatory audits because the ratings agency is better able to distinguish between the two types of companies. During the voluntary regime, the audited companies receive credit ratings that are 14 points higher than the unaudited companies. This is comprised of the initial spread during the mandatory regime of eight points plus an additional six points when auditing becomes voluntary.

To provide some perspective on the magnitude of these results, we assess whether the upgrade of two points (for companies that keep the audit) and the downgrade of four points (for companies that abandon the audit) are economically material. The credit rating agency uses its scores to assign companies into five categories: (1) "High risk" ($0 \leq$ credit rating ≤ 20); (2) "Caution" ($21 \leq$ credit rating ≤ 40); (3) "Normal" ($41 \leq$ credit rating ≤ 60); (4) "Stable" ($61 \leq$ credit rating ≤ 80); and (5) "Secure" ($81 \leq$ credit rating ≤ 100). Of the 5,139 companies in our sample, we find that 704 (13.7 percent) move up to a higher-rated category by attracting two additional credit points as a result of being voluntarily audited. In the other direction, 989 companies (19.2 percent) move down to a lower category as a result of losing four points due to their decision to opt out of the audit. Accordingly, the decision on whether to undergo an audit changes the credit risk category for nearly one-third of our sample companies (32.9 percent) once auditing becomes voluntary, reflecting its economic importance.

This naturally begs another question: why do companies choose to opt out of the audit, given that there is a large negative impact on their credit ratings? The most likely answer is that the cost of

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[16] Of the 176 auditor changes between 2003 and 2004, seven involve an upgrade from a non-Big 4 auditor to a Big 4 auditor, while 25 are in the opposite direction, from a Big 4 auditor to a non-Big 4 auditor. We find that the regime switch has no significant impact on the likelihood of an auditor upgrade versus the likelihood of a downgrade.

[17] In untabulated tests, we rerun the models in Table 5 after partitioning the sample between high-leverage and low-leverage firms. In the subsample of high-leverage firms, we find strong support for our first hypothesis that credit ratings increase when firms remain audited (i.e., $\mu_3 > 0$). Consistent with H2, we also find that credit ratings fall for high-leverage firms that opt out of the audit, although this result is not statistically significant. In the subsample of low-leverage firms, we find no significant change in credit ratings for firms that continue undergoing an audit (i.e., $\mu_3 = 0$). However, the results strongly support H2, since credit ratings fall significantly for low-leverage firms that opt out of the audit (i.e., $\mu_2 + \mu_3 < 0$).

FIGURE 1

Credit Ratings during the Mandatory and Voluntary Audit Regimes for Companies that are Voluntarily Audited and Companies that are Not Audited
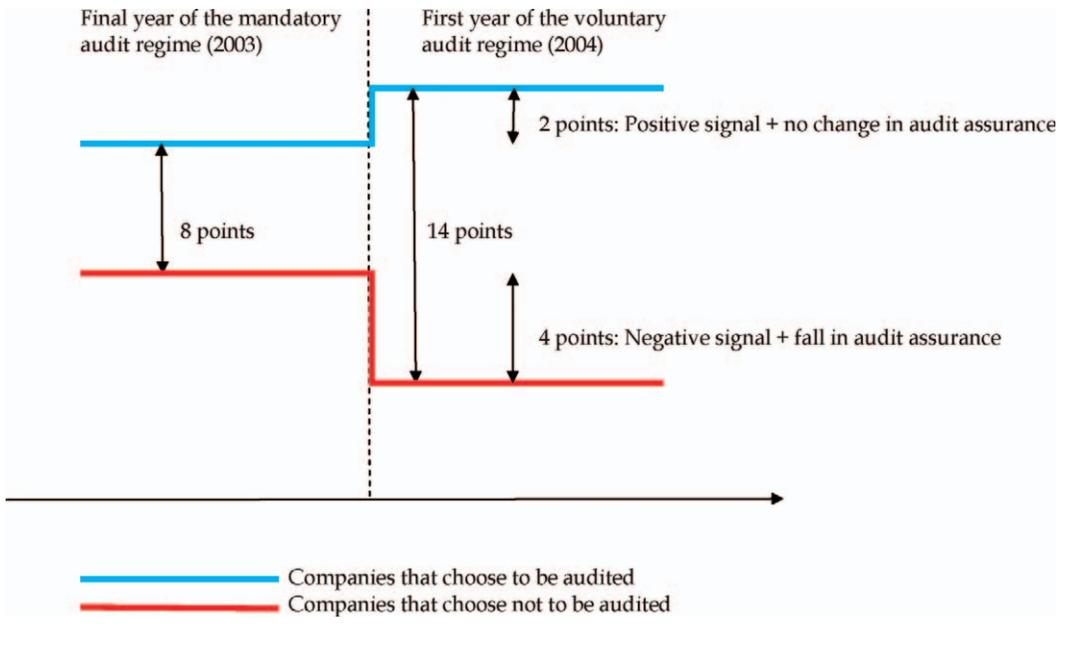
a lower credit rating is insufficient to compensate for the cost of the audit. The mean audit fee in 2003 is just £4,270 for the companies that opt out of having an audit in the following year (Table 4, Panel C). Presumably, these companies perceive that the economic benefits of continuing with the audit are no greater than £4,270 (on average), which explains their decision to stop being audited. The mean audit fee is £5,680 for the companies that continue with the audit (Table 4, Panel C). Apparently, these companies perceive that the economic benefits of continuing to be audited are greater than £5,680 (on average), which is why these companies keep the audit.

Under the assumption that a lower cost of borrowing is the primary benefit stemming from the audit, we can use audit fees to calculate upper and lower bounds for the likely change in the cost of debt. For the companies that chose not to be audited, the mean value of short-term and long-term debt is £231,000.[18] It follows that the borrowing cost savings that these companies would have enjoyed if they had been audited must be no greater than 1.8 percent (i.e., £4,270/£231,000). For the companies that chose to remain audited, the mean value of (short-term and long-term) debt is £301,000. Accordingly, the cost of debt reduction that these companies enjoy as a result of being audited would be at least 1.9 percent (i.e., £5,680/£301,000). However, we caution that these ballpark figures (1.8 percent and 1.9 percent) likely exaggerate the debt pricing benefit to the extent that audits provide economic benefits other than cheaper borrowing costs (e.g., a company may value the business advice provided by its auditor).[19]

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[18] We exclude non-interest-bearing trade payables when specifying short-term debt.

[19] Blackwell et al. (1998) measure borrowing costs using proprietary data from banks, and they find that lenders charge lower interest rates to private companies whose financial statements are voluntarily audited rather than unaudited. Regrettably, we do not have access to such proprietary data and we find that alternative measures of the interest rate estimated from financial statement information are unreliable.

Auditor Choice and Audit Fees during the Final Year of the Mandatory Audit Regime

Our primary findings are that the credit ratings agency upgraded the companies that remain audited and downgraded the companies that opted out once auditing became voluntary. However, we also find that credit ratings were significantly lower during the final year of the mandatory regime for the companies that later opt out (i.e., there is a significant negative coefficient on $OPTOUT_i$ in Table 5). Thus, even when auditing was compulsory, the companies that were audited involuntarily were perceived by the credit ratings agency as being relatively high-risk types of borrowers.

This evidence motivates analyzing whether the company's intention to keep the audit or opt out could have been (imperfectly) discerned prior to the regime switch. We expect that the opt-out companies would write contracts that minimize the costs of auditing when auditing is legally required. Thus, we examine whether the opt-out companies were privately contracting for low audit assurance during the mandatory regime. Such companies are likely to be "going through the motions" in terms of passively complying with the audit requirement, thereby reducing the societal benefit of forcing companies to be audited.

We expect the companies that would choose not to be audited under a voluntary regime will resist choosing high-quality auditors when they are compelled to be audited. In contrast, the companies that would choose to be audited under a voluntary regime are more likely to choose high-quality audit firms when auditing is compulsory. In this case, imposing audits prevents companies from signaling their types through their decision on whether to appoint an auditor, but they can still partly reveal their types through their decision on whether to choose a high-quality or low-quality auditor (Titman and Trueman 1986).

Studies from the U.K. and elsewhere suggest that the Big 4 firms supply higher-quality audits than do smaller auditors (e.g., Lennox 1999; Peel and Roberts 2003; Francis 2004; McMeeking et al. 2006), although the evidence is more mixed for private companies (Vander Bauwhede and Willekens 2004; Fortin and Pittman 2007; Clatworthy and Peel 2007).[20] Under the assumption that the Big 4 firms supply higher-quality audits, we expect that the opt-out companies would privately contract for a lower level of assurance by appointing non-Big 4 firms when audits are mandatory.[21]

Similar arguments apply to a company's incentives to pay for a high-quality audit. A company that would not be audited under a voluntary regime would be likely to privately contract for a lower audit fee when audits are compulsory. In contrast, a company that would choose to be audited voluntarily is more likely to accept the higher fee that ensues when an auditor supplies more effort and provides greater audit assurance on the financial statements. We, therefore, expect that the opt-out companies were paying relatively low audit fees during the mandatory regime.

We test these arguments by estimating auditor choice and audit fee models using data from the final year of the mandatory audit regime (2003):

$$BIG4_{it} = \beta_0 + \beta_1 OPTOUT_i + \beta_2 X_{it} + v_{it}, \tag{2}$$

$$LAF_{it} = \alpha_0 + \alpha_1 OPTOUT_i + \alpha_2 X_{it} + u_{it}, \tag{3}$$

where:

$BIG4_{it} = 1$ if company i chooses a Big 4 audit firm, and 0 otherwise;
$LAF_{it} = $ the log of company i's audit fees in 2003; and
$X_{it} = $ a vector of time-varying control variables for company i.

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[20] Prior research finds that Big 4 auditors charge higher fees, but the pair-wise correlation between auditor choice and audit fees is only 0.14 in our sample, suggesting that these variables reflect different underlying constructs.

[21] Lawrence et al. (2011) provide evidence on U.S. public firms that casts doubt on whether Big 4 auditors genuinely provide better external monitoring of the financial reporting process.

The coefficients on the $OPTOUT_i$ variable will be significantly negative in Equations (2) and (3) if the companies that later opt out when audits first become voluntary choose non-Big 4 auditors and pay lower audit fees when audits are mandatory.

The results for the auditor choice model are shown in Column (1) of Table 6. The $OPTOUT_i$ coefficient is negative and highly significant ($p < 0.01$). Thus, the companies that would later opt out of the audit are less likely to appoint Big 4 audit firms than are companies that later kept the audit. The results for the audit fee model are shown in Column (2) and, again, the $OPTOUT_i$ coefficient is negative and highly significant ($p < 0.01$). Therefore, the companies that would opt out under a voluntary system were paying significantly lower audit fees during the final year of the mandatory regime. In contrast, the companies that kept the audit had a higher demand for assurance services evident in the higher fees that these companies paid to their auditors. Overall, these findings suggest that companies' demand for audit assurance was *partially* signaled through their auditor choice and compensation during the mandatory regime. Nevertheless, the findings in Table 5 indicate that voluntary auditing permits companies to convey an incrementally informative signal through their choice of whether to be audited.

TABLE 6

Auditor Choice and Audit Fees during the Final Year of the Mandatory Audit Regime (2003)

| | Auditor Choice Model Dep. Var. = $BIG4_{it}$ | | Audit Fees Model Dep. Var. = LAF_{it} | |
| | Model 1 | | Model 2 | |
	Coeff.	z-stat.	Coeff.	t-stat.
$OPTOUT_i$	−1.10	−5.94***	−0.13	−7.20***
AGE_{it}	−0.00	−1.00	0.01	5.64***
$INTCOV_{it}$	0.29	3.87***	0.13	11.55***
LTS_{it}	0.15	2.35**	0.25	21.83***
LTA_{it}	0.77	7.62***	0.19	14.84***
$LIQUIDITY_{it}$	0.07	2.82***	0.01	1.74*
$LEVERAGE_{it}$	0.52	5.59***	0.03	1.45
$BIG4_{it}$			0.20	5.35***
Industry dummy variables?	Yes		Yes	
R^2/pseudo R^2	10.5%		23.5%	
Observations	5,139		5,139	

*, **, *** Statistically significant at the 10 percent, 5 percent, and 1 percent levels, respectively (two-tailed).
The t-statistics and z-statistics are reported with standard errors that are adjusted for heteroscedasticity.
Industry dummy variables are included (see Table 1), but the coefficients and the intercept are not tabulated.
The $LIQUIDITY_{it}$ and $LEVERAGE_{it}$ variables are winsorized because otherwise they would suffer from outliers. The other variables do not need to be winsorized, as they do not suffer from outliers.

Variable Definitions:
$BIG4_{it} = 1$ if the company is audited by a Big 4 audit firm, 0 otherwise;
$LAF_{it} =$ log of audit fees (£000);
$OPTOUT_i = 1$ if company i chooses to opt out of the audit, and 0 if company i continues to be audited;
$AGE_{it} =$ the age of company i in year t;
$INTCOV_{it} =$ interest expense divided by earnings before interest and taxation (the $INTCOV_{it}$ ratio is capped at 2.00, and we assign a value of 2.00 if earnings before interest and taxation is negative);
$LTS_{it} =$ log of total sales (£000);
$LTA_{it} =$ log of total assets (£000);
$LIQUIDITY_{it} =$ quick ratio ((current assets − inventory)/current liabilities); and
$LEVERAGE_{it} =$ total liabilities divided by total assets.

The results for the control variables are consistent with prior studies on the determinants of auditor choice and audit fees. The auditor choice model shows that Big 4 clients tend to be larger, while they also have higher liquidity and greater interest coverage. Larger and older companies pay significantly higher audit fees, while the interest coverage variable has a significantly positive coefficient in the audit fee model, implying that fees are higher when a company's earnings are low relative to its interest expense. This could reflect that audit fees are higher when companies are in financial distress to compensate for the increased audit risk.[22]

Additional Analysis of Big 4 and Non-Big 4 Audits

In 2003, 4,835 sample companies were audited by non-Big 4 firms, compared with only 304 companies that were audited by the Big 4. These descriptive statistics reflect that all of the companies in our sample are very small, translating into relatively few companies needing to approach the Big 4 firms to undertake their audits. In 2004, the number of Big 4 audits falls by 18.4 percent, from 304 to 248, while the number of non-Big 4 audits drops 34.0 percent, from 4,835 to 3,192. Accordingly, the regime switch had a bigger impact on the number of audits conducted by the non-Big 4 firms than those by the Big 4.

Because Big 4 audits are relatively scarce in our sample, we re-estimate the models for credit ratings and audit fees after excluding the companies that were audited by Big 4 firms in 2003. The ratings models reveal that the non-Big 4 clients enjoy a statistically significant two-point increase in their credit ratings when they continued being audited in 2004 (H1), while the non-Big 4 clients that stopped being audited suffered a significant four-point drop (H2). Thus, the credit ratings spread between the two types of companies increased from nearly 8 to 14 points between 2003 and 2004. In another estimation, the audit fee model continues to show that the involuntarily audited companies paid significantly lower audit fees during the mandatory regime than did the companies that later chose to remain audited.

We also re-estimate the credit ratings and audit fee models for the subsample of 304 companies that were audited by Big 4 firms in 2003. We find that credit ratings increased for the 268 Big 4 clients that chose to remain audited in 2004 ($p < 0.01$), while there was an insignificant drop in credit ratings for the 36 Big 4 clients that were no longer audited ($p = 0.63$).[23] The companies that chose to be audited received credit ratings that were nearly seven points higher during the mandatory regime ($p = 0.11$) and 14 points higher during the voluntary regime ($p < 0.01$). However, the $OPTOUT_i$ coefficient is not statistically different from zero in the audit fee model. This insignificant result is perhaps unsurprising, given that the companies that chose Big 4 audits in 2003 had already revealed their preference for higher-quality audits and so were not intent on minimizing audit costs.

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[22] The R^2 in the audit fee model is only 24 percent, which is lower than in prior studies because the companies in our sample are nearly homogeneous in terms of their size. Most of the R^2 in prior audit fee studies comes from the cross-sectional variation in company size, which is low in our study because every company must meet the size thresholds for mandatory audits in 2003 and voluntary audits in 2004. In analyzing a wide range of private and public clients of a large international accounting firm, Bell et al. (1994) document that the explanatory power of audit fee regressions steeply subsides as clients become smaller.

[23] For the 36 Big 4 clients that are no longer audited, credit ratings fall by a statistically insignificant 1.65 points. However, this test suffers from low power stemming from the small sample size, which is corroborated by a comparison of the impact of electing to abandon the audit on credit ratings for non-Big 4 and Big 4 clients. Reassuringly, we find that the drop in credit ratings is not significantly different between the 1,663 non-Big 4 clients and the 36 Big 4 clients that cease to be audited, whereas the drop in credit ratings for the 1,663 non-Big 4 clients is statistically significant ($p < 0.01$). It follows that low power is responsible for the lack of statistical significance when we isolate the sample of 36 Big 4 clients. Finally, the fact that only 36 Big 4 clients opt out of the audit is consistent with our evidence in Table 6 (Model 1) that non-Big 4 clients are much more likely to abandon the audit when this becomes permissible.

V. CONCLUSIONS

The absence of evidence on the implications of forced versus voluntary auditing motivates our research on economic outcomes surrounding legislation that rescinds mandatory audits. Taking advantage of a regulatory regime change from mandatory to voluntary audits for privately held U.K. companies, we isolate whether there is a signaling benefit from allowing audits to be voluntary, as theory predicts that the company's decision on whether to be audited conveys valuable information to outsiders about its type (Melumad and Thoman 1990). We also test whether the companies that would choose to avoid an audit under the voluntary regime were privately contracting for a relatively low level of audit assurance during the mandatory regime. Given recent research that auditors play a major role as information intermediaries in debt contracting, credit ratings suit our analysis of the signaling impact of the change in audit regime.

Our analysis provides strong, robust evidence that the move away from mandatory auditing engenders an important role for signaling, in which the low-risk companies convey their favorable borrowing characteristics by continuing with an audit. The companies that remain audited enjoy significantly higher credit ratings after the regime change, even though these companies were audited in both 2003 and 2004 and the assurance value of their audits was apparently stable. We attribute this upgrade in credit ratings to the positive impression that voluntarily submitting to an audit conveys to outsiders. Importantly, the decision to be audited voluntarily conveys information that is incremental to the signals that exist in a mandatory regime, where alternative mechanisms—namely, appointing Big 4 auditors and paying higher audit fees—only partly reveal companies' types. In short, our results imply that imposing audits removes an important mechanism by which companies are able to communicate their types.

We also find that the opt-out companies were significantly less likely to appoint Big 4 audit firms, and they paid significantly lower fees during the mandatory regime relative to the companies that remain audited after auditing became optional. This evidence suggests that the compulsorily audited companies were passively complying with the audit requirement and were subject to less strict monitoring than the companies that that would have voluntarily chosen to be audited. The main policy rationale for mandatory auditing is that external stakeholders obtain significant assurance benefits when companies that would not voluntarily choose an audit are forced into it. Our results suggest that these benefits are likely to be modest for privately held companies, as the companies that do not want to be audited privately contract for low levels of audit assurance when audits are legally required.

Finally, for several reasons, we stress that our research cannot provide a definitive answer to policy-makers on whether audits should be voluntary or mandatory. First, companies focus on their own private costs and benefits when considering whether to purchase an audit, and we are not able to measure the spillovers that accrue to external users from having the financial statements audited for every company. Second, our empirical analysis is restricted to private companies, preventing us from commenting on the extent to which our conclusions would generalize to public companies. Third, although extensive prior research analyzes the links between auditing and debt pricing, data constraints prevent us from reliably estimating companies' interest rates, so we cannot test how the change in credit ratings affects their borrowing costs.

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