WORKING PAPER

Long-Term Audit Pricing Dynamics Under Mandatory Fee Disclosure: Evidence from an Exogenous Shock

Marie-Laure Vandenhaute
Diane Breesch

KEY TAKE-AWAYS

This study examines the long-term evolution of audit pricing dynamics in a market characterized by continuous audit fee disclosure. Using data from the Dutch audit market over the period 2008-2019 and exploiting the 2014 EU Audit Reform as an exogenous fee shock, we analyze how audit fees adjust to prior-year mispricing. We find that audit fees exhibit mean-reverting behavior, with both overpricing and underpricing associated with subsequent fee adjustments. Further, results show that an exogenous fee-increasing shock temporarily increases fee dispersion. Under continuous fee disclosure, the availability of post-shock fee information facilitates pricing adjustments, with downward fee adjustments in the subsequent year. While bargaining power between auditors and clients is symmetric on average, clients exhibit stronger bargaining power in the one to two years following the fee-increasing shock. Taken together, our findings highlight the role of fee transparency in facilitating price adjustments and restoring pricing efficiency over time.

05/10/2026

Project Number:
2023B03

F AR Foundation *for* Auditing Research

Long-Term Audit Pricing Dynamics Under Mandatory Fee Disclosure: Evidence from an Exogenous Shock

Marie-Laure Vandenhaute

Diane Breesch

Solvay Business School
Vrije Universiteit Brussel

We gratefully acknowledge financial support and assistance with data collection from the Foundation for Auditing Research (FAR) through grant 2020B05. The views expressed in this document are those of the authors and do not necessarily reflect the views of other parties involved. We thank Benjamin Kinnart and Menno Craninckx for their valuable research assistance.

Long-Term Audit Pricing Dynamics Under Mandatory Fee Disclosure: Evidence from an Exogenous Shock

Abstract

This study examines the long-term evolution of audit pricing dynamics in a market characterized by continuous audit fee disclosure. Using data from the Dutch audit market over the period 2008-2019 and exploiting the 2014 EU Audit Reform as an exogenous fee shock, we analyze how audit fees adjust to prior-year mispricing. We find that audit fees exhibit mean-reverting behavior, with both overpricing and underpricing associated with subsequent fee adjustments. Further, results show that an exogenous fee-increasing shock temporarily increases fee dispersion. Under continuous fee disclosure, the availability of post-shock fee information facilitates pricing adjustments, with downward fee adjustments in the subsequent year. While bargaining power between auditors and clients is symmetric on average, clients exhibit stronger bargaining power in the one to two years following the fee-increasing shock. Taken together, our findings highlight the role of fee transparency in facilitating price adjustments and restoring pricing efficiency over time.

Keywords: Disclosure, Transparency, Audit fee, Regulation

1. Introduction

Mandatory disclosure of audit fees has been in place for several decades in many countries worldwide. In Europe, the Statutory Audit Directive (2006/43/EC) mandated fee disclosure as of 2006, following earlier implementation in countries such as the UK, the US, Australia, China, and Taiwan (Su and Wu 2017; Chen et al. 2019). The rationale for this requirement was to restore public trust in the quality of audits following major accounting scandals. By mandating the public disclosure of audit fees, regulators aimed to enhance transparency and to provide market participants with information about the economic relationship between auditors and their audit clients. In particular, such disclosures would enable stakeholders to assess whether the magnitude of audit fees could potentially compromise the auditor's independence (SEC 2000).

A limited stream of research investigates the impact of mandatory audit fee disclosure on audit pricing. Using data of listed companies from the US and China, Francis and Wang (2005) and Su and Wu (2017) provide evidence that mandatory fee disclosure enhances audit pricing efficiency (as reflected in reduced dispersion in audit fees). Both studies further show that audit fee transparency strengthens clients' bargaining power vis-à-vis auditors. In particular, they identify an asymmetric price-adjustment mechanism in which audit fees for previously overcharged clients are adjusted downward more strongly than audit fees for undercharged clients are adjusted upward. Focusing on private companies in Belgium and explicitly testing for both client and auditor bargaining power, Averhals, Van Caneghem, and Willekens (2020) corroborate these findings and provide further evidence of heightened price competition following the introduction of mandatory audit fee disclosure.

Although this prior research documents the *immediate* effects of mandatory fee disclosure on audit pricing, evidence on the *long-term* consequences of fee transparency remains scarce. In particular, it remains an open question whether, and in what ways, audit pricing dynamics

evolve under continued fee transparency. Reflecting this gap, Eierle et al. (2022), in their recent literature review, explicitly call for research "on the *long-term* effects of audit regulations instead of focusing on the *immediate* effects of new reforms".

Our study responds to this call by studying the long-term evolution of audit pricing dynamics in a market characterized by mandatory fee disclosure, which enables us to also assess how audit fees adjust to exogenous shocks in an environment of *continuous* audit fee disclosure. Exogenous shocks offer an interesting setting, as they may temporarily increase information asymmetry, due to market participants facing uncertainty about how others revise their pricing strategies in response to the shock. Prior research shows that regulatory fee shocks are associated with increased auditor bargaining power (Ettredge et al., 2018). By studying audit pricing dynamics following a regulatory fee shock under mandatory fee disclosure, our study sheds light on the role of fee transparency in shaping audit pricing dynamics over time.

We use data from the Dutch audit market, where mandatory fee disclosure has been in place since 2008, and examine audit fee developments over the period 2008 to 2019. Within this institutional setting, we exploit the 2014 EU Audit Reform (537/2014 and 2014/56/EU) as an exogenous shock to audit fees. The reform introduced a new regulatory framework that became effective in 2016 and was primarily aimed at enhancing audit quality through the introduction of new and strengthened regulatory requirements. These regulatory changes increased audit complexity and required additional audit effort, resulting in additional audit hours and, consequently, higher audit fees (Willekens et al 2019, Audit Analytics 2022).

In a market characterized by continuous fee disclosure, the public availability of post-shock audit fees enables market participants not only to observe market-wide pricing responses to the shock, but also to update their own pricing strategies accordingly. Such continuous transparency may shape audit pricing dynamics by facilitating iterative price adjustments, thereby reducing fee dispersion and enhancing pricing efficiency over time.

Using a sample of 8,747 firm-year observations from 2,882 unique Dutch companies over the period 2008 to 2019, we empirically test whether over- or undercharging in the preceding year is associated with subsequent audit fee adjustments. This approach allows us to assess whether and how audit pricing dynamics evolve over time in an audit market characterized by fee transparency, and how audit fees adjust to exogenous shocks.

Across the full sample period, we find that a 10 percent overpricing or underpricing in the preceding year is associated with a subsequent fee adjustment of 1.4 percent. In contrast, in the year following both the initial disclosure year (2009) and the audit reform (2016), a 10 percent mispricing is associated with an average adjustment of approximately 2.2 percent, indicating a substantially stronger pricing response that goes beyond simple mean reversion.

In the year of the audit reform (2015) the audit fee variance increases with 27 percent relative to the previous year. In the subsequent year (2016), we observe pronounced downward audit fee adjustments for overcharged clients, with a 10 percent overpricing corresponding to a 3.4 percent reduction in audit fees. By contrast, we find no evidence of upward audit fee adjustments for underpriced engagements. This asymmetry suggests that, following a exogenous shock that increases audit fees, price adjustments primarily occur through the correction of excessive fee increases.

While prior research shows that regulatory fee shocks are associated with increased auditors' bargaining power (Ettredge et al. 2018), our findings suggest that fee transparency facilitates post-shock price adjustments, thereby limiting the persistence of excessive fee increases and contributing to the restoration of pricing efficiency over time.

Our study contributes to the literature in two important ways. First, we contribute to the literature on mandatory audit fee disclosure by examining how fee transparency influences audit pricing dynamics beyond the immediate implementation period. By analyzing the long-term evolution of audit pricing in a market characterized by continuous fee disclosure, we provide

insights into the role of fee transparency in shaping audit fee adjustments and pricing efficiency, particularly when exogenous shocks arise and information asymmetries temporarily intensify. While regulators primarily introduced fee disclosure to inform market participants about auditor–client relationships and potential independence concerns, our results highlight that fee disclosure also has lasting implications for audit fee pricing.

2. Related Literature and Motivation

Rationale for the regulatory implementation of fee disclosure

Disclosure of audit fees has been mandatory for several decades in many British Commonwealth countries. Australia and the United Kingdom, for example, have required the disclosure of audit fees since 1962 (via the Uniform Companies Act of 1961-1962) and 1967 (under the Companies Act 1967), respectively (Carson, Redmayne and Liao 2014; Köhler and Ratzinger-Sakel 2012; Firth 1997a). The separate disclosure of non-audit fees paid to the auditor has been required in both countries since the 1990s (Firth 1997a). Also Norway has mandated the disclosure of audit and non-audit fees as from then (Firth 1997b). At the turn of the century, regulatory bodies in many other countries worldwide have implemented the public disclosure of fees in response to major accounting scandals such as Enron, Lernout & Hauspie, and WorldCom. Regulators were concerned that economic bonding due to the level of fees received from an audited company or the increased provision of non-audit services could impair auditor's independence. By requiring companies to publicly disclose audit and non-audit fees, regulators aimed to enhance transparency and, hence, to provide more information to market participants about the auditor's relationship with the company being audited. As such, stakeholders were able to evaluate whether the magnitude of audit and non-audit fees might impair the auditor's independence (SEC 2000). Since 2000, the Securities and Exchange Commission (SEC) in the United States has mandated companies to disclose both audit fees and non-audit fees paid to auditors (SEC 2000). Similarly, this requirement has been

implemented in China, Taiwan, and member states of the European Union. Specifically, the European Parliament and Council approved the Eighth Company Law Directive (2006/43/EC), which is better known as the Statutory Audit Directive, on 17 May 2006. This Directive mandates audited companies across the EU member states to disclose the audit fee and other fees for non-audit services charged by the audit firm in the financial statements.

Audit fee disclosure and audit pricing

While regulators mandated fees disclosure with the intent to enhance stakeholders' understanding of the auditor-client relationship, practitioners and professionals feared its unintended impact on subsequent audit pricing and price competition. Accordingly, some studies have examined the short-term effect of mandatory disclosure of audit fees on subsequent audit pricing (i.e., the effect that occurs immediately following the implementation). The first study to tackle this issue was conducted by Francis and Wang (2005). They analyzed data from listed US firms after the requirement for public fee disclosure was put in place in 2001 and found that clients who were overcharged could negotiate lower fees, while those who were undercharged faced higher fees in the aftermath of the initial public disclosure.[1] Interestingly, they found evidence of greater downward than upward fee adjustment indicating that clients have more bargaining power than auditors (Francis and Wang 2005). Complementary evidence was found using both proprietary and public audit fee data from listed Chinese firms before and after public fee disclosure was mandated in 2001 (Su and Wu 2016). While Francis and Wang (2005) concluded that public disclosure of fees increases precision of audit pricing and reduces the variance in fees over time, Mayhew (2005) suggests that the found evidence might also be the result of a simple mean reversion in fees over time4 irrespectively of public disclosure.

[1] Over(under)charged clients refer to those companies that are being charged more (less) by their audit firm than is appropriate for the level of service supplied (Causholli and Knechel 2012). Over(under)charged clients are identified as those whose audit fee exceeds (falls below) the estimate predicted by the fee model (Francis and Wang 2005).

Recently, Averhals et al. (2020) expanded this stream of research by investigating the effect of mandatory audit fee disclosure on audit pricing using both proprietary and public audit fee data from private Belgian firms before and after public fee disclosure was mandated in 2007. Based on descriptive statistics of a balanced sample, Averhals et al. (2020) show that average audit fees (adjusted for inflation) increased in the period 2004-2010. This finding contradicts the expectations of practitioners who had anticipated downward fee pressure following mandatory fee disclosure. The authors attribute the rise in fees to heightened audit risk stemming from the financial crises. Results from Breesch et al. (2013), however, studying the evolution of pricing on the (full) Belgian audit market in the period 2008 and 2010, show a sharp decrease in average 'absolute' pricing between 2008 and 2009, and between 2009 and 2010. Taking into account 'relative' pricing (by comparing audit fees against the size of the audited firm and, hence, controlling for changes in the audit market structure) no more significant price-level changes were noted. Interestingly, Averhals et al. (2020) explicitly test the moderating effect of client importance in the auditor's portfolio and competition faced by the auditor on audit pricing following the mandatory disclosure of audit fees. Results show that overcharged clients were able to secure downward fee adjustments, while undercharged clients faced upward fee adjustments (Averhals et al. 2020). Upward fee adjustments were, however, dependent on the importance of the client in the auditor's portfolio and the competition that the auditor faced (measured by the auditor's market share). Specifically, undercharged clients were better able to mitigate upward fee adjustments if they were more important in the auditor's portfolio or if the auditor faced more intense competition.

Finally, evidence shows that fee adjustments after mandatory fee disclosure vary depending on the disclosure form (i.e., fee amount disclosure or fee range disclosure) that client companies use. Using a Taiwanese dataset, Chen et al. (2019) show that a more precise disclosure form

(i.e., fee amount disclosure) is associated with larger downward fee adjustment in the period subsequent to the fee disclosure.

Overall, this body of research indicates that mandatory audit fee disclosure influences subsequent audit pricing. Fee transparency seems to provide clients with bargaining power over auditors and to intensify price competition.

Long-term evolution of audit pricing dynamics and fee shocks under continuous fee disclosure

While existing literature provides important insights into audit fee disclosure (Francis and Wang 2005; Su and Wu 2017; Averhals et al. 2020), it largely focuses on the immediate effects of disclosure and offers limited evidence on the long-term evolution of audit pricing dynamics under continued fee transparency. Although the primary objective of mandatory audit fee disclosure was to increase transparency in the auditor–client relationship, practitioners, professional bodies, and academics have expressed concerns about potential unintended consequences. In particular, increased transparency may intensify price competition in the audit market, as enhanced client bargaining power could exert downward pressure on audit fees (IBR 2016; Dopuch, King, and Schwartz 2003; Mayhew 2005). These concerns highlight the importance of examining how audit pricing evolves in the long run following the introduction of mandatory fee disclosure.

Moreover, it remains an open question how audit fees adjust to exogenous fee shocks in an environment characterized by continuous audit fee disclosure. Fee shocks, such as those arising from regulatory changes, may temporarily disrupt the information environment created by mandatory disclosure by increasing uncertainty and information asymmetry among market participants. However, in a market with continuous fee disclosure, the public availability of post-shock audit fees allows market participants not only to observe market-wide pricing

responses to the shock, but also to revise their own pricing strategies as new information becomes available.

3. Research Methodology

The Institutional Setting

In line with the EU Statutory Audit Directive (2006/43/EC), the Dutch legislation has required large[2] companies to disclose audit fees in their financial statements since 2008 (art. 382a, 1°, Title 9 Book 2 Burgelijk Wetboek [BW]). This disclosure requirement also applies to audit fees paid by the company's subsidiaries, which must be included in the reported audit fees (art. 382a, 2°, Title 9 Book 2 BW). According to art. 382a, 3° Title 9 Book 2 BW, audit fee disclosure is not required in the statutory financial statements if the company's financial information is consolidated at the group level and the audit fee is disclosed in the consolidated financial statements. Moreover, small groups are exempt from the obligation to prepare consolidated financial statements (art. 407, 2°, Title 9 Book 2 BW).[3] Accordingly, our analyses are based on consolidated financial statements, as these provide the relevant and comprehensive disclosure of audit fees required under Dutch law.

Within this institutional setting, the 2014 EU Audit Reform (537/2014 and 2014/56/EU) introduced a new regulatory framework that became effective in 2016 and was primarily aimed at enhancing audit quality through the introduction of new and strengthened regulatory requirements. These regulatory changes increased audit complexity and required additional audit effort, resulting in additional audit hours and, consequently, higher audit fees (Willekens et al 2019, Audit Analytics 2022).

[2] *Large companies* currently meet at least two of the following three criteria on two consecutive balance sheet dates: (i) 250 employees (ii) sales of 50 million euros, and (iii) total assets of 25 million euros (Article 397, 1°, Title 9 Book 2 BW).

[3] Currently, a group is classified as small if it meets at least two of the following three criteria on two consecutive balance sheet dates: (i) 50 employees, (ii) sales of 15 million euros, and (iii) total assets of 7.5 million euros (art. 396, 1° Title 9 Book 2 BW).

Empirical Procedure

To examine audit pricing dynamics over the longer term including effects around an exogenous fee shock, we adopt a two-way approach consistent with Francis and Wang (2005). In the first stage, we estimate an audit fee model based on prior research to decompose audit fees into an expected and an unexpected (abnormal) component. Specifically, we regress the natural logarithm of audit fees (*LAF*) on a set of variables capturing client and auditor characteristics commonly used in the audit fee literature. Appendix A provides definitions for all variables. The audit fee model we use for this first stage is:

$$LAF_{it} = \alpha + \beta_1 LAssets_{it} + \beta_2 Lev_{it} + \beta_3 CATA_{it} + \beta_4 Quick_{it} + \beta_5 Loss_{it} + \beta_6 List_{it} + \beta_7 LNAS_{it} + \beta_8 YearEnd_{it} + \beta_9 GCO_{it} + \beta_{10} Big_{it} + FE_{Industry} + FE_{Year} + FE_{Audit\ Firm} + FE_{Audit\ Partner} + \varepsilon_{it}, \quad (1)$$

where *i* and *t* index client and fiscal years, respectively. We include industry and year fixed effects to control for time-invariant industry characteristics and time-dependent factors. To correct for heteroscedasticity and serial dependence, we use robust standard errors adjusted for clustering by client firm (Petersen, 2009).

Regression residuals capture unexpected (abnormal) audit fees, with positive (negative) values indicating overcharging (undercharging) relative to expected fees. We then estimate the following change models to examine whether over- or undercharging in the prior year is associated with subsequent audit fee adjustments:

$$\Delta LAF_{it} = \alpha + \beta_1 LagAbnLAF_{it-1} + \Delta CONTROLS_{it} + FE_{Industry} + FE_{Year} + \varepsilon_{it}, \quad (2)$$

$$\Delta LAF_{it} = \alpha + \beta_{1a} LagPosAbnLAF_{it-1} + \beta_{1b} LagNegAbnLAF_{it-1} + \Delta CONTROLS_{it} + FE_{Industry} + FE_{Year} + \varepsilon_{it}, \quad (3)$$

where *i* and *t* index client and fiscal years, respectively, and Δ denotes the yearly change for the variables with previous year *t-1*. *LagAbnLAF, LagPosAbnLAF*, and *LagNegAbnLAF* are the test variables. *LagAbnLAF* measures the over- and undercharging relative to expected fees, and

thus reflects unexpected audit fee information revealed through fee disclosure. To distinguish between over- and undercharging, *LagPosAbnLAF* equals 0 when *LagAbnLAF* is negative (*LagAbnLAF* < 0), and otherwise takes the actual value of the *positive LagAbnLAF*. Conversely, *LagNegAbnLAF* equals 0 when *LagAbnLAF* is positive (*LagAbnLAF* > 0), and otherwise takes the actual value of the *negative LagAbnLAF*. Appendix A provides definitions for all variables.

4. Sample and Descriptive Statistics of Audit Fees

Sample

We retrieve data from two main sources: (i) financial statement data are retrieved from the *Reach* database provided by Bureau van Dijk, (ii) information on the audit fee, the audit firm and the going concern opinions is manually collected from firm's financial statements and audit opinions filed with the Dutch Chamber of Commerce (KvK).[4]

Our sample starts in 2008, the first year in which public disclosure of audit fees became mandatory in the Netherlands. Our sample period ends in 2019 because this is the last year for which we have manually collected all the necessary information. Our sample selection process starts with financial data available for 148,595 consolidated financial statements in the *Reach* database. As audit fee data are not systematically available in *Reach*[5], we construct a random sample, conditional on the availability of the financial data required for our analyses, and manually collect audit fee, audit firm, and going-concern information. This results in an initial sample of 14,275 firm-year observations (Table 1). For all analyses, we delete observations with missing data for audit fee and control variables. The final sample used in the audit fee regression analyses consists of 8,747 observations. The sample used in the audit fee change regressions comprises 5,166 observations, reflecting the loss of observations due to the

[4] Other than in other European countries, the Dutch KVK requires a fee to read and download the financial statements from a company (Bosman 2021).

[5] Audit fees in the Netherlands are disclosed in the notes to the financial statements without standardized reporting codes or dedicated XBRL tags. As a result, audit fee information is not consistently machine-readable and cannot be systematically extracted from XBRL-based databases such as *Reach*.

calculation of year-to-year changes. All continuous variables are winsorized at the top and bottom 1% in all analyses.

Descriptive statistics of audit fees

Table 2 shows descriptive statistics of audit fees by year for the period 2008-2019, while Figure 1 depicts the evolution of audit fees during our sample period. in the year following the initial disclosure year (2009 versus 2008), the mean audit fee declines sharply (-16%) and remains relatively stable until 2013. From 2014 onwards, a clear upward trend emerges, with a pronounced increase of 16% is noted in 2015, reflecting auditors' response to audit complexity and additional audit effort due to the introduction of the audit reform.

In subsequent years smaller fluctuations are noted. Despite these developments, year-to-year differences in mean audit fees are not significant (see Table 6). The median audit fee is consistently below the mean across all years, indicating a right-skewed distribution of audit fees.

In line with prior research (Francis and Wang 2005), standard deviations are large relative to the means, indicating substantial heterogeneity in audit fees across firms. Fee dispersion declines however from 2008 to 2009, increases gradually thereafter, and rises sharply again in 2015 in the aftermath of the audit reform. After 2015, the standard deviation remains elevated. The coefficient of variation, which measures dispersion relative to the mean and thus accounts for increasing audit fee level, shows a similar pattern, although it declines from 2016 onwards. This indicates that fees become less dispersed relative to their level. This temporary increase in fee dispersion in 2015 represents preliminary evidence of an exogenous shock that increased information asymmetry among market participants and affected audit pricing dynamics. In line with our predictions for a market characterized by continuous fee disclosure, fee dispersion decreases in the year following the exogenous shock, consistent with iterative price adjustments by market participants as newly available fee information is incorporated into pricing decisions.

A similar adjustment has been documented for the initial implementation year in prior research, and our descriptive evidence is consistent with this pattern, as market participants first gain access to publicly disclosed audit fee information, leading to a reduction in fee dispersion.

Audit fees relative to firm size also increase over the sample period. Both audit fees per €10,000 of sales and audit fees per €10,000 of total assets exhibit a clear upward trend, suggesting that audit fees grow faster than firms' sales and assets over time. This pattern is comparable to findings reported by Breesch (2021) for the Belgian audit market.

Figure 2 shows that mean audit fees are consistently higher for Big 4 auditors than for non-Big 4 auditors, with the gap widening markedly from 2014 onwards due to a stronger increase in Big 4 audit fees.

5. Audit Fee Regression

Descriptive statistics

Table 3 provides descriptives at the firm-year level for all variables used in the audit fee resgression (Eq. (1)). The mean audit fee is 158,960 euros, with a standard deviation of 321,787 euros. On average, client firms are moderately sized (*LAssets* = 18.20, approximately 316,000,000 euros. On average, the leverage ratio equals 0.65, current assets represent 57% of total assets, and the quick ratio is 1.24. Approximately 22% of firms report a loss, and 2% are listed. In addition, 90% of firms have a December fiscal year-end, 3% receive a going-concern opinion, and 54% of is audited by a Big4 firm.

Correlations

Table 4 provides pairwise correlation tests among all variables employed in our audit fee regression and shows that all control variables are significantly ($p < 0.01$) correlated with *LAF* with *CATA* ($r = -0.148$), *Quick* ($r = -0.049$) and *YearEnd* ($r = -0.060$) being negatively correlated with *LAF* and *LAssets* ($r = 0.656$), *Lev* ($r = 0.110$), *Loss* ($r = 0.101$), *List* ($r = 0.232$), *LNAS* (r

= 0.212), *GCO* (*r* = 0.043) and *Big4* (*r* = 0.378) being positively correlated with *LAF*. Results are in line with prior studies (Averhals et al. 2020).

Regression results

The first stage of our multivariate analysis involves decomposing audit fees into an expected (predicted) and an unexpected (abnormal) component, where the unexpected component corresponds to the residuals from an audit fee regression model (Eq. (1)). These residuals capture the unexplained variation in audit fees after controlling for observable client–auditor characteristics. To obtain these residuals, we estimate the audit fee regression separately for each year. Table 5 presents the regression results for the full sample. The R^2 from this regression ranges between 52% and 72%, depending on inclusion of audit firm and audit partner fixed effects. Model (1) includes industry and year fixed effects only. Models (2) and (3) separately add audit firm and audit partner fixed effects, while Model (4) includes all fixed effects simultaneously. With the exception of *YearEnd,* all control variables are statistically significant. The signs of the coefficients are consistent with expectations and align with prior research (Averhals et al., 2020).

6. Audit Fee Change Regression

Descriptive statistics of actual, abnormal, and predicted audit fees

Table 6 reports descriptive statistics and year-to-year tests of differences in means and variances for actual, abnormal, and predicted audit fees over the period 2008–2019. The evolution of average audit fees is discussed earlier (Table 2). Mean abnormal audit fees, capturing under- and overpricing, decline after 2009 and increase again from 2015 onwards. Predicted audit fees, reflecting gradual changes in observable client and auditor characteristics, evolve smoothly over time.

Equality of variance tests reveal several significant changes in the variance of actual audit fees, most notably between 2014 and 2015, when fee dispersion increases by approximately 28

percent. To isolate changes in dispersion that are not driven by systematic client characteristics, we also examine abnormal audit fees. Equality of variance tests for abnormal audit fees show a similar pattern with a 22 percent increases in 2015. Consistent with our predictions, these finding indicate that increased information asymmetry coming from an exogenous fee shock is associated with an increase in dispersion of audit fees.

Finally, consistent with Francis and Wang (2005) and Su and Wu (2017), we find that the standard deviation of both actual and abnormal audit fees decreases from 2008 to 2009, indicating a decrease in fee dispersion following the introduction of audit fee disclosure.

Table 7 reports descriptive statistics for positive and negative abnormal audit fees separately, capturing overcharging and undercharging, respectively. Positive abnormal audit fees are substantially larger in absolute magnitude and more dispersed than negative abnormal audit fees, with a mean of 136,063 euros and a standard deviation of 316,480 euros. The distribution of positive abnormal audit fees is highly right-skewed. In contrast, negative abnormal audit fees are smaller in absolute magnitude and considerably less dispersed. The mean negative abnormal audit fee amounts to -36,068 euros, with a standard deviation of 42,824 euros.

Descriptive statistics of variables in the audit fee change regression

Table 8 presents descriptive statistics for the variables used in the audit fee change regressions. On average, audit fees increase by 6,135 euros from one year to the next, while exhibiting substantial variation, as reflected in a standard deviation of 152,308 euros. Lagged abnormal audit fees indicate pronounced asymmetry. Overpricing averages 56,620 euros and is considerably more dispersed, whereas underpricing averages -16,137 and shows substantially lower variation.

Regression results

Table 9 displays the results of estimating Eq. (2) and Eq. (3). Column (1) shows the results when the test variable is *LAGAbnLAF*. The estimated coefficient on *LAGAbnLAF* is statistically significant and negative (*t*-stat. = -11.61). This suggests that prior-year mispricing is negatively associated with subsequent audit fee changes. This finding suggests that audit fees adjust in the opposite direction of prior mispricing. In economic terms, our results indicate that a 10 percent overpricing or underpricing in the preceding year is associated with a subsequent fee adjustment of 1.4 percent.

Column (2) shows the results when the test variables are *LAGPosAbnLAF* and *LAGNegAbnLAF*. The estimated coefficient on *LAGPosAbnLAF* (*t*-stat. = -5.46) *LAGNegAbnLAF* (*t*-stat. = -6.38) are both statistically significant and negative. An additional test shows that the coefficients are not statistically different from each other (*t*-stat. = 1.55). This finding suggests that clients and auditors have comparable bargaining power, such that fee adjustments following overpricing are of similar magnitude to those following underpricing.

In economic terms, a 10 percent overpricing in the preceding year is associated with a subsequent fee reduction of approximately 1.1 percent, while a 10 percent underpricing is associated with a subsequent fee increase of approximately 1.7 percent.

To examine whether audit fee adjustments evolve over time in a continuous transparent market, we further estimate Eq. (2) and Eq. (3) by interacting the test variables with year indicators. Figures 4 and 5 depict the resulting marginal effects. The results show that in the year following both the initial audit fee disclosure (2009) and the audit reform (2016), a 10 percent mispricing is associated with an average fee adjustment of approximately 2.2 percent. This indicates a substantially stronger pricing response in these periods, consistent with heightened information updating rather than simple mean reversion.

Distinguishing between overpricing and underpricing, we find statistically significant differences in adjustment magnitudes in 2016 and 2017. In 2016, a 10 percent overpricing in the preceding year is associated with a subsequent fee reduction of approximately 3.4 percent, while in 2017 the corresponding adjustment amounts to approximately 2.2 percent. This asymmetry suggests that, following an exogenous shock that increases audit fees, price adjustments primarily occur through the correction of excessive fee increases.

Additional analyses

We conduct additional analyses to assess the robustness of our main findings. First, we examine whether our results on audit fee adjustments remain robust when controlling for changes in the client firm and changes in the engagement partner. The results remain qualitatively unchanged. Second, given that our sample period spans 2008-2019, we examine whether inflation affects the observed evolution of audit fees. We therefore compare nominal mean audit fees with inflation-adjusted audit fees. As shown in Figure 3, the mean of deflated audit fees closely tracks the mean of nominal audit fees over time, indicating that the observed increase in audit fees is not driven by price-level changes.

7. Discussion and Conclusion

This study examines the long-term evolution of audit pricing dynamics in a market characterized by mandatory and continuous audit fee disclosure. Using data from the Dutch audit market over the period 2008–2019, and exploiting the 2014 EU Audit Reform as an exogenous fee shock, we analyze how audit fees adjust to prior mispricing and how these adjustment evolve over time.

Consistent with simple mean reversion, our results show that over the entire sample period audit fees adjust in response to prior-year mispricing. Both over-and underpricing are followed by fee adjustments in the subsequent year. We find no evidence of asymmetric bargaining power between auditors and clients when considering the full sample period.

Further, our results indicate that exogenous shocks that increase audit fees are accompanied by a substantial increase in fee dispersion in the year of the shock. In the subsequent year, when continuous fee disclosure allows market participants to observe post-shock pricing outcomes, fee adjustments occur primarily through the correction of excessive fee increases. This pattern suggests that clients are able to negotiate downward fee adjustments following a period of fee increases.

Overall, these findings indicate that while exogenous shocks may temporarily increase information asymmetry and disrupt audit pricing, continuous audit fee disclosure facilitates iterative price adjustments that limit the persistence of excessive fee increases and contribute to the restoration of pricing efficiency over time. By focusing on the long-run dynamics of audit pricing, our study extends prior research on mandatory audit fee disclosure and highlights the role of fee transparency in shaping audit pricing dynamics beyond the initial implementation period, particularly in periods of increased information asymmetry.

During the preparation of this manuscript, the authors used AI (Claude AI and GTP-5.2) in order to assist with language editing. The authors take full responsibility for the content of the manuscript.

REFERENCES

Audit Analytics (2022). Nineteen–year review of Audit & Non audit fee trends. Available at: https://www. auditanalytics. com/doc/Nineteen-Year_Review_of_Audit_and_Non-Audit_Fee_Trends. pdf.

Averhals, L., Van Caneghem, T., & Willekens, M. (2020). Mandatory audit fee disclosure and price competition in the private client segment of the Belgian audit market. *Journal Of International Accounting Auditing And Taxation*, *40*, 100337. https://doi.org/10.1016/j.intaccaudtax.2020.100337

Bosman, T. (2021). The measurement of audit quality in the Netherlands: a practical note. *Maandblad Voor Accountancy en Bedrijfseconomie*, *95*(1/2), 17–31. https://doi.org/10.5117/mab.95.56820

Chen, J., Duh, R., & Li, K. (2019). Does Fee Disclosure Type Matter? Evidence from Price Adjustment in the Audit Market of Taiwan. *Journal Of International Accounting Research*, *18*(3), 41–61. https://doi.org/10.2308/jiar-52573

Dopuch, N., King, R. R., & Schwartz, R. (2003). Independence in Appearance and in Fact: An Experimental Investigation. *Contemporary Accounting Research*, *20*(1), 79–114. https://doi.org/10.1506/9b5d-hllp-bbqe-8n3f

Eierle, B., Hartlieb, S., Hay, D. C., Niemi, L., & Ojala, H. (2022). External Factors and the Pricing of Audit Services: A Systematic Review of the Archival Literature Using a PESTLE Analysis. *Auditing A Journal Of Practice & Theory*, *41*(3), 95–119. https://doi.org/10.2308/ajpt-2019-510

Ettredge, M., Sherwood, M. G., & Sun, L. (2018). Effects of SOX 404(b) implementation on audit fees by SEC filer size category. *Journal Of Accounting And Public Policy*, *37*(1), 21–38. https://doi.org/10.1016/j.jaccpubpol.2018.01.004

Francis, J. R., & Wang, D. (2005). Impact of the SEC's Public Fee Disclosure Requirement on Subsequent Period Fees and Implications for Market Efficiency. *Auditing A Journal Of Practice & Theory*, *24*(s-1), 145–160. https://doi.org/10.2308/aud.2005.24.s-1.145

Instituut van de bedrijfsrevisoren (IBR). 2016. Jaarverslag. Brussels: Instituut van de bedrijfsrevisoren.

Mayhew, B. W. (2005). DISCUSSION OF Impact of the SEC's Public Fee Disclosure Requirement on Subsequent Period Fees and Implications for Market Efficiency. *Auditing A Journal Of Practice & Theory*, *24*(Supplement), 161–169. https://doi.org/10.2308/aud.2005.24.supplement.161

Petersen, M. A. (2009). Estimating standard errors in Finance Panel data sets: Comparing approaches. *Review Of Financial Studies*, *22*(1), 435–480. https://doi.org/10.1093/rfs/hhn053

Su, X., & Wu, X. (2017). Public Disclosure of Audit Fees and Bargaining Power between the Client and Auditor: Evidence from China. *The International Journal Of Accounting*, *52*(1), 64–76. https://doi.org/10.1016/j.intacc.2017.01.001

U.S. Securities and Exchange Committee (U.S. SEC). 2000. *Revision of the Commission's Auditor Independence Requirements*. November: 33-7919. Washington, D.C.: U.S. SEC.

Verrecchia, R. E. (2001). Essays on disclosure. *Journal Of Accounting And Economics*, *32*(1–3), 97–180. https://doi.org/10.1016/s0165-4101(01)00025-8

Willekens M, Dekeyser S, Símac I (2019) EU statutory audit reform: impact on costs, concentration and competition. European Union, Policy Department of Economic, Scientific and Quality of Life Policies. https://www.europarl.europa.eu/RegData/etudes/STUD/2019/631057/IPOL_STU(2019) 631057_EN.pdf. Accessed 27/01/2026

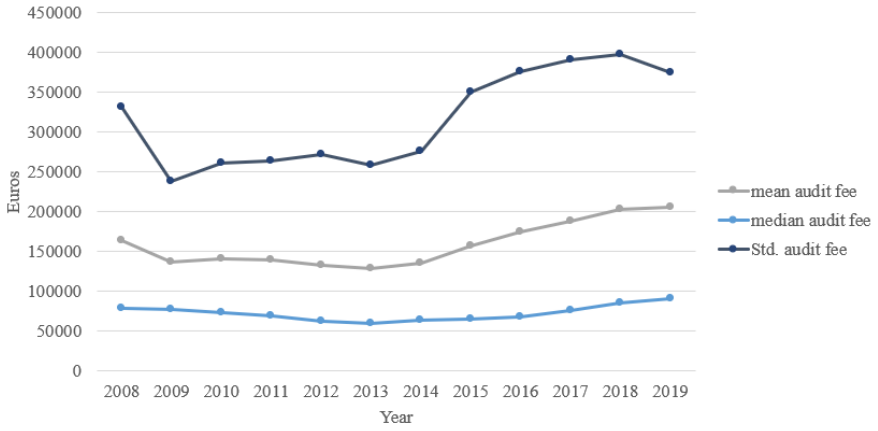


Figure 1. Mean, median and standard deviation of audit fees by year (2008-2019).

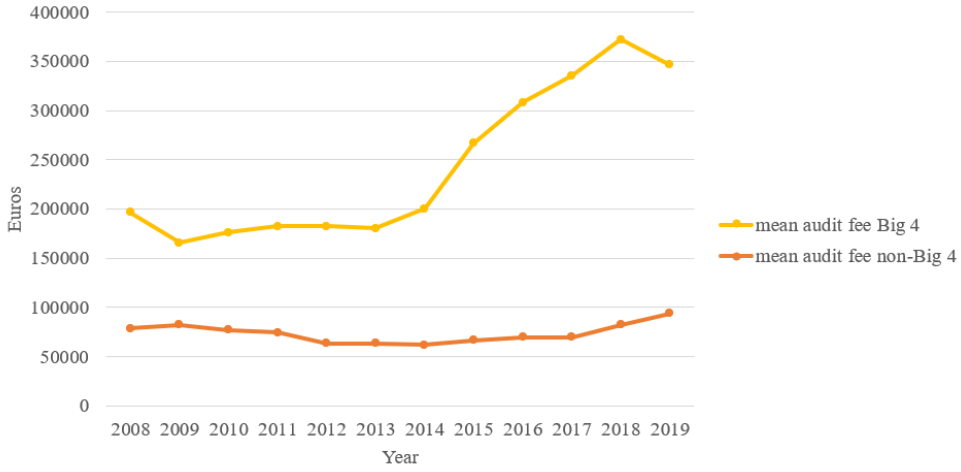


Figure 2. Mean audit fees by auditor type and year (2008-2019).



Figure 3. Mean nominal and inflation-adjusted audit fees by year (2008-2019).

Notes. Inflation-adjusted audit fees are deflated to 2008 euros using the Consumer Price Index (CPI). The CPI increased to 118.8 in 2019 (base year 2008 = 100).

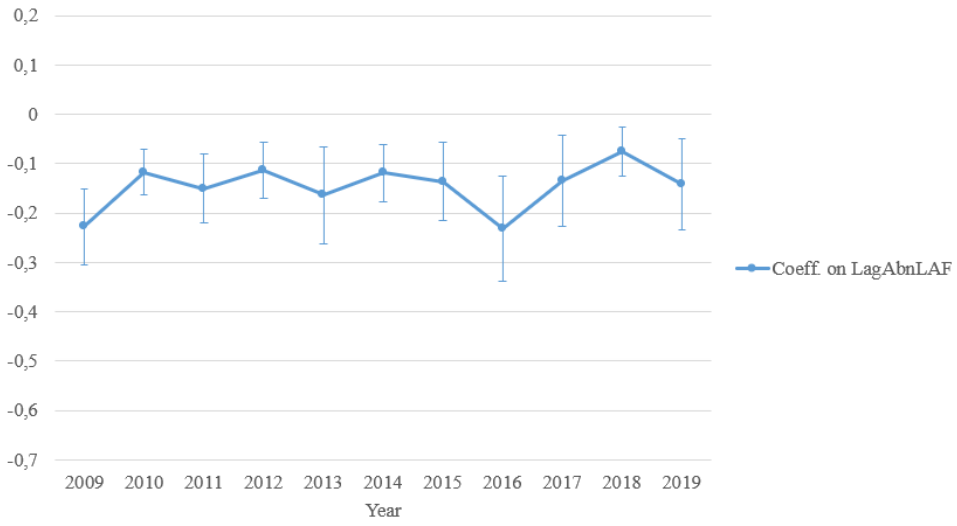


Figure 4. Average marginal effects of lagged abnormal fees on audit fee changes over time.

Notes. See Table 1 for variable definitions.

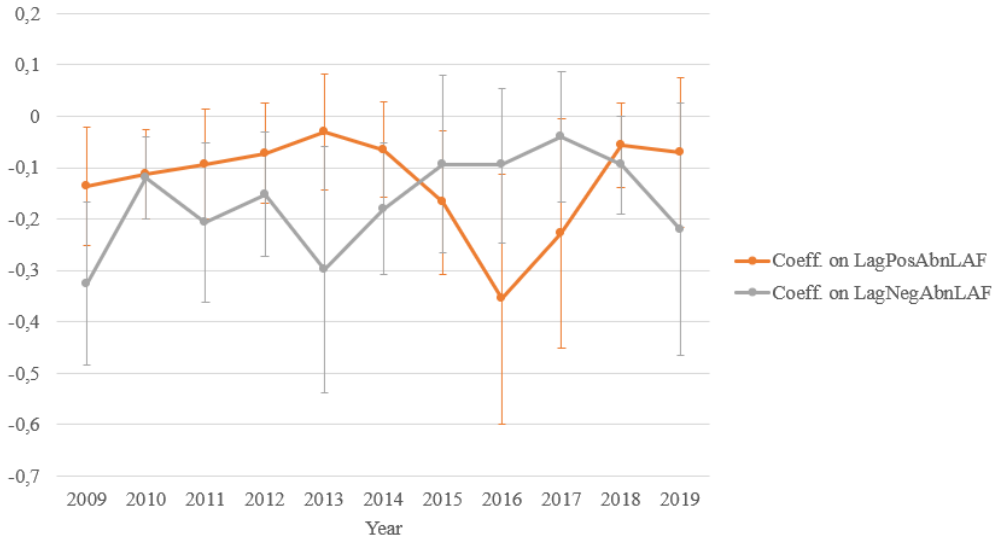


Figure 5. Average marginal effects of positive and negative lagged abnormal fees on audit fee changes over time.

Note. See Table 1 for variable definitions.

Table 1. Sample selection.

Description	
Firm-year observations 2008–2019	14,275
Less observations with missing audit fee data	(5,051)
Less observations with missing data for control variables	(477)
Final sample of firm-year observations for audit fee regression (eq. 1)	**8,747**
(Unique firms)	***(2,882)***
Less observations without two consecutive years of data	(3,581)
Final sample of firm-year observations for audit fee change regression (eq. 2)	**5,166**
(Unique firms)	***(1,738)***

Note: This table details the sample selection process.

Table 2. Descriptive statistics of audit fees by year (2008-2019).

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Mean	163,902	136,877	139,955	139,428	133,034	128,948	135,001	156,535	174,965	187,475	202,611	205,746
Mean percentage change from the previous year		-16%	2%	0%	-5%	-3%	5%	16%	12%	7%	8%	2%
Std.	331,724	238,003	261,399	264,090	272,436	258,780	276,141	350,869	376,429	390,394	397,540	375,310
Variation Coefficient	2.02	1.74	1.87	1.89	2.05	2.01	2.05	2.24	2.15	2.08	1.96	1.82
25%	50,000	49,000	44,623	42,900	39,122	39,054	40,795	41,000	42,000	43,000	48,000	54,000
Median	79,000	76,429	73,500	68,625	62,764	60,000	63,975	65,000	67,125	75,000	85,000	90,177
75%	145,000	130,824	126,000	127,500	119,000	113,000	120,000	121,091	140,000	152,000	173,000	195,000
95%	481,000	375,000	419,900	478,000	428,000	425,000	404,412	510,000	615,000	644,543	749,000	775,000
99%	2,483,463	1,463,100	1,500,000	1,600,000	1,983,000	1,598,868	1,862,273	2,483,463	2,483,463	2,483,463	2,483,463	2,483,463
Total audit fees (in million euros)	107	90.6	109	112	116	111	113	108	119	135	141	197
Total sales (in million euros)	378,000	275,000	310,000	349,000	370,000	366,000	314,000	242,000	258,000	298,000	292,000	399,000
Total assets (in million euros)	394,000	253,000	276,000	312,000	325,000	326,000	280,000	220,000	247,000	316,000	307,000	460,000
Audit fees per 10,000 euros of sales	2.82	3.29	3.51	3.20	3.14	3.03	3.61	4.45	4,61	4.52	4.85	4.95
Audit fees per 10,000 euros of assets	2.71	3.58	3.94	3.59	3.57	3.40	4.04	4.89	4.81	4.26	4.59	4.28
n	611	610	714	756	814	809	790	654	657	699	690	943

Note: N = 8,747.

Table 3. Descriptive statistics of variables in audit fee regression.

Variable	Mean	Std.	Min	25%	Median	75%	Max
LAF	11.33	0.97	9.31	10.67	11.18	11.83	14.73
AF (in euros)	158,960.00	321,787.00	11,000.00	43,000.00	72,000.00	137,171.00	2,483,463.00
LAssets	18.20	1.36	15.07	17.26	17.85	18.89	22.63
Assets (in million euros)	316.00	964.00	3.50	31.20	56.70	159.00	6,740.00
Lev	0.65	0.26	0.09	0.49	0.65	0.79	1.74
CATA	0.57	0.26	0.03	0.37	0.59	0.79	0.99
Quick	1.24	1.39	0.12	0.58	0.92	1.35	10.71
Loss	0.22	0.41	0.00	0.00	0.00	0.00	1.00
List	0.02	0.15	0.00	0.00	0.00	0.00	1.00
LNAS	7.14	4.94	0.00	0.00	9.48	10.88	14.01
YearEnd	0.90	0.30	0.00	1.00	1.00	1.00	1.00
GCO	0.03	0.18	0.00	0.00	0.00	0.00	1.00
Big4	0.54	0.50	0.00	0.00	1.00	1.00	1.00

Notes: N = 8,747. See Appendix A for variable definitions.

Table 4. Pearson correlations of variables in audit fee regression.

	LAF	*LAssets*	*Lev*	*CATA*	*Quick*	*Loss*	*List*	*LNAS*	*YearEnd*	*GCO*
LAssets	**.656**									
Lev	**.110**	-.001								
CATA	**-.148**	**-.357**	**-.068**							
Quick	**-.049**	.008	**-.465**	**.168**						
Loss	**.101**	.006	**.335**	**-.137**	**-.102**					
List	**.232**	**.181**	**-.029**	**-.090**	**.035**	**.061**				
LNAS	**.212**	**.131**	.001	**-.059**	**-.069**	-.017	**.043**			
YearEnd	**-.060**	**-.049**	.002	**-.049**	.003	-.016	.000	.023		
GCO	**.043**	**-.029**	**.228**	**-.032**	**-.059**	**.220**	**.040**	-.026	.011	
Big4	**.378**	**.347**	**.055**	**-.109**	-.001	**.107**	**.075**	**.035**	**-.085**	-.000

Notes: Bolded coefficients are significant at $p < 0.01$. N = 8,747.
See Appendix A for variable definitions.

Table 5. Audit fee regression results.

Variables	(1) Dependent Variable: *LAF*	(2) Dependent Variable: *LAF*	(3) Dependent Variable: *LAF*	(4) Dependent Variable: *LAF*
	β (*t*-stat.)	*β* (*t*-stat.)	*β* (*t*-stat.)	*β* (*t*-stat.)
LAssets	0.423***	0.425***	0.416***	0.418***
	(26.93)	(26.41)	(25.59)	(25.07)
Lev	0.295***	0.321***	0.278***	0.283***
	(4.85)	(5.24)	(4.43)	(4.42)
CATA	0.448***	0.440***	0.362***	0.373***
	(7.28)	(7.07)	(5.99)	(6.04)
Quick	-0.018*	-0.024**	-0.037***	-0.036***
	(-1.71)	(-2.25)	(-3.56)	(-3.44)
Loss	0.140***	0.141***	0.092***	0.096***
	(5.17)	(5.37)	(3.56)	(3.64)
List	0.692***	0.709***	0.434***	0.443***
	(6.03)	(6.41)	(4.54)	(4.57)
LNAS	0.026***	0.025***	0.022***	0.021***
	(9.15)	(8.57)	(7.88)	(7.61)
YearEnd	-0.034	-0.036	-0.015	-0.015
	(-0.80)	(-0.83)	(-0.32)	(-0.30)
GCO	0.144**	0.117**	0.213***	0.208***
	(2.37)	(2.02)	(3.90)	(3.80)
Big4	0.341***		0.122	
	(12.25)		(1.15)	
Constant	2.852***	2.971***	3.131***	3.141***
	(9.17)	(9.25)	(9.76)	(9.57)
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Audit Firm FE	No	Yes	No	Yes
Audit Partner FE	No	No	Yes	Yes
N	8,747	8,721	8,176	8,172
R^2	52.46%	57.06%	71.39%	71.84%

Notes: * $p < 0.10$, ** $p < 0.05$ *** $p < 0.01$. Standard errors are adjusted for heteroscedasticity and clustered by firm (Petersen 2009). See Appendix A for variable definitions.

Table 6. Descriptive statistics and variance tests of actual, abnormal, and predicted audit fees by year (2008-2019).

		(1) Audit fee (in euros)				(2) Abnormal audit fee (in euros)				(3) Predicted audit fee (in euros)	
Year	n	Mean	Difference in means[a] *t*-test	Std.	Equality of variance[b] *F*-test	Mean	Difference in means[a] *t*-test	Std.	Equality of variance[a] *F*-test	Mean	Std.
2008	611	163,902		331,724		53,485		256,222		110,861	103,580
2009	610	136,877	1.635	238,003	1.943***	34,260	1.498	186,786	1.882***	102,920	87,682
2010	714	139,955	-0.223	261,399	0.829***	39,466	-0.482	203,305	0.844**	100,595	87,076
2011	756	139,428	0.038	264,090	0.980	38,524	0.091	197,957	1.055	101,648	100,439
2012	814	133,034	0.472	272,436	0.940	40,036	-0.144	216,219	0.838*	92,615	83,698
2013	809	128,948	0.310	258,780	1.108	35,675	0.425	196,833	1.207***	93,381	91,097
2014	790	135,001	-0.452	276,141	0.878*	38,297	-0.257	210,755	0.872*	96,320	93,749
2015	654	156,535	-1.305	350,869	0.619***	50,763	-1.015	255,935	0.678***	104,746	114,883
2016	657	174,965	-0.917	376,429	0.869*	52,694	-0.132	271,551	0.888	121,039	142,394
2017	699	187,475	-0.600	390,394	0.930	58,233	-0.375	271,512	1.000	125,931	143,403
2018	690	202,611	-0.716	397,540	0.964	61,160	-0.195	287,852	0.890	140,059	148,748
2019	943	205,746	-0.163	375,310	1.122	61,114	0.003	273,203	1.110	144,565	140,671

Notes: * $p < 0.10$, ** $p < 0.05$ *** $p < 0.01$. [a] *t*-test the difference in means from the previous year. [b] Levene's test for equality of variance from the previous year. N = 8,747. See Appendix A for variable definitions. Abnormal audit fees (in euros) are calculated as actual audit fees minus the exponentiated predicted value from Equation (1).

Table 7. Descriptive statistics of positive and negative abnormal audit fees.

Variable	n	Mean	Std.	Min	25%	50%	75%	Max
Positive Abnormal audit fee (in euros)	4,220	136,062.90	316,480.10	0.02	14,068.33	37,493.94	102,730.70	1,817,162.00
Negative Abnormal audit fee (in euros)	4,526	-36,068.07	42,823.58	-220,700.90	-41,955.65	-22,025.63	-10,940.36	-0.02

Note: N = 8,746. One observation has the value 0

Table 8. Descriptive statistics of variables in audit fee change regression.

Variable	N	Mean	Std.	Min	25%	50%	75%	Max
Δ*LAF*	5,166	0.04	0.34	-2.92	-0.06	0.01	0.14	3.90
Δ*AF (in euros)*	5,166	6,135.43	152,307.70	-4,404,000.00	-4,000.00	800.00	10,004.00	3,404,000.00
LagAbnLAF	5,166	-0.01	0.64	-3.05	-0.39	-0.05	0.36	3.12
LagAbnAF (in euros)	5,166	39,388.01	206,227.80	-187,054.50	-22,197.15	-2,599.98	30,676.24	1,577,629.00
LagPosAbnLAF	5,166	0.24	0.39	0.00	0.00	0.00	0.36	3.12
LagPosAbnAF (in euros)	5,166	56,620.00	198,997.80	0.00	0.00	0.00	30,676.24	1,577,629.00
LagNegAbnLAF	5,166	-0.25	0.37	-3.05	-0.39	-0.05	0.00	0.00
LagNegAbnAF (in euros)	5,166	-16,136.66	26,318.99	-117,481.40	-22,197.15	-2,599.98	0.00	0.00
Δ*LAssets*	5,166	0.02	0.30	-6.94	-0.06	0.03	0.11	6.56
Δ*Assets (in million euros)*	5,166	25.40	701.00	-7,740.00	-2.95	1.31	7.95	32,900.00
Δ*CATA*	5,166	0.00	0.07	-0.97	-0.02	0.00	0.03	0.78
Δ*Quick*	5,166	0.22	6.87	-22.44	-0.10	0.00	0.11	339.15
Δ*Loss*	5,166	0.00	0.39	-1.00	0.00	0.00	0.00	1.00
Δ*List*	5,166	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Δ*LNAS*	5,166	0.02	3.17	-14.33	-0.26	0.00	0.26	13.62
Δ*NAS*	5,166	-247.44	247,341.90	-3,865,000.00	-6,000.00	0.00	6,134.00	11,600,000.00
Δ*YearEnd*	5,166	0.00	0.06	-1.00	0.00	0.00	0.00	1.00
Δ*GCO*	5,166	0.01	0.15	-1.00	0.00	0.00	0.00	1.00
Δ*Big4*	5,166	-0.01	0.15	-1.00	0.00	0.00	0.00	1.00

Note: See Appendix A for variable definitions.

Table 9. Regression results: Effect of lagged abnormal audit fees on audit fee changes.

Panel A: Full sample coefficient estimates (2009-2019)

	(1) Dependent variable: ΔLAF	(2) Dependent variable: ΔLAF	
Variables			*Difference between LagPosAbnLAF and LagNegAbnLAF*
	β (*t*-stat.)	*B* (*t*-stat.)	(*t*-stat)
LagAbnLAF	-0.144***		
	(-11.61)		
LagPosAbnLAF		-0.112***	1.55
		(-5.46)	
LagNegAbnLAF		-0.177***	
		(-6.38)	
Δ*LAssets*	0.075	0.074	
	(1.58)	(1.54)	
Δ*CATA*	0.141	0.145	
	(1.16)	(1.20)	
Δ*Quick*	-0.001	-0.001	
	(-0.93)	(-0.93)	
Δ*Loss*	0.012	0.012	
	(0.93)	(0.97)	
Δ*LNAS*	0.003	0.003	
	(1.36)	(1.31)	
Δ*YearEnd*	-0.117	-0.122	
	(-1.30)	(-1.34)	
Δ*GCO*	-0.003	-0.003	
	(-0.09)	(-0.10)	
Δ*Big4*	0.245***	0.245***	
	(4.97)	(4.96)	
Constant	0.016	0.002	
	(0.46)	(0.07)	
Industry FE	Yes	Yes	
Year FE	Yes	Yes	
N	5,166	5,166	
R^2	9.47%	10.92%	

Panel B: Coefficient estimates for test variables by year

	(1) Dependent variable: ΔLAF	(2) Dependent variable: ΔLAF		
	LagAbnLAF	*LagPosAbnLAF*	*LagNegAbnLAF*	*Difference between LagPosAbnLAF and LagNegAbnLAF*
	β (*t*-stat.)	*β* (*t*-stat.)	*β* (*t*-stat.)	(*t*-stat)
2009	-0.228***	-0.137**	-0.326***	1.63
	(-5.82)	(-2.34)	(-4.05)	
2010	-0.117***	-0.113**	-0.121***	-1.35
	(-4.87)	(-2.52)	(-2.96)	
2011	-0.151***	-0.094*	-0.207***	-0.48
	(-4.27)	(-1.73)	(-2.61)	
2012	-0.113***	-0.072	-0.152**	-0.69
	(-3.85)	(-1.45)	(-2.47)	
2013	-0.163***	-0.031	-0.298**	0.38
	(-3.24)	(-0.55)	(-2.43)	
2014	-0.119***	-0.065	-0.180***	-0.49
	(-4.01)	(-1.39)	(-2.78)	
2015	-0.136***	-0.168**	-0.093	-1.46
	(-3.38)	(-2.35)	(-1.06)	
2016	-0.231***	-0.356***	-0.095	-2.06**
	(-4.24)	(-2.86)	(-1.24)	
2017	-0.135***	-0.228**	-0.040	-1.89*
	(-2.85)	(-2.00)	(-0.62)	
2018	-0.075***	-0.056	-0.095**	-1.10
	(-2.97)	(-1.36)	(-1.98)	
2019	-0.142***	-0.071	-0.220*	-0.18
	(-3.00)	(-0.95)	(-1.76)	

Notes: * $p < 0.10$, ** $p < 0.05$ *** $p < 0.01$. Standard errors are adjusted for heteroscedasticity and clustered by firm (Petersen 2009). See Appendix A for variable definitions.

Significant differences between yearly coefficient estimates of *LagAbnLAF* ($p < 0.10$): 2010 vs 2009, 2012 vs 2009, 2014 vs 2009, 2018 vs 2009, 2016 vs 2010, 2018 vs 2011, 2016 vs 2012, 2016 vs 2014, 2018 vs 2016.

Significant differences between yearly coefficient estimated of *LagPosAbnLAF* ($p < 0.10$): 2016 vs 2010, 2016 vs 2011, 2016 vs 2012, 2016 vs 2013, 2016 vs 2014, 2018 vs 2016, 2019 vs 2016.

Significant differences between yearly coefficient estimated of *LagNegAbnLAF* ($p < 0.10$): 2010 vs 2009, 2015 vs 2009, 2016 vs 2009, 2017 vs 2009, 2018 vs 2009, 2017 vs 2013.

Appendix A. Variable Definitions.

Variable	Definition	Data Source
Audit Fee Regression		
Dependent variables		
LAF	Natural logarithm of audit fees.	Financial Statements
AF (in euros)	Audit fees in euros.	Financial Statements
Independent variables		
LAssets	Natural logarithm of total assets.	Reach
Assets (in million euros)	Total assets in million euros.	Reach
Lev	Total liabilities divided by total assets.	Reach
CATA	Current assets divided by total assets.	Reach
Quick	Current assets divided by current liabilities.	Reach
Loss	Equals one if the firm reports a net loss, and zero otherwise.	Reach
List	Equals one if the firm is publicly listed, and zero otherwise.	Reach
LNAS	Natural logarithm of non-audit fees.	Financial Statements
NAS (in euros)	Non-audit fees in euros.	Financial Statements
YearEnd	Equals one if the closingmonth of the firm is 12, and zero otherwise.	Reach
GCO	Equals one if the firm receives a going concern opinion, and zero otherwise.	Audit Opinion
Big4	Equals one if the firm is audited by a Big 4 audit firm.	Audit Opinion
Audit Fee Change Regression		
Dependent variables		
Δ*LAF*	Change in *LAF* from the previous year.	Financial Statements
Δ*AF (in euros)*	Change in *AF* from the previous year.	Financial Statements
Main test variables		
LagAbnLAF	Abnormal audit fees in the previous year, measured as the residual from the audit fee regression (Equation (1)).	Calculated
LagAbnAF (in euros)	Abnormal audit fees in the previous year (in euros), calculated as actual audit fees minus the exponentiated predicted value from Equation (1).	Calculated
LagPosAbnLAF	Equals *LagAbnLAF* if *LagAbnLAF* > 0, and zero otherwise.	Calculated
LagPosAbnAF (in euros)	Equals *LagAbnAF* if *LagAbnAF* > 0, and zero otherwise.	Calculated
LagNegAbnLAF	Equals *LagAbnLAF* if *LagAbnLAF* < 0, and zero otherwise.	Calculated
LagNegAbnAF (in euros)	Equals *LagAbnAF* if *LagAbnAF* < 0, and zero otherwise.	Calculated
Control variables		
Δ*LAssets*	Change in *LAssets* from the previous year.	Reach
Δ*Assets (in euros)*	Change in *Assets* from the previous year.	Reach
Δ*Lev*	Change in *Lev* from the previous year.	Reach
Δ*CATA*	Change in *CATA* from the previous year.	Reach
Δ*Quick*	Change in *Quick* from the previous year.	Reach
Δ*Loss*	Change in *Loss* from the previous year.	Reach
Δ*List*	Change in *List* from the previous year.	Reach
Δ*LNAS*	Change in *LNAS* from the previous year.	Reach
Δ*NAS*	Change in *NAS* from the previous year.	Reach
Δ*YearEnd*	Change in *YearEnd* from the previous year.	Reach
Δ*GCO*	Change in *GCO* from the previous year.	Reach