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## Corporate tax avoidance, accounting conservatism, and audit quality: Insights from European capital markets

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### Abstract

This study examines whether accounting conservatism constrains corporate tax avoidance and whether external audit quality amplifies this effect. Using a panel of 388 firms listed in the STOXX Europe 600 index between 2012 and 2022, we employ multivariate regression techniques with firm fixed effects and a range of robustness checks. The results show that conservative accounting practices are negatively associated with tax avoidance, consistent with the role of conservatism as a disciplinary mechanism that limits opportunistic tax behavior. Moreover, the findings indicate that high-quality audits, proxied by Big 4 auditors, strengthen the conservatism–tax avoidance relationship, highlighting the complementary monitoring role of external auditors. Robustness analyses using alternative proxies and estimation methods confirm the stability of these results. This research contributes to the literature by integrating conservatism, audit quality, and tax avoidance into a unified governance framework, and by providing large-sample evidence from a European setting.

**Keywords:** Accounting conservatism, Audit quality, Corporate governance, Financial reporting, Europe, Tax Avoidance.

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### 1. Introduction

Tax avoidance has become one of the most debated corporate practices in recent decades, attracting increasing attention from regulators, investors, and researchers alike. While firms may engage in tax planning to maximize shareholder value, excessive tax avoidance raises concerns regarding transparency, sustainability, and corporate governance. Recent corporate scandals and the growing pressure for fiscal responsibility have intensified the need to understand the mechanisms that constrain opportunistic tax behavior.

Accounting conservatism, defined as the asymmetric recognition of losses over gains [1, 2] has long been viewed as a key governance mechanism in financial reporting. By imposing timely recognition of bad news, conservatism reduces

managerial discretion and mitigates opportunistic behavior. Prior research highlights its disciplinary role in areas such as earnings management, contractual efficiency, and information asymmetry. However, its impact on tax avoidance remains relatively underexplored, despite growing evidence that financial reporting quality shapes firms' tax decisions.

Audit quality represents another critical dimension of corporate governance. High-quality external auditors, especially Big 4 firms, are expected to enforce stricter compliance, enhance credibility, and limit managerial opportunism [3, 4]. While a rich body of literature has examined the individual effects of conservatism and audit quality, very few studies have explored how these mechanisms interact in shaping corporate tax behavior. This represents a significant gap, given that external assurance may strengthen the effectiveness of conservatism as a disciplinary tool against aggressive tax strategies.

This study seeks to fill this gap by investigating the joint effect of accounting conservatism and audit quality on tax avoidance in European listed firms. Using a panel of 388 companies from the STOXX Europe 600 index between 2012 and 2022, we test whether conservative financial reporting reduces tax avoidance (H1), and whether high-quality auditors reinforce this effect through their monitoring role (H2). The European setting provides an interesting context, given the diversity of institutional environments, tax regimes, and enforcement practices across countries.

The contributions of this research are threefold. First, it extends the literature on accounting conservatism by demonstrating its role in constraining tax avoidance, an area where evidence remains limited. Second, it enriches the audit literature by showing that audit quality moderates the conservatism–tax avoidance relationship, thereby highlighting the complementary nature of financial reporting and external assurance. Third, the study provides practical implications for regulators and policymakers, suggesting that fostering conservatism and enhancing audit quality can serve as effective mechanisms to curb aggressive tax behavior and improve transparency.

The European setting provides a particularly relevant context for investigating the interplay between conservatism, audit quality, and tax avoidance. The European Union has experienced continuous efforts to harmonize financial reporting standards through IFRS adoption, while national differences in enforcement intensity and tax regimes persist across member states. This institutional diversity offers a unique laboratory to examine how financial reporting conservatism and external audit quality jointly discipline firms' tax behavior. By focusing on firms listed in the STOXX Europe 600, the study captures cross-country heterogeneity and provides insights that are highly relevant for regulators, policymakers, and investors in the European capital markets.

The remainder of the paper is organized as follows. Section 2 reviews the literature and develops the hypotheses. Section 3 presents the research design, including sample selection, variable measurement, and model specification. Section 4 discusses the empirical results and robustness checks. Section 5 concludes with theoretical contributions, practical implications, limitations, and avenues for future research.

## **2. Literature Review and Hypothesis Development**

This section discusses the relevant theoretical and empirical literature to establish the foundation for the study's hypotheses. We begin by examining the link between accounting conservatism and tax avoidance.

### *2.1. Accounting Conservatism and Tax Avoidance*

Accounting conservatism is widely recognized as one of the fundamental principles shaping the quality of financial reporting. According to Basu [1] it is defined as an asymmetry in the recognition of gains and losses, whereby losses are recognized in a timelier manner than gains. Watts [2] distinguishes between two main forms: conditional conservatism, which reflects the early recognition of economic losses, and unconditional conservatism, which reflects a systematic downward bias in accounting practices independent of economic events. Both forms of conservatism aim to enhance credibility and reduce the scope for managerial discretion, but they may have different implications for tax planning [5].

Tax avoidance, by contrast, encompasses the range of strategies used by firms to reduce their effective tax burden. These practices range from legal tax planning to aggressive tax avoidance that approaches the boundaries of legality. Common empirical proxies include the effective tax rate (ETR), cash effective tax rate (CETR), and book–tax differences (BTDs). Desai and Dharmapala [6] emphasize that tax avoidance is not only shaped by tax rules but also by managerial opportunism and governance mechanisms [7].

The theoretical relationship between conservatism and tax avoidance is subject to debate. On the one hand, conservatism can be viewed as a disciplinary mechanism: by requiring the timely recognition of losses and applying prudence to the recognition of income, conservatism reduces the scope for discretionary earnings manipulation, thereby limiting opportunities for aggressive tax strategies. This perspective aligns with studies showing that firms with higher levels of conservatism tend to engage in less tax avoidance, particularly in weak governance contexts where conservatism substitutes for external monitoring [8].

On the other hand, conservatism can also be used opportunistically. Managers may exploit conservative practices—such as creating excessive provisions, accelerating asset impairments, or recording discretionary reserves to reduce the taxable base and defer tax liabilities. This opportunistic use of conservatism is more likely to occur in institutional settings where external monitoring mechanisms are absent or ineffective. In such cases, conservatism ceases to act as a governance device and instead becomes a strategic tool in tax planning.

Empirical evidence reflects this theoretical ambiguity. Some studies document a negative association between conservatism and tax avoidance, while others report weak or insignificant results [9]. These inconsistencies may stem from differences in measurement approaches (ETR vs. BTD), the failure to distinguish between conditional and unconditional conservatism, or variations in institutional environments across countries. This suggests that the effect of conservatism on tax avoidance is context-dependent and requires careful empirical examination.

Drawing on the disciplinary perspective, we posit that conservatism constrains managerial opportunism in financial reporting and, by extension, reduces the ability of managers to engage in aggressive tax behavior.

*H<sub>1</sub>: Accounting conservatism reduces corporate tax avoidance.*

## *2.2. Audit Quality as a Moderator in the Conservatism–Tax Avoidance Relationship*

Audit quality has long been recognized as a cornerstone of reliable financial reporting and effective corporate governance. According to DeAngelo [3] audit quality reflects the probability that an auditor will both detect and report material misstatements in a firm's financial statements. High-quality auditors most notably those affiliated with the Big 4 are assumed to possess superior expertise, technical resources, and reputational incentives, which enhance their monitoring capacity. Empirical studies consistently document that the presence of high-quality auditors constrains opportunistic managerial practices, mitigates earnings management, and improves overall financial transparency [4, 10, 11].

Within the context of conservatism, audit quality plays a critical role in shaping how conservatism is applied and interpreted. Prior research suggests that auditors act as external enforcers of conservative accounting practices, ensuring that losses are recognized in a timely manner while preventing managers from exploiting provisions or reserves for opportunistic purposes [12–14]. By demanding a stricter application of accounting standards, auditors limit managerial discretion and thereby reinforce the governance function of conservatism.

The implications of audit quality extend directly to tax avoidance. Firms engaging high-quality auditors are subject to more rigorous scrutiny of their accounting policies, which reduces the likelihood that tax avoidance strategies will be pursued aggressively or concealed through earnings manipulation [15, 16]. Moreover, external auditors face reputational risks if they are associated with clients engaging in aggressive or questionable tax strategies. This reputational incentive compels auditors to curb excessive tax avoidance behaviors and to encourage more transparent reporting.

Importantly, the relationship between conservatism and tax avoidance is likely to depend on the degree of audit quality. On the one hand, in environments with weak audit quality, conservatism may be misapplied or even strategically manipulated to defer taxes, thereby diminishing its disciplinary role. On the other hand, when audit quality is high, auditors strengthen the credibility of conservatism by ensuring that it is applied consistently and prudently. In such settings, conservatism not only constrains earnings management but also acts as a credible governance mechanism against aggressive tax planning. Thus, audit quality is expected to moderate the relationship between conservatism and tax avoidance by reinforcing its disciplinary effect.

Empirical evidence supports this view. Studies find that firms audited by Big 4 auditors exhibit lower levels of tax avoidance [14, 17, 18]. Furthermore, high-quality auditors are more effective in limiting managerial opportunism in financial reporting, which indirectly reduces firms' ability to engage in tax avoidance schemes [6, 14]. Building on these insights, it can be argued that audit quality magnifies the effectiveness of conservatism as a governance tool by reducing the scope for opportunistic tax behavior.

Drawing on this reasoning, we develop the second hypothesis:

*H<sub>2</sub>: Audit quality strengthens the negative effect of accounting conservatism on corporate tax avoidance.*

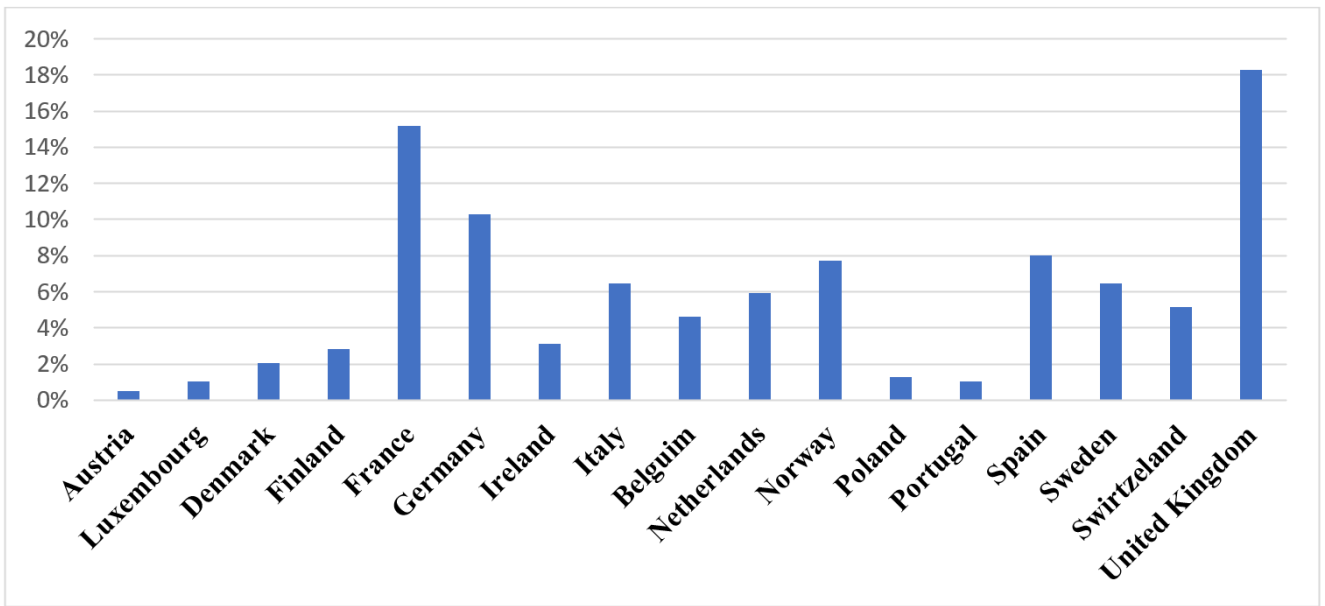
## **3. Research Plan**

This section outlines the empirical strategy adopted in this study. It presents the rationale for the sampling design, the procedures for data collection, the operationalization of key variables, and the econometric models used to test the research hypotheses.

### *3.1. Sample Construction and Data Collection*

The empirical analysis is conducted on a panel of European listed firms over the period 2012–2022. Consistent with prior studies, financial institutions (e.g., banks and insurance companies) and utilities are excluded given their unique regulatory and accounting environments, which could otherwise distort the results. The final sample comprises 388 firms, corresponding to approximately 2,577 firm-year observations, all drawn from the STOXX Europe 600 index. Accounting and financial information were extracted from the Datastream database. The dataset spans nine industrial sectors and 17 countries, providing broad geographical and sectoral coverage that enhances the external validity of the study.

Figure 1 presents the geographical distribution of the sample firms, with the United Kingdom (18%) and France (15%) accounting for the largest shares, followed by Germany, Spain, and other European economies.

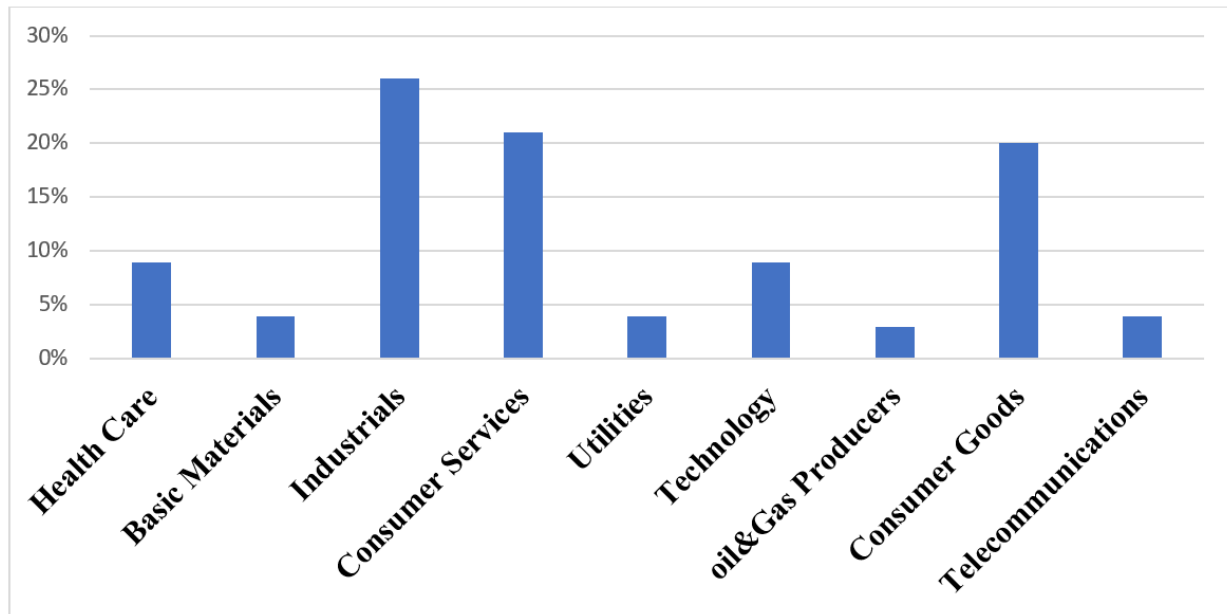


**Figure 1.**

Distribution of firms across countries.

**Note:** This figure illustrates the geographical distribution of the 388 firms included in the sample, drawn from the STOXX Europe 600 index over the period 2012–2022. The United Kingdom (18%) and France (15%) represent the largest shares, followed by Germany, Spain, and other European countries.

Figure 2 shows the sectoral distribution across nine industries. Industrials (26%) and Consumer services (21%) dominate the sample, while other sectors such as Technology, Health Care, and Utilities are also represented, ensuring adequate sectoral diversity



**Figure 2.**

Sample Distribution Across Sectors.

**Note:** This figure shows the sectoral distribution of the sample firms across nine industries. Industrials (26%) and Consumer services (21%) dominate the sample, while other sectors such as Technology, Utilities, and Health Care are also represented, ensuring adequate sectoral diversity.

The combination of geographical and sectoral diversity strengthens the representativeness of the sample and provides a robust basis for empirical testing.

### 3.2. Variable Measurement

The study operationalizes the variables in line with established measures in prior literature.

#### 3.2.1. Dependent Variable: Tax Avoidance

Tax avoidance is the dependent variable in this study. Following prior literature, we employ three widely used proxies that capture complementary dimensions of corporate tax behavior.

First, the GAAP Effective Tax Rate (ETR) is defined as the ratio of total tax expense to pre-tax income. This measure reflects the proportion of accounting earnings contributed to taxes, with lower values indicating greater tax avoidance [9, 19].

Second, the Cash Effective Tax Rate (CETR) is calculated as cash taxes paid divided by pre-tax income. Compared to the ETR, the CETR better captures the actual cash outflows associated with tax payments, thereby reducing distortions arising from accrual-based accounting adjustments [19].

Finally, we complement these measures with the Book–Tax Difference (BTD), computed as the difference between pre-tax accounting income and taxable income, scaled by lagged total assets [6]. The BTD highlights discrepancies between financial and tax reporting that may reflect tax planning strategies but can also be influenced by accrual-based earnings management.

Formally, the measures are defined as follows:

\*GAAP Effective Tax Rate (ETR):

$$ETR_{i,t} = \text{Total Tax Expense}_{i,t} / \text{Pre-tax Income}_{i,t}$$

\*Cash Effective Tax Rate (CETR)

$$CETR_{i,t} = \text{Cash Taxes Paid}_{i,t} / \text{Pre-Tax Income}_{i,t}$$

\*Book–Tax Difference (BTD) (level or scaled)

$$BTD_{i,t} = (\text{Pre-Tax Accounting Income}_{i,t} - \text{Taxable Income}_{i,t}) / \text{Total Assets}_{i,t-1}$$

**Note:**

- TaxExpense<sub>i,t</sub>: total tax expense of firm *i* in year *t*.
- CashTaxesPaid<sub>i,t</sub> : cash taxes actually paid.
- PreTaxIncome<sub>i,t</sub>: income before tax.
- TaxableIncome<sub>i,t</sub>: computed as tax expense divided by statutory tax rate.
- A<sub>i,t-1</sub> : lagged total assets, used for scaling.
- Lower values of ETR and CETR, and higher BTDs, indicate greater tax avoidance.

Our primary measures of tax avoidance are the Cash Effective Tax Rate (CETR) and the Book–Tax Difference (BTD), both widely employed in the literature to capture firms’ tax burden relative to earnings. Lower values of CETR indicate higher tax avoidance [9, 19] while larger BTD values reflect greater discrepancies between accounting and taxable income, potentially signaling more aggressive tax planning. As a robustness check, we also use the GAAP Effective Tax Rate (ETR) as an alternative proxy. Following prior studies [19] we exclude firm-year observations with negative or zero pre-tax income, and all tax avoidance measures are winsorized at the 1st and 99th percentiles to mitigate the influence of outliers.

By relying on multiple proxies, we reduce the risk that our results are driven by the limitations of any single measure and strengthen the robustness of the empirical analysis.

### 3.2.2. Independent Variable: Accounting Conservatism

Accounting conservatism is proxied using the C-Score model developed by Khan and Watts [20] which captures firm-year variation in conditional conservatism. The C-Score is estimated as a function of firm size, market-to-book ratio, and leverage, and reflects the degree of incremental timeliness in recognizing bad news relative to good news. Higher values of the C-Score indicate stronger conditional conservatism. This proxy has been widely applied in recent empirical studies [21] and is considered one of the most reliable firm-level measures of conservatism.

The baseline specification builds on the seminal model of Basu [1] who defines conservatism as the asymmetric timeliness of earnings in recognizing economic losses relative to gains. In this framework, earnings are regressed on contemporaneous stock returns and an interaction with a negative-return indicator:

$$\text{Earnings}_{i,t} / A_{i,t-1} = \alpha + \beta_1 \text{RET}_{i,t} + \beta_2 (\text{RET}_{i,t} \times \text{NEG}_{i,t}) + \epsilon_i$$

where  $\text{NEG}_{i,t} = 1$  if  $\text{RET}_{i,t} < 0$  [1] and zero otherwise. A significantly positive coefficient on  $\beta_2$  indicates greater conditional conservatism.

To extend this framework, we adopt the Khan and Watts [20] C-Score model, which allows the incremental timeliness of loss recognition to vary systematically with firm-specific characteristics. The regression model is specified as follows:

$$\text{Earnings}_{i,t} / A_{i,t-1} = \alpha + \beta_1 \text{RET}_{i,t} + \beta_2 (\text{RET}_{i,t} \times \text{NEG}_{i,t}) + \beta_3 (\text{RET}_{i,t} \times \text{SIZE}_{i,t}) + \beta_4 (\text{RET}_{i,t} \times \text{MTB}_{i,t}) + \beta_5 (\text{RET}_{i,t} \times \text{LEV}_{i,t}) + \mu_{i,t}$$

The coefficients  $\beta_2, \beta_3, \beta_4, \beta_5$  are estimated on a large pooled sample (or alternatively, using rolling five-year windows to account for time variation). The firm-year conditional conservatism score is then calculated as:

$$C\_Score_{i,t} = -(\beta_2 + \beta_3 \text{SIZE}_{i,t} + \beta_4 \text{MTB}_{i,t} + \beta_5 \text{LEV}_{i,t})$$

A higher C-Score reflects greater conditional conservatism, meaning timelier recognition of bad news relative to good news.

Note:  $\text{RET}_{i,t}$  annual stock return of firm *i* in year *t*.

- $\text{NEG}_{i,t}$  dummy variable equal to 1 if  $\text{RET}_{i,t} < 0$ , and 0 otherwise.
- $\text{SIZE}_{i,t}$  natural logarithm of total assets.
- $\text{MTB}_{i,t}$  : market-to-book ratio.
- $\text{LEV}_{i,t}$ : leverage ratio, measured as total debt divided by total assets.
- $A_{i,t-1}$  : lagged total assets, used to scale earnings.

As a robustness check, we complement the C-Score measure with alternative proxies commonly used in the literature, including Basu [1] asymmetric timeliness coefficient and accrual-based measures of conservatism proposed by Givoly and Hayn [22]. Employing multiple proxies mitigates concerns that the results may be driven by the choice of a single measure of conservatism and strengthens the reliability of our findings.

### 3.2.3. Moderating Variable: Audit Quality

Audit quality is introduced as a moderating variable. Consistent with the auditing literature, we measure audit quality primarily using a Big 4 indicator, which equals 1 if a firm is audited by one of the four largest international audit firms (PwC, Deloitte, EY, and KPMG), and 0 otherwise. Big 4 auditors are generally associated with greater expertise, resources, and independence, thereby constraining managerial discretion and enhancing the credibility of financial reporting [3, 18].

While the Big 4 indicator is widely used as a standard proxy for audit quality, it does not fully capture the multidimensional nature of auditing. To strengthen our analysis, we incorporate industry specialization as an additional proxy, reflecting the auditor's expertise within a specific sector. Specialized auditors are expected to possess deeper knowledge of industry-specific practices, regulations, and risks, thereby enhancing audit effectiveness and overall quality. Empirically, this proxy is measured as a dummy variable equal to 1 if the auditor is specialized in the client's industry and 0 otherwise [23].

Our main specification relies on the Big 4 indicator, while specialization is used to test the robustness of results. This multi-proxy approach aligns with recent research emphasizing that no single measure perfectly captures audit quality [15]. Note:

- *Big 4*: dummy variable equal to 1 if the auditor is PwC, Deloitte, EY, or KPMG, 0 otherwise.
- *Auditor industry specialization*: Dummy variable equal to 1 if the auditor is specialized in the client's industry, and 0 otherwise.

Higher audit quality is expected to strengthen monitoring effectiveness, thereby constraining opportunistic practices.

### 3.2.4. Control Variables

To mitigate omitted-variable bias, we include a set of firm-level controls identified in the prior literature on tax avoidance and conservatism. These include firm size (natural logarithm of total assets), leverage (total debt to total assets), profitability (return on assets), market-to-book ratio, and capital intensity (ratio of property, plant, and equipment to total assets). Year and industry fixed effects are also incorporated to account for macroeconomic shocks and sectoral heterogeneity.

### 3.3. Regression Models and Estimation Method

To test the hypotheses, we estimate panel data models that link accounting conservatism, audit quality, and tax avoidance. The empirical strategy begins with a baseline fixed-effects specification of the following form:

$$\text{TaxAvoidance}_{i,t} = \alpha + \beta_1 \text{Conservatism}_{i,t} + \beta_2 \text{AuditQuality}_{i,t} + \sum \gamma \text{Controls}_{i,t} + \eta_i + \lambda_t + \varepsilon_{i,t}$$

where  $I$  denotes the firm and  $t$  the fiscal year. Firm fixed effects ( $\eta_i$ ) capture unobservable time-invariant heterogeneity, while year fixed effects ( $\lambda_t$ ) control for macroeconomic shocks. Standard errors are clustered at the firm level to address heteroscedasticity and autocorrelation.

To examine the moderating role of audit quality, we augment the baseline model by including an interaction term between conservatism and audit quality:

$$\text{TaxAvoidance}_{i,t} = \alpha + \beta_1 \text{Conservatism}_{i,t} + \beta_2 \text{AuditQuality}_{i,t} + \beta_3 (\text{Conservatism} \times \text{AuditQuality})_{i,t} + \sum \gamma \text{Controls}_{i,t} + \eta_i + \lambda_t + \varepsilon_{i,t}$$

In this specification,  $\beta_1$  measures the effect of conservatism on tax avoidance at the baseline level of audit quality, while  $\beta_3$  captures how audit quality moderates this relationship. The total effect of conservatism on tax avoidance under high audit quality is therefore given by  $\beta_1 + \beta_3$ .

Variable definitions :

- *Tax avoidance* is primarily measured by the cash effective tax rate (CETR), with book-tax differences (BTD) and the effective tax rate (ETR) used as robustness measures.
- *Conservatism* is proxied by the firm-year C-Score of Khan and Watts [20] with Basu [1] asymmetric timeliness coefficient employed as an alternative specification.
- *AuditQuality* is proxied by a Big 4 auditor indicator, in robustness checks is proxied by auditor industry specialization.
- *Controls* include firm size, leverage, profitability (ROA), Tobin's Q, and capital intensity.
- $\varepsilon_{i,t}$  is the error term.
- $\text{Conservatism} \times \text{AuditQuality}$  represents the interaction effect. In these models,  $\beta_1$  captures the effect of conservatism on tax avoidance when audit quality is at its baseline level. The coefficient  $\beta_3$  reflects how audit quality moderates this relationship. Therefore, the total effect of conservatism on tax avoidance under high audit quality is obtained by the sum of the coefficients on the main effect ( $\beta_1$ ) and the interaction term ( $\beta_3$ ).

To strengthen causal inference, we estimate several complementary specifications. First, we include a dynamic model with lagged dependent variables to capture the persistence of tax avoidance, estimated via System GMM (Arellano-Bover/Blundell-Bond). Second, to mitigate potential endogeneity related to conservatism and auditor choice, we estimate instrumental variable (2SLS) regressions using industry-level averages and institutional/regulatory shocks as instruments; instrument validity is tested using Hansen and Sargan statistics. Third, we explore heterogeneity through subsample

analyses by country enforcement intensity, firm size, and industry sector. Finally, we re-estimate the models using Driscoll–Kraay standard errors, which are robust to heteroscedasticity and cross-sectional dependence.

All specifications are subject to diagnostic tests: variance inflation factors (VIF) for multicollinearity, the Wooldridge test for serial correlation, the Modified Wald test for heteroscedasticity, and the Pesaran CD test for cross-sectional dependence. For IV and GMM models, we report the Hansen J-statistic for instrument validity. Marginal effects of conservatism at different levels of audit quality are computed and reported with confidence intervals to facilitate interpretation of the interaction term.

Hypotheses :

*H*<sub>1</sub>: β<sub>1</sub><0, indicating that accounting conservatism reduces tax avoidance.

*H*<sub>2</sub>: β<sub>3</sub><0, suggesting that higher audit quality strengthens the disciplinary role of conservatism in constraining tax avoidance.

This multi-model estimation strategy ensures that our results are not driven by a single specification and enhances the robustness and credibility of the findings.

#### 4. Empirical Results

This section presents the empirical results. We first report descriptive statistics and correlation analysis, followed by diagnostic tests, the main regression analysis, and a series of robustness checks

##### 4.1. Descriptive Statistics

Table 1 reports the descriptive statistics for the main variables used in this study. The mean cash effective tax rate (CETR) is 0.209, with a median of 0.218 and a standard deviation of 0.092. On average, firms remit approximately 21% of their pre-tax income in cash taxes, although substantial heterogeneity is observed across the sample, with CETR values ranging from 0.2% to 47.9%. Similarly, the alternative proxy book–tax difference (BTD) exhibits a mean of 0.191, reflecting meaningful discrepancies between book and taxable income, often associated with tax planning activities.

The average C-Score (conditional conservatism) is 0.299, with values ranging from –0.081 to 0.721. This dispersion highlights significant variation in the extent to which firms recognize losses in a timely manner, providing a strong setting for investigating its potential governance role.

The control variables also show wide variability. Firm size (log of total assets) has a mean of 7.698, with a range from 5.241 to 11.347, indicating the presence of both relatively small and very large firms in the sample. Leverage averages 0.333, while profitability (ROA) has a mean of 0.072, with negative values observed for loss-making firms. The market-to-book ratio has an average of 1.978, consistent with moderate growth opportunities, while capital intensity averages 0.298, suggesting that approximately 30% of assets are invested in fixed capital. Finally, audit quality is relatively high in the sample: 70.8% of firms are audited by Big 4 auditors, confirming their dominant role in the European audit market.

**Table 1.**  
Descriptive statistics of main variables.

Variable	Mean	Median	Std. Dev.	Min.	Max.	Obs.
Tax Avoidance (CETR)	0.209	0.218	0.092	0.002	0.479	2577
Tax Avoidance (BTD)	0.191	0.197	0.082	0.008	0.497	2577
Accounting Conservatism (C-Score)	0.299	0.302	0.130	-0.081	0.721	2577
Firm Size (Ln Assets)	7.698	7.757	1.210	5.241	11.347	2577
Leverage	0.333	0.390	0.201	0.022	0.895	2577
Profitability (ROA)	0.072	0.058	0.084	-0.205	0.273	2577
Market-to-Book	1.978	1.755	0.910	0.465	5.731	2577
Capital Intensity	0.298	0.275	0.122	0.033	0.730	2577
Audit Quality	Modality		Proportion			
Audit Big 4	0		0.292			
	1		0.708			

Economically, the estimated coefficient suggests that a one-standard-deviation increase in conditional conservatism reduces the cash effective tax rate by approximately 0.5 percentage points. While this effect may appear modest, it is economically meaningful given that the mean CETR in the sample is around 21%. Moreover, when interacted with high audit quality, the marginal effect is amplified, with the total reduction reaching nearly 1 percentage point, underscoring the complementary role of conservatism and external auditing in constraining tax avoidance.

Overall, the descriptive statistics reveal substantial heterogeneity in tax avoidance behavior, conservatism levels, and audit quality, providing a rich basis for empirical testing.

##### 4.2. Correlation Analysis

Table 2 reports the Pearson correlation coefficients among the study variables. Consistent with expectations, the tax avoidance proxies (CETR) is positively correlated but exhibit correlations well below perfect collinearity, indicating that they capture related yet distinct dimensions of firms’ tax avoidance behavior

**Table 2.**

Pearson correlation matrix of main variables.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) Tax avoidanceCETR	1.000							
(2) Conservatism (C-s)	-0.225***	1.000						
(3) Audit Quality	-0.103**	0.192***	1.000					
(4) Firm Size	-0.189***	0.255***	0.522***	1.000				
(5) Leverage	0.098**	0.039	0.088*	0.149***	1.000			
(6) Profitability	-0.274***	0.122**	0.089**	0.159***	-0.091**	1.000		
(7) Market-to-Book	-0.105***	0.089*	0.061	0.191***	0.059	0.129***	1.000	
(8) Capital Intensity	0.079	-0.061	-0.039	-0.069*	0.209***	-0.119**	-0.097**	1.000

Note: CETR = cash effective tax rate, measured as cash taxes paid divided by pre-tax income; C-Score = conditional conservatism index Big4 = indicator equal to 1 if the firm is audited by a Big 4 auditor, 0 otherwise; Size = natural logarithm of total assets; Lev = leverage ratio, measured as total debt over total assets; ROA = return on assets, measured as net income over total assets; MTB = market-to-book ratio; CapInt = capital intensity, measured as net property, plant, and equipment divided by total assets.\*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels, respectively.

Source: Khan and Watts [20].

Importantly, accounting conservatism (C-Score) is negatively correlated with CETR ( $-0.225$ ,  $p < 0.01$ ), consistent with H1 and with the view that conservative accounting limits managerial incentives for aggressive tax planning. Similarly, audit quality (Big 4 indicator) is negatively associated with CETR ( $-0.103$ ,  $p < 0.05$ ), providing initial support for the monitoring role of auditors in constraining tax avoidance. Furthermore, conservatism and audit quality are positively correlated ( $0.192$ ,  $p < 0.01$ ), indicating that firms audited by high-quality auditors tend to adopt more conservative accounting practices.

Regarding the controls, firm size is negatively correlated with CETR ( $-0.189$ ,  $p < 0.01$ ), supporting the political cost hypothesis that larger firms are subject to greater scrutiny and therefore report higher effective tax burdens. Profitability (ROA) is also negatively correlated with tax avoidance ( $-0.274$ ,  $p < 0.01$ ), while leverage exhibits a positive association ( $0.098$ ,  $p < 0.05$ ), consistent with the tax shield benefits of debt. Importantly, no correlation coefficient exceeds 0.60, mitigating concerns about multicollinearity in subsequent regressions. This observation will be formally confirmed through Variance Inflation Factor (VIF) diagnostics in the subsequent section.

Before estimating the regression models, a series of diagnostic tests were conducted to ensure the appropriateness of the panel data methodology. These tests include the assessment of individual (firm-specific) effects, multicollinearity, heteroscedasticity, and serial correlation.

#### 4.3. Panel Data Diagnostics

Prior to estimating the regression models, a series of diagnostic tests was conducted to ensure the validity of panel data estimation. The mean Variance Inflation Factor (VIF = 1.93) is well below the conventional threshold of 10, indicating that multicollinearity is not a concern. However, the Modified Wald test for groupwise heteroscedasticity ( $\chi^2 = 398.8$ ,  $p < 0.01$ ) and the Wooldridge test for autocorrelation ( $F(1,412) = 16.7$ ,  $p < 0.01$ ) reveal the presence of heteroscedasticity and first-order serial correlation. To address these issues, all subsequent estimations are reported with heteroscedasticity- and autocorrelation-robust standard errors clustered at the firm level.

Regarding model specification, both the Fisher test ( $F = 19.9$ ,  $p < 0.01$ ) and the Breusch–Pagan LM test ( $\chi^2 = 89.4$ ,  $p < 0.01$ ) confirm the existence of unobserved firm-specific heterogeneity. Finally, the Hausman specification test ( $\chi^2 = 48.3$ ,  $p < 0.01$ ) strongly rejects the null hypothesis that the random-effects estimator is consistent, thus supporting the use of a fixed-effects model. Accordingly, all regression analyses are carried out using fixed-effects estimations with robust clustered standard errors.

**Table 3.**

Diagnostics test.

Test	Statistic	p-value	Conclusion
Variance Inflation Factor (VIF)	Mean VIF = 1.93	–	No multicollinearity concern
Modified.Wald (heteroscedasticity)	$\chi^2 = 398.8$	0.000	Heteroscedasticity detected
Wooldridge (autocorrelation)	$F(1,412) = 16.7$	0.000	First-order autocorrelation present
Fisher test (fixed effects)	$F = 19.9$	0.000	Individual effects confirmed
LM test (random effects)	$\chi^2 = 89.4$	0.000	Random effects confirmed
Hausman test	$\chi^2 = 48.3$	0.000	Fixed-effects preferred

The results of the diagnostic tests provide strong support for the use of a fixed-effects estimator with heteroscedasticity- and autocorrelation-robust standard errors clustered at the firm level. This specification appropriately controls for unobserved firm-level heterogeneity and ensures consistent inference in the presence of serial correlation and heteroscedasticity. Building on this foundation, the following section presents the regression results that test the hypothesized relationships between accounting conservatism, audit quality, and tax avoidance.

#### 4.4. Regression Results

Table 4 presents the regression results examining the relationship between accounting conservatism, audit quality, and tax avoidance. Models (1) and (2) report the baseline results using CETR and BTD as dependent variables, while Models (3) and (4) incorporate the interaction term to capture the moderating role of audit quality.

**Table 4.**  
Regression results for the impact of conservatism and audit quality on tax avoidance.

Variables	M1: Without interaction effect		M2: With interaction effect	
	CERT	BTD	CETR	BTD
Conservatism (C-Score)	-0.032***	-0.033***	-0.029**	-0.031**
Audit Quality (Big4)	-0.019*	-0.021*	-0.022	-0.018
Conservatism×Audit Quality			-0.031**	-0.029**
Firm Size (Ln Assets)	-0.020***	-0.019***	-0.021***	-0.018***
Leverage	0.021*	0.018*	0.016*	0.019*
Profitability (ROA)	-0.044***	-0.047***	-0.049***	-0.048***
Market-to-Book	-0.007	-0.008	-0.007	-0.009
Capital Intensity	0.008	0.009	0.011	0.010
Constant	0.188***	0.195***	0.205***	0.200***
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
N (observations)	2577	2577	2577	2577
Adj. R <sup>2</sup>	0.277	0.278	0.321	0.393

**Note:** Conservatism is measured using the C-Score while audit quality is proxied by a Big 4 indicator (equal to 1 if the firm is audited by PwC, Deloitte, EY, or KPMG, and 0 otherwise). Tax avoidance is measured by the cash effective tax rate (CETR = cash taxes paid/pre-tax income) and book-tax differences (BTD = pre-tax accounting income minus taxable income, scaled by lagged total assets). The interaction term (Conservatism × Audit Quality) captures the moderating role of audit quality. All models include year and industry fixed effects, with standard errors clustered at the firm level. \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels, respectively.

Source: Khan and Watts [20]

In the baseline specifications (Models 1 and 2), the coefficient on Conservatism (C-Score) is negative and highly significant across both proxies of tax avoidance ( $\beta = -0.032$  and  $-0.033$ ,  $p < 0.01$ ). This finding supports H1, indicating that firms with higher levels of conditional conservatism are less likely to engage in tax avoidance. This result is consistent with the view that timely recognition of losses restricts managerial discretion, thereby limiting opportunities for aggressive tax planning.

The coefficient on Audit Quality (Big 4) is also negative and marginally significant ( $\beta = -0.019$  and  $-0.021$ ,  $p < 0.10$ ). This suggests that the presence of a Big 4 auditor reduces firms' ability to manage taxable income, in line with the expectation that high-quality auditors constrain opportunistic reporting and strengthen compliance with tax obligations.

Models (3) and (4) extend the analysis by including the interaction term between conservatism and audit quality. The coefficient on Conservatism × Audit Quality is negative and statistically significant ( $\beta = -0.031$  and  $-0.029$ ,  $p < 0.05$ ), confirming H3. This result demonstrates that the disciplinary role of conservatism in constraining tax avoidance is amplified when firms are audited by Big 4 auditors. Put differently, while conservatism on its own reduces tax avoidance, its effect becomes stronger in environments with high audit quality. Notably, the adjusted R<sup>2</sup> improves from 0.277–0.278 in the baseline models to 0.321–0.393 in the interaction models, highlighting the explanatory relevance of the moderating effect.

Among the control variables, firm size and profitability (ROA) consistently show negative and significant associations with tax avoidance, suggesting that larger and more profitable firms are less aggressive in reducing their tax burden. In contrast, leverage is positively associated with tax avoidance, consistent with the tax shield benefits of debt financing. The coefficients on market-to-book ratio and capital intensity are statistically insignificant, indicating that growth opportunities and capital structure play a limited role in shaping tax avoidance in this setting.

Taken together, the results provide robust support for the hypotheses. Conservatism and audit quality both serve as effective governance mechanisms that constrain tax avoidance, and their interaction reveals a complementary relationship: conservatism establishes a more cautious financial reporting environment, while high-quality auditors reinforce its disciplinary impact through credible monitoring.

## 5. Robustness Checks

To assess the reliability of our results, a series of robustness checks was performed. Table 5 summarizes the findings.

**Alternative Variable Specifications:** In Column (2), tax avoidance is proxied by the GAAP effective tax rate (ETR). Conservatism remains negatively associated with tax avoidance ( $\beta = -0.032$ ,  $p < 0.05$ ), while the interaction term Conservatism × Audit Quality continues to be negative and significant ( $\beta = -0.028$ ,  $p < 0.05$ ). Similarly, in Column (3), when conservatism is measured using [1] asymmetric timeliness specification, the coefficient remains significant ( $\beta = -0.028$ ,  $p < 0.05$ ). These results confirm that our conclusions are not driven by the choice of proxies.

**Subsample Analyses:** In Column (4), we exclude crisis years 2020–2021 to test whether the COVID-19 shock biases our estimates. The coefficients on conservatism ( $\beta = -0.038$ ,  $p < 0.01$ ) and the interaction term ( $\beta = -0.030$ ,  $p < 0.05$ ) remain significant, suggesting that the disciplinary role of conservatism and audit quality is not specific to periods of

extraordinary market turbulence. This finding is especially relevant in the European context, where regulatory responses to the pandemic varied across countries.

Alternative Estimation Techniques: Column (5) reports GLS estimations, and Column (6) presents regressions with Driscoll–Kraay standard errors, which correct for cross-sectional dependence. In both cases, the coefficients on conservatism ( $\beta \approx -0.030$ ,  $p < 0.05$ ) and the interaction term ( $\beta \approx -0.029$  to  $-0.032$ ,  $p < 0.05$ ) remain stable, underscoring the robustness of our baseline specification.

Outlier Treatment: In Column (7), after winsorizing all continuous variables at the 1st and 99th percentiles, results remain materially unchanged. Conservatism ( $\beta = -0.031$ ,  $p < 0.01$ ) and the interaction term ( $\beta = -0.030$ ,  $p < 0.05$ ) continue to be significant, indicating that extreme values do not drive the findings.

**Table 5.**  
Robustness Checks.

Variables	Baseline (FE)	Alt. Tax Avoidance (ETR)	Alt. Conservatism (Basu)	Subsample (Excl. 2020–21)	GLS Estimation	Driscoll–Kraay SE	Winsorized Sample
Conservatism (C-Score)	-0.033***	-0.031**	-0.029**	-0.032***	-0.030**	-0.034***	-0.032***
Audit Quality (industry specialization)	-0.021*	-0.020*	-0.022	-0.019*	-0.020*	-0.022*	-0.021*
Conservatism × Audit Quality	-0.031**	-0.028**	-0.027*	-0.030**	-0.029**	-0.032**	-0.030**
Firm Size (Ln Assets)	-0.019***	-0.020***	-0.021***	-0.018***	-0.019***	-0.020***	-0.019***
Leverage	0.018*	0.017*	0.016*	0.019*	0.018*	0.017*	0.018*
Profitability (ROA)	-0.047***	-0.048***	-0.046***	-0.045***	-0.046***	-0.047***	-0.046***
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R <sup>2</sup> / Within R <sup>2</sup>	0.278	0.265	0.272	0.281	0.276	0.274	0.279

**Note:** The dependent variable is tax avoidance, alternatively measured by the effective tax rate (ETR). Conservatism is proxied by the C-Score by asymmetric timeliness measure. Audit quality is proxied by Big4 in the baseline and by auditor industry specialization in robustness tests. All continuous variables are winsorized at the 1st and 99th percentiles to reduce the influence of outliers. Standard errors are clustered at the firm level. To address heteroscedasticity, autocorrelation, and cross-sectional dependence, we apply GLS and estimators. \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels, respectively.

**Source:** Khan and Watts [20]; Basu [1] and Driscoll and Kraay [24].

Overall, the robustness checks confirm that the negative association between accounting conservatism and tax avoidance, as well as the moderating role of audit quality, hold across alternative proxies, subsamples, and estimation methods. These results enhance confidence in the empirical evidence and underline the stability of our conclusions in the heterogeneous European institutional environment.

Taken together, these robustness analyses confirm that our findings are not driven by model specification, proxy selection, or outlier effects. The consistency of the results across multiple tests underscores the reliability of the evidence and strengthens their relevance for European regulators and policymakers seeking to enhance financial reporting credibility and curb aggressive tax practices.

Overall, the robustness analyses confirm the stability of our baseline findings, reinforcing the view that accounting conservatism and audit quality operate as complementary governance mechanisms in constraining tax avoidance. Having established the consistency of these results across alternative specifications and subsamples, we now turn to the conclusion, which summarizes the main insights, theoretical contributions, and policy implications of the study.

## 6. Conclusion

This research set out to explore whether accounting conservatism serves as a disciplinary mechanism against tax avoidance and to assess the moderating role of external audit quality. Based on a panel of 388 European listed companies between 2012 and 2022, the evidence indicates that conservative reporting practices are negatively associated with aggressive tax behavior. Moreover, the results demonstrate that high-quality external auditors, proxied by Big 4 firms, enhance this constraining effect. These findings remain consistent across alternative specifications and robustness checks, highlighting the reliability of the results.

The study contributes to the literature in several ways. First, it extends prior research on conservatism by showing its relevance beyond contractual and governance contexts, emphasizing its effectiveness in shaping corporate tax practices. Second, it integrates conservatism and audit quality into a unified framework, addressing a gap in the literature where these factors have largely been studied separately. Third, by demonstrating that audit quality amplifies the governance role of conservatism, the study highlights the assurance value of external audits in mitigating opportunistic tax strategies.

From a practical perspective, the results carry implications for regulators, firms, and auditors. For policymakers, they suggest that encouraging prudent reporting and ensuring high-quality audits can be effective levers to curb aggressive tax

planning, thereby improving transparency and compliance. For firms, adopting conservative accounting and engaging reputable auditors can reduce reputational risks, lower exposure to penalties, and align with long-term shareholder interests. For auditors, the findings underline their function as external monitors whose role extends beyond financial statement assurance to influencing firms' tax behavior.

Despite its contributions, the study has limitations. The reliance on archival data and commonly used proxies for conservatism and tax avoidance may not fully capture the complexity of these constructs. Furthermore, the exclusive focus on European listed firms limits generalizability to other institutional environments, especially emerging markets. Additionally, other governance mechanisms, such as board oversight or internal audit, are not explicitly incorporated into the analysis.

Overall, our findings highlight the importance of accounting conservatism and audit quality as complementary governance mechanisms in constraining tax avoidance across European listed firms. Beyond their theoretical contribution, the results have practical implications for regulators and standard setters in Europe, where the ongoing debates around tax transparency, IFRS-based reporting, and audit market concentration remain highly salient. By showing that both internal reporting conservatism and external audit quality mitigate opportunistic tax behavior, the study underscores the need for coordinated regulatory policies that strengthen financial reporting credibility and foster greater tax compliance across the European Union.

Future research could build on these findings by examining institutional moderators such as investor protection, tax enforcement regimes, or cultural attitudes toward tax compliance. Another promising avenue is to consider the impact of digitalization and artificial intelligence in financial reporting and auditing, which may reshape the relationship between conservatism, audit quality, and tax practices. Cross-country comparisons between developed and emerging markets would also provide valuable insights into the external validity of the results.

In conclusion, this study demonstrates that conservative reporting and high-quality external audits jointly operate as complementary governance mechanisms in constraining tax avoidance. By bridging perspectives from accounting, auditing, and taxation, the findings provide an integrated understanding of how governance structures influence corporate behavior, offering both theoretical contributions and practical implications for scholars, regulators, and practitioners.

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