

Employee Share Ownership and Tax Avoidance: The Moderating Role of Board Independence in SBF 120 Firms

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Abstract

Corporate tax avoidance continues to attract scrutiny from regulators and researchers alike, yet little is known about how governance mechanisms behave when they operate together rather than in isolation, since most studies still treat ownership structure and board composition as separate levers. This paper examines whether employee share ownership and board independence reinforce or offset one another in shaping tax avoidance among SBF 120 (Société des Bourses Françaises 120) firms, using a panel of 104 French listed companies observed from 2011 to 2023, with 1,120 firm-year observations in the main models. We estimate dynamic panel models via system Generalized Method of Moments, an approach chosen for its ability to handle the endogeneity concerns and behavioral persistence that typically arise in tax research. The results show that firms with higher employee ownership report a higher Cash Effective Tax Rate (ETR), that is, less tax avoidance, a pattern consistent with employee-shareholders who, unable to separate their savings from their job security, tend to favor fiscal caution. Board independence works in the opposite direction, with more independent boards associated with a lower Cash ETR - a pattern more consistent with an advisory than a disciplinary role, though this interpretation is not directly tested here and should be read as suggestive rather than confirmatory. The most notable finding concerns the interaction between the two: when board independence is high, the tax-restraining effect of employee ownership is stronger, pointing to a complementary rather than substitutive relationship between the two mechanisms. The difference is statistically clear but modest in size. When Book-Tax Differences replaces Cash ETR as the dependent variable, the coefficients keep the expected signs, with weaker significance. Taken together, these findings suggest that ownership structure and board composition do not simply add up their separate effects on tax behavior but interact with one another, challenging the additive logic that still dominates much of the governance literature and offering evidence from a civil law setting where this particular pairing had received little attention.

Categories: Auditing and taxation, Strategic finance, Corporate Governance & Business Ethics

Keywords: employee share ownership, board independence, tax avoidance, cash etr, governance complementarity, sbf 120, system gmm, france

Introduction

Corporate tax avoidance has become one of the most closely watched dimensions of firm behavior, drawing sustained attention from regulators, investors, and academic researchers. Despite the volume of research this interest has generated, a fundamental question remains largely unaddressed: when multiple governance mechanisms coexist within the same firm, do they reinforce one another or work at cross-purposes? Most existing work sidesteps this question by examining ownership structure and board composition as though they were independent drivers of tax behavior. A small number of studies have begun to test this proposition directly by modeling ownership and governance jointly (Annuar et al., 2014) (Shaukat Malik et al., 2025), but such interactive approaches remain the exception rather than the rule, particularly outside emerging-market settings. The result is a body of evidence that is internally coherent but institutionally incomplete: we know what each mechanism does in isolation, but very little about what happens when they operate simultaneously within the same firm.

Employee share ownership (ESO) sits at the center of this gap. Unlike institutional or managerial ownership, ESO creates distinct incentives because employees' financial and professional interests are directly tied to the firm's performance: because employees cannot diversify their exposure to the firm, their financial and professional stakes are inextricably linked to its fortunes. Financial

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wealth, job security, and career prospects all depend on the same employer, creating a risk exposure that sets employee-shareholders apart from other ownership constituencies - a point made early on in work on concentrated, undiversifiable ownership more broadly (Chen et al., 2010). Rather than pushing toward aggressive tax optimization, this concentrated exposure may incline employee-shareholders toward the kind of fiscally conservative behavior that preserves the firm's institutional legitimacy and long-term stability. Empirical evidence on this mechanism nevertheless remains scarce, particularly in developed market contexts where employee ownership plans are institutionally embedded.

France offers a natural setting in which to examine these dynamics. Its civil law tradition, combined with a long-standing culture of employee financial participation and a well-developed population of listed firms with formalized ownership plans, makes France a setting that the governance literature has largely bypassed. SBF 120 firms in particular operate under regulatory scrutiny, stakeholder pressure, and mandatory governance standards of a kind that make the interaction between ownership structure and board composition both practically significant and empirically tractable. ESO within SBF 120 firms has already been linked to financial performance outcomes (Achour, 2024), which speaks to the relevance of this ownership mechanism in the French listed-firm context, yet its interaction with board independence in shaping tax behavior remains unexplored. To our knowledge, the joint effect of employee ownership and board independence on tax behavior in this institutional context has not been examined.

This paper addresses that gap. Drawing on a panel of 104 French listed firms observed over the period 2011 to 2023, we investigate the direct effects of ESO and board independence on corporate tax avoidance, and more importantly their combined effect. We estimate dynamic panel models via the system Generalized Method of Moments, an approach suited to the endogeneity concerns common in governance research and to the persistence that characterizes tax avoidance behavior over time.

The analysis yields three main results. Higher ESO is associated with a higher Cash Effective Tax Rate (ETR), that is, with lower tax avoidance, in a pattern consistent with the risk-aversion logic that characterizes employee-shareholders in the French context. Board independence, in contrast, is negatively associated with the Cash ETR: firms with more independent boards exhibit greater tax avoidance, a result more consistent with the advisory role hypothesis than with the disciplinary view. The third result is perhaps the most substantive. The interaction between employee ownership and board independence is positive and highly significant, meaning that the tax-constraining effect of employee ownership grows stronger as board independence increases. With an alternative Book-Tax Differences (BTD) proxy, the interaction keeps the expected sign but is significant only at the 10% level. This governance complementarity result is the paper's central contribution.

These results bear on a growing body of work that challenges the additive logic underlying most multi-mechanism governance studies. Ownership structure and board composition do not merely add their individual effects; they interact, so that the effect of one depends on the level of the other. The implications reach beyond tax avoidance to the broader question of how governance configurations shape managerial decisions in civil law settings.

The paper proceeds as follows. The relevant literature and hypotheses are discussed first, followed by the research design, sample, and variable measurement. The empirical results are then presented, followed by a discussion of the findings within the broader governance literature. The paper concludes with the main findings and implications.

Literature review

Employee Share Ownership and Tax Avoidance

The relationship between ESO and corporate tax behavior is theoretically more complex than the classical agency framework suggests. The standard alignment argument holds that once employees become shareholders, they grow sensitive to anything that reduces residual cash flows, including the tax burden. While intuitively appealing, this reasoning rests on an assumption that does not travel easily across institutional contexts: that employee-shareholders resemble other equity holders in their risk exposure, their time horizon, and their capacity to diversify. That assumption rarely holds in practice.

Fama identified this distinctive position early on, noting that employees bear firm-specific human capital risk that makes them structurally more sensitive to threats to the firm's long-term stability than to short-term cash flow optimization (Fama, 1980). Unlike institutional investors or managers, employees cannot separate their financial stake from their employment relationship, as their savings and job security are simultaneously tied to the same organization. From this perspective, aggressive tax planning, with its attendant regulatory, reputational, and legal risks, is precisely the kind of behavior that employee-shareholders have reason to resist.

Recent empirical work does not all point in this direction. Li et al. find that Employee Stock Ownership Plans reduce the corporate income tax burden in China, a result closer to the classical alignment logic than to the risk-aversion argument (Li et al., 2025). Huang et al. reach a similar conclusion for Chinese state-owned enterprises, where ownership by employee shareholders is positively associated

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with tax avoidance (Huang et al., 2025). The restraint argument finds support elsewhere: Chen et al. show that in family firms, concentrated and undiversifiable ownership pushes toward fiscal caution rather than aggressive planning (Chen et al., 2010). The evidence is therefore mixed and seems to depend on the institutional setting.

The institutional environment further conditions this effect. Desai and Dharmapala show that the behavioral consequences of ownership-based incentives depend critically on the broader governance environment: where agency problems are contained and oversight is effective, internal stakeholders tend to favor compliance over optimization (Desai and Dharmapala, 2006). Core and Guay and Oyer and Schaefer document how equity-based compensation reorients employee preferences toward long-term value preservation (Core and Guay, 2001) (Oyer and Schaefer, 2005). In a civil law environment with strong stakeholder accountability norms, this reorientation is more likely to express itself as fiscal prudence than as appetite for aggressive tax strategies.

These contextual dependencies are well documented in recent reviews. Velte confirms that ownership effects on tax behavior are rarely unconditional and depend heavily on the governance context in which they operate (Velte, 2024). Salah and Achour add that employee-shareholders can act as meaningful governance participants rather than simply vehicles for economic incentives (Salah and Achour, 2025). In large French listed firms, where mandatory governance codes, union representation, and regulatory oversight converge, these conditions are particularly likely to reinforce the risk-aversion channel. Employee-shareholders facing concentrated employment risk and long investment horizons tend toward stable, compliant behavior that protects the firm's legitimacy, treating fiscal prudence as a form of risk management rather than a constraint on short-term returns.

Throughout the hypotheses below, tax avoidance is operationalized inversely through the Cash ETR: a higher Cash ETR indicates lower tax avoidance, and a lower Cash ETR indicates greater tax avoidance. Given the risk profile of employee-shareholders and the institutional conditions that characterize large French listed firms, we expect employee ownership to be associated with greater fiscal prudence rather than more aggressive tax planning. Our first hypothesis is therefore:

H1: ESO is negatively associated with tax avoidance.

Board Independence and Tax Avoidance: Disciplinary Pressure versus Advisory Expertise

Tax avoidance is not a routine managerial decision. It touches simultaneously on financial performance, institutional legitimacy, and long-term risk exposure, a combination that managers focused on immediate results tend to handle poorly. Hanlon and Heitzman argue that the true cost of tax avoidance lies not in its visible charges but in the risks it quietly accumulates over time (Hanlon and Heitzman, 2010). Independent directors, whose autonomy from management leaves them directly exposed to the reputational consequences of those risks, have good reason to weigh that trade-off differently from executives.

The empirical record gives partial support to this disciplinary reading. Armstrong et al. find that more independent boards are associated with less tax avoidance where avoidance is high, and with more avoidance where it is low, which suggests that boards curb the extremes (Armstrong et al., 2015). This disciplinary reading was already established well before the recent wave of studies: Minnick and Noga and Lanis and Richardson both find that board composition shapes tax outcomes in ways consistent with a monitoring role, providing an earlier empirical anchor for the same argument (Minnick and Noga, 2010) (Lanis and Richardson, 2011). El-Feel et al., drawing on a large-scale bibliometric synthesis, identify board independence as one of the governance characteristics most consistently linked to reduced tax aggressiveness (El-Feel et al., 2025). Yahaya et al. corroborate this pattern across diverse regulatory environments (Yahaya et al., 2026).

These dynamics are arguably sharpest in the SBF 120 context. Large French listed firms operate under sustained regulatory scrutiny, active pressure from unions and responsible investors, and governance codes that heighten accountability expectations for board members. As Avi-Yonah reminds us, large corporations are embedded in political and social environments that impose legitimacy constraints of considerable force, constraints that weigh most directly on those whose independence signals public accountability (Avi-Yonah, 2008). For SBF 120 independent directors, the reputational cost of facilitating aggressive tax behavior is real and difficult to conceal.

That said, the literature does not speak with a single voice. A competing strand of the literature, rooted in the advisory role of boards, holds that independent directors may bring financial and legal expertise that enables more sophisticated tax planning rather than constraining it. This effect tends to surface in civil law environments where concentrated ownership and direct regulatory oversight already perform much of the disciplinary work. Khaoula and Ali document precisely this pattern in a comparable civil law setting, and Dhiyaulhaq and Fadjarenie similarly show that board-level fiscal expertise can shape tax outcomes in ways that run counter to the disciplinary prediction (Khaoula and Ali, 2012) (Dhiyaulhaq and Fadjarenie, 2023). Whether the disciplinary or advisory channel dominates in the specific governance architecture of French listed firms is ultimately an empirical question, and one that the existing literature has not addressed.

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The SBF 120 environment, with its accountability norms, media exposure, and regulatory density, presents conditions broadly consistent with the disciplinary channel. Ali et al. further show that this disciplinary effect is amplified when ownership-based monitoring mechanisms are present, a point taken up in the next subsection (Ali et al., 2024). The advisory channel nevertheless remains a plausible alternative in a context where concentrated ownership and direct regulatory oversight already perform much of the disciplinary work. Drawing on the disciplinary view as the theoretical baseline and recognizing the institutional ambiguity of the French context, we formulate our second hypothesis as follows:

H2: Board independence is negatively associated with tax avoidance.

Board Independence as a Moderating Mechanism

The two preceding subsections establish that ESO and board independence each shape corporate tax behavior, though through channels that are distinct and heavily conditioned by institutional context. A further question, however, concerns their interaction: what happens when employee-shareholders oriented toward fiscal compliance operate within firms governed by highly independent boards?

Bebchuk and Fried established that the effectiveness of any incentive mechanism is not intrinsic but conditional upon the governance architecture within which it operates (Bebchuk and Fried, 2004). In the present context, this means the tax-constraining effect of employee ownership is not fixed but varies with board composition. Desai and Dharmapala formalized this conditionality by showing that the behavioral effects of ownership-based incentives on tax outcomes vary significantly with the quality of internal governance structures (Desai and Dharmapala, 2006).

Del Sordo and Zattoni develop this logic into a multilevel complementarity view. In their framework, employee ownership shapes firm behavior through informal channels such as preference alignment and reputational concern, while board independence operates through formal oversight and strategic orientation (Del Sordo and Zattoni, 2025). When both mechanisms point in the same direction, independent directors reinforce at the strategic level the fiscal prudence that employee-shareholders carry informally, converting a diffuse risk-aversion into a coherent governance orientation. Together, their disciplinary force exceeds what either could achieve independently. Ali et al. provide direct empirical support for this view, documenting that the disciplinary effect of board independence is significantly amplified in the presence of strong ownership-based monitoring (Ali et al., 2024).

In the SBF 120 context, this complementarity carries additional institutional weight. Employee-shareholders facing concentrated employment risk and independent directors exposed to reputational accountability tend, for different reasons, to favor the same compliance-oriented outcomes. When these two forces coexist, their alignment is expected to constrain tax avoidance more effectively than either mechanism acting alone. Velte and Salah and Achour offer convergent, if indirect, support for this prediction by documenting the conditionality of ownership effects and the interactive nature of internal governance mechanisms (Velte, 2024) (Salah and Achour, 2025).

These arguments suggest that board independence does not merely add a second layer of oversight but reshapes the conditions under which employee ownership operates. We therefore expect:

H3: Board independence positively moderates the relationship between ESO and tax avoidance.

Figure 1 summarizes the hypothesized relationships between the three constructs.

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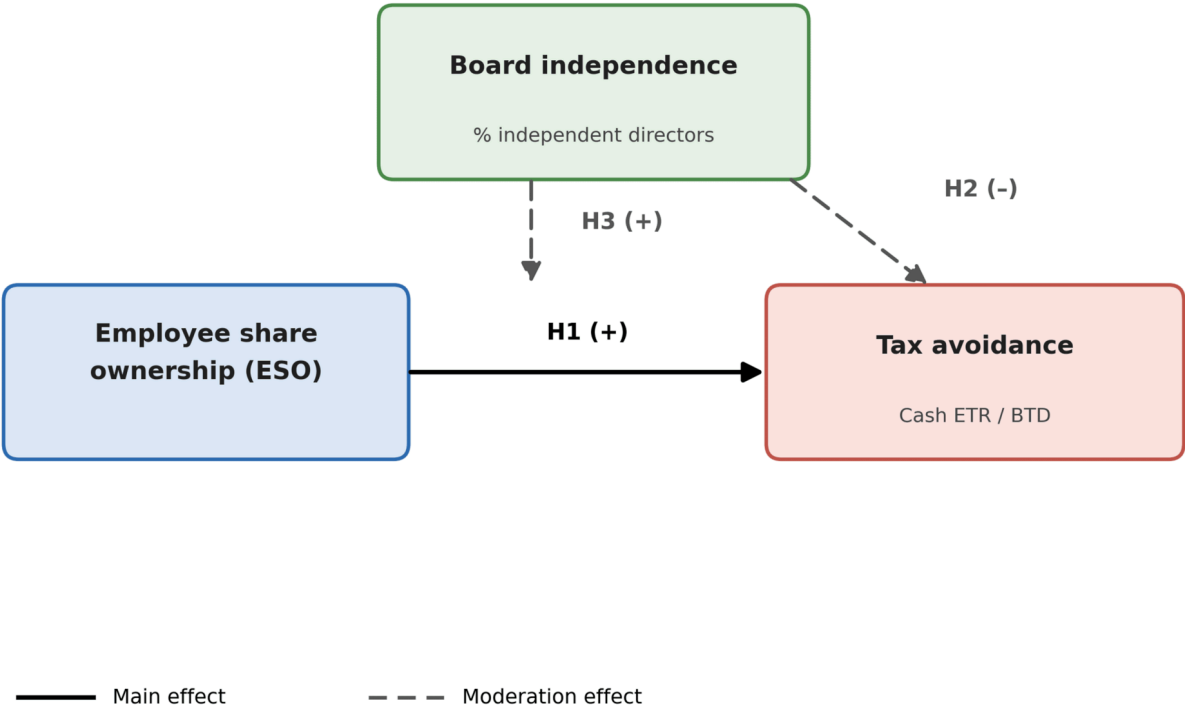


FIGURE 1: Conceptual framework.

The figure presents the hypothesized relationships between employee share ownership (ESO), board independence (BINDP), and corporate tax avoidance. H1 and H2 represent the direct effects; H3 represents the moderating effect of board independence on the ESO - tax avoidance relationship. Cash ETR is an inverse proxy for tax avoidance: a higher Cash ETR indicates lower tax avoidance. BTD is a direct proxy: a higher BTD indicates more tax avoidance. ETR: Effective Tax Rate; BTD: Book-Tax Differences.

Source: Figure prepared by the authors using Python (Matplotlib), based on the conceptual model described in this section.

Research Method

Methodology

Research Design, Sample, and Data Sources

The sample is drawn from the firms of the SBF 120 index. Governance and financial data were collected from Datastream and Refinitiv Eikon (Refinitiv, 2025). We retained the 104 French listed firms for which data are available over the whole 2011 to 2023 period. The panel is therefore balanced in structure, with 1,352 potential firm-year observations. Some values are missing, however, so the number of available observations differs from one variable to another, from 1,224 for Cash ETR to 1,330 for leverage (Table 2). Most variables have very few missing values. The two exceptions are Cash ETR and board independence, with 128 and 78 missing firm-years respectively.

The regression models use fewer observations. Because the lagged dependent variable is not available for 2011, each firm loses its first year. The Cash ETR models are estimated on 1,120 observations and the BTD models on 1,098, the difference reflecting a few additional missing values on BTD. Adding board independence in Model 2 does not reduce the sample further, since its missing values fall on observations already excluded. The number of firms (104) is the same in all specifications.

All estimations were carried out in Stata/SE 14, using the xtabond2 command (Roodman, 2009) for the system GMM specifications.

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Variable Measurement

Dependent variable: Corporate tax avoidance is measured using the Cash ETR, calculated by dividing total income taxes paid in cash by pre-tax income, in accordance with the work of Salah et al. (Salah et al., 2026) and Shakri et al. (Shakri et al., 2025). It is important to note that the Cash ETR is considered an indirect indicator rather than a direct measure of tax avoidance, as it can also reflect factors unrelated to avoidance, such as loss carryforwards, tax credits, or timing differences (see Limitations section). As an alternative measure, we use Book-Tax Differences (BTD), defined as pre-tax accounting income less taxable income, scaled by total assets and expressed in percent. Unlike the Cash ETR, BTD is a direct proxy: a higher BTD indicates more tax avoidance.

Independent variable: ESO is measured as the percentage of outstanding shares held by employees. This operationalization follows Salah and Achour and Li et al., who treat the proportion of employee-held capital as the most direct observable indicator of employee-shareholder influence within the firm (Salah and Achour, 2025) (Li et al., 2025).

Moderating variable: Board independence (BINDP) is measured as the proportion of independent directors on the board, consistent with Salah, Achour and Boussaada, Campa et al., and Gull et al. (Salah et al., 2026) (Campa et al., 2022) (Gull et al., 2018). This measure reflects the extent to which the board can exercise oversight independently of managerial influence.

Control variables: Five control variables are included to account for firm-level characteristics known to influence tax avoidance. Firm size (SIZE) is the natural logarithm of total assets; larger firms face greater political visibility and are more likely to attract regulatory scrutiny, which may affect their tax behavior (Dakhli, 2022) (Shakri et al., 2025). Profitability (ROA) is pre-tax income scaled by total assets; more profitable firms face higher statutory tax liabilities and therefore have stronger incentives to engage in tax planning (Li et al., 2025) (Shakri et al., 2025). Financial leverage (LEV) is the ratio of total debt to book equity, as debt financing generates interest deductions that systematically reduce effective tax rates (Baghdadi et al., 2022) (Gull et al., 2018). Operating cash flow (CASH) is cash flows from operating activities divided by total assets, included to control for the firm's ability to generate internal resources (Salah et al., 2026). Finally, the market-to-book ratio (MTB) is the ratio of opening market capitalization to opening common equity, included as a proxy for growth opportunities (Kerr, 2019) (Salah et al., 2026). Table 7 summarizes all variable definitions.

Variable	Abbreviation	Measurement
Cash effective tax rate	Cash ETR	Total taxes paid in cash divided by pre-tax income
Employee share ownership	ESO	Percentage of shares held by employees
Board independence	BINDP	Percentage of independent directors on the board
Firm size	SIZE	Natural logarithm of total assets
Return on assets	ROA	Pre-tax income divided by total assets
Financial leverage	LEV	Total debt divided by book equity
Operating cash flow	CASH	Operating cash flow divided by total assets
Market-to-book ratio	MTB	Opening market capitalization divided by opening common equity

TABLE 1: Variable definitions.

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Model Specifications

The system GMM estimator developed by Blundell and Bond is preferred over the difference GMM estimator of Arellano and Bond on two grounds (Blundell and Bond, 1998) (Arellano and Bond, 1991). First, several regressors, notably firm size and profitability, exhibit limited within-firm variation over the sample period. In that case, lagged levels are weak instruments for first differences and the difference estimator loses precision. By combining moment conditions in levels and in differences, the system GMM makes fuller use of the available variation in both the cross-sectional and time-series dimensions. Second, tax behavior depends on its own past, modestly for the Cash ETR and more clearly for BTD, so a dynamic specification is needed, and employee ownership cannot be treated as strictly exogenous.

Both models include the lagged dependent variable to capture the dynamics of tax behavior. Model 1, given in Equation (1), follows the specification of Li et al. and tests the direct effect of ESO on tax avoidance (Li et al., 2025).

$$\text{Cash ETR}_{it} = \alpha_0 + \alpha_1 \text{Cash ETR}_{i,t-1} + \alpha_2 \text{ESO}_{it} + \alpha_3 \text{SIZE}_{it} + \alpha_4 \text{ROA}_{it} + \alpha_5 \text{LEV}_{it} + \alpha_6 \text{CASH}_{it} + \alpha_7 \text{MTB}_{it} + \varepsilon_{it}(1)$$

Model 2, given in Equation (2), extends this baseline by introducing board independence and the interaction term $\text{ESO} \times \text{BINDP}$, allowing us to test both the direct effect of board composition on tax avoidance and its moderating role in the ESO-tax avoidance relationship:

$$\begin{aligned} \text{Cash ETR}_{it} = & \alpha_0 + \alpha_1 \text{Cash ETR}_{i,t-1} + \alpha_2 \text{ESO}_{it} + \alpha_3 \text{BINDP}_{it} + \alpha_4 \text{ESO}_{it} \times \text{BINDP}_{it} \\ & + \alpha_5 \text{SIZE}_{it} + \alpha_6 \text{ROA}_{it} + \alpha_7 \text{LEV}_{it} + \alpha_8 \text{CASH}_{it} + \alpha_9 \text{MTB}_{it} + \varepsilon_{it}(2) \end{aligned}$$

Equations (1) and (2) are also estimated with BTD and its own lag in the robustness analysis.

Instruments were restricted to the second lag of the endogenous regressors (lag 2), consistent with common practice in system GMM estimation to limit instrument proliferation. The resulting instrument count was 84 for Model 1 and 86 for Model 2, consistent across the Cash ETR and BTD specifications, remaining below the number of cross-sectional units (104 firms) in every specification, in line with the rule of thumb proposed by Roodman (Roodman, 2009).

Results And Discussion

Results

Descriptive Statistics and Correlations

Table 2 reports the descriptive statistics for the main variables. The mean Cash ETR is 0.229, with a standard deviation of 0.083. It is below the French statutory corporate tax rate, which fell from 33.33% at the start of the period to 25% from 2022 onward. ESO averages 1.447% with wide dispersion, pointing to meaningful variation in ownership structures among SBF 120 companies. Board independence averages 52.8%, meaning that independent directors hold about half of board seats on average, a figure broadly consistent with French corporate governance recommendations. The distributional properties of the control variables are broadly comparable to those reported in related studies on the French institutional context, suggesting the sample is representative of large listed firms in this setting.

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Variable	Obs	Mean	Std. Dev.	Min	Max
Cash ETR	1,224	0.229	0.083	0.000	0.567
ESO	1,321	1.447	4.109	0.001	24.395
BINDP	1,274	0.528	0.116	0.143	1.000
SIZE	1,324	8.163	1.999	6.989	14.149
ROA	1,324	0.060	0.133	-0.241	0.462
LEV	1,330	0.520	0.394	0.109	1.368
CASH	1,320	0.088	0.137	-0.221	0.689
MTB	1,324	2.011	2.160	0.367	8.776

TABLE 2: Descriptive statistics.

Cash ETR: total taxes paid in cash divided by pre-tax income; ESO: percentage of shares held by employees; BINDP: percentage of independent directors on the board; SIZE: natural logarithm of total assets; ROA: pre-tax profit divided by total assets; LEV: total debt divided by book equity; CASH: operating cash flow divided by total assets; MTB: opening market capitalization divided by opening common equity.

Source: Authors' own calculations.

Table 3 reports the pairwise Pearson correlation coefficients. The highest correlation, 0.679, is between operating cash flow and the MTB ratio. It remains below the 0.80 threshold generally associated with problematic multicollinearity. Return on assets and financial leverage are negatively correlated (-0.345), which is the usual pattern: more profitable firms rely less on debt. Variance Inflation Factor (VIF) values, computed before adding the interaction term, range from 1.10 to 2.06, far from the usual thresholds of 5 or 10.

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Variable	Cash ETR	ESO	BINDP	SIZE	ROA	LEV	CASH	MTB	VIF
Cash ETR	1.000								
ESO	0.327***	1.000							1.19
BINDP	-0.035	0.180***	1.000						1.12
SIZE	0.019	0.069**	-0.079***	1.000					1.46
ROA	0.027	-0.185***	-0.033	-0.290***	1.000				1.31
LEV	-0.031	-0.079***	-0.074***	0.367***	-0.345***	1.000			1.46
CASH	0.043	-0.010	0.041	-0.058**	0.418***	-0.017	1.000		2.04
MTB	0.027	0.029	-0.030	-0.315***	0.467***	-0.124***	0.679***	1.000	2.06

TABLE 3: Correlation matrix.

Note: *** $p < 1\%$; ** $p < 5\%$; * $p < 10\%$. Correlations are pairwise and use all observations available for each pair of variables. VIF values are computed on the estimation sample, which is smaller because of the lagged dependent variable. The regression used for the VIFs includes the lagged Cash ETR (VIF = 1.10) and excludes the interaction term.

Source: Authors' own calculations.

VIF: Variance Inflation Factor; Cash ETR: total taxes paid in cash divided by pre-tax income; ESO: percentage of shares held by employees; BINDP: percentage of independent directors on the board; SIZE: natural logarithm of total assets; ROA: pre-tax profit divided by total assets; LEV: total debt divided by book equity; CASH: operating cash flow divided by total assets; MTB: opening market capitalization divided by opening common equity.

Main Regression Results

Table 4 reports the system GMM estimates for Model 1 (Equation 1). A Fisher test p-value below 0.01 confirms the overall significance of the specification. The Arellano-Bond first-order autocorrelation test yields an AR(1) statistic of -1.966 ($p = 0.049$), consistent with the first-order serial correlation expected in dynamic panel models. The second-order autocorrelation AR(2) statistic of -0.546 ($p = 0.585$) satisfies the requirement for GMM consistency. The Sargan-Hansen test statistic of 82.790 ($p = 0.278$) confirms the validity of the instrument set.

The coefficient on ESO is positive and significant at the 1% level ($\beta = 0.001$, $p = 0.001$), indicating that higher employee ownership is associated with a higher Cash ETR, that is, with lower tax avoidance, consistent with H1. The lagged Cash ETR enters with a positive and significant coefficient ($\beta = 0.043$, $p < 0.01$). The persistence is modest but supports the use of a dynamic specification. Among the control variables, firm size and financial leverage are negatively associated with the Cash ETR, while profitability and the MTB ratio show positive and significant associations. Operating cash flow is also negatively associated with the Cash ETR. These results are in line with what the literature reports for comparable samples of large listed firms.

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Variable	Coefficient	p-value
Cash ETR (t-1)	0.043	0.000***
ESO	0.0010	0.001***
SIZE	-0.012	0.000***
ROA	0.126	0.000***
LEV	-0.005	0.000***
CASH	-0.004	0.010**
MTB	0.082	0.002***
Constant	0.101	0.000***
AR(1)	-1.966	0.049
AR(2)	-0.546	0.585
Sargan-Hansen test	82.790	0.278
Number of instruments	84	
Number of observations	1,120	
Number of firms	104	

TABLE 4: GMM estimates—direct effect of employee share ownership (H1).

Note: *** $p < 0.01$; ** $p < 0.05$. Variable definitions as in Table 1. In the regressions, MTB is divided by 100.

Source: Authors' own calculations. Cash ETR: total taxes paid in cash divided by pre-tax income; ESO: percentage of shares held by employees; BINDP: percentage of independent directors on the board; SIZE: natural logarithm of total assets; ROA: pre-tax profit divided by total assets; LEV: total debt divided by book equity; CASH: operating cash flow divided by total assets; MTB: opening market capitalization divided by opening common equity; GMM: Generalized Method of Moments.

Moderation Analysis

Table 5 presents the results of Model 2 (Equation 2), which extends the baseline specification by introducing board independence and the interaction term $ESO \times BINDP$. A Fisher test p-value below 0.01 confirms the overall significance of the specification. The AR(1) statistic in Model 2 ($p = 0.064$) falls marginally above the conventional 5% threshold. This is interpreted as a finite-sample power limitation rather than evidence of misspecification, consistent with the reduced power of the AR(1) test in panels of moderate time dimension ($T = 13$), and with the general caution against treating conventional significance thresholds as hard cutoffs in dynamic panel GMM diagnostics (Roodman, 2009). The decisive diagnostic for GMM consistency, the absence of second-order autocorrelation, is clearly satisfied (AR(2): $p = 0.877$). Nonetheless, the borderline AR(1) result is noted, and Model 2 estimates should be considered marginally less precisely identified than those of Model 1, where AR(1) is unambiguous ($p = 0.049$). The Sargan-Hansen test statistic of 87.075 ($p = 0.181$) validates the instrument set.

The coefficient on ESO remains positive and significant at the 1% level ($\beta = 0.0016$, $p < 0.01$), consistent with the main effect documented in Model 1 and confirming H1. Board independence enters with a negative and significant coefficient ($\beta = -0.056$, $p < 0.01$), indicating that firms with more independent boards tend to report lower Cash ETR values. This result runs counter to H2 and is

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taken up in the discussion of board independence below. The interaction term $ESO \times BINDP$ is positive and significant at the 1% level ($\beta = 0.0019$, $p < 0.01$), confirming H3. This statistical interaction is discussed below, in the subsection on governance complementarity alongside its limits, as evidence of the underlying causal mechanism.

Variable	Coefficient	p-value
Cash ETR (t-1)	0.036	0.000***
ESO	0.0016	0.000***
BINDP	-0.056	0.000***
$ESO \times BINDP$	0.0019	0.000***
SIZE	-0.012	0.000***
ROA	0.123	0.000***
LEV	-0.004	0.000***
CASH	-0.005	0.000***
MTB	0.074	0.002***
Constant	0.148	0.000***
AR(1)	-1.849	0.064
AR(2)	0.154	0.877
Sargan-Hansen test	87.075	0.181
Number of instruments	86	—
Number of observations	1,120	—
Number of firms	104	—

TABLE 5: GMM estimates—Model 2 (board independence and $ESO \times BINDP$ interaction, Cash ETR).

Note: *** $p < 0.01$. Variable definitions as in Table 1. In the regressions, MTB is divided by 100.

Source: Authors' own calculations. Cash ETR: total taxes paid in cash divided by pre-tax income; ESO: percentage of shares held by employees; BINDP: percentage of independent directors on the board; SIZE: natural logarithm of total assets; ROA: pre-tax profit divided by total assets; LEV: total debt divided by book equity; CASH: operating cash flow divided by total assets; MTB: opening market capitalization divided by opening common equity; GMM: Generalized Method of Moments.

Figure 2, which plots predicted Cash ETR as a function of ESO at high and low levels of board independence, makes the complementarity result visible: the slope is steeper when board independence is high, so the tax-constraining effect of employee ownership grows with board independence. To assess the economic significance of this complementarity, we compute the marginal effect of employee ownership on the Cash ETR at high and low levels of board independence. At low board independence (mean – 1 SD = 41.2%), a one-standard-deviation increase in employee ownership (4.109 percentage points) is associated with a predicted Cash ETR increase of approximately 0.010, or 4.3% of the sample mean. At high board independence (mean + 1 SD = 64.4%), the same increase is associated with a predicted Cash ETR increase of approximately 0.012, or 5.1% of the sample mean. The gap between the two is under one percentage point. The interaction is therefore statistically significant (Table 5, $\beta = 0.0019$, $p < 0.01$) but modest in

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economic terms. In the BTD robustness check (Table 6), it keeps the expected sign and is significant at the 10% level. These marginal effects are descriptive illustrations of the interaction at representative levels of board independence rather than independently tested simple slopes; the formal statistical evidence for moderation rests on the significance of the ESO $\times$ BINDP interaction term itself. The control variables retain their signs and statistical significance from Model 1, with minor variations in magnitude.

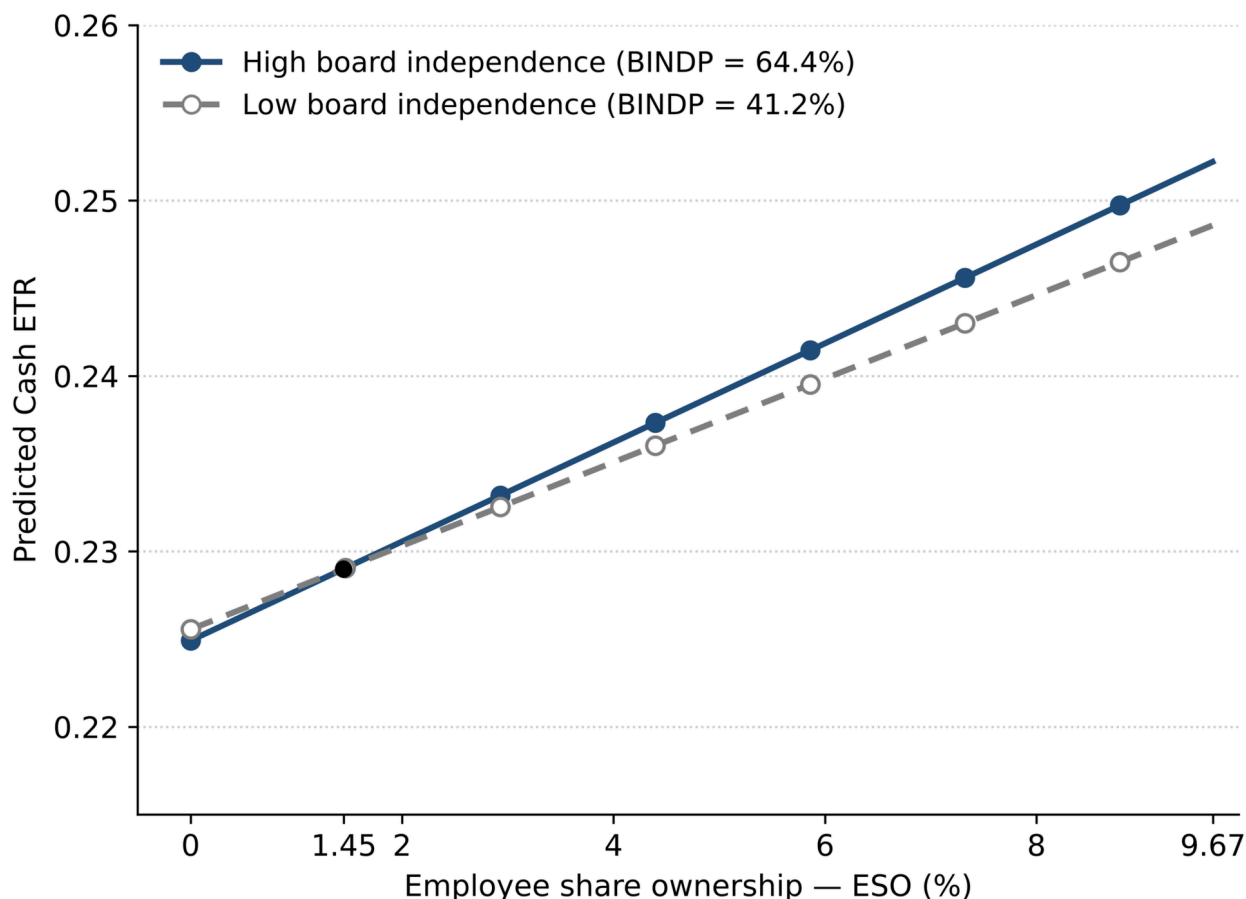


FIGURE 2: Moderating effect of board independence on the ESO—cash ETR relationship.

Predicted Cash ETR values are derived from the Model 2 GMM estimates. Both lines are anchored at the same point at mean employee share ownership (1.447%) so that only the difference in slopes is shown. The direct effect of board independence ($\beta = -0.056$), which would place the high-independence line about 0.012 below the low-independence line, is not displayed. High (low) board independence is defined as the sample mean plus (minus) one standard deviation: 64.4% (41.2%). Cash ETR is an inverse proxy for tax avoidance: a higher Cash ETR indicates lower tax avoidance.

Source: Figure prepared by the authors using Python (Matplotlib), based on the model estimates reported in Table 5. GMM: Generalized Method of Moments; ETR: Effective Tax Rate; ESO: Employee share ownership.

Robustness Analysis

To assess the sensitivity of the results to the choice of tax avoidance proxy, we re-estimate Models 1 and 2 using BTD as the dependent variable, defined as pre-tax accounting income less taxable income scaled by total assets and expressed in percent. The GMM diagnostics are broadly satisfactory. Second-order autocorrelation is absent in both models (AR(2): $p = 0.614$ and $p = 0.612$ respectively), and the Sargan-Hansen statistics of 89.563 ($p = 0.137$) and 86.582 ($p = 0.190$) support the validity of the instruments. The AR(1) statistics of -1.437 ($p = 0.150$) and -1.433 ($p = 0.151$) are not significant at conventional levels, so the BTD estimates should be read with more caution than those of the main specification.

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Employee Share Ownership and Tax Avoidance: The Moderating Role of Board Independence in SBF 120 Firms

The lagged BTD enters with a positive and highly significant coefficient in both specifications ($\beta = 0.474$ in Model 1; $\beta = 0.473$ in Model 2), confirming that BTD exhibits meaningful persistence over time. Because a higher BTD indicates more tax avoidance, the expected signs are the reverse of those in the Cash ETR models. In Model 1, the ESO coefficient is negative and significant at the 5% level ($\beta = -0.0136$, $p = 0.036$), in line with H1. In Model 2, the ESO coefficient remains negative ($\beta = -0.0066$, $p = 0.068$), BINDP enters positively ($\beta = 0.014$, $p < 0.01$), and the interaction term is negative ($\beta = -0.0176$, $p = 0.057$), in line with H3. The signs of the key coefficients are therefore those expected from the main specification, but the significance is weaker: 5% for employee ownership in Model 1, and 10% for employee ownership and for the interaction in Model 2. For board independence, the picture is mixed. Its coefficient is positive, which goes in the same direction as the Cash ETR result. But the total effect of board independence on BTD turns negative once employee ownership exceeds about 0.8%, a level below the sample mean of 1.447%. The BTD models therefore point in the same direction as the main results on employee ownership and on the interaction, with less statistical support, and they only partly confirm the link between board independence and greater tax avoidance found with the Cash ETR.

Variable	Model 1 Coef.	Model 1 p	Model 2 Coef.	Model 2 p
BTD (t-1)	0.474	0.000***	0.473	0.000***
ESO	-0.0136	0.036**	-0.0066	0.068*
BINDP	—	—	0.014	0.000***
ESO × BINDP	—	—	-0.0176	0.057*
SIZE	1.183	0.001***	1.159	0.000***
ROA	-1.948	0.000***	-1.990	0.000***
LEV	0.031	0.005***	0.027	0.001***
CASH	0.011	0.000***	0.012	0.000***
MTB	-0.188	0.009***	-0.190	0.000***
Constant	-6.729	0.000***	-6.386	0.000***
AR(1)	-1.437	0.150	-1.433	0.151
AR(2)	-0.503	0.614	-0.506	0.612
Sargan-Hansen test	89.563	0.137	86.582	0.190
Number of instruments	84		86	
Number of observations	1,098		1,098	
Number of firms	104		104	

TABLE 6: Robustness checks—Book-Tax Differences (BTD).

Note: *** $p < 0.01$; ** $p < 0.05$; * $p < 0.10$. Variable definitions as in Table 1. In the regressions, MTB is divided by 100.

Source: Authors' own calculations. BTD: pre-tax accounting income less taxable income, scaled by total assets and expressed in percent; ESO: percentage of shares held by employees; BINDP: percentage of independent directors on the board; SIZE: natural logarithm of total assets; ROA: pre-tax profit divided by total assets; LEV: total debt divided by book equity; CASH: operating cash flow divided by total assets; MTB: opening market capitalization divided by opening common equity.

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Discussion

Employee Share Ownership and Tax Avoidance

The positive and significant association between ESO and the Cash ETR confirms H1. The result aligns with a monitoring and risk-aversion interpretation rather than the classical alignment prediction. Rather than pushing employee-shareholders toward aggressive tax optimization, concentrated firm exposure inclines them toward fiscally conservative behavior that protects the firm's institutional legitimacy. Employees who cannot disentangle their financial wealth and job security from the organization they partly own have strong personal reasons to resist strategies that invite regulatory scrutiny or reputational damage.

This result differs from the evidence reported for China, where employee ownership is associated with a lower tax burden and more tax avoidance (Li et al., 2025) (Huang et al., 2025). The difference may come from the SBF 120 context, with its strong union representation, sustained media attention, and regulatory frameworks that make the reputational costs of aggressive tax planning particularly salient. The classical alignment hypothesis, calibrated on dispersed Anglo-Saxon ownership structures, does not translate well into this institutional setting. Based on the Model 1 estimates, a one-standard-deviation increase in employee ownership (4.109 percentage points) is associated with a Cash ETR increase of approximately 0.004, or about 1.8% of the sample mean. In Model 2, where the effect is allowed to vary with board independence, the same increase is associated with a rise of 0.010 to 0.012. The effect is small in economic terms and its size depends on the specification, and we put more weight on its direction, which is stable, than on its exact magnitude. In both cases, employee ownership appears as one disciplinary force among several rather than a dominant one.

Board Independence and Tax Avoidance

The negative association between board independence and the Cash ETR does not confirm H2. The divergence from the disciplinary view warrants a substantive explanation. Armstrong et al. report that independent boards restrain tax avoidance mainly where it is high (Armstrong et al., 2015). Our results point in a different direction, and the explanation lies in what board independence actually does within large civil law firms, rather than what the disciplinary hypothesis assumes.

Independent directors in SBF 120 companies are appointed to serve shareholder interests, and those interests now routinely include after-tax value maximization. A director with a background in finance, tax law, or strategic advisory is unlikely to frame tax planning purely as a risk to be contained. She may instead treat it as a domain of legitimate optimization, bringing expertise that enables more sophisticated planning than management could develop on its own. Dhiyaulhaq and Fadjaranie document this dynamic directly, and Khaoula and Ali show that in civil law settings where ownership concentration and direct regulatory oversight already perform much of the disciplinary work, the advisory function of independent directors tends to dominate (Dhiyaulhaq and Fadjaranie, 2023) (Khaoula and Ali, 2012). The French context fits this description well. The non-confirmation of H2 is therefore less a failure of the hypothesis than evidence of its institutional conditionality.

An important caveat applies to this interpretation: director-level expertise, tax background, and advisory activity are not directly observed in this study. The advisory explanation is presented as an interpretation consistent with the observed pattern and with prior evidence from comparable civil law settings, rather than as an empirically demonstrated mechanism. A disciplinary explanation specific to this institutional context cannot be ruled out on the basis of the present evidence. The BTD estimates give only partial support to this reading, which is a further reason to treat it as tentative.

Governance Complementarity: The Moderating Role of Board Independence

The interaction result is where the empirical contribution is most distinctive. The interaction between ESO and board independence is positive and significant for the Cash ETR. It is negative for BTD, as expected, though significant only at the 10% level. This indicates that the tax-constraining effect of employee ownership grows stronger as board independence increases. What makes this result theoretically interesting is the context in which it arises. Employee ownership constrains tax avoidance; board independence, taken alone, appears to facilitate it. A negative or negligible interaction would not have been surprising. Instead, the restraining effect of employee ownership is stronger where boards are more independent. The difference is modest in size, as the marginal effects reported above show.

Del Sordo and Zattoni offer a useful framework for understanding this pattern. Employee-shareholders press toward fiscal prudence through employment risk and reputational sensitivity (Del Sordo and Zattoni, 2025). Independent directors, exercising authority at the board level, shape the firm's strategic risk appetite. When these two forces align, independent directors formalize at the governance level what employee-shareholders carry informally through their day-to-day risk exposure. The result is not merely additive: the effect of employee ownership depends on the composition of the board. Ali et al. provide empirical support for this complementarity logic, and the SBF 120 context, where both employee ownership and board independence are shaped by strong regulatory, reputational, and social pressures, makes this alignment particularly coherent (Ali et al., 2024).

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The scope of the interaction term warrants clarification. A positive, significant $ESO \times BINDP$ coefficient is consistent with the complementarity account developed above, in which informal risk aversion among employee-shareholders is reinforced by formal oversight from independent directors, but the coefficient does not reveal how that reinforcement actually operates inside these firms. We do not observe board discussions, the extent to which independent directors engage with employee representatives, or the internal channels through which either group's preferences come to shape tax decisions. The result is best read as evidence consistent with governance complementarity rather than direct confirmation of the underlying mechanism. Board-level interviews, case studies, or other qualitative work tracing how these two constituencies actually interact would be a natural next step for testing whether the process matches what the statistical pattern suggests.

The robustness checks using *BTD* give the same signs for employee ownership and for the interaction term, with weaker significance. The coefficients on all explanatory variables change sign between the two specifications, which is expected since a higher Cash ETR indicates less tax avoidance while a higher *BTD* indicates more. Firm size is a good example: it is negatively associated with Cash ETR and positively associated with *BTD*. The Cash ETR captures the effective tax burden relative to pre-tax income, which large firms reduce through planning. This is consistent with the political power hypothesis, according to which large firms have more resources for tax planning, and it contrasts with the political cost view of Zimmerman (Zimmerman, 1983). The *BTD* captures the gap between accounting and taxable income, which tends to be mechanically wider in larger firms owing to greater reporting complexity, cross-border operations, and a broader range of legitimate accrual choices. Frank et al. document this pattern independently of any tax planning intent (Frank et al., 2009). The coexistence of both signs across specifications is consistent with established evidence and does not call the reliability of the core results into question.

Limitations and Future Research

A first limitation concerns how we measure tax avoidance. Following prior literature, we use the Cash ETR as our main proxy and read a higher Cash ETR as less avoidance. While this reading follows standard practice, it is an imperfect proxy: Cash ETR can fluctuate for reasons unrelated to tax avoidance, including loss carryforwards, tax credits, timing differences between book and taxable income, deferred tax effects, and one-off settlements or refunds. We try to address this by re-running the analysis with *BTD* instead. The results on employee ownership and on the interaction keep the same signs, but the interaction, which drives the paper's main argument, is significant only at the 10% level. Still, neither measure captures tax avoidance directly, and a useful next step would be to bring in other proxies - ETR volatility, unrecognized tax benefits where firms disclose them, or measures built from country-by-country reporting - to see whether the pattern holds more broadly.

A further caveat concerns residual endogeneity. While system GMM addresses the persistence of tax avoidance and mitigates simultaneity between the regressors and the dependent variable, it does not fully eliminate the risk of time-varying omitted variables, such as unobserved shifts in tax strategy or governance culture, nor the possibility of residual reverse causality, whereby a firm's tax position could itself influence subsequent decisions on employee ownership or board composition. The diagnostic tests reported above, notably the Sargan-Hansen and $AR(2)$ statistics, support the internal validity of the specification, but they cannot rule out every alternative explanation for the associations observed.

Another limitation is the sample itself: all firms are large, SBF 120-listed companies operating under France's civil law tradition, with its own governance codes, union presence, and accountability norms. These are the same features that drive much of our reasoning - the advisory reading of board independence, for instance, or why employee-shareholders stay fiscally cautious. This institutional specificity limits the generalizability of the findings. Smaller firms, unlisted companies, or firms in common law countries with more dispersed ownership could show a different balance between disciplinary and advisory board functions, or a weaker employee-ownership effect altogether. The results should be understood as evidence from one institutional setting rather than as a general account of how these two governance mechanisms interact.

For practitioners and policymakers, the results carry a practical implication: ESO plans are associated with more tax compliance, and this association is somewhat stronger in firms with more independent boards. This does not mean that board independence raises compliance by itself, since its direct association with the Cash ETR is negative in our estimates. The point is of growing relevance as fiscal transparency expectations tighten across European regulatory frameworks. Extending the complementarity logic to other governance dimensions, such as audit committee structure, institutional ownership, or executive characteristics, also remains a productive avenue for future research.

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Conclusions

This paper asked whether ESO and board independence reinforce or offset one another in shaping corporate tax avoidance, a question most governance research still avoids by treating ownership and board composition as separate, additive levers. Using 104 SBF 120 firms observed over thirteen years, three results stand out. ESO is associated with lower tax avoidance, in line with a risk-aversion logic where employee-shareholders, unable to separate their savings from their job security, lean toward fiscal caution. Board independence goes the other way when tax avoidance is measured with the Cash ETR: more independent boards are tied to greater tax avoidance, which fits an advisory reading better than the usual disciplinary one - independent directors appear to bring expertise that sharpens tax planning rather than restrains it. The main result, though, is the interaction between the two. When board independence is high, employee ownership's tax-restraining effect is stronger, meaning the two mechanisms complement rather than substitute for each other. The difference is statistically significant but modest in size. When BTD replaces Cash ETR as the outcome variable, the signs are the same and the significance is weaker.

The contribution can be stated concisely, even though it was not an *ex ante* obvious prediction: ownership structure and board composition do not simply add their separate effects on tax behavior; they interact. That pushes back against the additive assumption still common in multi-mechanism governance research, and it does so with evidence from a civil law setting where this particular pairing had gone largely untested.

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

Concept and design: Zyed Achour

Drafting of the manuscript: Zyed Achour

Critical review of the manuscript for important intellectual content: Zyed Achour, Amel Salah

Supervision: Zyed Achour

Acquisition, analysis, or interpretation of data: Amel Salah

Disclosures

Human subjects: All authors have confirmed that this study did not involve human participants or tissue.

Animal subjects: All authors have confirmed that this study did not involve animal subjects or tissue.

Conflicts of interest: In compliance with [the ICMJE uniform disclosure form](#), all authors declare the following:

- **Payment/services info:** All authors have declared that no financial support was received from any organization for the submitted work.
- **Financial relationships:** All authors have declared that they have no financial relationships at present or within the previous three years with any organizations that might have an interest in the submitted work.
- **Other relationships:** All authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.

Data Availability Statements

The datasets (and/or code) supporting this study are available from the corresponding author upon reasonable request.

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on the authors' own model specifications and estimated results reported in this study; no data or content was generated or altered by the AI tool beyond rendering the authors' inputs into visual form. The final content and interpretations remain the sole responsibility of the authors.

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