The moderating role of the board of director's independence on the relationship between financial transparency and tax avoidance

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Abstract: This study examines how independent directors affect the connection between financial transparency and tax avoidance in 104 French companies listed on the SBF120 from 2011 to 2020. Panel data analysis reveals that low financial transparency is associated with increased tax avoidance. Moreover, the inclusion of independent directors on boards substantially moderates this association. This is demonstrated through the analysis of three tax avoidance metrics: the current effective tax rate, cash effective tax rate, and book-tax difference.

Keywords: tax avoidance; financial transparency; board independence; effective tax rate; ETR; current ETR; cash ETR; book-tax difference; BTD; SBF120.

JEL codes: G30, H26, H32.

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1 Introduction

Tax avoidance remains a hot topic in the media and in the business world. According to research by economist Gabriel Zucman, $79 billion (https://elucid.media/economie/paradis-fiscaux-europeens-destination-favorite-depots-etrangers) in profits from higher-tax countries including France, are artificially shifted to the Netherlands and account for 39% of corporate tax collection. However, it should be emphasised that tax avoidance is often referred to as 'legal' and does not necessarily fall under the category of tax avoidance. Indeed, tax avoidance, to also refer as tax optimisation, consists rather of escaping taxes by means deemed legal, such as using tax loopholes or derogatory regimes. This is the case when companies artificially relocate their income or profits to a country different from that where they have their economic activities and where tax rates are very low or even zero, as in 'tax havens'. In France, 'the Syndicat Solidaires Finances Publiques' estimates the amount of tax avoidance by companies and individuals at least 80 billion euros (https://solidairesfinancespubliques.org). It was not until 2018 that

parliament unanimously adopted the opening of the 'Bercy Lock', which will allow the most serious tax fraud to finally be the subject of legal proceedings and public convictions. Corporate transparency refers to making available to other stakeholders relevant and reliable information about regular performance, financial condition, investment opportunities, corporate governance, values, and risks (Bushman and Smith, 2001). Good corporate governance is contingent upon the disclosure of information being sufficiently complete and transparent. As part of good governance practises, efforts are carried out to improve financial reporting standards, such as increasing voluntary disclosures and transparency in information communication (Kanoujiya et al., 2023). In this sense, the disclosure of accurate and accessible information is considered a good governance practice, allowing stakeholders to better assess company performance and make informed investment decisions (Srairi, 2019). In particular, disclosing information to investors would also result in increased accessibility of information to all external parties available to the public, and in particular, it could contribute to strengthening the capacity of the tax administration to control companies that engage in aggressive tax avoidance activities. On the other hand, greater transparency in corporate tax filings can be an effective mechanism to mitigate reputational tax risks (Stiglingh et al., 2017). Among others, Auger (2014) notes that companies deemed transparent enjoy greater trust and a positive perception from stakeholders than companies that lack transparency.

Furthermore, the presence of independent directors is supposed to promote a level of financial transparency and disclosure (Torchia and Calabro, 2016). This is based primarily on the fact that outside directors, who are less aligned with management or shareholder interests, are likely to further encourage companies to disclose information to outside investors and other interested parties. Salehi et al. (2022), for example, found a significant correlation between board independence and financial reporting transparency. Similarly, independent outside directors will be able to reduce the uncertainty of future effective corporate tax rates by maintaining a high level of oversight and control over management (Choi and Park, 2022) and may therefore play a role of moderation between financial transparency and the level of tax avoidance. To examine the impact of board independence as a governance mechanism on the association between financial transparency and tax avoidance, this study was carried out in two stages.

This study began by examining the relationship between tax avoidance and financial transparency. Assessing whether financial transparency had an effect on tax avoidance constituted the first stage. For this purpose, a sample of 104 French companies listed between 2011 and 2020 was selected. This investigation identified a correlation between reduced tax avoidance and increased levels of corporate transparency. Second, this study examined how independent directors impacted the validity of this link, which led to the conclusion that director independence enhances the negative effect of financial transparency on tax avoidance.

Having independent directors, less tied to the personal interests of the company's management, could reduce the likelihood of tax avoidance. These independent directors may be more willing to advocate for increased financial transparency and exert stricter control over management practices.

By addressing the complex interplay between financial transparency, tax avoidance, and corporate governance, this article makes a distinct contribution to the existing literature by examining the moderating role of board independence. Empirically, our study provides valuable insights into the mechanisms through which corporate

governance practices mitigate tax avoidance behaviours and how independent directors mediate the relationship between financial transparency and avoidance tax. This research not only advances theoretical understanding but also offers practical implications for policymakers and practitioners seeking to promote greater transparency and accountability in corporate tax practices.

The remainder of this paper is structured as follows: The theoretical and empirical research on the relationships between financial transparency and tax avoidance is reviewed in Section 2, along with the potential moderating effects of director independence. Section 3 provides details on the methodology and data collection. Section 4 presents the findings and related discussion. Section 5 presents the key results and directions for additional investigation.

2 Theoretical framework

2.1 Financial transparency and tax avoidance

There is a lot of debate concerning how companies handle their tax obligations, especially in relation to tax avoidance and evasion. Tax avoidance is a legal practice in which firms use legal strategies to lower their tax payments. Tax evasion is, rather, the illegal action of neglecting to register income or assets in order to avoid paying taxes. According to Desai and Dharmapala (2018), tax avoidance differs from tax evasion in that it is backed by legal tax incentives and tax-saving techniques. Tax avoidance is ethically questionable even though it is lawful because it can reduce the government's tax revenue and cause a lack of financial transparency for stakeholders. This is a grey area where large companies, by making arrangements at the limit of legality, take advantage of their international presence, for example, to artificially relocate part of their profits and pay the least. Financial transparency is a key principle of good governance, pushing for the disclosure of accurate, complete, and intelligible financial information. This involves sharing financial information with all interested parties, including shareholders, investors, employees, and customers, in an open and honest manner. By showcasing the company's ability to effectively manage its resources, financial transparency aims to increase the company's credibility and legitimacy by allowing stakeholders to assess the financial health of the company and understand its history, present, and future strategies, and performance. The link between financial transparency and tax avoidance (or evasion) has been widely debated in the literature (Overesch and Wolff, 2021; Stiglingh et al., 2022; Kerr, 2019). From a theoretical point of view, it is the applications of agency theory and signalling theory that are most often mentioned to justify this link. Due to the asymmetry of information between shareholders and managers, managers may be tempted to take advantage of this situation by adopting opportunistic behaviour. They may seek to maximise their own interests to the detriment of those of the shareholders, in particular by concealing important financial information or manipulating the tax results when their remuneration is linked to the financial performance of the company. Signalling theory suggests that managers may use selective financial transparency to send signals to stakeholders and investors while concealing other potentially damaging information. Tax transparency can be used as a signal to enhance a company's reputation and inspire confidence in stakeholders and investors. According to Aryati and Wibowo (2017), signalling theory focuses on how organisations convey information to consumers about

their financial statements, and these signals inform owners and other stakeholders about the status of the company. Information can send out both positive and negative communications. The information regarding the profit made can be interpreted as a good indicator. Higher profits enhance a company's value since tax avoidance practices alert investors to the stock's rising value (Prastiwi, 2017). Empirically, the majority of research conducted in various contexts supports the hypothesis that financial transparency has a negative impact on tax avoidance. Stiglingh et al. (2022), for instance, discovered that companies with more tax transparency also have higher effective tax rates (ETRs) and effective cash-tax rates. Using a sample of aggregate tests conducted at the country-wide and company levels, Kerr (2019) demonstrated that the less a corporation can keep tax information hidden from tax officials and the general public, the less opportunity there is for tax avoidance. The same conclusions were reported by Mangoting et al. (2019): tax avoidance is negatively affected by transparency. A company's risk of tax avoidance decreases the more information it releases. Building on previous research, the first hypothesis of this study is formulated as follows:

H1 Financial transparency is negatively associated with tax avoidance.

2.2 The moderating effect of the board of directors independence on the relationship between financial transparency and tax avoidance

Armstrong et al. (2014) defined an independent director as one who does not have direct or indirect relationships with the company, its main shareholders, or its managers. Such directors are considered independent since they have no known conflicts of interest that could compromise their objectivity or their capacity to act in the organisation and all of its stakeholders' best interests. Due to the important role that independent directors can play in protecting the interests of shareholders, conducting risk assessments, and ensuring that decisions comply with regulations, the independence of directors is regarded as a key component of corporate governance. Salehi et al. (2022) found, among other findings, a substantial negative association between board independence and financial reporting transparency. Similar conclusions were drawn by Hassaan and Salah in 2023, showing that companies with more independent board members have greater financial transparency. The independence of administrators is also expected to mitigate tax avoidance manoeuvres for the reasons mentioned above, as well as by participating in the establishment of strong internal controls to ensure compliance with tax obligations, the accuracy of tax declarations, and the traceability of transactions. Armstrong et al. (2015) found a correlation between board independence and tax avoidance, suggesting that having more independent boards will result in less tax avoidance. According to Lanis and Richardson (2016), the independence of board members enhances the standing and reputation of the corporation, and they found a favourable correlation between independent directors and the ETR. Similarly, Lanis et al. (2022) discovered that boards had a positive effect on tax avoidance independence using an example of 1,450 publicly traded US corporations. Palupi et al. (2021) demonstrated that the size of the company and the number of independent directors allowed for better control and supervision of the company in determining the degree of tax avoidance. Considering the expectation that director independence will affect both tax avoidance manoeuvres and the company's financial transparency, we formulate our second hypothesis as follows:

H2 Board independence moderates the financial transparency-tax avoidance relationship.

3 Empirical design

3.1 Data and sample

Companies listed in the SBF 120 index between 2011 and 2020 were included in the initial sample. The data were collected from the ASSET4 database, accessible via Thomson Reuters DataStream. The final sample is composed of 104 French firms from various industries, as detailed in Table 1. The final sample comprises 1,040 firm-year observations in total.

Table 1 Distribution of companies in the sample by industry

Industry	*Number*	*(%)*
Power supplies	9	8.65
Food and beverage	8	7.69
Construction	10	9.61
Chemistry	5	4.81
Trade, commerce, distribution	7	6.73
Communication and multimedia	5	4.81
Education and advice	5	4.81
Mining industry	4	3.85
Pharmaceutical industry	5	4.81
Industry	9	8.65
Energy	5	4.81
Transport	6	5.77
Computing, telecom	8	7.69
Equipment, automobiles	8	7.69
Cosmetics	6	5.77
Games and recreation	4	3.85
Total of companies	104	100%

3.2 Variables

3.2.1 Dependent variable

According to Dyreng et al. (2010), tax avoidance is any action that lowers the company's tax liability in relation to its pre-tax earnings. The ETR, determined by dividing total income taxes by pre-tax income, can be used to assess tax avoidance. This metric is used in CEO compensation contracts, as a baseline for business-to-business tax comparisons, as a measure of the effectiveness of tax services, and to evaluate critical company decisions. The choice to employ this proxy was made based on the belief that accounting results did not accurately reflect the taxable income of enterprises, which may encourage

tax avoidance. We presume that a low ETR indicates less taxation resulting from tax avoidance or a decrease in the numerator. However, a low ETR could also result from an increase in accounting income or an increase in the numerator. Since the ETR is simple to calculate from financial statement data and frequently used by empirical research in this field (Kerr, 2019; Alkurdi and Mardini, 2020; Chytis et al., 2019), it was chosen as a proxy for tax avoidance in this study. The effective tax ratio is calculated using the following formula:

$$Current\ ETR_{it} = \frac{Total\ current\ taxes_{it}}{Pre\text{-}tax\ income_{it}} \tag{1}$$

3.2.2 Independent variable

Following Nair et al. (2019) and Dhaliwal et al. (2014), financial transparency was assessed using a proxy called scaled accruals (ACCRUAL), which is calculated using information from financial statements. ACCRUAL is given by the following formula:

$$ACCRUAL = (\Delta CA - \Delta CL - \Delta CASH + \Delta STD - DEP + \Delta TP)/lag(TA) \tag{2}$$

where

ΔCA	change in total current assets
ΔCL	change in total current liabilities
ΔCASH	is the change in cash
ΔSTD	change in the current portion of long-term debt included in total current liabilities
DEP	depreciation and amortisation
TP	change in income tax payable
TA	total assets at the end of the previous year.

3.2.3 Moderating variable

In the context of this study, the moderator variable is the board of directors' independence (BINDP) in the financial transparency-tax avoidance relationship. According to Reguera-Alvarado and Bravo (2017), Salehi et al. (2020), Butt and Ahmed (2021), Chytis et al. (2019), Al-Kurdi and Mardini (2020), and other researchers, it is measured by the proportion of independent directors on the board.

3.2.4 Control variables

We included a series of variables to control the effect of the firm's characteristics on financial transparency, board independence, and tax avoidance. First, the audit fees (AUDIT fees), measured as the logarithm of the company's total audit fees. More complex tax activities can indeed increase the risk associated with financial reporting, leading to higher audit costs and a heavier audit burden (Donohoe and Knechel, 2014).

Balakrishnan et al. (2019), for example, found a positive relationship between audit fees and the ETR, while Shokrollahi et al. (2017) reported a negative effect.

Second, the return on assets (ROA), calculated by dividing pre-tax income by total assets, was included in the model as a control variable because it is anticipated that profitability and profits will have an impact on the amount of taxes payable. For instance, Aburajah et al. (2019) and Palupi et al. (2021) demonstrated a positive relationship between ROA and the ETR.

Third, since the use of intangible assets to allocate income among subsidiaries in multiple countries and states is a technique frequently used in tax avoidance practices (Hanlon and Heitzman, 2010), the intangibles ratio (INTANG), obtained by dividing total intangible assets by total assets, was introduced as a control variable. In this regard, Kerr (2019) found a negative and significant relationship between the INTANG variable and the ETR.

Furthermore, the plant, property, and equipment (PPE) ratio is likely to be linked to tax avoidance due to the accelerated depreciation techniques that may be adopted and the changes made to the useful life of equipment (Lanis and Richardson, 2015). This ratio was also introduced into the model, especially since previous research has been able to establish a link between the PPE variable and the ETR (Kerr, 2019; Lanis and Richardson, 2015; Stiglingh et al., 2020). PPE is measured by dividing total property, plant, and equipment by total assets.

Table 2 Variables description

Variable	*Abbreviation*	*Description of variables*	*Authors*
Effective tax rate	Current ETR	Total current taxes / Pre-tax income	Mangoting and al. (2019), Overesch and Wolff (2021), Salah et al., (2023)
Financial transparency	ACCRUAL	(ΔCA – ΔCL – ΔCASH + ΔSTD – DEP + ΔTP) / lag(TA)	Dhaliwal et al. (2014), Nair et al. (2019)
Board independance	BINDP	Percentage of independent directors on the board	Chytis et al. (2019), Alkurdi and Mardini (2020)
Audit fees	AUDIT Fees	Logarithm of total company audit expenses	Donohoe and Knechel (2014), Balakrishnan et al. (2019)
Return on assets	ROA	Pre-tax income / Total assets	Aburajah et al. (2019), Achour (2023)
Intangible assets	INTANG	Total intangible assets / Total assets	Kerr (2019)
Plant, property, and equipment ratio	PPE	Total property, plant, and equipment / Total assets	Kerr (2019), Lanis and Richardson (2015), Stiglingh et al. (2020)
Leverage	LEV	Total debt / Total assets	Stiglingh et al. (2020), Kerr (2019)
Book-to-market ratio	BTM	Opening common equity / Opening market capitalisation	Kerr (2019)

Similarly, the leverage effect (LEV), measured by the ratio of total debt to total assets, was also introduced as a control variable. This is because interest charges are first

intended to reduce the profits and tax charges of the period, but also because the most indebted companies are also less likely to avoid declaring their taxes. However, it should be emphasised that several studies have produced contradictory findings in this area. For instance, Stiglingh et al. (2020) and Kerr (2019) discovered a positive association between the variable LEV and the ETR, but Salehi et al. (2020) came to the opposite conclusion.

Finally, we control the model through the book-to-market (BTM) ratio. This variable is measured as the ratio of opening common stock to opening market capitalisation and is meant to provide insight into growth opportunities (Kerr, 2019). It is expected that firms with stable growth would be less tempted to engage in tax avoidance. The definitions of the variables and selected measurement indicators are summarised in Table 2.

3.3 Empirical models

In order to test our hypotheses, we referred to the economic model developed by Balakrishnan et al. (2019), who examined whether aggressive tax planning firms have a less transparent information environment as well as the impact of the presence of directors of tax-aggressive corporations on mitigating transparency issues through more tax-related disclosure. We adopted the linear model presented below (Model 1) to test the effect of financial transparency on tax avoidance using the ETR (current ETR) as a proxy (Mangoting et al., 2019; Overesch and Wolff, 2021).

$$\begin{aligned} Current\ ETR_{it} = {} & \beta_0 + \beta_1 ACCRUAL_{it} + \beta_2 AUDIT\ Fees_{it} + \beta_3 ROA_{it} \\ & + \beta_4 INTANG_{it} + \beta_5 PPE_{it} + \beta_6 LEV_{it} + \beta_7 BTM_{it} + \varepsilon_{it} \end{aligned} \quad \text{(Model 1)}$$

Model 2 allowed us to examine the moderating effect that the presence of independent administrators could have on the relationship between financial transparency and tax avoidance.

$$\begin{aligned} Current\ ETR_{it} = {} & \beta_0 + \beta_1 ACCRUAL_{it} + \beta_2 BINDP_{it} + \beta_3 ACCRUAL_{it} \\ & * BINDP_{it} + B_4 AUDIT\ Fees_{it} + \beta_5 ROA_{it} + \beta_6 INTANG_{it} \\ & + \beta_7 PPE_{it} + \beta_8 LEV_{it} + \beta_9 BTM_{it} + \varepsilon_{it} \end{aligned} \quad \text{(Model 2)}$$

where *i* denotes firms and t represents time periods.

Current ETR is the endogenous variable; ACCRUAL is the independent variable; BINDP is the moderate variable; ACCRUAL × BINDP is the interaction between the independence of the board and financial transparency; AUDIT Fees, ROA, INTANG, PPE, LEV, and β_t are the control variables; the coefficients are related to the five variables; and ε_{it} the error term.

4 Results

4.1 Preliminary analysis

The descriptive statistics for each variable are presented in Table 3. The average value of the tax avoidance measure (current ETR) is 0.216, which is lower than the legal tax rate on French corporations in the sample. Similar results were reported by Stiglingh et al.

(2020) for the top 100 companies listed on the JSE, who tested the link between tax transparency and tax avoidance. The average score for ACCRUAL is –0.058. This means that, on average, the companies in our sample have not yet followed best practises for voluntary financial disclosure. The minimum financial transparency is –2,964, and the maximum financial transparency is 0.148. With a standard deviation of 23.2%, suggesting that there is no significant difference in the value of financial transparency for this sample. Moreover, the results also reveal that the average BINDP is 0.728 and ranges from a low of 0.143 to a high of 1. We notice a disparity between companies with a percentage of independent members ranging from 14.3% to 100%. On average, 72% of the board members of companies are independent. This means that the composition of the board of directors in the sample is ensured by at least more than half of the independent directors.

For the control variables, we note that the average AUDIT fee is 3.595. The average value of the ROA is around 8.5%. The ratios of intangible assets (INTANG) and plants, installations, and equipment (PPE) of French companies are respectively 0.545 and 1.255. The average debt ratio of the companies in the sample is 41%. As for the BTM ratio, it records an average value of 0.010.

Table 3 Descriptive statistics

Variable	*Obs*	*Mean*	*Std. dev.*	*Min*	*Max*
Current ETR	1.009	0.216	0.620	–8.342	4.500
ACCURAL	906	–0.058	0.232	–2.964	0.1480
BIND	834	0.728	0.216	0.143	1
AUDIT Fees	890	3.595	0.629	1.462	6.041
ROA	1.009	0.085	0.154	–0.363	0.964
INTANG	989	0.545	2.081	0.0050	30.255
PPE	999	1.255	6.851	0.0003	69.669
LEV	1.006	0.041	4.459	0.001	42.510
BTM	984	0.010	0.029	–0.106	0.398

Notes: Current ETR: Total current taxes on profit before tax, ACCRUAL: (ΔCA – ΔCL – ΔCASH + ΔSTD – DEP + ΔTP) / lag (TA); BIND: Percentage of independent directors on the board of administration; AUDIT Fees: logarithm of total company audit fees; ROA: pre-tax profit on total assets; INTANG: total intangible fixed assets on total assets; PPE: total property, plant, and equipment on total assets; LEV: total debt on total assets; BTM: open common equity on open market capitalisation.

Table 4 presents the correlation matrix of the different variables considered in our two models. The recorded coefficients make it possible to conclude that there is no problem of multi-collinearity between the variables, insofar as it is customary to consider the absence of these problems when the coefficients are less than 0.8 (Kennedy, 1985; Gujarati, 2004). These results are confirmed by the variance inflation factor (VIF), whose values do not exceed 2. Without claiming to draw a definitive conclusion on the relationship examined, we do, however, note a statistically significant positive association between the current EIR and financial transparency (ACCRUAL). Similarly, Table 4 shows that the moderating variable BINDP is negatively associated with the current ETR and ACCRUAL. Moreover, a statistically significant negative relationship is

also reported between the measure of financial transparency and the presence of independent directors on boards.

4.2 Regression results

To test the hypotheses formulated above, we proceeded in two phases. First, we tested the impact of ACCRUAL, as an indicator for measuring financial transparency, on tax avoidance. Second, we tested the potential moderating effect of director independence on the relationship between financial transparency and tax avoidance. In order to select the most appropriate estimation method, several statistical tests were performed. It should be noted that the efficiency of the GMM estimation relies on the validity of two tests, namely the Sargan-Hansen test and the Arellano and Bond test.

Given the nature of our panel data and the potential presence of endogeneity issues, we employed the generalised method of moments (GMM) for estimation. GMM is particularly well-suited for addressing problems such as simultaneity bias and endogeneity, as it allows us to utilise a broader set of moments from the data, capturing information on the relationships between variables over time. This approach is essential for ensuring the validity of our estimations and providing robust results.

The Sargan-Hansen over-identification test makes it possible to ensure the validity of the instruments used in the panel data regressions by testing two hypotheses at the 10% threshold. If the value is greater than 10%, the instruments are considered valid. In Model 1, the results of the Sargan-Hansen test assume that the over-identifying restrictions are valid given a statistic of 59.740 and a probability of 4.6% to hold the null hypothesis (Table 5). Similarly, in Model 2, as shown in Table 6, the results of the Sargan-Hansen test lead to the conclusion that the over-identifying restrictions are valid given that the chi-statistic is 59.236 and the probability is 5.1%.

The results of the estimating equation of the first-order autocorrelation test of Arellano and Bond show, for model 1, values of –1.636 and -0.728, with respective p values of 0.102 and 0.467. This means that we reject the hypothesis of no first-order autocorrelation of errors, but we cannot reject the hypothesis of no second-order autocorrelation. This implies that the instruments used in the models are valid (Table 6).

For model 2, the results of the Arellano and Bond first-order autocorrelation tests show values of –1.036 and –1.313, with respective p values of 0.300 and 0.189. The hypothesis of the absence of first-order autocorrelation is thus rejected, but we cannot reject the hypothesis of the absence of second-order autocorrelation, suggesting that the instruments used in the models are valid (Table 6).

The results obtained from the GMM estimates are presented in Table 5. The ACCRUAL coefficient is positive and significant at the 1% level ($\beta_1 = 24.426$, $p < 0.000$), which means that companies that escape tax have less financial transparency, validating the first hypothesis H1. This result is consistent with the findings of Balakrishnan et al. (2019). They are also in line with those released by Stiglingh et al. (2020), who showed that companies that are more transparent in disclosing their tax affairs also have more ETRs, using a sample of a list of all companies listed on the Johannesburg Stock Exchange (JSE). These authors note that companies with voluntary tax transparency are less involved in tax avoidance.

Table 4 Correlation matrix and VIF values

Variable	*Current ETR*	*ACCRUAL*	*BINDP*	*ACCRUALBIND*	*AUDITFees*	*ROA*	*INTANG*	*PPE*	*LEV*	*BTM*	*VIF*
Current ETR	1.000										1.19
ACCRUAL	0.062	1.000									1.12
BINDP	–0.023**	–.0084*	1.000								1.02
ACCRUALBIND	–0.058*	0.334	0.084*	1.000							1.15
AUDIT fees	0.084*	–0.028**	0.041**	0.030**	1.000						1.22
ROA	0.027**	–0.217	–0.029**	0.203	–0.111	1.000					1.30
INTANG	–0.022**	–0.672	0.056*	0.658	0.054*	0.283	1.000				1.17
PPE	–0.084*	–0.305	0.038**	0.301	0.043**	0.245	0.305	1.000			1.11
LEV	–0.056*	–0.235	–0.058*	0.228	–0.016**	0.571	0.163	0.227	1.000		1.46
BTM	–0.032*	–0.059*	0.108	0.071*	–0.375	–0.013**	0.039**	0.020**	0.069*	1.000	1.21

Notes: **p < 5%; *p < 10%.

Current ETR: total current taxes on profit before tax, ACCRUAL: (ΔCA – ΔCL – ΔCASH + ΔSTD – DEP + ΔTP)/ lag (TA); BIND: percentage of independent directors on the board of administration; AUDIT fees: logarithm of total company audit fees; ROA: pre-tax profit on total assets; INTANG: total intangible fixed assets on total assets; PPE: total property, plant, and equipment on total assets; LEV: total debt on total assets; BTM: open common equity on open market capitalisation.

Regarding the control variables, our results show that the regression coefficient of audit fees is negative and significantly associated with tax avoidance according to the current ETR proxy ($\beta_3 = -1.659$; $p < 0.000$), which means that the auditors seem to charge higher audit fees for companies with informational risks. This result is in agreement with Shokrollahi et al. (2017). Analysts are also expected to budget more accurately as companies become more transparent. Therefore, higher audit fees mean less transparency for companies. These results are in line with those observed by Riguen et al. (2021). The ROA coefficient is positive and statistically significant for tax avoidance ($\beta_4 = 12.791$, $p < 0.00$), which suggests that the least economically efficient companies would be more likely to engage in tax avoidance. Fraudulent manoeuvres. These results are consistent with those found by Aburajah et al., (2019) and Palupi (2021), who found a positive association between the ROA and the ETR.

The regression coefficient of intangible assets (INTANG) is negative and significantly associated with tax avoidance ($\beta_5 = -0.979$, $p < 0.000$). This result is also consistent with the conclusion of Kerr (2019). The regression coefficient of property, plant and equipment (PPE) is positive and significantly associated with tax avoidance ($\beta_6 = 0.124$, $p < 0.000$); Kerr (2019) and Lanis and Richardson (2015) found a positive relationship between the PPE variable and the ETR, contrary to the results of Stiglingh et al. (2020).

Table 5 GMM estimation results of model 1

Variables	*Current ETR*	
	Coefficient	*p-value*
Current ETR_{-1}	0.296	0.000***
ACCRUAL	24.426	0.000***
AUDIT Fees	–1.659	0.000***
ROA	12.791	0.000***
INTANG	–0.979	0.000***
PPE	0.124	0.000***
LEV	–0.831	0.000****
BTM	23.754	0.000***
Constant	4.466	0.000***
AR(1)	–1.036	0.300
AR(2)	–1.313	0.189
Test de Sargan-Hansen	59.740	0.046
Observations	743	
Nb. Echantillon	104	

Notes: ***$p < 0.01$ is the significance at the 1% level.
Current ETR: Total current taxes on profit before tax, ACCRUAL: ($\Delta CA - \Delta CL - \Delta CASH + \Delta STD - DEP + \Delta TP$) / lag (TA); BIND: Percentage of independent directors on the board of administration; AUDIT Fees: logarithm of total company audit fees; ROA: pre-tax profit on total assets; INTANG: total intangible fixed assets on total assets; PPE: total property, plant, and equipment on total assets; LEV: total debt on total assets; BTM: open common equity on open market capitalisation.

The leverage effect coefficient (LEV) is -0.831 and is significantly related to the current ETR variable at the 1% threshold ($p < 0.000$). This result could be interpreted by the fact that, for over-indebted companies, the concerns of viability and financial profitability of their partners (creditors in particular) would facilitate tax avoidance. Indeed, companies with the most vulnerable financial conditions are more likely to engage in tax avoidance.

The regression of the BTM ratio is positively and significantly associated with tax avoidance ($\beta_7 = 23.754$, $p < 0.000$). This result is consistent with Kerr (2019), who found a positive relationship between the BTM variable and the ETR.

Table 6 GMM estimation of model 2

Variables	*Current ETR*	
	Coefficient	*p-value*
Current ETR$_{-1}$	0.291	0.000***
ACCRUAL	–5.659	0.000***
BINDP	–2.155	0.000***
ACCRUAL*BINDP	–8.790	0.000***
AUDIT Fees	–0.428	0.000***
ROA	12.874	0.000***
INTANG	–0.472	0.000***
PPE	0.107	0.000***
LEV	–0.826	0.000****
BTM	3.993	0.002***
Constant	–2.009	0.084 *
AR(1)	–1.034	0.300
AR(2)	–0.839	0.401
Test de Sargan-Hansen	59.236	0.051
Nb. observations	660	
Nb. Echantillon	104	

Notes: ***p < 0.01, *p < 0.1.

Current ETR: Total current taxes on profit before tax, ACCRUAL: (ΔCA – ΔCL – ΔCASH + ΔSTD – DEP + ΔTP) / lag (TA); BIND: Percentage of independent directors on the board of administration; AUDIT Fees: logarithm of total company audit fees; ROA: pre-tax profit on total assets; INTANG: total intangible fixed assets on total assets; PPE: total property, plant, and equipment on total assets; LEV: total debt on total assets; BTM: open common equity on open market capitalisation.

In order to test our hypothesis H2 and analyse the impact of the presence of independent directors on the board on the relationship between financial transparency and tax avoidance, we estimated Model 2 using the GMM method. Table 6 shows that the coefficient of BINDP is negatively associated with the ETR, and the independence of the board of directors is a factor in reducing opportunistic accounting practises ($\beta_3 = –2.155$ and $p < 1\%$). These latest results confirm that the presence of independent directors on the board of directors increases the effectiveness of management control and encourages them to disclose more reliable financial information. These independent directors use their particular status and skills to control the actions of the directors. This result is consistent with that observed by Salehi et al. (2020). Also, the coefficient of the

ACCRUAL*BIND interaction variable shows a significant negative effect on the ETR. The number of independent directors present in the councils makes it possible to negatively moderate the relationship studied, thus leading to greater financial transparency by probably favouring a more reliable disclosure of information. These results lead to accepting Hypothesis 2 as formulated. Moreover, and in accordance with our expectations, the coefficients relating to audit fees are negatively and significantly associated with tax avoidance ($\beta_4 = 0.428$, $p < 0.000$). The performance measurement coefficient (ROA) is positively and significantly related to tax avoidance ($\beta_5 = 12.874$, $p < 0.000$). Similarly, the ratio of intangible assets

4.3 Robustness check

To test the robustness of our results, we re-estimated our models using two alternative measures of tax avoidance. The first measurement is the cash ETR test and the second uses the book-tax differences (BTD).

Cash ETR (taxes paid in cash divided by pre-tax income) is a frequently used proxy in many studies (Dyreng et al., 2008, 2016). The cash ETR approximation is given by the following ratio:

$$Cash\ ETR_{it} = \frac{Total\ taxes\ paid\ in\ cash_{it}}{Pretax\ income_{it}} \tag{3}$$

Additionally, since the current ETR is calculated annually and susceptible to yearly fluctuations, it fails to unveil long-term businesses' tax avoidance strategies, rendering it inadequate for detecting long-term tax avoidance (Salihu et al., 2013), we re-estimated our research models using BTD as tax avoidance proxy.

$$BTD = Pre\text{-}tax\ accounting\ income\ less\ the\ value\ of\ taxable\ income\ scaled\ by\ total\ assets. \tag{4}$$

Table 7 presents the results of the estimation of the two models. We accept the presence of an AR(1) effect for the residuals, proving that the dynamic model is appropriate. We also accept that the AR(2) effect does not exist. Regarding the Sargan-Hansen test, the p-value is greater than 10%, which leads to retaining the null hypothesis and confirming the validity of the instruments used. The results in Table 7 confirm the main conclusions drawn above. There is a positive and significant relationship between ACCRUAL and cash ETR. However, some control variables show signs of different coefficients. The coefficients of the AUDIT Fees variable, the INATNG variable, and the leverage effect variable (LEV) are negative and significant at the 1% level. The performance ratio (ROA) has a positive and significant coefficient at the 1% level. The coefficient of the PPE variable is positive and significant at the 1% level. Also, the ratio coefficient (BTM) has a positive and significant effect at the 1% level.

Table 7 GMM robustness

	Cash ETR				*BTD*			
	Model 1		*Model 2*		*Model 1*		*Model 2*	
	Coefficient	*p-value*	*Coefficient*	*p-value*	*Coefficient*	*p-value*	*Coefficient*	*p-value*
INTERCEPT	0.031	0.000***	–0.037	0.000***	0.836	0.000***	0.797	0.000***
ACCRUAL	0.097	0.000***	0.082	0.000***	3.753	0.000***	2.203	0.000***
BINDP	---	---	–0.135	0.000***	---	---	9.090	0.000***
ACCRUAL*BINDP	---	---	–0.081	0.047**	---	---	9.337	0.047**
AUDIT fees	–0.028	0.000***	–0.031	0.000***	1.613	0.000***	1.160	0.000***
ROA	0.159	0.000***	0.176	0.000***	–0.127	0.000***	0.054	0.109
INTANG	–0.010	0.000***	–0.012	0.000***	–0.115	0.001***	–0.077	0.155
PPE	0.002	0.000***	0.002	0.000***	0.015	0.033**	–0.005	0.521
LEV	–0.007	0.000***	–0.008	0.000***	–0.032	0.000***	–0.014	0.238
BTM	0.063	0.096*	0.205	0.008***	–7.266	0.000***	–4.884	0.004
Constant	0.114	0.000***	0.219	0.000***	–5.255	0.000***	–10.154	0.000***
AR(1)	–1.546	0.122	–1.412	0.158	–1.308	0.191	–1.325	0.185
AR(2)	0.442	0.659	0.381	0.703	1.617	0.106	1.649	0.099
Test de Sargan-Hansen	41.608	0.532	55.831	0.091	60.569	0.039	63.149	0.024
Nb. observation	632	574	781	658				

Notes: ***p < 0.01, **p < 0.05, *p < 0.1.

Cash ETR: taxes paid in cash divided by pre-tax income; BTD: pre-tax accounting income less the value of taxable income scaled by total assets, ACCRUAL: (ΔCA – ΔCL – ΔCASH + ΔSTD-DEP + ΔTP) / lag (TA); BIND: Percentage of independent directors on the board of administration; AUDIT Fees: logarithm of total company audit fees; ROA: pre-tax profit on total assets; INTANG: total intangible fixed assets on total assets; PPE: total property, plant, and equipment on total assets; LEV: total debt on total assets; BTM: open common equity on open market capitalisation.

Similarly, the re-estimation of model 2 found that the coefficients of the variable ACCRUAL*BINDP is negatively significant at the 5% level ($p < 0.047$). Overall, we find that the results of our robustness analysis based on the indirect measure of tax avoidance (current TER) are comparable to the main results presented in Tables 5 and 6. Therefore, using cash taxes paid as the numerator rather than tax burdens to calculate tax avoidance proxies enhances the reliability of past results. However, it is important to keep in mind that taxes paid in cash may contain sums from previous tax periods, causing a mismatch between the numerator and the denominator and thus giving a false appreciation of tax avoidance (Dyreng et al., 2008; Hanlon and Heitzman, 2010)

In tax avoidance, a higher value of BTD indicates increased levels of tax avoidance. According to empirical results, the ACCRUAL variable is positively correlated with BTD and has reached a significance level of 1%, thereby supporting H1. The empirical results demonstrate that as firms become more transparent, the ETR decreases and the BTD increases, indicating a greater inclination towards tax avoidance activities. Likewise, Table 7 indicates that ACCRUAL*BINDP is positively correlated to BTD, and it has reached a significant level of 5%. The empirical result still supports H2, meaning the higher the presence of independent directors, the lower the values of tax avoidance will be.

5 Conclusions

The objective of this research was to assess the impact of financial transparency on the level of tax avoidance and the potential for the presence of independent administrators to moderate this impact. The results obtained from a sample of 104 French companies listed on SBF120 during the period from 2011 to 2020, based on estimates from dynamic panel data (GMM), confirm that financial transparency has a statistically significant negative effect on tax avoidance. These conclusions allow reinforcing the arguments of agency theory, according to which greater financial transparency allows shareholders and stakeholders to have better visibility on the activities of the company, which limits the opportunities for concealment of profits and manipulation of financial results. Our findings are consistent with the hypothesis that increased financial transparency is associated with a reduction in tax avoidance. Furthermore, we contended that board independence might amplify the negative effect of transparency on tax avoidance. This relationship supports the hypothesis that independent directors ought to push for greater transparency in order to satisfy their oversight and advisory responsibilities, and that they should also be expected to take the necessary steps to make this possible. Our study also lends validity to the generally accepted assumption in the literature on financial reporting and disclosure that independent directors can affect company transparency.

This evidence may be attributable to several advantages of having independent directors on the boards, which are meant to serve as a resource for skills and expertise, a capacity for effective oversight, and a mechanism to ensure effective decision-making. The impact of company boards on reducing opportunistic activities through efficient supervision procedures is also highlighted by this study.

The findings of this study have important implications for corporate governance and policy-making. They suggest that promoting financial transparency through measures such as enhanced disclosure requirements and stricter regulations can be an effective

strategy to mitigate tax avoidance practices and ensure a more equitable and accountable tax system. In addition, companies and regulators concerned with improving corporate governance practices may find it useful to recognise the contribution of independent directors to transparency efforts. A more resilient and trusted corporate environment can be created by promoting board independence and giving independent directors discretion to oversee and support transparent reporting.

Despite the importance of the findings, there are some limitations to the study that should be mentioned. The first concerns the transparency metric. It is critical to understand that the research's selected measure of transparency, 'ACCURATE' covers aspects of financial transparency, including reliability, quality, and disclosure, but may not involve all of the aspects of transparency. The level of transparency and its effect on the avoidance of taxes may also depend on additional factors such as the accuracy, reliability, or quality of disclosures. In order to provide a more thorough analysis, future research may take into account a number of additional indicators or proxies for financial transparency. The second concerns the sample of 104 French enterprises listed in SBF120, which might not accurately reflect all companies in France or other nations. The results should not then be generalised. The third relates to difficulties with endogeneity and causality: the study investigates the association between financial transparency and tax avoidance using dynamic panel data estimation (GMM). Other unreported or omitted factors might have an impact on tax avoidance and financial transparency, which could introduce bias. To better study causality, future research might take into account supplementary methodologies such as instrumental variable approaches.

In conclusion, our study contributes to the existing literature by providing robust empirical evidence of the relationship between financial transparency and tax avoidance, as well as the moderating role of board independence. By shedding light on these relationships, our research not only advances theoretical understanding but also provides actionable insights for practitioners and policymakers aiming to foster responsible corporate behaviour and promote a more equitable tax environment.

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