

ESG Performance, Financial Pressure, and Corporate Tax Avoidance: Evidence from Taiwan before and during COVID-19

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ARTICLE INFO	ABSTRACT
<p>Article History</p> <p>Received 20 July 2025 Accepted 26 December 2025</p> <p><i>JEL Classifications</i> G34, H26, M14</p> <p>Keywords: ESG Performance, Tax Avoidance, Book-tax Differences, COVID-19 Pandemic</p>	<p>Purpose: This study investigates the relationship between environmental, social, and governance (ESG) performance and corporate tax avoidance, and further examines whether financial pressure induced by the COVID-19 pandemic affects firms' tax avoidance behavior. Using Taiwan as an emerging-market context, this research aims to clarify whether ESG engagement reflects ethical commitment or strategic opportunism.</p> <p>Design/methodology/approach: The study employs panel data from 5,668 firm-year observations of listed and OTC companies in Taiwan between 2017 and 2020. ESG performance is measured using a comprehensive proprietary ESG index constructed from TEJ data, covering environmental, social, and governance dimensions. Corporate tax avoidance is proxied by book-tax differences (BTD) and permanent book-tax differences (PBSD). Multiple regression models, including robustness tests with random-effects models, subsample analyses, and alternative tax avoidance measures, are applied.</p> <p>Findings: The empirical results reveal a significant positive association between ESG performance and corporate tax avoidance, supporting the strategic or opportunistic ESG perspective. All three ESG dimensions—environmental, social, and governance—are positively related to tax avoidance. Moreover, firms exhibited higher levels of tax avoidance during the COVID-19 pandemic, suggesting that heightened financial pressure incentivized more aggressive tax planning. Overall, the findings indicate that ESG initiatives may coexist with, rather than constrain, opportunistic financial behavior.</p> <p>Research limitations/implications: This study focuses on Taiwanese listed firms, which may limit the generalizability of the results to other institutional settings. Additionally, while BTD and PBSD are widely used proxies for tax avoidance, they may capture elements beyond intentional tax planning. Future research could incorporate cross-country comparisons, alternative ESG measures, or qualitative analyses to further explore the motivations underlying ESG engagement.</p> <p>Originality/value: This study contributes to the literature by providing emerging-market evidence on the ESG-tax avoidance relationship and by incorporating the COVID-19 pandemic as an exogenous financial shock. It offers new insights into how financial pressure shapes corporate tax behavior and highlights the potential misuse of ESG practices as a strategic tool rather than a purely ethical commitment.</p>

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1. Introduction

In recent years, the global discussion on corporate sustainability has gradually shifted from the broader notion of Corporate Social Responsibility (CSR) to the more structured and measurable framework of Environmental, Social, and Governance (ESG). While CSR traditionally encompasses a wide spectrum of ethical and social expectations,

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ESG provides a more standardized set of indicators used by investors, regulators, and stakeholders to evaluate firms' non-financial performance. For this reason, and consistent with global trends, this study adopts ESG—rather than CSR—as the operational definition for assessing corporate sustainability performance.

Among the three ESG dimensions, tax governance has emerged as a central issue within the governance pillar. As corporations are expected not only to comply with tax regulations but also to contribute fairly to public finance, tax avoidance has increasingly been viewed as both an ethical concern and a risk management issue. Consequently, the relationship between ESG (or CSR) performance and tax avoidance has become a prominent topic in the literature. Existing studies present two competing views. One perspective argues that firms with strong ESG commitments avoid aggressive tax strategies to maintain legitimacy and long-term reputation (Hoi et al., 2013; Lanis & Richardson, 2015; Wang & Tsai, 2016). The alternative view suggests that ESG activities may serve as a façade associated with opportunistic managerial behaviour, including aggressive tax planning (Sikka, 2010; Davis et al., 2016; Benlemlih et al., 2023). These mixed findings highlight the need for further empirical evidence, particularly from emerging markets where regulatory environments and institutional pressures differ from those of developed countries.

Taiwan provides a unique context for such investigation. As an export-oriented emerging economy deeply embedded in global supply chains, Taiwan has progressively strengthened ESG-related regulations, including mandatory sustainability reporting and governance disclosure requirements. At the same time, international tax reforms—such as the OECD BEPS initiatives and Taiwan's implementation of Controlled Foreign Corporation (CFC) rules—have imposed stricter constraints on tax avoidance behavior. The coexistence of rising ESG expectations and tightening tax enforcement creates potential trade-offs for firms, making Taiwan an important setting to study the ESG–tax avoidance relationship.

The COVID-19 pandemic adds further complexity to this relationship. The pandemic generated severe financial pressure for many firms, intensifying concerns over liquidity and operational resilience. Prior research has shown that ESG performance may help firms mitigate crisis-related risks (Lins et al., 2017; Poursoleyman et al., 2024) but may also increase agency problems when managers use ESG initiatives strategically (Pagano & Volpin, 2005; Masulis & Reza, 2015). At the same time, evidence indicates that during periods of economic hardship, firms are more likely to engage in tax avoidance as the benefits outweigh the associated costs (Richardson et al., 2015; Athira & Ramesh, 2023). Additionally, CSR- or ESG-related spending may itself introduce financial pressure, which could further motivate tax avoidance (Davis et al., 2016; Hou et al., 2017). Therefore, financial stress represents a key mechanism linking ESG activities and tax avoidance, and the COVID-19 pandemic provides a natural setting to examine this mechanism.

Despite the relevance of these issues, few studies have simultaneously considered ESG performance, tax avoidance, and the role of pandemic-induced financial pressure, especially within emerging markets. To address this gap, this study investigates whether ESG performance and the COVID-19 pandemic influence corporate tax avoidance among Taiwanese listed and OTC firms. This paper makes three primary contributions. First, it adopts a comprehensive ESG index suited to the Taiwanese institutional context, providing a more robust measurement of sustainability performance. Second, it contributes to comparative international literature by offering evidence from an emerging market facing simultaneous pressures of ESG compliance and anti-tax-avoidance regulations. Third, it incorporates the COVID-19 pandemic as an economic shock to examine how financial stress influences tax avoidance, thereby providing new insights into corporate behavior in times of crisis.

The empirical findings support the view that some firms engage in ESG activities primarily for opportunistic reasons and reveal that the pandemic has had a positive impact on tax avoidance—suggesting that companies intensified tax planning efforts under pandemic-related financial pressures.

The remainder of this paper is organized as follows: Section 1 presents the research motivation, objectives, and contributions. Section 2 reviews the relevant literature and develops the research hypotheses. Section 3 outlines the research design, including model specification and variable definitions. Section 4 reports the empirical results. Section 5 concludes the paper and provides policy recommendations based on the findings.

2. Literature Review and the Development of the Research Hypotheses

2.1 ESG Performance and Corporate Tax Avoidance

The relationship between ESG/CSR performance and corporate tax avoidance has received extensive scholarly attention, yet empirical findings remain mixed. Two major theoretical perspectives help explain the divergent

empirical results: (1) the ethical ESG/CSR perspective, which argues for a negative association between ESG and tax avoidance, and (2) the strategic ESG/CSR perspective, which posits that ESG may coexist with or even facilitate tax avoidance.

(1) Ethical ESG/CSR Perspective: ESG/CSR reduces tax avoidance

Under the ethical view, firms committed to ESG/CSR principles are less likely to pursue aggressive tax strategies because tax avoidance contradicts social responsibility and risks damaging corporate reputation. Studies in developed markets provide support for this argument. Hoi et al. (2013) found that firms engaging in irresponsible CSR activities tend to exhibit higher levels of tax sheltering and larger book-tax differences. They emphasized that corporate culture plays a critical role—when CSR is embedded in the firm's core values, it can reduce external costs and disincentivize tax avoidance. Similarly, Lanis and Richardson (2015) demonstrated that firms with better CSR performance, particularly in terms of transparency and disclosure, were less inclined to avoid taxes. They advocated for stronger corporate governance frameworks to ensure legal and ethical compliance. Evidence from Asian emerging markets also supports this perspective. For example, Muller and Kolk (2015) examined Indian multinational firms and discovered that companies with higher CSR ratings tend to have higher effective tax rates, suggesting lower tax avoidance risks. Wang and Tsai (2016), using Taiwanese data, found a negative association between CSR and book-tax differences in firms that received the "Corporate Citizenship Award", indicating that CSR was perceived and practiced as an extension of corporate ethics. Rakia et al. (2023), analysing Malaysian firms, also found that higher CSR scores were associated with lower levels of tax avoidance.

Collectively, this strand of research suggests that ESG-aligned firms prioritize long-term legitimacy and stakeholder trust, reducing the incentives and tolerance for aggressive tax planning.

(2) Strategic ESG Perspective: ESG/CSR may coexist with or conceal tax avoidance

An alternative perspective views ESG/CSR as a strategic instrument for risk management, reputation building, or even camouflage. From this standpoint, ESG/CSR engagement does not necessarily reflect genuine ethical commitment. Instead, ESG/CSR activities may be deployed selectively to divert attention from questionable financial practices.

Studies in developed markets provide support for this argument. Sikka (2010) argued that CSR initiatives may serve as a disguise for tax avoidance, allowing firms to enhance public perception while reducing their tax burden. This reflects a form of opportunism, where CSR becomes a means to shift attention away from questionable financial practices. Preuss (2010) found that firms headquartered in tax havens tended to be more active in promoting CSR, indicating that such engagement may serve more as a marketing tool than a genuine ethical commitment. Although these OFC-based firms claimed to engage in responsible business practices, their commitments to key stakeholders were, in most cases, weaker than those made by comparable U.S. firms. Davis et al. (2016) posited that due to resource constraints, firms must strategically allocate capital to maximize returns. In such cases, companies may use financial gains from tax avoidance to fund CSR activities, creating an appearance of social responsibility while still engaging in aggressive tax planning. Evidence from Asian emerging markets—such as Hou et al. (2017), using data from Taiwan, found that firms with strong financial performance were more willing to disclose CSR information but simultaneously had greater flexibility to engage in tax avoidance.

Benlemlih et al. (2023) added nuance to the strategic perspective by showing that consumer awareness can moderate this opportunistic behavior. Their findings suggest that while CSR may be used as a reputation shield, external pressures from stakeholders can serve as an informal governance mechanism that reduces the gap between CSR and ethical behavior.

The literature thus provides conflicting predictions on whether ESG/CSR performance reduces or facilitates tax avoidance. The divergence largely depends on institutional settings, stakeholder monitoring, and the degree of financial pressure faced by firms. Given Taiwan's status as an emerging economy with evolving ESG regulations and increasing anti-tax-avoidance enforcement, the relationship is especially worthy of empirical investigation. The following hypothesis is proposed:

H1: Ceteris paribus, ESG performance affects corporate tax avoidance.

2.2 ESG Performance and Tax Avoidance during the COVID-19 Pandemic

The COVID-19 pandemic introduced unprecedented financial pressures, liquidity constraints, and operational uncertainty for firms worldwide. Although the pandemic differs from past economic crises, the mechanisms underlying corporate financial distress remain similar.

Richardson et al. (2015), examining Australian firms during financial crises, find that when firms experience financial distress, the expected benefits of tax avoidance often exceed reputational or regulatory costs. Athira and Ramesh (2023), focusing on COVID-19, confirm a positive association between pandemic-related financial pressure and tax avoidance, highlighting firms' increased reliance on tax savings to maintain liquidity. These studies suggest that during periods of heightened financial stress, tax planning becomes a strategic resource for survival.

In times of crisis, a related and often debated question is whether companies should increase or reduce their ESG activities. The crisis literature provides two conflicting perspectives.

(1) Risk-mitigation perspective: ESG improves resilience

ESG may buffer firms against economic shocks. Lins et al. (2017) show that during the global financial crisis, high-CSR firms enjoyed greater investor trust and mitigated valuation losses. Poursoleyman et al. (2024) demonstrate that ESG provides insurance-like protection during COVID-19 across 5,000+ global firms. These studies imply that strong ESG firms may experience less financial pressure and thus less need to increase tax avoidance.

(2) Agency perspective: ESG becomes a tool during crises

Agency theory posits that ESG investments may serve as a vehicle for managerial entrenchment, particularly when firms face declining performance. Pagano and Volpin (2005) and Masulis and Reza (2015) argue that managers may use socially responsible expenditures to pursue personal or political interests rather than shareholder value. Karaibrahimoğlu (2010) finds that firms often reduce CSR commitments during crises—suggesting that ESG activities may be deprioritized when resources are scarce.

Combined with evidence that financial pressure encourages tax avoidance, this perspective implies that even ESG-oriented firms might increase tax planning during crises. Based on the above discussion, the following hypothesis is proposed:

H2: Ceteris paribus, the COVID-19 pandemic has a positive effect on corporate tax avoidance.

3. Research Model and Variable Definition

3.1 Data sources and sample selection

The samples in this study were from listed/OTC companies in Taiwan from 2017 to 2020. The financial data was obtained from the Public Information Observatory and the TEJ Finance database of the Taiwan Economic Journal (TEJ), and the ESG data was obtained from the CSR module constructed by TEJ. Originally, a total of 1,770 companies were obtained. After deducting 43 companies with special operating conditions such as finance, securities, and financial holdings, 6,893 observations were obtained. After removing incomplete data, a total of 5,668 annual observations were gathered. Industry categories were based on TEJ's classification.

3.2 Data sources and sample selection

The first objective of this research was to explore the effects of ESG performance on tax avoidance (H1). The Model (1) is as follows:

$$BTD_{i,t} = \beta_0 + \beta_1 ESG_SCORE_{i,t} + \beta_2 IVE_{i,t} + \beta_3 PPE_{i,t} + \beta_4 INTANG_{i,t} + \beta_5 RD_{i,t} + \beta_6 ROA_{i,t} + \beta_7 DY18_{i,t} + \beta_8 IND_{i,t} + \varepsilon_{i,t} \quad (1)$$

where:

i is the individual company

t is the period

BTD is the book-tax differences, which is a proxy of corporate tax avoidance

ESG_SCORE is the comprehensive performance of ESG

IVE is the degree of corporate financial leverage

PPE is the intensity of fixed assets

INTANG is the intensity of intangible assets

RD is the research and development expense ratio

ROA is the return on total assets

DY18 is the income tax rate increased for profit-seeking enterprises

IND is the industry category.

The second objective of this research was to investigate the effect of the COVID-19 pandemic on tax avoidance. To test H2, we established Model (2) as follows:

$$BTD_{i,t} = \beta_0 + \beta_1 ESG_SCORE_{i,t} + \beta_2 COVID_{i,t} + \beta_3 IVE_{i,t} + \beta_4 PPE_{i,t} + \beta_5 INTANG_{i,t} + \beta_6 RD_{i,t} + \beta_7 ROA_{i,t} + \beta_8 DY18_{i,t} + \beta_9 IND_{i,t} + \varepsilon_{i,t} \quad (2)$$

where:

COVID is the COVID-19 pandemic.

3.3 Variable Definition

Corporate tax avoidance: In this paper, the book-tax differences (BTD) were used as a proxy variable for corporate tax avoidance. Referring to Khurana and Moser (2013) and Ding et al. (2021), the present study divided the current income tax expense (including deferred income tax expense, but excluding the discontinued sector) by the highest statutory profit-seeking enterprise income tax rate to calculate the taxable income. Then, BTD was measured using:

$$\frac{\text{pre-tax book income} - \text{the taxable income}}{\text{total assets}}$$

ESG performance (ESG_SCORE): This study used the CSR module of TEJ as the data source and employed the KLD's method to evaluate ESG performance as the benchmark. A total of 19 items were included to measure the ESG performance, and the full score was 19 points. The 19 items were categorized into: environmental protection performance (ESG_E), social responsibility performance (ESG_S), and corporate governance performance (ESG_G). If the item was represented by a numerical value, it was divided into ten percentile scores (If the value ranks 18% in the total sample data of this item, the company gets 0.2 points; the highest is 1 point and the lowest is 0 point, and so on), and the scoring mechanism was adjusted according to the positive and negative indicators (for example, the higher the carbon emission, the lower the score of the enterprise, which is a negative indicator; the higher the corporate governance evaluation level, the higher the score of the enterprise, which is a positive indicator). The details of the calculation of ESG performance are shown in Table 1.

Table 1: Calculation of ESG performance

Item	Inverse indicator	Scoring
Environmental protection (E)		
Carbon emissions	yes	Divide into 10 percentiles and give points in order
Enterprise water consumption	yes	Divide into 10 percentiles and give points in order
MIT product mark		1 if the stamp is obtained, 0 otherwise
Environmental label		1 if the stamp is obtained, 0 otherwise
Social responsibility (S)		
Enterprises employing people with disabilities		Divide into 10 percentiles and give points in order
Employee turnover	yes	Divide into 10 percentiles and give points in order

Employee educational background		Doctor = 4 points, Master = 3 points, University = 2 points, below high school = 1 point, after calculating the weighted average, divide into 10 percentiles and give points in order
Salary difference between executives and lower-level employees	yes	Divide into 10 percentiles and give points in order
Enterprises that violate the Labor Standards Law	yes	It is 1 if there is no occurrence in the current year, otherwise it is 0
Employee applying for parental leave		Divide into 10 percentiles and give points in order
Gender composition of employees		Divide into 10 percentiles and give points in order
Employee occupational injuries	yes	It is 1 if there is no occurrence in the current year, otherwise it is 0
Social responsibility news	yes	It is 1 if there is no occurrence in the current year, otherwise it is 0
Corporate donations		1 when there is an occurrence in the year, 0 otherwise
Gender composition of directors		Divide into 10 percentiles and give points in order
Corporate governance (G)		
Corporate governance assessment		Divided into 5 levels to give points in order
CSR disclosure situation		1 for voluntary disclosure, 0 for compulsory disclosure or no disclosure
CSR assurance situation		1 if there is third-party assurance, 0 otherwise
ISO series certification		1 if the stamp is obtained, 0 otherwise

Financial leverage (IVE): Chen et al. (2010) argued that companies with high debt ratios are less likely to engage in active tax avoidance because they can reduce tax expenditures through the tax shield generated by the tax law. Meanwhile, Graham (2000) suggested that companies can use the interest expenses generated by debt to deduct taxable income, thereby reducing the tax liability. In this paper, financial leverage was included as a control variable and was measured by the debt ratio.

Fixed assets intensity (PPE): Differences arise between financial accounting and tax laws due to varying depreciation expenses recognized for fixed assets, leading to financial and tax disparities. Mills (1998) indicated that enterprises may increase depreciation expense used to reduce the tax burden, but Chen et al. (2010) believed that depreciation expense itself constitutes a tax deduction, and companies no longer need to use tax avoidance to achieve their goals. In this paper, fixed asset intensity was included as a control variable and was measured by dividing the real estate, plant, and equipment by the total assets.

Intangible assets intensity (INTANG): Intangible assets, similar to fixed assets, are subject to distinct amortization recognition regulations under general accounting principles and tax laws. Steijvers and Niskanen (2014) studied the relationship between Finnish family businesses and tax avoidance and indicated that the amortization of intangible assets may cause the effect of the tax shield. Hence, intangible asset intensity was included as a control variable and was measured by dividing the intangible assets by the total assets.

Research and development expense ratio (RD): Under Taiwan's Income Tax Law, enterprises have the opportunity to declare a specified portion of their Research and Development (R&D) expenses as deductions during income tax settlement. Additionally, they may avail themselves of further tax concessions through other applicable regulations. This paper included the R&D expense ratio as a control variable, which was calculated by the R&D expenses divided by the operating income.

Return on total assets (ROA): Gupta and Newberry (1997) indicated that companies with higher profitability may have to pay more taxes according to tax law. Chen et al. (2010) also found that the higher the profitability of family businesses, the higher the effective tax rate. Frank et al. (2009) believed that high-profit enterprises that have to pay more taxes have greater incentives to engage in tax avoidance activities. Therefore, this paper measured profitability by dividing pre-tax net income by the total assets.

Raising the income tax rate for profit-seeking enterprises (DY18): In 2018, the Taiwanese government raised the tax rate of income tax for profit-seeking enterprises from 17% to 20% to adjust the tax structure. Raising the nominal interest rate has an impact on the measurement of tax avoidance (Richardson and Lanis, 2007). Therefore, this paper set up a dummy variable to proxy the change in tax rate to control for its impact on tax avoidance. The period before 2018 was set to 0 and the period after 2018 was set to 1.

Industry (IND): Due to industry-specific tax regulations, different sectors are subject to varying tax laws, resulting in disparities in effective tax rates across industries. For instance, the 2010 Taiwan government budget assessment report pointed out that the electronics industry has become the largest beneficiary of tax concessions under the "Statute for Industrial Innovation"; the "Biotechnology Medical Industry Development Regulations" was established to promote the development of the biotechnology medical industry. Hence, an industry dummy variable was included as a control variable. If the enterprise belongs to the electronics industry or the biotechnology medical industry, the dummy variable was set to 1; otherwise, it was set to 0.

The COVID-19 pandemic (COVID): To explore the influence of the COVID-19 pandemic on tax avoidance, this paper sets up a dummy variable for the COVID-19 pandemic. The pre-epidemic period (2017-2019) is set to 0, and the post-epidemic period (2020) is set to 1.

4. Empirical Results

4.1 Descriptive Statistical Analysis

Table 2 Panel A shows the descriptive statistics of the study variables. The mean of BTD (book-tax differences) for measuring tax avoidance was -0.011, and the median was -0.005. On average, the BTD of sample companies was small, indicating that the degree of tax avoidance is low. The mean of ESG_SCORE (ESG performance) was 5.306, which was far below the ESG performance benchmark of 19 points set in this paper. The means for ESG_E (environmental protection), ESG_S (social responsibility), and ESG_G (corporate governance) were 0.276, 4.219, and 0.812, respectively. These scores were also lower compared to the full scores of each ESG dimension, indicating that the sample companies still need to actively engage in ESG activities to meet social expectations. The mean of ROA was 0.086, suggesting that most of the sample companies are profitable. The median of DY18 was 1, indicating that more than half of the sample observations belong to the period of raising the income tax rate for profit-seeking enterprises. The median of IND was 1, meaning that more than half of the sample companies belong to the electronics and biotechnology medical industries. Table 2 Panel B shows the industry distribution of all the samples, indicating that over 50% of the samples belong to the electronics and biotechnology medical industries.

Table 2: Descriptive statistics and sample industry distribution

Panel A Descriptive statistics (n=5668)					
Variable	Mean	Standard deviation	Minimum	Median	Maximum
BTD	-0.011	0.052	-0.643	-0.005	0.550
ESG_SCORE	5.306	1.240	3.200	5.100	11.300
ESG_E	0.276	0.460	0.000	0.000	2.800
ESG_S	4.219	0.899	0.500	4.200	7.700
ESG_G	0.812	0.851	0.000	0.400	4.000
IVE	0.435	0.180	0.004	0.438	0.998
PPE	0.251	0.174	2.68E-05	0.228	0.957
INTANG	0.015	0.052	2.52E-07	0.002	0.939
RD	0.026	0.030	0.000	0.016	0.132
ROA	0.086	0.071	-0.118	0.080	0.283
DY18	0.760	0.426	0.000	1.000	1.000
IND	0.540	0.498	0.000	1.000	1.000
COVID	0.250	0.436	0.000	0.000	1.000

Panel B Sample industry distribution

	Industry	Num.	%	Industry	Num.	%
Electronics & Biotechnology Medical (n=3061)	Biotechnology Medical	339	5.98	Optoelectronics	394	6.95
	Semiconductor	376	6.63	Communication Network	292	5.15
	Computer and Peripherals	374	6.60	Electronic components	733	12.93
	Electronic channel	133	2.35	Information service	99	1.75
	Other electronics	321	5.66	Total	3061	54.00
Non-Electronics & Biotechnology Medical (n=2607)	Cement	28	0.49	Food	104	1.83
	Plastic	91	1.61	Textile	181	3.19
	Motor machinery	354	6.25	Electrical cable	64	1.13
	Chemical	159	2.81	Glass ceramic	20	0.35
	Paper	24	0.42	Iron	173	3.05
	Rubber	37	0.65	Auto	106	1.87
	Cultural and creative	55	0.97	Agricultural Science and Technology	13	0.23
	E-commerce	18	0.32	Building materials construction	308	5.43
	Shipping	103	1.82	Tourism	145	2.56
	Oil, electricity and gas	43	0.76	Trade department store	132	2.33
	Other	449	7.92	Total	2607	46.00

Notes: BTD (book-tax differences, a proxy for tax avoidance); ESG_SCORE (ESG performance); ESG_E (environmental protection performance); ESG_S (social responsibility performance); ESG_G (corporate governance performance); IVE (financial leverage); PPE (fixed assets intensity); INTANG (intangible assets intensity); RD (research and development expense ratio); ROA (return on total assets); DY18 (raising the income tax rate for profit-seeking enterprises); IND (industry); COVID (COVID-19 pandemic).

4.2 Correlation Analysis

The Pearson correlation analysis between the variables is listed in Table 3. It can be seen that ESG_SCORE and BTD had a positive relationship; thus, the higher the ESG performance, the greater the degree of tax avoidance. The IVE and BTD were found to have a negative relationship, meaning that the higher the corporate debt ratio, the smaller the degree of tax avoidance. Furthermore, the results showed that ROA and BTD have a positive relationship, indicating that the higher the return on total assets, the higher the degree of tax avoidance. INTANG had no significant relationship with BTD. COVID and BTD had a positive relationship, indicating that the degree of tax avoidance increased after COVID-19. Additionally, the VIF value of all variables was below 10, indicating that there is no serious collinearity problem among the independent variables.

Table 3: Correlation analysis

	BTD	ESG_SCORE	ESG_E	ESG_S	ESG_G	IVE	PPE	INTANG	RD	ROA	DY18	IND	COVID
BTD	1												
ESG_SCORE	.085**	1											
ESG_E	.038**	.456**	1										
ESG_S	.048**	.497**	-.246**	1									
ESG_G	.053**	.684**	.384**	-.199**	1								
IVE	-.109**	.027*	.062**	-.067**	.077**	1							
PPE	-.063**	-.051**	.047**	-.176**	.086**	0.004	1						
INTANG	.000	.095**	.029*	0.011	.111**	.066**	-.076**	1					

RD	-.036**	.035**	-.079**	.090**	-0.001	-.192**	-0.006	0.007	1				
ROA	.251**	.104**	-0.002	-0.021	.175**	-.180**	.101**	.046**	.060**	1			
DY18	.057**	.247**	0.012	.313**	0.022	.038**	-0.01	-0.003	0.013	0.024	1		
IND	-.065**	0.018	-.151**	.107**	-0.006	-.107**	-.146**	0.005	.425**	.066**	-0.005	1	
COVID	.050**	.106**	-.029*	.115**	.049**	.047**	-0.021	0.006	0.014	0.004	.326**	-0.002	1

Notes: BTD (book-tax differences, a proxy for tax avoidance); ESG_SCORE (ESG performance); ESG_E (environmental protection performance); ESG_S (social responsibility performance); ESG_G (corporate governance performance); IVE (financial leverage); PPE (fixed assets intensity); INTANG (intangible assets intensity); RD (research and development expense ratio); ROA (return on total assets); DY18 (raising the income tax rate for profit-seeking enterprises); IND (industry); COVID (COVID-19 pandemic). ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

4.3 Results and Discussion

This study employed multiple regression analysis to test the proposed hypotheses. Table 4 presents the estimation results for Model (1), which examines Hypothesis 1. As shown in COL. (1) of Table 4, the coefficient for ESG_SCORE is positive (0.0022) and statistically significant at the 1% level, indicating a significant positive relationship between ESG performance and tax avoidance (BTD). In other words, firms with higher ESG performance tend to engage in greater tax avoidance. This finding supports the strategic ESG perspective, which views ESG initiatives as driven by opportunistic motives rather than ethical considerations. This aligns with prior studies such as Sikka (2010), Preuss (2010), and Davis et al. (2016), who argue that CSR and tax avoidance can coexist or even substitute for one another. Thus, Hypothesis 1 is supported: *ceteris paribus*, ESG performance affects corporate tax avoidance.

Regarding the control variables, IVE (debt ratio) exhibits a significant negative relationship with BTD, suggesting that higher leverage is associated with lower tax avoidance, consistent with the tax shield argument proposed by Chen et al. (2010). PPE (fixed asset ratio) also shows a negative effect, implying that asset-heavy firms are less likely to avoid taxes—again echoing Chen et al. (2010). RD (R&D expenses) has a significant negative impact on BTD, indicating that firms investing more in innovation are less aggressive in tax planning. In contrast, ROA (return on assets) is positively associated with BTD, supporting Frank et al. (2009)'s argument that more profitable firms have stronger incentives for tax avoidance. DY18 (tax rate) is positively associated with BTD, indicating that higher statutory tax rates motivate greater tax avoidance. IND (industry dummy) has a negative effect, reflecting that firms in the electronics and biotech industries may benefit from tax incentives, thus reducing their need for tax avoidance. The coefficient of INTANG (intangible assets) is not statistically significant.

To further examine the specific dimensions of ESG, this study analyzes ESG_E (environmental responsibility), ESG_S (social responsibility), and ESG_G (corporate governance). The results, shown in columns 2 to 4 of Table 4, reveal that all three components are positively and significantly associated with BTD. These findings reinforce the opportunism hypothesis, suggesting that firms undertake ESG activities for strategic benefits rather than altruistic motives.

Table 4: Influence of ESG performance on tax avoidance

	COL.(1)		COL.(2)		COL.(3)		COL.(4)	
Variable	Coefficient	t-Statistic	Coefficient	t-Statistic	Coefficient	t-Statistic	Coefficient	t-Statistic
C	-0.0178	-4.80***	-0.0090	-3.28***	-0.0152	-3.62***	-0.0084	-3.09***
ESG_SCORE	0.0022	3.87***						
ESG_E			0.0037	2.55**				
ESG_S					0.0018	2.24**		
ESG_G							0.0015	1.89*
IVE	-0.0236	-6.15***	-0.0234	-6.11***	-0.0224	-5.83***	-0.0237	-6.17***
PPE	-0.0300	-7.71***	-0.0311	-8.00***	-0.0294	-7.45***	-0.0314	-8.05***
INTANG	-0.0186	-1.43	-0.0152	-1.17	-0.0144	-1.11	-0.0168	-1.28
RD	-0.0005	-2.11**	-0.0005	-1.96*	-0.0005	-2.09**	-0.0005	-2.00**

ROA	0.0018	19.06***	0.0019	19.53***	0.0019	19.63***	0.0018	18.91***
DY18	0.0049	3.06***	0.0064	4.10***	0.0053	3.19***	0.0064	4.10***
IND	-0.0097	-6.53***	-0.0093	-6.19***	-0.0100	-6.66***	-0.0098	-6.55***
Adjusted R ²	0.09		0.09		0.09		0.09	

Notes: Dependent variable is tax avoidance which is measured by BTD (book-tax differences). ESG_SCORE (ESG performance); ESG_E (environmental protection performance); ESG_S (social responsibility performance); ESG_G (corporate governance performance); IVE (financial leverage); PPE (fixed assets intensity); INTANG (intangible assets intensity); RD (research and development expense ratio); ROA (return on total assets); DY18 (raising the income tax rate for profit-seeking enterprises); IND (industry). ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. Observations are 5668.

Table 5 presents the results for Model (2), which tests Hypothesis 2, proposing that the COVID-19 pandemic positively affects corporate tax avoidance. As shown in columns 1 to 4 of Table 5, the COVID-19 variable is positive and statistically significant at the 1% level across all specifications, confirming that tax avoidance increased during the pandemic. This supports Hypothesis 2.

The findings are consistent with Athira and Ramesh (2023), who reported a positive association between the pandemic and tax avoidance. During COVID-19, many firms faced substantial financial pressures such as declining revenues and disrupted cash flows. To preserve liquidity and sustain operations, firms were incentivized to intensify tax avoidance efforts as a strategic response.

These results may also be interpreted through the lens of the risk management view of ESG. While some firms may have maintained or even increased ESG activities during the crisis to preserve reputation and stakeholder trust (Lins et al., 2017; Poursoleyman et al., 2024), limited resources during economic downturns may have prompted other firms to prioritize financial survival, including cost-saving strategies such as tax avoidance. Thus, the pandemic served as a stress test, revealing firms' strategic behavioral shifts under extreme conditions.

Overall, the empirical findings support both hypotheses and provide new evidence in favor of the view that ESG activities may be driven more by opportunism than ethics. Moreover, the results underscore the significant influence of external shocks such as COVID-19 on corporate tax strategies.

Table 5: Influence of the COVID-19 pandemic on tax avoidance

	COL.(1)		COL.(2)		COL.(3)		COL.(4)	
Variable	Coefficient	t-Statistic	Coefficient	t-Statistic	Coefficient	t-Statistic	Coefficient	t-Statistic
C	-0.0175	-4.71***	-0.0089	-3.24***	-0.0149	-3.56***	-0.0083	-3.03***
ESG_SCORE	0.0021	3.80***						
ESG_E			0.0039	2.65***				
ESG_S					0.0018	2.21**		
ESG_G							0.0014	1.77*
COVID	0.0043	2.68***	0.0046	2.87***	0.0044	2.74***	0.0043	2.69***
IVE	-0.0239	-6.25***	-0.0239	-6.23***	-0.0228	-5.94***	-0.0241	-6.26***
PPE	-0.0298	-7.67***	-0.0309	-7.95***	-0.0292	-7.40***	-0.0312	-7.99***
INTANG	-0.0186	-1.43	-0.0153	-1.18	-0.0144	-1.11	-0.0167	-1.28
RD	-0.0005	-2.16**	-0.0005	-2.01**	-0.0005	-2.14**	-0.0005	-2.05**
ROA	0.0018	19.06***	0.0019	19.53***	0.0019	19.62***	0.0018	18.93***
DY18	0.0035	2.08***	0.0049	2.95***	0.0038	2.20***	0.0050	3.01***
IND	-0.0097	-6.51***	-0.0093	-6.15***	-0.0099	-6.65***	-0.0097	-6.53***
Adjusted R ²	0.09		0.09		0.09		0.09	

Notes: Dependent variable is tax avoidance which is measured by BTD (book-tax differences). ESG_SCORE (ESG performance); ESG_E (environmental protection performance); ESG_S (social responsibility performance); ESG_G (corporate governance performance); COVID (COVID-19 pandemic); IVE (financial leverage); PPE (fixed assets intensity); INTANG (intangible assets intensity); RD (research and development expense ratio); ROA (return on total assets); DY18 (raising the income tax rate for

profit-seeking enterprises); IND (industry). ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. Observations are 5668.

4.4 Robustness Tests

4.4.1 Controlling for firm effects

To account for unobserved firm-specific heterogeneity, we attempt to estimate a firm fixed-effects (FE) model. However, the FE regression fails due to a singular design matrix. As an alternative, we estimate a firm random-effects (RE) model to control for time-invariant firm attributes. COL. (1) of Table 6 presents the estimation results for Model (1), which examines Hypothesis 1. The coefficient for ESG_SCORE is positive (0.0017) and statistically significant at the 1% level, indicating a significant positive relationship between ESG performance and tax avoidance (BTD). COL. (2) of Table 6 presents the results for Model (2), which tests Hypothesis 2, proposing that the COVID-19 pandemic positively affects corporate tax avoidance. The COVID-19 variable is positive and statistically significant at the 1% level. The RE regression results remain economically and statistically aligned with the baseline, indicating that the observed relationships are not driven by omitted time-invariant firm characteristics. These robustness findings confirm that incorporating firm-level effects does not materially alter the study's inferences and provides additional confidence in the empirical validity of the results.

Table 6: Controlling for firm effects- random-effects (RE) model

Variable	COL.(1)		COL.(2)	
	Coefficient	t-Statistic	Coefficient	t-Statistic
C	-0.0162	-3.70***	-0.0156	-3.54***
ESG_SCORE	0.0017	2.65***	0.0016	2.52**
COVID			0.0048	3.66***
IVE	-0.0304	-6.29***	-0.0314	-6.50***
PPE	-0.0281	-5.52***	-0.0274	-5.40***
INTANG	-0.0191	-1.12	-0.0191	-1.12
RD	-0.0006	-1.91*	-0.0007	-2.02**
ROA	0.0022	19.29***	0.0022	19.33***
DY18	0.0052	3.84***	0.0037	2.63***
IND	-0.0094	-4.56***	-0.0093	-4.51***
Adjusted R ²	0.084		0.085	

Notes: Dependent variable is tax avoidance which is measured by BTD (book-tax differences). ESG_SCORE (ESG performance); COVID (COVID-19 pandemic); IVE (financial leverage); PPE (fixed assets intensity); INTANG (intangible assets intensity); RD (research and development expense ratio); ROA (return on total assets); DY18 (raising the income tax rate for profit-seeking enterprises); IND (industry). ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. Observations are 5668.

4.4.2 Sample Selection: Top and Bottom 25% of BTD

As shown in Panel A of Table 2, the median value of BTD was -0.005, indicating that approximately 50% of the sampled companies had positive book-tax differences. This is noteworthy given the overall low level of BTD in the dataset. Various factors may contribute to an increase in book-tax differences, and it cannot be conclusively attributed solely to active corporate tax avoidance.

To address this concern, a sensitivity analysis was conducted using a subsample consisting of firms in the top and bottom 25 percent of the BTD distribution ($n = 2,834$ observations). The results are reported in Table 7. COL. (1) presents the estimation results for Model (1), which tests Hypothesis 1. ESG_SCORE remains significantly and positively associated with BTD, consistent with the findings in COL. (1) of Table 4. The coefficients of the control variables also align closely with the baseline results, suggesting that a portion of BTD in the sample is indeed attributable to tax planning behavior. These results reinforce the validity of using BTD as a proxy for tax avoidance and support the interpretation that firms exhibiting higher ESG performance may do so with an opportunistic motive.

COL. (2) displays the results for Model (2), which examines Hypothesis 2 regarding the impact of the COVID-

19 pandemic on tax avoidance. The coefficient on the COVID-19 indicator is positive and statistically significant at the 5 percent level, indicating that pandemic-induced financial pressure heightened firms' propensity to engage in tax avoidance. These findings provide robust support for Hypothesis 2.

Table 7: Sample Selection: Top and Bottom 25% of BTD

Variable	COL.(1)		COL.(2)	
	Coefficient	t-Statistic	Coefficient	t-Statistic
Constant	-0.028	-3.28***	-0.023	-3.15***
ESG_SCORE	0.003	2.90***	0.003	2.79***
COVID			0.008	2.41**
IVE	-0.047	-6.32***	-0.048	-6.43***
PPE	-0.038	-5.04***	-0.038	-5.04***
INTANG	-0.018	-0.71	-0.017	-0.68
RD	-0.056	-1.23	-0.001	-1.26
ROA	0.274	16.43***	0.003	16.43***
DY18	0.009	2.99***	0.007	2.11**
IND	-0.015	-5.28***	-0.015	-5.31***
Adjusted R ²	0.14		0.14	

Notes: Dependent variable is tax avoidance which is measured by BTD (book-tax differences). ESG_SCORE (ESG performance); COVID (COVID-19 pandemic); IVE (financial leverage); PPE (fixed assets intensity); INTANG (intangible assets intensity); RD (research and development expense ratio); ROA (return on total assets); DY18 (raising the income tax rate for profit-seeking enterprises); IND (industry). ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. Observations are 2834.

4.4.3 Alternative Measure: Permanent Book-Tax Differences (PBTD)

Permanent book-tax differences (PBTD) are calculated by subtracting temporary book-tax differences from total BTD. Following Frank et al. (2009), PBTD serves as a more relevant measure of corporate tax planning because temporary differences may primarily reflect short-term earnings management by current management. Consistent with their approach, temporary book-tax differences in this study are estimated by dividing deferred income tax expense by the statutory tax rate and then deducting the resulting value from total BTD. The regression results are presented in Table 8.

COL. (1) reports the estimation results for Model (1), which examines Hypothesis 1. ESG_SCORE remains significantly and positively associated with PBTD, consistent with the findings reported in COL. (1) of Table 4. This result provides further evidence that higher ESG performance is linked to greater tax avoidance behavior.

COL. (2) presents the results for Model (2), which tests Hypothesis 2. Although the coefficient on the COVID-19 indicator is positive, it does not reach statistical significance at the 10 percent level. This suggests that, when using PBTD as an alternative measure of tax avoidance, the effect of the pandemic on tax planning remains directionally consistent with expectations but lacks statistical support.

Table 8: Alternative Measure: Permanent Book-Tax Differences (PBTB)

Variable	COL.(1)		COL.(2)	
	Coefficient	t-Statistic	Coefficient	t-Statistic
Constant	-0.154	-14.42***	-0.153	-14.38***
ESG_SCORE	0.004	2.73***	0.004	2.71***
COVID			0.004	0.86
IVE	0.020	1.80*	0.019	1.77*
PPE	-0.039	-3.50***	-0.039	-3.49***
INTANG	0.065	1.74*	0.065	1.74*
RD	0.102	1.40	0.001	1.39
ROA	0.263	9.51***	0.003	9.52***
DY18	0.014	2.93***	0.012	2.52**
IND	0.029	6.26***	0.027	6.27***
Adjusted R ²	0.05		0.04	

Notes: Dependent variable is tax avoidance which is measured by PBTB (permanent book-tax differences). ESG_SCORE (ESG performance); COVID (COVID-19 pandemic); IVE (financial leverage); PPE (fixed assets intensity); INTANG (intangible assets intensity); RD (research and development expense ratio); ROA (return on total assets); DY18 (raising the income tax rate for profit-seeking enterprises); IND (industry). ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. Observations are 5668.

5. Conclusion and Recommendations

This study investigates the relationship between ESG performance, financial pressure, and corporate tax avoidance using a comprehensive dataset of Taiwanese listed firms before and during the COVID-19 pandemic. ESG performance is measured using a proprietary index developed for this research, while book-tax differences (BTD) and permanent book-tax differences (PBTB) are used as primary proxies for tax avoidance. The empirical evidence consistently demonstrates a significant and positive association between ESG performance and corporate tax avoidance, supporting the strategic or opportunistic view of ESG. Rather than engaging in ESG activities solely as a reflection of ethical commitment, firms may adopt ESG practices as part of a broader strategic framework designed to enhance financial outcomes, including minimizing tax burdens.

Analyses of disaggregated ESG dimensions further reinforce this interpretation. Environmental (E), social (S), and governance (G) performance each exhibit a positive and statistically significant relationship with tax avoidance, consistent with the results derived from the aggregate ESG index. These findings suggest that, across all ESG domains, firms may employ ESG initiatives as instruments that complement tax-related incentives, thereby aligning ESG engagement with strategic economic motivations rather than purely normative or value-driven objectives.

This study also examines the role of financial pressure by exploring the impact of the COVID-19 pandemic on firms' tax behavior. The results show that tax avoidance increased significantly during the pandemic period. This finding aligns with the risk-management and financial-constraint perspectives, which propose that firms adopt more aggressive tax strategies as a means of preserving liquidity and ensuring business continuity in times of crisis. When confronted with revenue disruptions, heightened uncertainty, and operational instability, firms may view tax avoidance as a viable mechanism to mitigate financial pressures. The interaction between ESG performance and the pandemic context further highlights the complex interplay between sustainability practices and corporate financial decision-making under stress.

Based on these findings, several policy and managerial implications emerge:

Strengthening regulatory oversight and disclosure quality: Policymakers should consider enhancing ESG disclosure standards and tax transparency requirements to prevent the misuse of ESG initiatives as a façade for

aggressive tax planning. Standardized, comparable, and audited ESG reporting—combined with stricter enforcement of tax regulations—can reduce information asymmetry and limit opportunistic behavior.

Improving corporate governance mechanisms: Firms should strengthen governance structures to ensure that ESG strategies are aligned with long-term organizational values rather than short-term gains. Enhancing board independence, establishing clearer accountability mechanisms, and integrating ethical considerations into executive compensation plans can help align ESG practices with genuine sustainability objectives.

Embedding ESG into long-term strategic planning: Companies should treat ESG not as a symbolic or reputational tool but as an integral component of long-term strategic development, risk management, and stakeholder engagement. Doing so can reduce the incentive for opportunistic ESG behavior and promote more authentic and sustainable organizational practices.

Enhancing transparency and credibility in ESG communication: High-quality ESG disclosures that are verifiable, consistent, and performance-based can improve stakeholder trust and mitigate concerns about the true motivations behind ESG initiatives. Transparent communication can help build legitimacy and foster stronger, more credible relationships with investors, regulators, and the public.

In conclusion, this study provides robust empirical evidence that ESG performance is positively associated with corporate tax avoidance and that financial pressure—exemplified by the COVID-19 pandemic—intensifies firms' reliance on tax avoidance strategies. These findings contribute to the growing body of literature on ESG, corporate behavior, and crisis management by highlighting the strategic nature of ESG engagement and its interaction with firms' financial incentives.

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