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Earnings Before Interest and Tax (EBIT) and Capital Remuneration

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Objective: This research's overall objective is to estimate the capital whose remuneration is CIT.

Method: The Generalized Least Squares (GLS) method on random-effect panel data, collected on a sample of one hundred and three firms in the building and public works (BPW) sector in France, over the period 2017 to 2021, was used. It was assumed that there is no free cost or revenue and that the public or taxable capital (TAXITY) used by the firm, subject to CIT, is a straight line debt and equity combination.

Results: We find a strong positive correlation between CIT and TAXITY and significantly estimate the corporate capital tax rate (CCTR) at 1.61%.

Conclusion: The main determinant of CIT has been estimated, namely the positive effect of public capital.

Keywords

Financial integration; Corporate capital tax; Cost of capital; Public capital; Tax capital

RESEARCH ARTICLE

Earnings Before Interest and Tax (EBIT) and Capital Remuneration

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1. Introduction

The various global sources of corporate financing recognized to date by corporate finance fall into two categories: equity capital and debt capital (Çam & Özer, 2021; Papadaki & Pavlopoulou-Lelaki, 2021; Gutterman, 2022; OECD, 2024; Santos et al., 2024). These capital resources are provided by shareholders and bondholders and are remunerated by dividends and interest respectively, taking into account corporate income tax (CIT). The ultimate aim of any corporation today is to create customers. This enables corporate managers to create value for the corporate financial partners through the earnings made on sales to customers. If corporate finance is concerned with finding, collecting and allocating the means of financing that enable firms to create value, then its purpose is to define the rules of rational behaviour for firms in terms of financing, investment and the distribution of value or remuneration of capital (Cobbaut, 1997; Gherghina, 2021; Graham, 2022; Vernimmen et al., 2022; Brealey et al., 2023). But creating value or earnings is not easy for corporate managers. They have to find and raise corporate financing at the lowest possible cost, and then allocate that financing to a profitable corporate investment, i.e. one that creates value and therefore generates profits.

There are generally three or even four levels of corporate earnings, based on the corporate income statement. These are earnings before interest, tax, depreciation and amortization (EBITDA), earnings before interest and tax (EBIT), earnings before tax (EBT) and net earnings (NE). EBITDA corresponds to earnings from corporate investment, excluding corporate income tax, financing costs and investment costs. EBITDA is to be allocated to the return on capital employed (interest and dividends), to deductions in favour of the State (CIT) and employees (profit-sharing), and to self-financing, which includes depreciation allowances and retained earnings (Ginglinger, 1991; Azza & Achibane, 2022; Nhleko et al., 2023; Hultner, 2024; Nissim, 2024). It should be noted that each of these remunerations

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accrues to one or other of the two groups of financial partners of the firm, with the exception of corporate income tax; profit-sharing, which is an optional system, can be disregarded. Dividends, retained earnings and part of the depreciation charge (real) go to shareholders, while interest and the other part of the depreciation charge (financial) go to bondholders. EBIT is the earnings generated by a corporate investment, irrespective of the source of financing. EBIT is generally used to remunerate not only shareholders via dividend and bondholders via interest, but also the State via corporate income tax (CIT). EBT is earnings before corporate income tax (CIT). EBT is generally divided between shareholders in the form of dividends and the State in the form of CIT. NE is the net earnings available to shareholders.

It should be noted that the remuneration of capital used by the firm gives rise to three types of cost against two categories of capital. These are the dividend or cost of equity capital, the interest or cost of debt capital, and corporate income tax (CIT). From this point on, EBIT allocation at the firm level gives rise to the following general research question: **Isn't corporate income tax (CIT) the remuneration of capital?**

In the related literature, most capital theories have not addressed this issue. They have developed on the basis of two global sources of corporate capital (debt capital and equity capital) with their respective costs (interest and dividend), considering corporate income tax (CIT) as a constraint to be respected (Modigliani and Miller theory, trade-off theory (TOT), agency theory, pecking order theory (POT); to name but four). Some authors have recognized the remuneration of public capital used by the firm in exchange for corporate income tax (CIT), without seeking to financially integrate this capital (Charreaux, 1996; Deklerck et al., 2003; Desai et al., 2007; Meunier, 2018). EBIT is a remuneration for public capital (construction of roads, schools and health centers, etc.) via CIT, for debt capital via interest and for equity capital via dividend (Charreaux, 1996; Stantcheva, 2021; Jacob, 2022; Shakatreh et al., 2022).

Given that in a given national economy where there are no free costs or revenues and capital markets are pure and perfect, the payment of CIT justifies the presence of the State as the firm's financial partner. Overall, this research aims to **estimate the capital that is remunerated by corporate income tax (CIT)**. This research will make it possible to integrate the State into the group of the corporate financial partners, to have a less arbitrary, random and uncertain basis for corporate taxation, and to avoid tax evasion and tax fraud. It will also make it possible to review the structure, value, cost and return on corporate capital (Agossadou, 2024). Thus, our basic research question is divided into two separate research issues.

RQ1: What is the amount of capital whose remuneration is CIT?

RQ2: What is the tax rate on capital whose remuneration is CIT?

These research questions must be answered if the objective of this research is to be achieved. The research results will be used as evidence to improve the various theories of capital and, in turn, to develop corporate finance, corporate taxation and public finance. They will help to reduce the phenomenon of base erosion and profit shifting (BEPS). The literature review, methodology, results and conclusion form the structure of the rest of this paper.

2. Literature review

From traditional theory to the present day, most capital tax theories are based on two global sources of corporate financing (equity capital and debt capital) without attempting to consider the public capital used by the firm in exchange for corporate income tax (CIT). As a result, several authors have analysed the capital structure using a non-integrative CIT approach, sometimes with contradictory results (Ahmed et al., 2024; B. T. T. Dao & Ta, 2020; T. T. B. Dao & Le, 2023; DeAngelo & Masulis, 1980; He et al., 2021; Kontuš et al., 2023; Luo & Jiang, 2022; Myers, 2001). From this perspective, the theories of Modigliani and Miller, trade-off, agency and pecking order are reviewed and the financial integration of CIT is analysed.

2.1. Modigliani and Miller theory

In the absence of CIT, the irrelevance theory of capital structure finds its full force insofar as Earnings Before Interest (EBI) is shared between the two categories of capital providers (Modigliani & Miller, 1958). However, this theory was severely criticized for failing to take account of the CIT, which characterizes the real world, so that these authors had to abandon their basic irrelevance theory of capital structure. Thus, from an arbitrage process, CIT provides the firm financed by debt capital with a tax shield due to debt interest deduction in computing CIT (Modigliani & Miller, 1963). This is the full relevance theory of capital structure in case of CIT. These authors have therefore analysed CIT as a tax

or cost reducer, a profit, value or capital multiplier. They therefore recommend that a firm should maximize its debt financing in the presence of CIT. But empirical evidence obtained by several authors has invalidated this full relevance theory of capital structure (Baxter, 1967; E. H. Kim, 1978; Solomon, 1963). In short, this theory has not incorporated CIT financially and has therefore focused, without detailed analysis, on the tax advantage created through debt capital over equity capital in relation to CIT.

2.2. Trade-off theory (TOT)

Trade-Off Theory (TOT) accepts the relevance theory of capital structure developed by Modigliani and Miller in 1963, but asks corporate managers to impute the bankruptcy cost of debt to the tax shield offered by the tax deduction of debt interest (Kraus & Litzenberger, 1973; Myers, 2001). This is the bounded relevance theory of capital structure, allowing the optimum capital structure to be determined. TOT supporters analyse CIT as a factor that can destroy or create value, by reducing or increasing the cost of investment. Thus, some authors have obtained empirical evidence to confirm TOT (MacKie-Mason, 1990; Rajan & Zingales, 1995; Graham, 1996; Graham & Harvey, 2001; Frank & Goyal, 2009; Qiu & La, 2009). However, other authors have found empirical evidence to invalidate the TOT (DeAngelo & Masulis, 1980; Bradley et al., 1984; Fama & French, 1998; Negash, 2002; Chakraborty, 2010). In short, TOT has not performed an integrated firm-level CIT analysis.

2.3. Agency theory

When it comes to corporate capital formation, agency theory states that corporate managers do not always raise capital on the markets in shareholder interests, due to conflicts between shareholders and managers and between shareholders and bondholders (Jensen & Meckling, 1976). According to this theory, resolving these conflicts generates agency costs through corporate debt. Under these conditions, corporate managers are encouraged to adopt capital structure behaviour after having reconciled the debt interest tax shield not only with bankruptcy costs, but also with the agency costs generated by corporate debt. As for the validity of agency theory, it has to be said that empirical evidence exists both to confirm it (Berger & Bonaccorsi di Patti, 2006; Harvey et al., 2004; W. S. Kim & Sorensen, 1986; Vilasuso & Minkler, 2001) and to refute it (Pinegar & Wilbricht, 1989; Brounen et al., 2006). In short, agency theory has not fully integrated CIT into its analyses, since there are other conflicts that have not been mentioned, like "conflict between shareholders and government" or "conflict between managers and government", whose impact may lead to CIT's "tax audit" or even "tax reassessment".

2.4. Pecking-order theory

The pecking-order theory (POT) is just a more detailed version of the trade-off theory (TOT), since it breaks down equity for tax purposes into internal equity (retained earnings) and external equity (Lewellen & Lewellen, 2004). For investment financing in a context of informational asymmetry, POT recommends financing first by internal equity (retained earnings), then by debt capital and, finally, by external equity (Myers & Majluf, 1984). Empirical tests have been carried out to confirm POT (Flannery & Rangan, 2006; Seifert & Gonenc, 2010) as well as to refute it (Helwege & Liang, 1996; Frank & Goyal, 2003). In short, POT, like TOT, is influenced by the presence of CIT, but has not performed an integrated financial analysis of CIT.

Overall, the four capital theories examined considered CIT as an earnings catalyst for the firm due to tax purposes, without seeking to financially integrate CIT. This research is in line with the irrelevance theory of capital structure (Modigliani & Miller, 1958), but with the financial integration of CIT.

2.5. Financial integration of CIT

The breakdown of EBIT into three types of cost (interest, CIT and dividend) against two overall sources of financing (debt capital and equity capital), leaves a notorious imbalance in the operation of remuneration of corporate capital, since CIT is not paid for free by the firm. To restore balance between the financing and capital remuneration operations at the firm level, CIT must be financially integrated. Financial integration theory states that "*CIT is the cost of a global source of financing, called public capital*". The firm now has three global sources of financing: debt capital, equity capital and public capital. Henceforth, a corporation wishing to finance itself must issue property, debt or public authority securities, and undertake to pay the security holders one or more terms of income, depending on the different legal terms of the securities. Accordingly, the "*taxholder*" or State, holder of public authority securities, is *de facto* the shareholder of any corporation (Desai et al., 2007) but in reality is often neglected in corporate governance (Morck et al.,

1988; Hermalin & Weisbach, 1998; La Porta et al., 1998; Shleifer & Wolfenzon, 2002).

2.5.1. Rationale for public capital

In the case of non-free cost or revenue, CIT is paid for all utilities used by the firm. These utilities constitute "public capital". CIT has thus become the cost of public capital allocated to public investments that the firm uses (Deklerck et al., 2003). Public capital is justified by the firm's use of public resources. The financial integration of public capital at firm level is shown in Figure 1 and summarized in Table 1.

Table 1 shows the trilogy of corporate financing, i.e. financing by shareholders' equity at the dividend rate, bondholders' debt capital at the interest rate and public capital from the "*taxholder*" or State at the tax rate.

Figure 1 shows the firm's integrated financial flow, including the three providers of capital: the State, or "taxholder", shareholders and bondholders. In return, the firm pays tax to the State, dividend to the shareholders and interest to the bondholders.

2.5.2. Relationship between public capital and CIT

If CIT is the cost of public capital, we might expect, *ceteris paribus*, a positive relationship between public capital and CIT. But because of biases in CIT (Agossadou, 2023), the relationship between CIT and public capital can be positive, negative or zero. For example, CIT exemption leads to a zero relationship between CIT and public capital. Also, CIT credit may indicate a negative relationship between CIT and public capital. The consequence is the change from a "*broaden bases, low rates*" to a "*shrunk bases, raise rates*" tax system; this breaks the basic principle of tax theory, stipulating that the ideal tax is "*a low rate, applied to a broad and inelastic tax base*" (Bénassy-Quéré et al., 2009 cited in (Heyer, 2015)). In view of the above, the research hypothesis is as follows:

Table 1. Corporate integrated financing.

Capital providers	Types of capital	Cost of capital
Shareholders	Equity capital	Dividend
Bondholders	Debt capital	Interest
Taxholder (State)	Public capital	Tax (CIT or CCT[a])

[a] Corporate Capital Tax.
Source: Personal computing 2024.

H1: "There is a positive relationship between public capital and CIT".

3. Methods

A research study's validity and relevance depend on its epistemological posture (Thietart, 2014). It follows an objectivist ontological and positivist epistemological stance, expressed through a predominantly quantitative analytical approach with a hypothetico-deductive reasoning logic. This section covers research design, sampling and data collection, and modelling.

3.1. Research design

The research design is based on a numerical case study of an investment project of 100 currency units (CU) over one period, by a firm (E) financed by equity capital for 50 CU and by debt capital for 50 CU. The data are presented in Table 2.

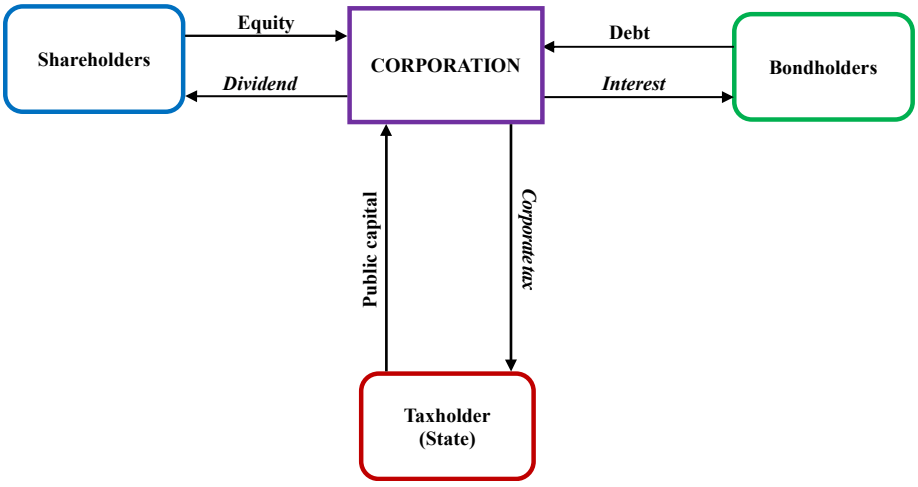

Fig. 1. Corporate integrated financing flows. Source: Personal computing 2024.

Table 2. Investment project of firm E.

Elements	Firm E
Equity (S)	50
Debt (D)	50
Investment (I)	100
Operating revenue	326
Operating expenses	210
Minimum cash flow required or EBITDA[a]	116
Reconstitution of	
Equity capital S (to be recovered)	50
Debt D (to be repaid)	50
Depreciation and Amortization (DA)	100
Earnings before interest and tax (EBIT)	16
Remuneration	
Interest (on Debt D) at rate r = 8 %	4
Earnings before tax (EBT)	12
Corporate income tax (CIT) at rate τ = 50 %	6
Dividend (of Equity S) at rate k = 12 %	6

[a] EBITDA: earnings before interest, tax, depreciation and amortization.
Source: Adapted from (Cobbaut, 1997).

From Table 2, we can see that there are three (3) types of capital remuneration: dividends, interest and tax, against two (2) sources of financing: equity and debt. This leads us to assume that there is undoubtedly a hidden capital whose remuneration is the corporate income tax that needs to be unmasked.

3.2. Sampling and data

In a given national economy, all profit-seeking firms are subject to corporate income tax (CIT). The parent population therefore includes all firms subject to CIT. We were interested in firms in France because of the Pappers platform, which offers free access to French firm data. French firms in the building and public works (BTP) sector were selected because of the importance of this sector in terms of job creation. We downloaded from https://www.pappers.fr/ the corporate accounts of firms with at least ten employees over the period 2015 to 2023. We then excluded from the initial sample all firms with missing data and all years, i.e. the next four years, 2015, 2016, 2022 and 2023, for which no data are available. Also excluded from the sample were firms with loss-making results, as these deviate from the principle of rationality and profitability for the corporate sector. In sum, the final research period selected runs from 2017 to 2021, and the final sample comprises 103 firms, i.e. a total of 515 firm-year observations. The data were used to create a dynamic data panel, which was processed using EViews 13 software and Microsoft Excel 2021.

3.3. Model and variables

The objective of this research is to determine the capital whose remuneration is the corporate income tax (CIT). To achieve this objective, a model expressing corporate income tax (CIT) as a function of public capital is defined. The variable to be explained is corporate income tax, referred to as CIT; the explanatory variable is public capital, referred to as TAXITY. The general form of the tax model for firm i at time t is as follows:

$$\mathbf{CIT} = \mathbf{f}(\mathbf{Public\ capital}) \tag{1a}$$

The specific form of the tax model for firm i at time t is as follows:

$$\mathbf{CIT}_{i,t} = \alpha_0 + \alpha_1 \mathbf{TAXITY}_{i,t} + \varepsilon_{it} \tag{1b}$$

Where:

STANDARD COEFFICIENTS, INDICES AND ERROR TERM	
α_0 = Origin coefficient	i = Index for firm i, with $i \in [1; 103]$
α_1 = TAXITY coefficient	t = Index of time t, with $t \in [2017; 2021]$
ε = Error term	
DEPENDENT VARIABLE	
$\mathbf{CIT}_{i,t}$	Represents Corporate income tax of firm i in year t
INDEPENDENT VARIABLE	
$\mathbf{TAXITY}_{i,t}$	Denotes the public capital of firm i in year t

The dependent variable CIT is measured by the product of the corporate tax rate (CITR) and taxable earnings. This research is based on the postulate that the value G of public capital is the linear combination of the value S of equity capital and the value D of debt capital. We can therefore write:

$$\mathbf{G} = \beta \mathbf{S} + \gamma \mathbf{D} \quad ; \quad \beta \geq 0 \text{ and } \gamma \geq 0 \tag{2}$$

The case where the parameters β and γ are negative ($\beta < 0$ or $\gamma < 0$), is mathematically possible, but economically impossible, as the cost of capital is always positive or zero; for this reason, firms with a loss-making income entitling them to a tax credit are excluded from the final sample. For convenience, we will use $\beta = \gamma = 1$ in the following and equation (2) becomes:

$$G = S + D \quad (3)$$

According to equation (3), the independent variable TAXITY is measured by the sum of equity and debt capital. Public capital is therefore permanent capital, or medium- and long-term capital, or capital with a term of more than one year. The ordinary least squares method and the analysis utility were used.

4. Results and discussions

We present the descriptive statistics of variables, the results of the statistical tests and analyses of CIT model, then show the estimation results of CIT model and the interpretations.

4.1. Descriptive statistics

Table 3 presents the descriptive statistics for tax model variables.

As shown in Table 3, average public capital amounts to **€23,718,701** and costs an average corporate income tax of **€612,570**.

4.2. Tests results

Chow, Hausman and Lagrange Multiplier tests are done to select the most appropriate model.

4.2.1. Chow test

Table 4 presents summary of Chow test results.

As shown in Table 4, the value of Prob. Cross-section Chi-square is less than 0.05 ($\alpha = 0.05$), then the fixed effect model was selected based on the test results.

4.2.2. Hausman test

Table 5 presents summary of Hausman test results.

Table 3. Descriptive statistics of variables in CIT model.

	TAXITY	CIT
Mean	23,718,701	612,570
Maximum	1,980,000,000	36,473,345
Minimum	1,562	–
Std. Dev.	170,000,000	2,911,210
Observations	515	515

Source: EViews 13 descriptive statistics report.

Table 4. Summary of Chow test results.

	Statistic	Prob.
Cross-section F	2.168884	0.0000
Cross-section Chi-square	221.786782	0.0000

Source: Test Chow Eviews 13.

Table 5. Summary of Hausman test results.

CIT	Coefficients		Difference (b-B)
	Fixed effects (b)	Random effects (B)	
TAXITY	0.003376	0.016058	−0.012682
	Chi-Sq. Statistic	Prob.	
Cross-section random	18.835939	0.0000	

Source: Test Hausman Eviews 13.

Table 5's results show that the probability value is 0.0000, which is less than the significance level ($\alpha = 0.05$). As a result, the Hausman test concludes that the panel data regression model is best estimated using the fixed effect model.

But the fixed-effects model does not output a significant coefficient for the response variable. With this in mind, let's proceed with the Lagrange Multiplier test.

4.2.3. Lagrange multiplier test

The Lagrange Multiplier (LM) Test, also known as the Lagrangian Multiplier Test, is used to determine the optimal panel data regression method between the random effect model and the common effect model. Test (LM) is a test to determine whether Random Effect (RE) model is better than Common Effect (CE) method used. If Result:

H0: Select CE ($p > 0.05$)
H1: Select RE ($p < 0.05$)

Table 6 presents summary of Lagrange Multiplier test results.

The value of p value is shown in Table 6 which is 0.000 where the value is less than 0.05. So, the Lagrange Multiplier Test indicates that receiving H1 means the best estimation method is Random Effect.

The random effect model was selected, and the Generalized Least Squares (GLS) method was used for estimation. Since GLS is applied, there is no need to conduct classical assumption tests, as GLS accounts for potential heteroscedasticity and autocorrelation issues that could arise in panel data.

4.3. Statistical analyses

These analyses focused on correlations, graphs of variables and regression residuals and the normality of errors (Jarque-Bera test).

Table 6. Summary of Lagrange Multiplier test results.

	Cross-section	Time	Both
Breusch-Pagan	23.22279	0.816229	24.03902
	(0.0000)	(0.3663)	(0.0000)

Source: Test Lagrange Multiplier Eviews 13.

Table 7. Ordinary correlation between variables in CIT model.

	TAXITY	CIT
TAXITY	1.000000	0.943708
CIT	0.943708	1.000000

Source: Ordinary correlation EViews 13.

4.3.1. Correlation analysis

Correlation and regression analyses are related in that they both deal with the relationships between variables. Correlation measures the strength of the linear relationship between two variables, while regression analyses the relationship of one variable to one or more others. The linear correlation coefficient R^2 of regression differs from the correlation coefficient R of correlation in that, while the R measures the strength and direction of the linear relationship between two variables, the R^2 focuses on the ability of one or more independent variables to predict variation in a dependent variable.

Correlation analysis is performed to investigate the relationship between the independent variable TAXITY, representing public capital and measured by permanent capital on the one hand, and, the dependent variable CIT, representing corporate income tax. The analysis of the relationship between CIT and TAXITY is presented in Table 7.

According to Table 7, corporate income tax (CIT) is correlated at 0.943708 with public capital (TAXITY) at the 1 % significance level. This correlation between TAXITY and CIT is positive and very strong (94.37 %).

4.3.2. Graphical analysis

Figure 2 shows the scatterplots and the regression line of the tax model, while Figure 3 shows the curves of the endogenous variable CIT and its residuals.

Residual: The plot of residuals from regression εi. ***Actual***: The Figure of observed endogenous variable (**Y**). ***Fitted***: The Figure of estimated endogenous variable ($\hat{\mathbf{Y}}$).

4.3.3. Normality analysis

Figure 4 shows the histogram and normality of the CIT model.

The likelihood associated with the Jarque-Bera statistic (0.00) is less than 0.05. The normality assumption for the residuals is therefore not verified. We can therefore conclude that the residuals of CIT model estimate are not stationary. The normality of their distribution is not confirmed.

4.4. Estimation results and discussion

Regression analysis, equation analysis and discussion are developed.

4.4.1. Regression analysis

The results of the Random Effect Model analysis, which investigated how corporate income tax (CIT) is influenced by a factor such as public or tax equity (TAXITY), are displayed in Table 8. Detailed results of the EViews 13 regressions are presented in the appendix (https://managementdynamics.researchcommons.org/cgi/editor.cgi?article=1344&window=additional_files&context=journal).

The t-test analysis revealed that public capital (TAXITY) had a positive and significant effect on corporate income tax (CIT), confirming the validity of the corresponding coefficient, which is simply the corporate capital tax rate (CCTR). Interestingly, simultaneous F-test analysis revealed a significant collective influence of the independent variable TAXITY on the dependent variable CIT, confirming the overall validity of the CIT model. Further examination using the coefficient of determination test showed that 82.8 % of the variation in the dependent variable could be attributed to the single effect of the independent variable under study. This leaves a small percentage of 17.2 % of the variation unexplained by the current model, suggesting that other factors not

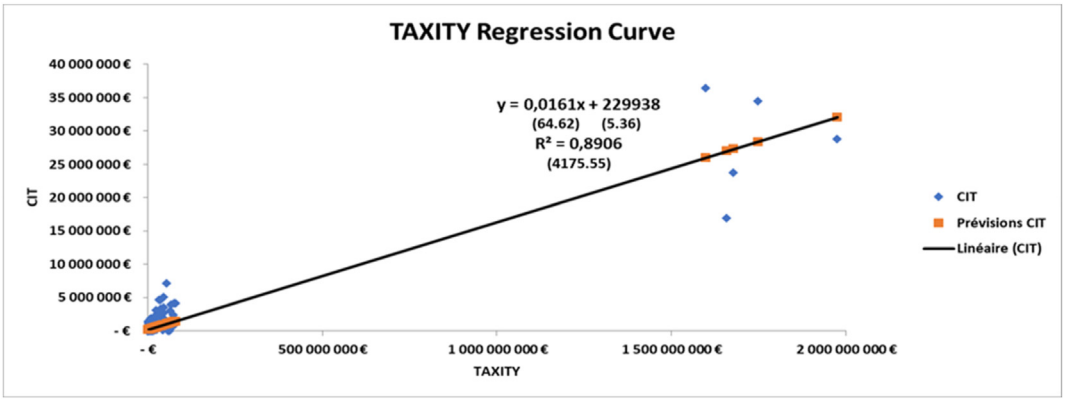

*Fig. 2. **Scatterplots and TAXITY regression curve.** Source: Personal computing 2024.*

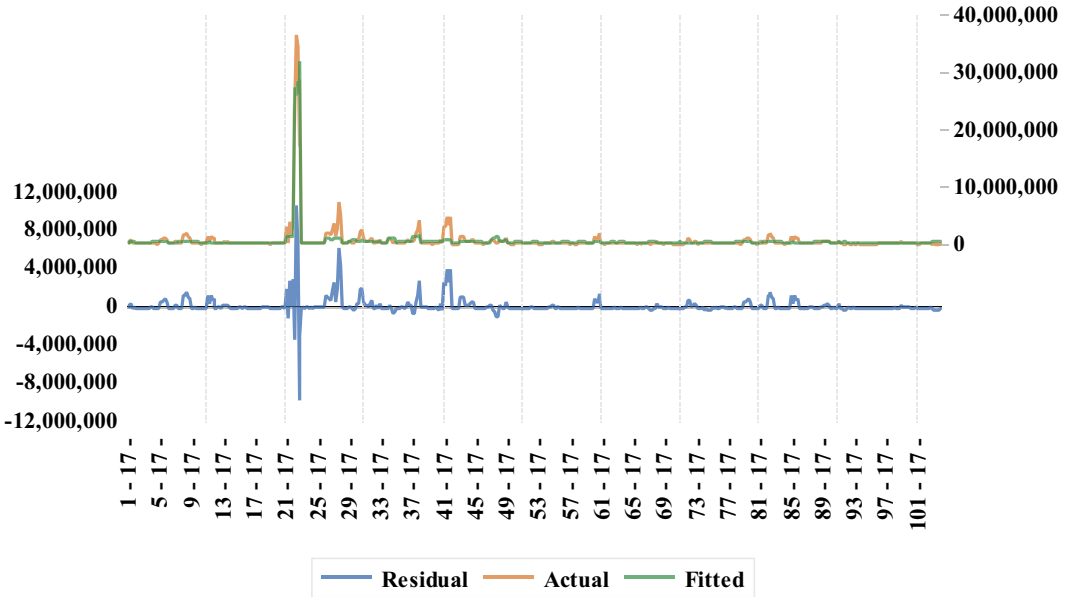

Fig. 3. Graphs of endogenous variable and residuals. Source: Personal computing 2024.

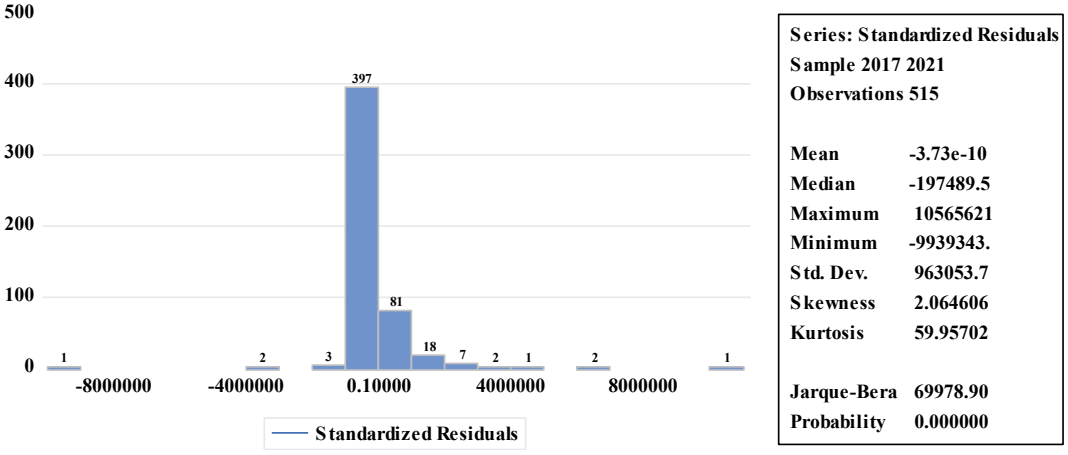

Fig. 4. Histogram and Normality Test. Source: Personal computing 2024.

included in this research play a negligible role in the influence of the dependent variable.

The R^2 *value* above in Table 8 indicates that 82.83 per cent of the total variability in the corporate income tax (CIT) was explained by the public capital (TAXITY) in CIT model.

Table 8. Results of random effect model test.

Dependent Variable: CIT		
Variable	**Coefficient**	**Prob.**
TAXITY	0.016058	0.0000***
C	231703.5	0.0000***
F-statistic	**2474.683**	
Prob (F-statistic)	**0.000000*** **	
R-squared	**0.828295**	
Adjusted R-squared	**0.827960**	
Observations	**515**	

Note: ***, ** and * indicate that significant at 1, 5 and 10 per cent.
Source: Computed from Eviews 13 statistics.

4.4.2. Equation analysis

The regression equation that was found is as follows:

$$\mathbf{CIT} = \mathbf{0.0160576327966} * \mathbf{TAXITY} + \mathbf{231703.478882} + [\mathbf{CX} = \mathbf{R}] \quad (4)$$

The dependent variable CIT will increase by 231703.5 if the independent variable TAXITY remains constant or increases by one unit on average, depending on the constant value of 231703.5. The regression analysis reveals that the variable TAXITY has a positive relationship with the variable CIT, with a regression

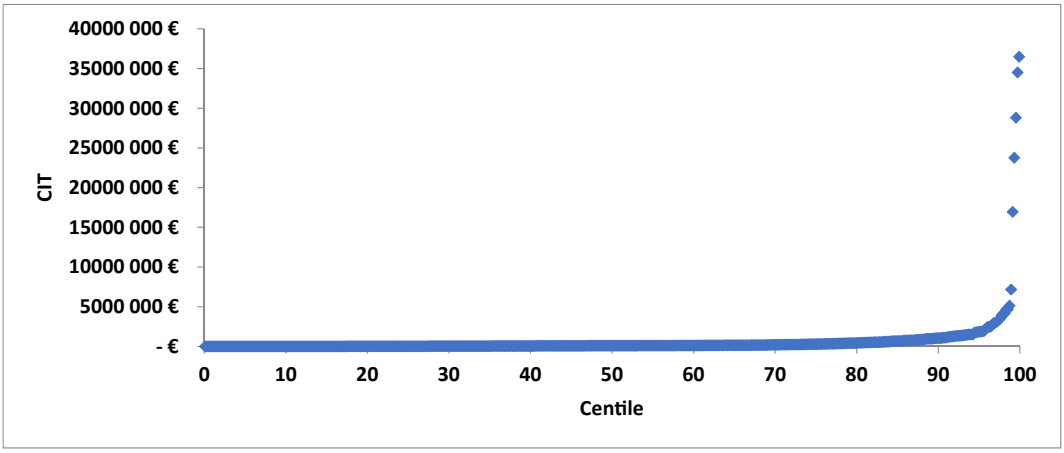

Fig. 5. ***Probability distribution curve.*** *Source: Personal computing 2024.*

coefficient of 0.0160576327966. This means that, *ceteris paribus*, a one-unit increase in TAXITY is associated with a 0.0160576327966 unit increase in CIT, and vice versa. Equation (4) shows that the corporate capital tax rate (CCTR) is **1.61** %; while the average legal tax rate (ALTR), earnings-based, over the period 2017 to 2021 in France is 28.77 %.

4.4.3. Discussion

The analysis shows that public capital has a significant positive impact on corporate income tax (CIT), with a regression coefficient of 0.016058 and a significance level of 0.0000. This indicates that firms that use more public capital offered by the State or Government, tend to pay more corporate income tax (CIT) and comply more with tax obligations. These results are consistent with authors who believe that corporate capital encompasses not only private capital (debt and equity) but also public capital through taxation (Desai et al., 2007; Agossadou, 2024). However, these results call into question most capital structure theories that treat corporate income tax (CIT) as an exogenous constraint to be respected. As a result, corporate taxation leaves much to be desired. This divergence highlights the complexity of CIT in raising corporate capital as both an influencing and an influenced factor.

4.5. Empirical data analysis

Empirical analysis of the data collected suggests that most of the firms in the sample studied tend to pay relatively little or no corporate income tax (CIT). Figure 5 shows the probability distribution curve.

According to Figure 5, out of a total of 515 firms in the sample studied, 11.16 % of these firms, i.e. 58 firms, bore no corporate income tax burden (CIT = 0 €); 55.44 % of firms, i.e. 286 firms, bore a CIT burden of less than € 100,000; 81.65 % of firms, i.e. 421 firms, had a CIT charge of less than € 500,000; 89.22 % of firms, i.e. 460 firms, had a CIT charge of less than € 1,000,000; 98.54 % of firms, i.e. 508 firms, had a CIT charge of less than € 5,000,000; 98.93 % of firms, i.e. 510 firms, had a CIT charge of less than € 8,000,000.

The tax behavior of the firms studied shows that most of them resort to tax evasion (tax optimization or tax fraud) to reduce their taxable income. The result is an indirect leakage of CIT revenues for the French Treasury.

4.6. Policy implications

The tax policy implications arising from the results of the CIT model are as follows:

1. Challenge the two global sources of corporate financing and the corporate income tax system.
2. Integrate corporate tax financially. This will make it possible to consider the Government or State as a financial partner of the firm whose income is tax, in the same way as shareholders whose income is dividends and bondholders whose income is interest.
3. Implement a tax reform that shifts the tax system from corporate income tax (CIT) to corporate capital tax (CCT). This will broaden the tax base, which will be constant, and reduce the tax rate, which will be aligned with the interest rate.

5. Conclusion

Research results have identified the main determinant of corporate tax, namely the positive effect of public capital. A new theory of capital has

recently emerged, namely the financial integration theory of the firm, which states that corporate tax is the cost of public capital used by the firm (Agossadou, 2024). A reform of corporate taxation is needed for those countries that continue to tax corporate income by promoting the phenomenon of Base Erosion and Profit Shifting (BEPS). The amount of public capital is the sum of debt and equity capital, and the cost is the tax rate, which will be aligned with the interest rate, which in turn will be aligned with the dividend rate. The research results obtained involve shareholders, bondholders, corporate tax inspectors, corporate managers and researchers in corporate financing, corporate investment, corporate taxation on profits or capital, corporate financial valuation and the profitability of corporate investment.

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Data, materials and/or code availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

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