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Rogiene Batista dos Santos, Rafael Schiozer

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Does tax avoidance increase informational asymmetry? Evidence from the Tax Cuts and Jobs Act

Rogiene Batista dos Santos¹

<https://orcid.org/0000-0003-3694-4727>

Email: rogiene.santos@fgv.br


Rafael Schiozer¹

<https://orcid.org/0000-0003-3890-6345>

Email: rafael.schiozer@fgv.br

¹ Fundação Getulio Vargas, Escola de Administração de Empresas de São Paulo, Departamento de Contabilidade, Finanças e Controle, São Paulo, SP, Brazil

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Correspondence address

Rogiene Batista dos Santos

Fundação Getulio Vargas, Escola de Administração de Empresas de São Paulo, Departamento de Contabilidade

Avenida Nove de Julho, 2029 – CEP: 01313-902

Bela Vista – São Paulo – SP – Brazil

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ABSTRACT

This article aims to examine whether corporate tax avoidance increases informational asymmetry. Specifically, we examine how the 2017 Tax Cuts and Jobs Act (TCJA) decreased tax avoidance incentives and, as a consequence, reduced firms' informational asymmetry. Previous studies offer limited causal evidence on how tax avoidance, transparency, and informational asymmetry interact under major tax reforms such as the TCJA. The study advances the understanding of how tax strategy decisions influence capital-market transparency and the incorporation of firm-specific information into prices. It offers insights to scholars, policymakers, and investors concerned with governance and financial reporting quality. The findings inform policymakers about the potential of tax reforms – particularly tax reductions and provisions aimed at improving information efficiency. They also highlight that curbing tax avoidance enhances corporate transparency. A difference-in-differences (DiD) design exploits the TCJA as an exogenous shock, comparing U.S. multinationals with subsidiaries in tax havens (less affected) to those with subsidiaries in high-tax jurisdictions (more affected). Stock price synchronicity, which measures the co-movement of individual stock prices with the Standard & Poor's 500, serves as a proxy for informational asymmetry. This study shows that a reduction in firms' tax avoidance practices decreases informational asymmetry for investors. Using the TCJA as an exogenous shock that lowered incentives for tax avoidance, we document that U.S. stock price synchronicity (our measure of informational asymmetry) declined after the TCJA for U.S. multinationals, but significantly less for multinationals with subsidiaries in tax havens. These findings provide causal evidence that tax avoidance impairs investors' ability to incorporate firm-specific information into stock prices.

Keywords: synchronicity, tax avoidance, Tax Cuts and Jobs Act of 2017, tax reform.

1. INTRODUCTION

Tax avoidance involves a series of practices aimed at reducing taxes (Hanlon and Heitzman, 2010) by individuals or entities through the strategic use of tax laws and regulations. These practices can increase the firm's cash flow and benefit shareholders (Armstrong et al., 2012, 2015; Hasan et al., 2021) through lower taxes. On the other hand, tax avoidance behavior involves complex and nontransparent practices, which increase informational asymmetry and the opacity of financial information, thereby hindering investors' ability to interpret financial reports. Although a few papers have studied the relationship between tax avoidance and the informational environment (Gallemore & Labro, 2015; Hasan et al., 2021; Kerr, 2019; Shevlin et al., 2020), establishing a causal link between them is a challenging empirical task.

This study explores the Tax Cuts and Jobs Act (TCJA) to investigate whether tax avoidance practices increase informational asymmetry. By reducing the tax rate in the United States of America, the TCJA presents an exogenous shock that decreases U.S. firms' incentives to engage in tax avoidance. We focus on U.S. multinational firms (i.e., firms with foreign subsidiaries), as they were one of the main targets of the TCJA. By restricting our sample to multinational firms, we are able to compare two *ex-ante* relatively homogeneous groups of firms that were heterogeneously affected by the TCJA: multinationals with subsidiaries in tax havens (hereinafter TH firms) and those without subsidiaries in tax havens (non-TH firms). Including domestic-only firms would introduce additional firm-specific characteristics that could confound our analysis.

Although the TCJA decreases the incentives for tax avoidance for virtually all U.S. firms, it affected non-TH firms more strongly. In a nutshell, because TH firms already used their tax-haven subsidiaries to reduce taxes, the TCJA reduced their profit-shifting incentives but had a comparatively smaller effect on their overall tax-avoidance incentives. Non-TH firms, in contrast, were not able to reduce taxes by shifting profits prior to the TCJA; therefore, the reduction in the domestic tax rate decreased their incentives for tax avoidance more than for TH firms. Thus, we consider non-TH firms as “more sensitive to treatment” than TH firms. In this spirit, non-TH firms are considered “treated” by the TCJA, while TH firms comprise the control group in our difference-in-differences (DiD) analysis.

We first show that, before the TCJA, TH firms engaged in less intensive tax avoidance – measured by the Cash ETR of Hanlon and Heitzman (2010) – than non-TH firms, consistent with expectations. After the TCJA, both groups reduced tax avoidance, but the decline was smaller for TH firms, indicating lower sensitivity to the reform. This pattern suggests that TH firms already possessed a greater ability to maintain lower effective tax rates than non-TH firms.

To examine whether this decrease in tax avoidance caused by the TCJA improves the information environment, we compute the stock price synchronicity for the firms in our sample. Synchronicity refers to the co-movement between the returns of a specific stock and the market portfolio (Morck et al., 2000). The higher the synchronicity, the more a stock return co-moves with the return of the stock index, and therefore, the more the returns of that stock are explained by market-wide factors rather than firm-specific information. The synchronicity measure uses the coefficient of determination (i.e., R^2) of a regression of the firm’s stock return against the stock market index to gauge how much these returns co-move. Therefore, a decrease in a stock’s synchronicity indicates a decrease in the co-movement between the price of that stock and the market portfolio and means that investors increase their ability to use firm-specific (idiosyncratic) information to price stocks.

In contrast, an increase in synchronicity signals that investors are using more market-wide (systematic) information in stock pricing. Indeed, we find that the TCJA is associated with a reduction in stock market synchronicity, consistent with the idea that lower tax avoidance means a reduction in informational asymmetry for both groups of firms. Importantly, we find evidence that the reduction in synchronicity is more pronounced among non-TH firms, although the results are statistically weak in some specifications. These results suggest that the larger the decrease in tax avoidance incentives, the more pronounced the decrease in synchronicity.

The relationship between tax avoidance and informational asymmetry remains central to accounting research. Prior studies show trade-offs between aggressive tax planning and transparency (Balakrishnan et al., 2019; Hanlon & Heitzman, 2010), that firms with greater stock liquidity are less likely to engage in extreme tax avoidance (Chen, Schuchard et al., 2019), and that IFRS adoption increased avoidance where book-tax conformity is higher (Braga, 2017). This study advances the literature by providing causal evidence through the TCJA, whose Base Erosion and Anti-Abuse Tax (BEAT) and Global Intangible Low-Taxed Income (GILTI) provisions altered multinational tax incentives and strengthened compliance (Laplante et al., 2023), thereby improving reporting quality and reducing informational asymmetry. We detail the main provisions of the TCJA and the economic channels at play in section 2.

Our study also adds to the literature on the effects of the TCJA itself. Lampenius et al. (2021) argue that, by imposing tax on foreign income and reducing taxes at the headquarters of multinationals, the TCJA creates incentives for firms to provide greater

disclosures about their foreign earnings, reducing information asymmetry for investors. This aligns with findings by Balakrishnan et al. (2019) and Hope et al. (2013), which highlight the link between geographic earnings disclosures and reduced financial opacity. Additionally, Laplante et al. (2023) note that the TCJA not only increases tax compliance but also aligns reported earnings with actual economic activity, thereby improving the quality of financial reporting. Our research builds on these studies by investigating how this improvement in accounting transparency translates into investors' ability to price stocks.

Our study also builds on prior research linking tax avoidance to profit shifting through tax haven subsidiaries (Garcia-Bernardo & Jansky, 2024; Klassen & Laplante, 2012; Rathke, 2021), the role of tax incentives in shaping effective tax rates (Sousa et al., 2025), and the behavioral and managerial drivers of tax aggressiveness (Costa & Klann, 2023; Martinez et al., 2022). It further connects to studies on the adverse market and reputational effects of tax avoidance (Austin & Wilson, 2017; Chen, Ge et al., 2019; Drake et al., 2019; Garg et al., 2020; Kim et al., 2011). These results inform regulators and practitioners seeking to reduce informational asymmetry through enhanced tax disclosure and compliance policies.

Our results have implications for regulators and practitioners. They clarify how tax avoidance influences informational asymmetry, supporting policies that promote transparent tax disclosure and stronger enforcement. The remainder of the paper is organized as follows: section 2 presents the theoretical framework and hypotheses, section 3 details the data and empirical strategy, section 4 reports the results, and section 5 concludes.

2. THEORETICAL FRAMEWORK AND HYPOTHESES

2.1 TCJA and Provisions: BEAT and GILTI

Two specific TCJA provisions – the BEAT and the GILTI – explain how the reform affected profit-shifting incentives and tax avoidance. BEAT, a minimum tax on deductible cross-border payments to related parties, sought to curb base erosion and align taxation with real activity. Laplante et al. (2023) show that BEAT reduced intercompany payments to tax havens, while Dyreng et al. (2023) find that it expanded the tax base and raised overall tax costs. GILTI, in turn, imposed a minimum tax on foreign income to discourage profit shifting, promoting greater transparency. Lampenius et al. (2021) report that GILTI increased disclosure on foreign earnings, and Laplante et al. (2023) conclude that it enhanced compliance and reporting quality.

Importantly for our purposes, while the BEAT and GILTI provisions decrease the incentive for tax avoidance for all U.S. multinationals (both TH and non-TH), we claim that the effect is stronger for non-TH firms, as TH firms had an *ex-ante* lower degree of tax avoidance. In particular, both provisions were targeted more at TH firms, which used profit shifting mechanisms to reduce taxes prior to the TCJA. This provision aimed at creating incentives to report profits in the United States rather than to prevent overall tax avoidance. Because the TCJA reduced domestic taxes, and non-TH firms relied less on profit shifting practices than TH firms prior to the TCJA, the incentives for non-TH firms to avoid taxes using less transparent mechanisms decreased with the TCJA.

2.2 The Effect of the TCJA on the Stock Market and Statement of Hypotheses

Our study uses an exogenous shock to firms' incentives to practice tax avoidance, provided by the TCJA in 2017. Several studies have studied the impact of this act on companies' tax planning (Dowd et al., 2020; Henry & Sansing, 2020), profitability (Clausing, 2020), and performance (Durrant et al., 2021).

Our study is closely related to Clausing (2020), who estimates the impact of changing the taxation system with the passage of the TCJA Act on the profits of U.S. companies. The author presents and discusses changes in legislation by considering the nature of their effects on profit transfer. The net effect of the TCJA is an overall reduction in taxes, but this reduction is more pronounced for multinational corporations without subsidiaries in tax havens than for those with subsidiaries in tax havens. In addition, several papers (Gallemore & Labro, 2015; Hasan et al., 2021; Kerr, 2019; Shevlin et al., 2020) claim that tax avoidance is associated with higher informational asymmetry. Therefore, because the TCJA decreased the incentives for tax avoidance for multinationals, we expect the TCJA to have decreased informational asymmetry (as measured by stock price synchronicity) for these firms. As such, we formulate our first hypothesis as:

H₁: the reduction in tax avoidance incentives with the TCJA decreases stock price synchronicity for multinationals.

In empirical terms, we test this hypothesis by examining whether stock price synchronicity (Morck et al., 2000) decreases after the passage of the TCJA in a DiD setting, in which the dependent variable is stock price synchronicity, and the treatment is the passage of the TCJA.

Our second hypothesis explores the heterogeneity among multinationals in terms of how much the TCJA affected their tax avoidance incentives and, as a consequence, informational asymmetry. Although the TCJA decreased the incentives for tax avoidance for all U.S. multinationals (with or without subsidiaries in tax havens), TH firms were less affected; the expected effect is less pronounced for TH firms. If our first hypothesis (i.e., tax avoidance increases synchronicity) holds, the above rationale allows us to formulate our second hypothesis.

H₂: the reduction in stock price synchronicity after the TCJA is less pronounced for TH multinationals than for non-TH multinationals.

We also test this second hypothesis with a DiD regression in which non-TH multinationals are the treated group (more sensitive to treatment), whereas TH firms are the control group (less sensitive to treatment).

3. RESEARCH METHODS

3.1 Data and Sample

We collect data for all publicly traded non-financial U.S. companies with foreign subsidiaries from 2000 to 2020. To identify the firms with foreign subsidiaries, we start with all U.S. firms in Compustat and manually inspect their Form 10-K filings in the EDGAR database from the Securities and Exchange Commission to hand-collect data on U.S. companies that have foreign subsidiaries and the location of these subsidiaries. Specifically, we analyze the firms' Form 10-K filings in 2017 (the year in which the TCJA was passed) by using keywords that allow us to identify if the company had foreign

subsidiaries or not. We use this procedure to classify firms into domestic (i.e., without foreign subsidiaries, which were dropped from our sample) and multinationals. For the latter, we further looked up information about the countries where these subsidiaries were located in 2017. Based on this information, we classify those with at least one subsidiary in a tax haven as TH firms, whereas the remaining firms were classified as non-TH firms. We use the OECD classification to define tax haven countries.

After filtering for missing financial and accounting information, the sample of this study is composed of 18,625 observations and 1,186 unique companies. The sample is well balanced between TH and non-TH firms, with 49.4% and 50.6% of the total observations, respectively. In our first set of analyses, aiming to verify the association between stock price synchronicity and tax avoidance practices, we use the entire 2000-2020 period. To analyze the heterogeneous impact of the passage of the TCJA between TH and non-TH firms, we restrict our analysis to a 5-year window around the passage of the TCJA (from 2015 to 2019). In these later analyses, we remain with approximately 6,653 observations.

3.2 Variables

We follow Hanlon and Heitzman (2010) and use Cash ETR as the proxy for tax avoidance in our first set of regressions. This measure captures the amount disbursed by the company to pay taxes as a fraction of pretax book income before special items, as defined in Eq. 1. Studies such as Chen et al. (2010) and Lampenius et al. (2021) highlight its relevance for analyzing short-term tax planning adjustments.

$$\text{Cash ETR} = \frac{\text{Cash tax paid (TXPD)}}{\text{Pretax book income (PI) before special items (SPI)}} \quad (1)$$

To measure the synchronicity of stock i in year t , we follow Morck et al. (2000) and estimate the market model using weekly returns.

$$r_{iw} = \alpha + \beta_i \text{MKT}_w + \varepsilon_{iw} \quad (2)$$

where r_{iw} is the weekly excess return of stock i over the T-Bill in week w , MKT_w is the weekly excess return of the Standard & Poor's 500 over the T-Bill in week w , ε_{iw} is the error term, and α and β_i are parameters to be estimated. We estimate Eq. 2 using 1-year windows (i.e., 52 weekly returns for each stock in each year). The coefficient of determination obtained for each year for each stock i from Eq. 2 is used to compute the synchronicity of stock i in year t , as follows:

$$\text{Sync}_{it} = \ln\left(\frac{R_{it}^2}{1 - R_{it}^2}\right) \quad (3)$$

The intuition of the link between informational asymmetry and synchronicity is that the higher the R^2 of Eq. 2 for a given stock (i.e., higher synchronicity), the more the variation in the company's stock price is explained by the return of the market portfolio and, therefore, less firm-specific information is explaining the firm's stock return (Morck et al., 2000). Therefore, smaller synchronicity indicates lower informational asymmetry.

Table 1 describes the main variables in our study, including control variables, that are selected in line with the literature on tax avoidance.

Table 1*Variable measurement*

Type	Variable	Definition	Data source	Expected signal
Dependent	Synchronicity	$Sinc_{it} = \ln\left(\frac{R_{it}^2}{1 - R_{it}^2}\right)$	Center for Research in Security Prices (returns)	
Independent	Cash ETR	Cash tax paid (TXPD) over pre-tax book income (PI) before special items (SPI)	Compustat	+
Independent	Tax Haven firm	Dummy variable indicating that the multinational has at least one subsidiary in a tax haven in 2017	Hand-collected from Form 10-K filings	+
Independent	TCJA	Dummy variable indicating the years after the introduction of the TCJA	-	-
Control	Size	Natural log of total assets (AT)	Compustat	-
Control	Leverage	The sum of long-term debt (DLTT) and current liabilities (DLC) divided by total assets (AT)	Compustat	-
Control	R&D	Research and development expenses (XRD) divided by net sales (SALE); when missing, reset to 0	Compustat	+
Control	Net operating loss (NOL)	An indicator if the firm has a non-missing value of tax loss carry-forwards (TLCF)	Compustat	+
Control	Intangibles to total assets	The ratio of intangible assets (INTANG) to total assets (AT)	Compustat	-
Control	ROA	Operating income before depreciation (OIBDP) scaled by total assets (AT)	Compustat	+
Control	Gross PPE to total assets	Gross property, plant, and equipment (PPE GT) divided by total assets (AT)	Compustat	-
Control	Market-to-book	Market value of equity (PRCC_F × CSHO) scaled by book value of equity (CEQ)	Compustat	+

Source: *Elaborated by the authors.*

3.3 Empirical Methods

The extant literature has already documented a positive association between tax avoidance and synchronicity. Even if this is not a hypothesis of our own, this relationship is essential for our main tests. Therefore, we verify whether this relationship holds for multinational firms that comprise our sample by estimating Eq. 4:

$$Synchronicity_{i,t} = \gamma_0 + \gamma_1(-CashETR)_{i,t} + \Gamma Controls_{i,t} + \epsilon_{i,t} \quad (4)$$

where *Synchronicity* is defined as in Eq. 3 and captures informational asymmetry, i.e., how much firm-specific information is incorporated into stock returns. Lower synchronicity means that more firm-specific information is incorporated into stock prices, all else equal. *CashETR* is defined as in Eq. 1 and is our main proxy for tax avoidance. We invert the sign of *CashETR* in this regression to facilitate interpretation, such that (*-CashETR*) becomes a direct measure of tax avoidance (as previously explained, the lower *CashETR* is, the higher the degree of tax avoidance).

Controls is a set of variables that have been previously found to affect synchronicity in the literature (Atwood et al., 2012; Cen et al., 2017; Chen et al., 2010; Chyz, 2013; Dyreng et al., 2008, 2010; Gallemore et al., 2019; Lanis et al., 2022), including research and development, financial leverage, size, intangible assets, return on assets (ROA), and the market-to-book ratio (MTB).

The definitions of these variables and their expected signs are presented in Table 1. Continuous variables are winsorized at the 2.5% and 97.5% levels. We estimate this regression using data for the entire sample period. We perform specifications both without fixed effects and including sector \times year fixed effects, which allow us to capture industry-specific shocks that affect profitability and investors' interest in firms of each industry heterogeneously. Because the cross-sectional variation in Cash ETR is more important than within-firm variations, we do not employ firm fixed effects. In this and all other regressions, the standard errors are robust to heteroskedasticity and clustered at the firm level.

Parameter γ_1 measures the effect of tax avoidance (*-CashETR*) on informational asymmetry (synchronicity). A positive association between *-CashETR* and *Synchronicity* has already been documented in the literature (but not specifically for a subset of multinational firms), and indicates that tax avoidance practices impair investors' ability to incorporate firm-specific information into stock prices. Therefore, we expect $\gamma_1 > 0$.

Our two hypotheses are tested using Eq. 5, as follows:

$$Synchronicity_{i,t} = \omega_0 + \omega_1 TCJA_t + \omega_2 Tax Haven_i + \omega_3 (TCJA_t \times Tax Haven_i) + \Omega Controls_{i,t} + \epsilon_{i,t} \quad (5)$$

where *TCJA* is the treatment event dummy, which takes the value 0 before the implementation of the TCJA and 1 after it. *Tax Haven* is a dummy indicating whether the firm has at least one subsidiary in a tax haven (and 0 otherwise).

The parameter ω_1 is used to test H_1 . The TCJA reduces firms' incentives to avoid taxes, resulting in lower informational asymmetry and lower synchronicity, which is consistent with $\omega_1 < 0$. H_2 is consistent with $\omega_3 > 0$, as we expect the negative effect of the TCJA on synchronicity to be less intense for TH firms than for non-TH firms.

We use a 5-year period around the passage of the TCJA in these regressions. Again, we estimate these regressions with and without firm and time fixed effects and controls. Our preferred specifications do not use control variables, as most of these controls might

be affected by the treatment, resulting in the bad controls problem (Angrist & Pischke, 2007).

4. EMPIRICAL ANALYSIS

4.1. Descriptive Statistics

Table 2 presents the descriptive statistics for each variable for the period 2015 to 2019 (i.e., around the TCJA). We split the sample between TH firms and non-TH firms and between the period before the passage of the TCJA and after it. Before the TCJA (Panel A), TH firms have higher (i.e., less negative) *Synchronicity* than non-TH firms, suggesting a higher level of informational asymmetry. TH firms also have higher Cash ETR, suggesting a lower degree of tax avoidance. TH firms are also larger, more levered, have lower R&D spending, more intangible assets, larger ROA, MTB, and lower property, plant, and equipment (PPE)/assets in comparison with non-TH firms.

Table 2*Descriptive statistics 2015-2019 (Wilcoxon rank-sum test)*

Variables	No tax havens				Tax havens				Wilcoxon rank-sum test
	Mean	Median	Standard deviation	Observations	Mean	Median	Standard deviation	Observations	
Panel A – Before the TCJA									
Synchronicity	-2.800	-1.856	1.752	1,366	-1.485	-1.199	1.403	1,197	-13.593***
Cash ETR	0.112	0.072	0.377	1,366	0.152	0.163	0.387	1,197	-5.556***
Size	6.479	6.484	2.137	1,366	7.376	7.310	1.860	1,197	-10.769***
Leverage	0.212	0.184	0.197	1,366	0.227	0.222	0.178	1,197	-2.942**
R&D	0.177	0.000	0.816	1,366	0.130	0.023	0.586	1,197	-11.845***
NOL	0.819	1.000	0.384	1,366	0.834	1.000	0.371	1,197	-0.979
Intangibles	0.163	0.060	0.208	1,366	0.269	0.232	0.219	1,197	-14.807***
ROA	0.033	0.0873	0.224	1,366	0.085	0.108	0.145	1,197	-5.987***
Gross PPE	0.596	0.459	0.493	1,366	0.417	0.293	0.374	1,197	8.300***
Market-to-book	3.523	1.992	6.049	1,366	4.775	2.839	7.499	1,197	-9.864***
Panel B – After the TCJA									
Synchronicity	-3.141	-2.699	2.049	2,181	-2.157	-1.830	1.825	1,909	-17.391***
Cash ETR	0.107	0.045	0.333	2,181	0.143	0.151	0.369	1,909	-8.449***
Size	6.547	6.584	2.208	2,181	7.541	7.471	1.819	1,909	-14.680***
Leverage	0.233	0.212	0.201	2,181	0.259	0.252	0.184	1,909	-5.403***
R&D	0.391	0.000	2.104	2,181	0.186	0.026	1.265	1,909	-14.216***
NOL	0.823	1.000	0.381	2,181	0.838	1.000	0.367	1,909	-1.291
Intangibles	0.164	0.062	0.210	2,181	0.281	0.248	0.224	1,909	-19.716***
ROA	0.013	0.087	0.267	2,181	0.082	0.105	0.146	1,909	-8.001***
Gross PPE	0.606	0.455	0.522	2,181	0.419	0.301	0.374	1,909	9.701***
Market-to-book	3.472	2.025	5.262	2,181	5.078	2.999	6.385	1,909	-14.359***

*TCJA = Tax Cuts and Jobs Act.**** = $p < 0.01$; ** = $p < 0.05$; * = $p < 0.10$.**Source:** *Elaborated by the authors.*

The statistics for the period after the passage of the TCJA are shown in Panel B of Table 2. Synchronicity is reduced for both groups of firms, consistent with our first hypothesis. Cash ETR is also reduced for both groups of firms, which could appear inconsistent with a reduction in tax avoidance incentives. However, a lower Cash ETR is mechanically driven by the lower tax rate that was put in place after the TCJA. Overall, the differences between the two groups in terms of the other variables persist.

Figure 1 further depicts the average CASH ETR of TH and non-TH firms around the passage of the TCJA. We first note that, pre-TCJA, TH firms have higher Cash ETR, consistent with lower tax avoidance incentives *ex ante*. Second, we note an increase in Cash ETR in 2017 for both groups. The reason for this result likely lies in the one-time (transition) repatriation tax that required companies with unrepatriated foreign earnings to recognize and repatriate those profits during the TCJA transition year (Dyreng et al., 2023; Wagner et al., 2020).

Moreover, firms with sizable accumulated foreign profits may have anticipated this rule and repatriated earnings – or paid additional taxes – during 2017, temporarily inflating Cash ETRs in a way unrelated to persistent tax-avoidance behavior (De Simone et al., 2019; Dharmapala, 2024). Third, the decrease in Cash ETR from 2017 to 2019 is approximately 6 percentage points, smaller than the 14 percentage-point decrease in the tax rate determined by the TCJA, and is more gradual among TH firms. This gradual decrease is possibly the combination of a lower effective tax rate and the deferral in payment of repatriated taxes over these years (Dyreng et al., 2023). Finally, this decrease is more gradual for TH firms than for non-TH firms, possibly because TH firms have relied more on this deferral.

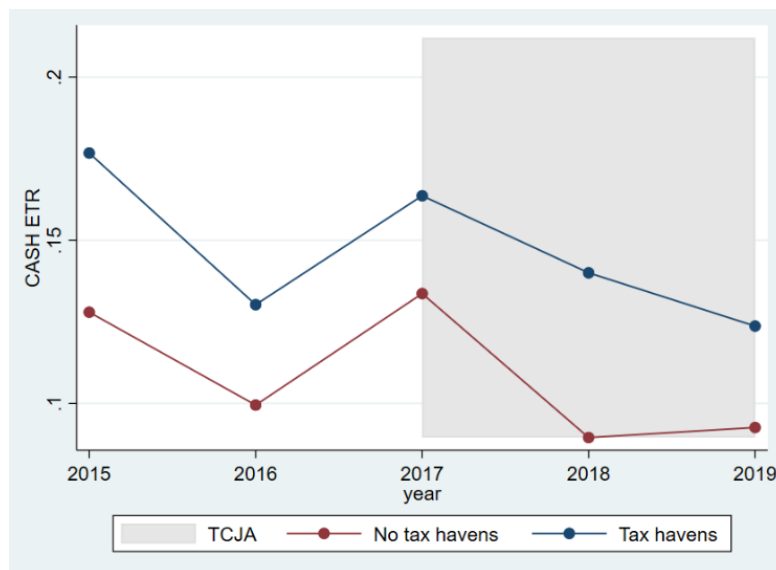


Figure 1 Cash ETR before and after Tax Cuts and Jobs Act (TCJA) (2015-2019)

Source: Elaborated by the authors.

Figure 2 presents the evolution of the average stock price synchronicity for TH and non-TH firms around the passage of the TCJA. Non-TH firms present lower synchronicity over the entire period. Importantly, prior to the TCJA, the two groups of firms present nearly parallel levels of *Synchronicity*, and, after the passage of the TCJA, the difference between the two groups is slightly reduced, particularly in 2019 and 2020.

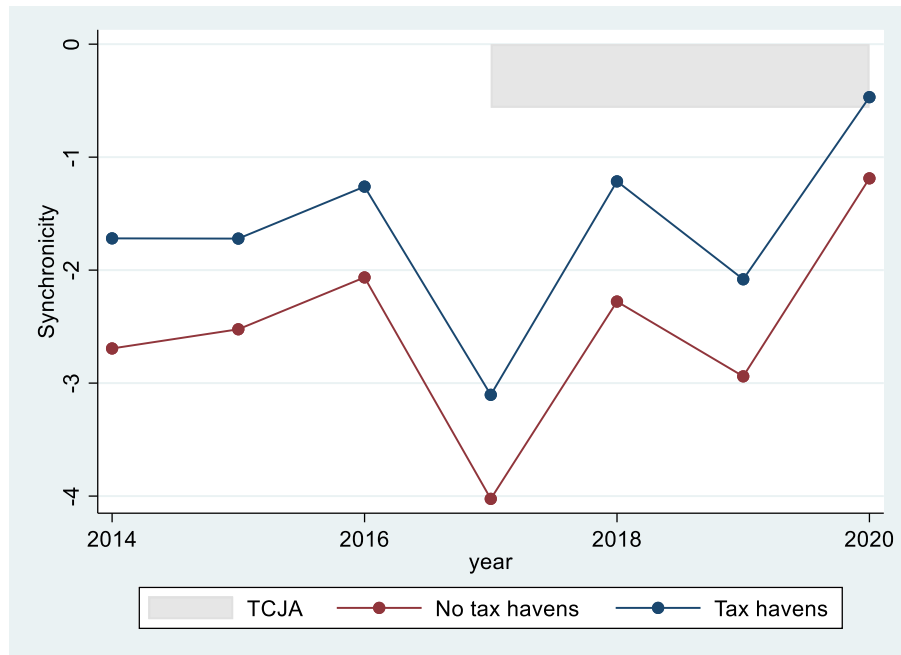


Figure 2 Synchronicity before and after TCJA

Source: Elaborated by the authors.

Table 3 presents the Pearson correlations of the regression variables used in this study. -Cash ETR (0.0627*) has a positive and significant relation with *Synchronicity*. TCJA presents a significant negative relation with *Synchronicity* (-0.0983*), suggesting that, after the passage of this act, informational asymmetry was reduced for multinational firms.

Table 3*Pearson correlations*

Variables	1	2	3	4	5	6	7	8	9	10	11
(1) Synchronicity	1										
(2) CASH ETR	0.0627*	1									
(3) TCJA	-0.0983*	-0.0663*	1								
(4) Size	0.4266*	0.0636*	0.0846*	1							
(5) Leverage	0.1107*	-0.0338*	0.1575*	0.4141*	1						
(6) R&D	-0.0692*	-0.0546*	0.0899*	-0.1248*	-0.0651*	1					
(7) NOL	-0.0207*	-0.0041	0.0933*	-0.1043*	-0.0613*	0.0563*	1				
(8) Intangibles	0.1144*	0.0476*	0.0955*	0.2037*	0.2009*	-0.0570*	0.0605*	1			
(9) ROA	0.2066*	0.1808*	-0.1547*	0.3229*	0.0593*	-0.3915*	-0.0722*	0.1053*	1		
(10) Gross PPE	-0.0031	-0.0234*	0.0018	0.1719*	0.2192*	-0.0998*	-0.0892*	-0.3962*	0.1235*	1	
(11) Market-to-book	0.0276*	-0.0209*	0.1072*	0.0287*	0.1244*	0.0479*	0.0573*	0.0194*	-0.0231*	-0.1293*	1

*** = $p < 0.01$; ** = $p < 0.05$; * = $p < 0.1$.**Source:** *Elaborated by the authors.*

4.2 Regression Results

Table 4 presents the estimation results of several specifications of Eq. 4. Columns 1 and 2 report the results for the full sample of firms, columns 3 and 4 show the results using only the group of TH firms, and columns 5 and 6 show the results using non-TH firms.

Table 4*The impact of tax avoidance on synchronicity*

Variables	All multinational firms		TH firms		Non-TH firms	
	(1) OLS	(2) Sector \times year FE	(3) OLS	(4) Sector \times year FE	(5) OLS	(6) Sector \times year FE
Tax avoidance	0.103*** [3.287]	0.097*** [2.721]	0.092** [2.366]	0.104** [2.109]	0.103** [2.089]	0.067* [1.711]
Size	0.409*** [62.803]	0.400*** [51.521]	0.380*** [42.187]	0.389*** [34.576]	0.401*** [41.736]	0.383*** [29.438]
Leverage	-0.496*** [-6.925]	-0.702*** [-7.752]	-0.701*** [-7.296]	-0.741*** [-5.515]	-0.213** [-2.037]	-0.522*** [-3.653]
R&D	0.000 [0.017]	-0.005 [-0.417]	0.014 [0.706]	0.023 [1.060]	-0.003 [-0.224]	-0.014 [-1.004]
NOL	0.162*** [6.084]	0.133*** [4.210]	0.073** [2.124]	0.107** [2.379]	0.230*** [5.744]	0.101* [1.896]
Intangibles	0.113* [1.708]	0.300*** [3.697]	0.026 [0.308]	-0.000 [-0.004]	-0.023 [-0.221]	0.271* [1.917]
ROA	0.535*** [6.742]	0.242*** [2.785]	0.624*** [4.717]	0.227 [1.459]	0.426*** [4.180]	0.283** [2.356]
Gross PPE	-0.287*** [-9.006]	-0.015 [-0.323]	-0.053 [-1.093]	-0.009 [-0.117]	-0.308*** [-7.076]	-0.054 [-0.805]
Market-to-book	0.013*** [5.637]	0.016*** [6.244]	0.003 [1.087]	0.011*** [3.447]	0.020*** [5.472]	0.017*** [3.578]
Observations	18,625	18,625	9,204	9,204	9,421	9,421
Year dummies	Yes	No	Yes	No	Yes	No
Sector \times year FE	No	Yes	No	Yes	No	Yes
R ²	0.356	0.588	0.353	0.651	0.334	0.642

Notes: This table shows the results of the estimation of Eq. 4. The dependent variable is synchronicity, defined in Eq. 3. Tax avoidance is measured by *-CashETR*, the main variable of interest, defined in Eq. 1. The other covariates are control variables and are described in Table 1. We do not report the intercept. Regressions (2), (4), and (6) use sector \times year fixed effects. A sector is defined by the 4-digit Standard Industrial Classification code. In all regressions, the standard errors, shown in brackets, are robust to heteroscedasticity and clustered at the firm level.

FE = fixed effects; OLS = ordinary least squares.

* = 10% significance level; ** = 5% significance level; *** = 1% significance level.

Source: Elaborated by the authors.

Our coefficients of interest, reported in the first row of Table 4, show a positive association between Cash ETR and *Synchronicity*, as expected. The coefficient is larger and statistically stronger in the regressions without sector-year fixed effects (columns 1, 3, and 5), suggesting that the cross-sectional variation of Cash ETR (i.e., variation between firms) is more important than the within-firm variation (i.e., change over time) to explain the variation of *Synchronicity*. Indeed, the lower significance for the regressions with fixed effects is not surprising, as Cash ETR tends to be affected by industry-wide shocks in each year that affect industry profitability. Therefore, we take the results of columns 2, 4, and 6 as our preferred specifications. For the entire sample, a one standard deviation (SD) change in Cash ETR is associated with an approximate 3.5% increase in synchronicity.

The computation is as follows. The SD of Cash ETR is 0.359 for the full sample. Therefore, the estimated effect for the full sample is $0.359 \times 0.097 = 3.5\%$. We obtain slightly larger estimates for TH firms, and slightly smaller for non-TH firms. Notably, the association of Cash ETR and *Synchronicity* is similar across the two subsamples (TH firms and non-TH firms), suggesting a homogeneous effect of tax avoidance on informational asymmetry.

Overall, the results in Table 4 are consistent with the previous literature, which finds that tax avoidance (as proxied by -Cash ETR) increases informational asymmetry, resulting in higher stock price synchronicity. Importantly, these tests strongly suggest that this effect is present across TH firms and non-TH firms alike. We depart from this inference to verify our two hypotheses.

Our next set of analyses aims at testing our first and second hypotheses. Given that our prior tests show that tax avoidance is positively associated with informational asymmetry, we use an exogenous shock that affected heterogeneously the firms' incentives to practice tax avoidance (the TCJA) to reinforce a causal interpretation of our previous results.

Table 5 presents the estimation of Eq. 5, which formalizes the tests of our hypotheses, with several variations. We start with the traditional DiD equation, without any fixed effects or controls, in column 1. The estimated coefficient γ_1 (for TCJA) indicates that after TCJA passage, synchronicity for non-TH firms decreased by approximately 0.86 (statistically significant at the 1% level), or approximately one-fourth of the conditional non-TH sample average. This result provides support for our first hypothesis. The second coefficient, γ_2 , indicates that TH firms had a level of *Synchronicity* that is 0.79 higher than non-TH firms prior to the passage of the TCJA, as expected and previously described in our descriptive statistics. Our main coefficient of interest, γ_3 (for $TCJA \times Tax Haven$), is positive, but smaller than γ_1 in magnitude and statistically significant at the 5% level. This result indicates that the average synchronicity of TH multinationals has decreased with the passage of the TCJA, but to a lesser extent than for non-TH multinationals. The overall effect of TCJA on the *Synchronicity* of TH firms is a reduction of 0.672, or approximately 40% of the pre-TCJA synchronicity. The marginal change in *Synchronicity* of TH firms (compared to non-TH firms) represents approximately 10% of the SD of *Synchronicity* in the overall sample. This result is consistent with our rationale and provides evidence in favor of our second hypothesis.

Table 5
Difference-in-difference regressions (2015-2019)

Variables	Synchronicity			
	(1)	(2)	(3)	(4)
TCJA	-0.861*** (0.0553)	-0.866*** (0.0537)	-0.881*** (0.0623)	
Tax haven	0.794*** (0.0729)	0.370*** (0.0624)		
TCJA × tax haven	0.189** (0.0724)	0.143* (0.0701)	0.208* (0.0823)	0.138 (0.0815)
Size		0.350*** (0.0157)		
Leverage		-0.260 (0.152)		
R&D		0.0107 (0.0173)		
NOL		0.250*** (0.0656)		
Intangibles		0.0212 (0.132)		
ROA		0.644*** (0.151)		
Gross PPE		-0.382*** (0.0670)		
Market-to-book		0.00575 (0.00382)		
Observations	6,653	6,653	6,630	6,630
R ²	0.095	0.239	0.473	0.569
Firm FE	No	No	Yes	Yes
Year FE	No	No	No	Yes
# of clusters (companies)	1,518	1,518	1,495	1,495

Notes: *The dependent variable in all models is our measure of synchronicity, TCJA is equal to 1 in 2017, 2018, and 2019. Companies with subsidiaries in tax haven countries are treated, and domestic companies are considered the control group. The other variables are defined in Table 3. Standard errors in parentheses.*

FE = fixed effects.

** = $p < 0.05$; ** = $p < 0.01$; *** = $p < 0.001$.*

Source: *Elaborated by the authors.*

We add other features to the basic DiD regression in the specifications reported in the remaining columns of Table 5. Column 2 of Table 5 adds firm-level controls. To avoid the “bad control” problem, we use pre-shock (2016) values. In this regression, γ_1 is practically unchanged in comparison to column 1. The magnitudes of γ_2 and γ_3 are smaller than in the previous regression, but the positive signs are maintained, and they remain statistically significant (although γ_3 is significant only at the 10% level).

In column 3 of Table 5, we add firm fixed effects (which subsume the *Tax haven* variable). Again, γ_1 is virtually unchanged in comparison to the previous regressions. The positive sign of γ_3 remains, and its magnitude is larger than in the previous regressions,

providing further support for H₂. The last specification of Table 5, reported in column 4, is a generalized DiD that includes both time and firm fixed effects. Only the main coefficient of interest, γ_3 ($TCJA \times Tax\ haven$), is identified in this model. The coefficient remains positive, but its magnitude is slightly smaller than in the previous regressions, and it is statistically significant only at the 11% level.

Overall, the results reported in Table 5 are consistent with both H₁ and H₂, as they show that informational asymmetry (as measured by *Synchronicity*) is reduced for both sets of firms after the TCJA, but the effect is more intense for non-TH firms. These results are aligned with Kerr (2019) and Lewellen (2023), who find a link between tax avoidance and financial transparency.

As a robustness check, we also estimate a non-parametric DiD version of Eq. 5, using the year of the TCJA, 2017, as our reference. We report these results graphically in Appendix 2, representing the dynamic effects of the TCJA. One concern that arises is that TH and non-TH firms' synchronicities were trending differently prior to the TCJA (as the DiD coefficients are statistically different from 0). While these results do not invalidate our first hypothesis, they call for caution when interpreting the validity of the second.

Another possible concern with the interpretation of our previous results as the causal effect of tax avoidance incentives on synchronicity is that other confounding effects could drive the less pronounced decrease in synchronicity for TH firms after the TCJA. Appendix 3 presents the results of a dynamic DiD regression using Cash ETR (instead of synchronicity) as the dependent variable. The depicted vector of coefficients and their 90% confidence intervals suggest that TH and non-TH firms' Cash ETR were trending similarly before the TCJA, and TH firms reduced their Cash ETR relative to non-TH firms after the TCJA, consistent with the idea that the TCJA reduced the incentives for tax avoidance more strongly among non-TH firms than among TH firms.

5. CONCLUSION

We examine whether tax avoidance practices affect investors' ability to incorporate firm-specific information into stock prices. While tax avoidance may improve shareholder value by reducing taxes paid, it often involves a series of practices that decrease financial statements' transparency, which may impair investors' ability to price stocks.

Our empirical strategy examines a sample of U.S. multinational firms and exploits the 2017 TCJA as an exogenous shock to their incentives to engage in tax avoidance. The TCJA lowered the federal corporate tax rate, thereby reducing tax avoidance incentives across all firms. However, the magnitude of this reduction varied systematically depending on the presence of tax-haven subsidiaries. Before the TCJA, multinationals with affiliates in tax havens could more effectively shift profits abroad and thus enjoyed stronger tax-avoidance opportunities than firms operating only in higher-tax jurisdictions. Once the statutory tax rate was reduced, the relative benefit of profit shifting declined more sharply for firms without tax-haven subsidiaries, making the drop in tax-avoidance incentives larger for this group.

Our first set of results shows a positive association between tax avoidance and stock price synchronicity (an inverse proxy for informational asymmetry) for multinational firms. This evidence is in line with the previous literature that claimed that tax avoidance increases informational asymmetry.

To allow us to claim a causal relationship, we explore the passage of the TCJA as an exogenous shock to the incentives of firms to practice tax avoidance, employing a set of DiD regressions. Tax-haven multinationals are less sensitive to treatment and form the

control group, whereas non-tax-haven firms are more sensitive to treatment and form the treated group. Our baseline results indicate that, after the passage of the TCJA, synchronicity decreased between 25% and 40% of the pre-TCJA synchronicity levels. More importantly, the average synchronicity for companies with subsidiaries in tax-haven countries decreased by almost 20% less than for multinationals with subsidiaries in other (i.e., non-tax-haven) countries. Thus, we can infer that, by reducing the incentives for tax avoidance, the passage of this law contributed to reducing informational asymmetry in the stock market.

This study makes several valuable contributions to the literature. First, it enhances our understanding of stock price efficiency by examining the effects of tax avoidance practices on informational asymmetry in the stock market. Second, this study sheds light on the impact of synchronicity on the market for companies with subsidiaries in tax haven countries. Therefore, companies must consider this impact when they plan their strategies. Finally, this study holds significant practical implications for regulators and legislators because they must ensure that investors can capture information about companies for their investment analysis, especially about diversification strategies.

Moreover, this study has practical implications for other players. First, if tax avoidance practices increase informational asymmetry, investors will be more interested in knowing about these practices. Understanding these practices helps investors to assess the risks associated with investing in a particular company. Companies engaged in aggressive tax avoidance may face reputational risks, legal challenges, and potential financial penalties, which can impact their performance and value. Second, financial analysts try to anticipate the future earnings of companies. Therefore, understanding companies' tax avoidance enables them to make a more accurate analysis. It allows them to evaluate the impact of tax strategies on the profitability of companies, for example, cash flow and long-term sustainability, providing a more comprehensive view of the investment potential. Finally, in recent decades, society has become more conscious of the impact of companies on their resources. Therefore, companies involved in tax scandals receive more attention from the media. Knowing about the tax avoidance practices of companies can contribute to public discussions on fairness and equality.

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AUTHOR CONTRIBUTIONS

Rogiene Batista dos Santos: conceptualization (equal); data curation (equal); formal analysis (equal); investigation (equal); methodology (equal); project administration (lead); resources (equal); software (supporting); supervision (lead); validation (lead); visualization (equal); writing – original draft (equal); writing – review and editing (equal).

Rafael Schiozer: conceptualization (equal); data curation (equal); formal analysis (equal); investigation (equal); methodology (equal); project administration (lead); resources (equal); software (supporting); supervision (lead); validation (lead); visualization (equal); writing – original draft (equal); writing – review and editing (equal).

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

DATA AVAILABILITY STATEMENT

The entire dataset supporting the results of this study can be made available upon request to the authors.

GENERATIVE AI DISCLOSURE

The authors declare that generative artificial intelligence was used in the following stages of the production of this manuscript:

- Text refinement: ChatGPT.
- Translation: ChatGPT.

The authors declare that, regardless of the use of the tools mentioned above, all generated content was supervised, verified, and critically validated by humans. The authors assume full and exclusive responsibility for the accuracy of the data, integrity of mathematical/statistical formulas, originality of the text, and the conclusions presented in the published article.

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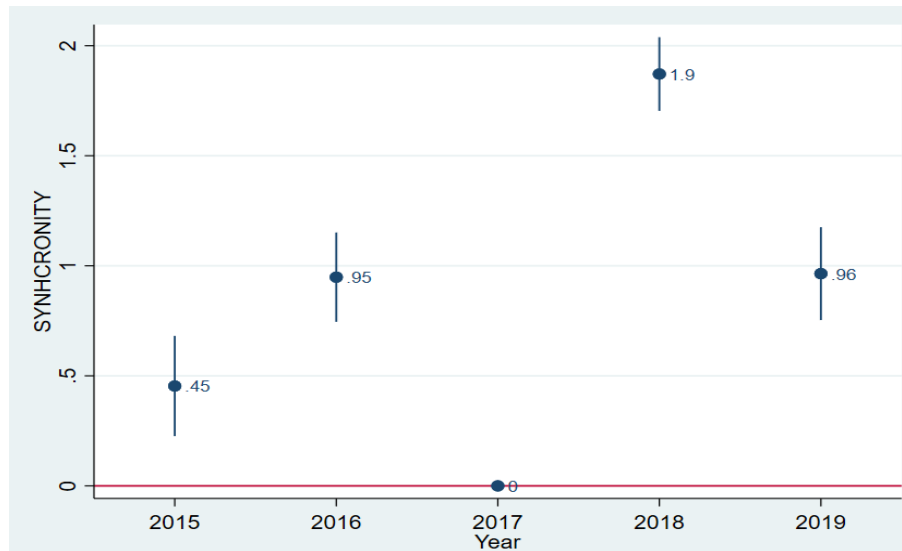
Appendix 1*Descriptive statistics*

Variable	No tax havens					Tax havens					All companies				
	Obs.	Mean	SD	Minimum	Maximum	Obs.	Mean	SD	Minimum	Maximum	Obs.	Mean	SD	Minimum	Maximum
Synchronicity	9,421	-2.352	1.974	-10.637	1.286	9,204	-1.601	1.679	-10.548	1.286	18,625	-1.982	1.872	-10.638	1.286
Cash ETR	9,421	0.144	0.346	-2.762	2.751	9,204	1.286	0.371	-4.881	3.536	18,625	0.159	0.359	-4.882	3.536
Size	9,421	6.417	2.109	1.663	11.774	9,204	7.184	1.851	1.554	11.774	18,625	6.797	2.022	1.554	11.774
Leverage	9,421	0.204	0.187	0.000	0.775	9,204	0.210	0.1771	0.000	0.776	18,625	0.208	0.183	0.000	0.776
R&D	9,421	0.182	1.282	0.000	24.479	9,204	0.119	0.756	0.000	24.479	18,625	0.152	1.056	0.000	24.479
NOL	9,421	0.756	0.756	0.000	1.000	9,204	0.772	0.419	0.000	1.000	18,625	0.764	0.424	0.000	1.000
Intangibles	9,421	0.140	0.187	0.000	0.816	9,204	0.234	0.203	0.000	0.817	18,625	0.187	0.2008	0.000	0.817
ROA	9,421	0.068	0.195	-1.279	0.424	9,204	0.104	0.127	-1.279	0.424	18,625	0.086	0.166	-1.279	0.424
Gross PPE	9,421	0.605	0.459	0.000	2.496	9,204	0.432	0.348	0.004	2.497	18,625	0.520	0.418	0.000	2.497
MTB	9,421	3.080	4.544	4.544	69.543	9,204	4.150	5.621	0.140	69.543	18,625	3.609	5.133	0.140	69.543

Notes: *The average synchronicity is -2.352 for companies with subsidiaries in no tax haven countries and -1.601 for companies with subsidiaries in tax haven countries. Therefore, there is more asymmetrical information for companies with subsidiaries in tax havens. The average Cash ETR is 14.40% for companies with subsidiaries abroad but outside a tax haven and 15.90% for companies with subsidiaries in tax havens. Thus, companies in tax-haven countries pay more taxes.*

Obs. = observations; SD = standard deviation.

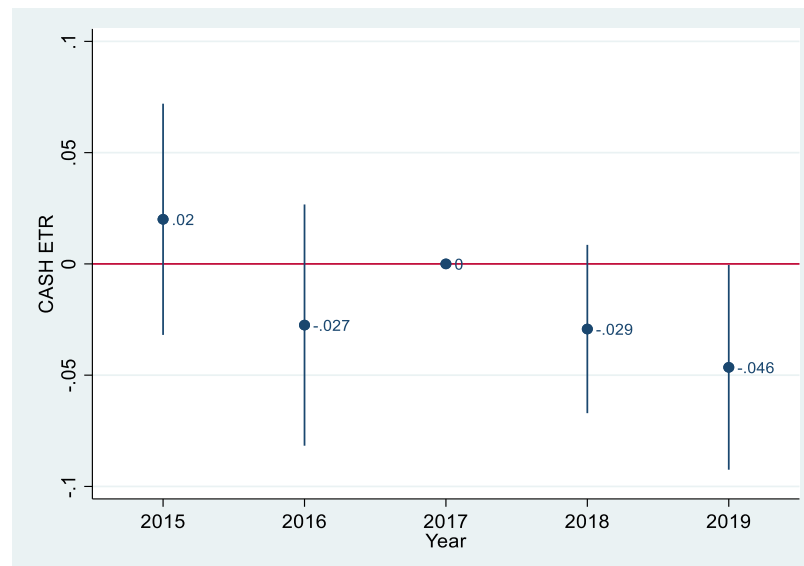
Source: *Elaborated by the authors.*



Appendix 2 Treatment effect over time (Synchronicity)

Notes: We found significant coefficients over the years. We used the first year of data (2015) as our reference. The vector of coefficients ω_t and their 95% confidence intervals is depicted in this figure. This figure shows that the hypothesis of parallel trends in the pre-shock period can be rejected because the confidence intervals for years (ω_{2015} , ω_{2016} , ω_{2017} , ω_{2018} , and ω_{2019}) did not cross the horizontal axis, meaning that these coefficients are statistically different from 0. This result confirms the hypothesis that companies with subsidiaries in tax haven countries had higher levels of Synchronicity (asymmetric information).

Source: Elaborated by the authors.



Appendix 3 Treatment effect over time (Cash ETR)

Notes: We found a significant coefficient in 2015. We used the first year of data (2015) as our reference. The vector of coefficients ω_t and their 95% confidence intervals are depicted in this figure. Cash ETR is a proxy for tax avoidance (see research methodology for details). The passage of the Tax Cuts and Jobs Act (TCJA) occurred in 2017.

Source: Elaborated by the authors.

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