Capital and Employment under Offshore Secrecy*

Diana Ricciulli-Marin†

University of British Columbia / Central Bank of Colombia

March 26, 2026

Abstract

This paper studies the real economic effects of a crackdown on offshore secrecy in Colombia. Exploiting variation in the likelihood of detecting offshore wealth triggered by the Panama Papers leak in 2016, I find that firms owned by users of offshore vehicles increase their retained earnings and use this additional liquidity to increase capital and employment, resulting in higher profits two years after the leak. Heterogeneity analyses show larger effects among owner-managed firms, where shocks to business owners more directly translate into firm choices. Moreover, these positive real responses imply higher corporate income tax revenues, complementing the revenue gains from increased wealth tax compliance. Overall, these findings provide new evidence on the real economic implications of offshore tax evasion by wealthy individuals.

JEL Classifications: H26, G32, G38.

Keywords: tax evasion, tax havens, corporate governance.

*PRELIMINARY DRAFT. Please do not circulate. I am indebted to Kevin Milligan, Claudio Ferraz, Terry Moon, and Patrick Francois for continuous feedback and invaluable support throughout this project. I also thank Raffaele Saggio, Thomas Lemieux, Sam Norris, David Green, Gorkem Bostanci, Nicole Fortin, Juliana Londoño-Vélez, Sebastian Siegloch, Pierre Bachas, Nils Lehr, Mateo Uribe-Castro, and Nathan Nunn for their comments. The opinions expressed in this paper belong to the author and do not necessarily reflect the views of the Colombian Central Bank or its Board of Directors. Financial support from the Stone Center of Wealth and Income Inequality at UBC is gratefully acknowledged.

†email: driccima@student.ubc.ca

1 Introduction

The last decade has marked a turning point in the global fight against offshore tax evasion. Large data leaks and the expansion of information-exchange agreements with major tax havens have triggered an unprecedented crackdown on offshore financial secrecy, substantially increasing the probability of detecting hidden offshore wealth (Alstadsæter et al., 2023; Bachas et al., 2024). Existing studies show that this crackdown has generated important redistributive gains, including higher tax progressivity and lower wealth inequality (e.g., Alstadsæter et al., 2019; Londoño-Vélez and Ávila-Mahecha, 2021; Johannesen, 2023). However, its broader economic implications remain unclear. Theoretically, by raising the probability of detection, cracking down on tax havens lowers the expected after-tax returns to holding wealth offshore, potentially inducing wealthy individuals to reallocate assets toward more productive uses.[1] At the same time, higher effective personal taxes reduce returns on savings and investment, leaving the net economic effect ambiguous.

Empirically identifying the real economic effects of offshore tax evasion is challenging. Offshore wealth is inherently difficult to observe and, even when observed, linking it to real economic outcomes requires rich and rarely available administrative data. Moreover, the use of tax havens is endogenous and correlated with unobserved individual or firm characteristics that also affect real outcomes, posing challenges to causal identification.

This paper provides new evidence on the economic impact of a crackdown on offshore secrecy using a unique dataset that links users of offshore vehicles to business ownership and firm-level real economic activity in Colombia. In a matching difference-in-differences framework and exploiting exogenous variation from the Panama Papers leak in 2016, I study how an increased probability of offshore wealth detection affects firms' capital accumulation, employment, and profits. In particular, to identify the causal effect, I compare the outcomes of firms whose shareholders are related to the use of offshore vehicles in 2015, either directly or through their family members, with those of similar firms potentially unrelated to offshore structures, before and after the leak.

The Panama Papers episode in Colombia provides an ideal setting to study the real economic implications of a crackdown on offshore secrecy. First, the leak was unexpected and marked a turning point in the Colombian government's ability to detect offshore

[1] This intuition aligns with research emphasizing the efficiency costs of tax evasion due to resource misallocation (Skinner and Slemrod, 1985; Fullerton and Karayannis, 1994). In particular, differences in evasion opportunities across tax bases can lead to the accumulation of less productive assets that yield higher after-tax returns because they are easier to conceal.

wealth. Originating from the Panamanian law firm Mossack Fonseca, the Panama Papers comprised 11.5 million documents related to more than 214,000 offshore corporations. The publication of this information in the Offshore Leaks Database by the International Consortium of Investigative Journalists (ICIJ) enabled Colombian tax authorities to identify individuals engaged in offshore tax evasion and was followed by additional international tax enforcement actions. These included the signing of a Tax Information Exchange Agreement (TIEA) with Panama two weeks after the leak and the start of automatic exchange of financial information (AEoI) with other major tax havens in 2017.

Second, given Colombia's long-standing tradition of wealth taxation, the leak directly increased the cost of holding wealth offshore. In particular, affected individuals not only began to disclose previously omitted wealth but were also required to pay taxes on it (Londoño-Vélez and Ávila-Mahecha, 2021).

Finally, the availability of rich administrative data linking business ownership to firm-level real outcomes enables a detailed analysis of the economic effects of the crackdown. In particular, using individuals' full names and exploiting Colombian naming conventions (typically two given names and two surnames), I am able to link users of offshore vehicles identified in the Offshore Leaks Database to shareholders of Colombian firms and to their corresponding real economic outcomes.

My main findings reveal a positive effect of the crackdown on firms' assets and capital accumulation. Firms whose owners are linked to offshore vehicle use increased total assets by approximately 9%. In particular, about six percentage points of this increase reflects higher physical capital, corresponding to roughly a 32% rise in this component. To rule out the possibility that this effect is driven solely by the accumulation of owners' personal assets (e.g., real estate), I disaggregate physical capital into its components. I find no significant effects on buildings and land, but a positive and statistically significant increase in machinery and equipment, which is more closely associated with productive investment rather than owners' personal assets.

This capital expansion is equity-financed through higher retained earnings, consistent with a reallocation of owners' wealth toward domestic firms. More precisely, following the crackdown, treated firms increase retained earnings and equity by roughly 48% and 10%, respectively. Further illustrating this reallocation channel, I find that as firms increase retained earnings, they are also less likely to import goods from tax havens. In particular, this finding is consistent with the use of trade misinvoicing to transfer funds from domestic firms to offshore accounts in tax havens, a practice that was uncovered by

Colombian tax authorities at the time of the leak. [2]

The growth in physical capital also occurs alongside broader economic gains, with increases in employment and profits. Following the crackdown, treated firms experience an increase in employment of approximately 8%. Similarly, the ratio of pre-tax profits to total baseline revenues increased by roughly 6 percentage points, corresponding to a 57% increase in pre-tax profits among treated firms.

The positive real effects are stronger among owner-managed firms, where shocks to business owners are more likely to translate into firm-level decisions. Using board membership data, I show that the expansion in physical capital, employment, and profits is significantly larger in firms with substantial shareholder representation on the board (above 20%). Similarly, the effects are more pronounced among closely held firms (fewer than five shareholders), where there is also limited separation between ownership and control. Together, these findings highlight how owners' personal incentives to conceal wealth offshore can affect firms' real economic outcomes, particularly in settings with little separation between ownership and control.

The estimated responses also vary systematically with firms' financial and production characteristics. Effects are larger among cash-constrained firms, consistent with these firms being further from their optimal capital stock and thus responding more strongly to positive liquidity shocks, while more liquid firms adjust less. The responses are also stronger in capital-intensive firms, where additional liquidity is more likely to finance investment in physical capital. Overall, these patterns support a liquidity channel through which the crackdown relaxes financing constraints, especially in firms where capital accumulation is central to growth.

I conduct a series of robustness exercises to strengthen the internal validity of my main findings. The key identification assumption underlying my estimates is that, absent treatment, firms whose owners are linked to offshore structures and otherwise similar unexposed firms would have followed parallel trends. I provide evidence in support of this assumption by estimating event-study coefficients prior to the leak, which are statistically indistinguishable from zero. In addition, raw means reveal no differences in the pre-2016 trajectories of the main outcomes between treated and control firms, further supporting the parallel-trends assumption. Nonetheless, even with evidence of pre-treatment parallel trends, other threats to identification may remain.

A first set of empirical challenges concerns the definition of treated and control groups.

[2] See La Silla Vacía: "Panama Papers: las preguntas que responde y las que deja abiertas". Available here.

As the Offshore Leaks Database captures only a subset of offshore tax evasion, some affected firms may be misclassified as controls, potentially biasing estimates toward zero. To assess the importance of such spillovers, I construct an alternative control group by restricting the sample to firms whose owners operate only a single firm, a profile that is unlikely among offshore tax evaders, who typically operate complex firm networks. Estimates using this alternative control group are statistically similar to the baseline, suggesting limited spillover effects. Moreover, a related concern is treatment misclassification arising from imperfect name matching between the Offshore Leaks Database and firm-level data, particularly when offshore users are linked to domestic family firms using only two common last names. Excluding firms matched using only shareholders' last names yields results similar to the main sample, alleviating the concern that misclassification of treated firms is driving the main findings.

A second set of threats to identification relates to contemporaneous shocks and potential changes in firm composition. Colombia's adoption of International Financial Reporting Standards (IFRS) between 2015 and 2016 could differentially affect treated and control firms; hence, the estimated impact may reflect accounting changes rather than real economic behavior. This concern is mitigated by using detailed firm-reported data that disaggregates total retained earnings into amounts from IFRS-related revaluations and routine firm activity. The estimated effects are similar when using total retained earnings and retained earnings net of IFRS-revaluations, indicating that the results are not driven by accounting changes. In addition, because the obligation to report balance sheet data and income statements depends on firm-size thresholds, the panel is unbalanced, raising the possibility that changes in the composition of reporting firms confound the estimates. I show that the crackdown has no effect on firm survival or reporting status, ruling out entry-exit dynamics or shifts in sample composition as explanations for the findings.

Finally, I examine the implications of the estimated real economic impacts for government tax revenues. While existing work shows that the 2016 crackdown on offshore secrecy raised wealth tax revenues by increasing the disclosure of previously hidden offshore assets (Londoño-Vélez and Ávila-Mahecha, 2021), I identify an additional revenue channel operating through higher taxable corporate income. In particular, using the estimated percentage increase in pre-tax profits and average effective corporate income tax rates in 2016 and 2019, I find that the crackdown on offshore secrecy led to an increase in corporate income tax revenues among treated firms that ranges between 13% and 18%. These estimates imply that the fiscal gains from enforcing offshore transparency extend

beyond wealth taxation and include increases in corporate income tax revenues driven by real economic behavior.

Overall, this paper provides new evidence on the real economic implications of offshore tax evasion by wealthy individuals. The results are consistent with the idea that a crackdown on offshore secrecy alters the incentives of rich individuals to accumulate wealth in tax havens, generating positive effects for domestic firms and government revenues. In contrast to multinational enterprises that use tax havens primarily for corporate tax planning, my findings suggest that shareholders of closely held firms potentially conceal wealth offshore primarily for personal use.

Furthermore, these findings highlight the importance of pairing international transparency initiatives with domestic wealth taxation. Prior research shows that transparency reforms, when implemented alongside wealth taxes, generate substantial revenue gains (e.g., Londoño-Velez and Tortarolo, 2025; Londoño-Vélez and Ávila-Mahecha, 2021). Consistent with this evidence, I show that in countries that levy a wealth tax, greater transparency raises the relative cost of holding assets offshore, inducing a reallocation of previously idle offshore wealth toward domestic productive investment. This mechanism is particularly relevant for developing economies, where capital is scarce and its diversion abroad can constrain domestic economic activity.

Related Literature

This paper contributes to three main strands of the literature. First, it relates to the literature on the impact of tax havens on real economic activity. The bulk of existing work in this area examines the economic implications of the use of tax havens by multinational enterprises (MNEs) or publicly listed firms. While the majority of studies find higher after-tax returns and increased capital investment associated with tax haven use by MNEs (Hong and Smart, 2010; Suárez Serrato, 2018; Klemm and Liu, 2019; Bilicka et al., 2022, 2024), the empirical evidence on employment and wages is mixed finding both positive and negative implications (Suárez Serrato, 2018; Souillard, 2022; Bilicka et al., 2022; Alstadsæter et al., 2025a; Lopez and Michallet, 2024).[3] Unlike the prior literature, this paper examines the economic impact of tax haven use by shareholders of closely held private firms, where ownership and management are tightly linked. In contrast to MNEs' use of tax havens (typically through subsidiaries to reduce corporate tax burden), this paper focuses on offshore activities by wealthy individuals that reflect more personal rather than

[3]See (Alstadsæter et al., 2024) for a complete review of this literature.

corporate motives.

Second, this paper contributes to the growing literature on offshore tax evasion by wealthy individuals. Existing studies focus primarily on distributional consequences, showing that the propensity to hold offshore wealth rises sharply with wealth, reducing tax progressivity and increasing wealth inequality (Alstadsæter et al., 2018, 2019; Guyton et al., 2021; Londoño-Vélez and Ávila-Mahecha, 2021; Johannesen, 2023; Bachas et al., 2024; Leenders et al., 2023; Londoño-Velez and Tortarolo, 2025). Recent studies have shifted the focus from the distributional consequences of offshore tax evasion to its real economic effects, examining in particular the link between offshore wealth concealment, real estate ownership, and housing markets in tax havens (Alstadsæter et al., 2022; Johannesen et al., 2022). As opposed to these papers, I study how offshore tax evasion by wealthy individuals affects capital accumulation, employment, and profits in the domestic firms they own. To the best of my knowledge, this is the first study to link offshore tax evasion to private-firm ownership data to study the real economic implications of shareholders' personal use of tax havens.

Finally, this paper contributes to the literature on how shocks to business owners affect firms' real economic outcomes. The vast majority of work in this area focuses on the effects of taxing business owners, with a particular focus on dividend taxation (Yagan, 2015; Bach et al., 2024; Bilicka et al., 2025), capital gains taxation (Moon, 2022), and personal income taxation (Risch, 2024). More recently, Brounstein (2025) link business owners to firm outcomes by studying firms' responses to Ecuador's corporate income tax surcharge on firms whose owners are tax-haven residents. This paper differs from prior work by studying a distinct type of shock: an increase in the probability of detecting offshore tax evasion that, rather than directly raising owners' tax liabilities, reduces the after-tax return to holding wealth offshore.

The rest of the paper proceeds as follows. Section 2 presents the context and the institutional details relevant for the analysis. Section 3 builds a simple conceptual framework to guide the empirical analysis. Section 4 and 5 present the data and the empirical strategy. Section 6 studies the real economic effects of the crackdown on offshore secrecy. Section 7 studies the implications of real responses on government tax revenue. Section 8 concludes.

2 Context

This section describes the global crackdown on offshore tax evasion and the institutional features relevant for understanding its implications for wealthy individuals in Colombia and their firms.

2.1 Global Crackdown on Offshore Tax Evasion

The fight against offshore tax evasion has intensified over the past decade. The probability of detecting offshore tax evasion by wealthy individuals has increased following large-scale leaks of offshore financial information and the implementation of major international initiatives, most notably the automatic exchange of financial information led by the OECD (Alstadsæter et al., 2023).

The first major offshore data leak was the Panama Papers in 2016, which comprised 11.5 million documents related to more than 214,000 offshore corporations. The leak originated from Mossack Fonseca, one of the world's largest providers of offshore financial services (Obermaier and Obermayer, 2017). The leaked documents included passport copies, bank statements, and internal correspondence, and enabled the identification of the ultimate beneficial owners of offshore entities. The International Consortium of Investigative Journalists (ICIJ) converted this large and unstructured dataset into a searchable database linking offshore entities to shareholders, directors, and intermediaries, and made it publicly available for use by researchers and governments (Alstadsæter et al., 2025b). This database has grown over time with additional leaks, including the Bahamas Papers (2017), the Paradise Papers (2017), and the Pandora Papers (2021), providing tax authorities with unprecedented information on the use of tax havens by wealthy individuals. In particular, the primary sources of this database are offshore corporate service providers and public corporate registers of major tax havens.

Together with these large data leaks, the automatic exchange of financial information (AEoI) involving more than 100 countries has been in force since 2017. Under this framework, financial institutions in participating jurisdictions report information on accounts held by foreign residents to the tax authorities of the account holders' home countries (Johannesen, 2024). Existing studies show that this surge in international tax enforcement has significantly increased tax compliance and improved our understanding of who holds wealth in tax havens (e.g. Baselgia, 2023; Alstadsæter et al., 2023; Boas et al., 2024).

Altogether, the Panama Papers and the introduction of AEoI marked the beginning of

a global crackdown on offshore tax evasion by substantially increasing the information available to tax authorities. Importantly, the use of offshore entities does not, by itself, imply illegal behavior or tax evasion. The release of offshore financial information imposes costs only on individuals found to be concealing wealth and failing to comply with domestic tax laws. As a result, the costs faced by evaders depend critically on governments' ability to process and effectively use this information to strengthen enforcement, as well as on the applicable domestic tax laws. The following subsection examines the implications of this global crackdown for wealthy individuals in Colombia.

2.1.1 Colombia in the Crackdown

In Colombia, full tax compliance requires the self-reporting of offshore account balances and the payment of the corresponding wealth tax. Colombia has levied a wealth tax on individuals since 1935, with a temporary repeal between 1992 and 2002. Individuals with net wealth above a threshold are subject to an annual tax on net worth, excluding two main non-taxable components: (i) up to USD 137,000 of the value of the primary residence, and (ii) the equity value of shares in domestic firms. In 2015, individuals with net worth exceeding COP 1 billion (approximately USD 364,418) faced tax rates ranging from 0.2 to 1.5 percent. Although traditionally applied to individuals, the wealth tax was also imposed on firms between 2002 and 2017. [4]

Despite its long history, wealth taxation in Colombia has been weakly enforced. Enforcement capacity is constrained by the widespread concealment of wealth offshore and limited administrative resources to cross-check third-party information. The Panama Papers, released in April 2016, confirmed these challenges. Following the leak, the Colombian tax authority contacted exposed taxpayers and requested information on their offshore activities. In May 2016, the Minister of Finance reported that 65% the individuals investigated were non-compliant. In particular, investigations uncovered several evasion schemes, including the use of trade misinvoicing to transfer funds from domestic firms to personal offshore accounts. [5]

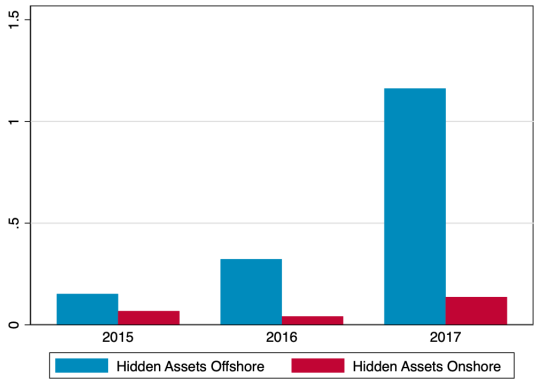
By the end of 2016, the Colombian government had taken decisive steps signaling that curbing offshore tax evasion was a policy priority. Three weeks after the leak, the government announced a Tax Information Exchange Agreement with Panama, effective

[4] Peydró et al. (2025) find that firms' wealth taxation negatively affects investment, employment, and productivity, while also changing firms' capital structure.

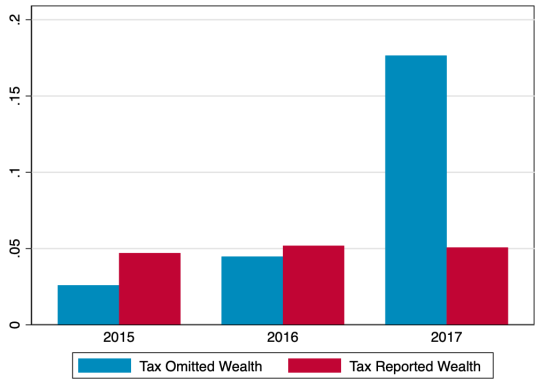
[5] News papers uncovered these evasion schemes that led to the illicit enrichment of individuals: Caracol Radio (2017) and La República (2016).

Figure 1: Crackdown Effects on Assets Disclosure and Taxation

(a) Hidden Assets (% of GDP)



(b) Taxes Omitted Wealth (% of GDP)



Note: Panels (a) and (b) plot the evolution of total hidden assets and the corresponding tax payments on omitted wealth, respectively, between 2015 and 2017. Hidden assets and tax payments are measured using wealth tax declarations reporting total net worth as of January of each year (2015-2017). Accordingly, 2015 and 2016 reflect amounts disclosed before the Panama Papers leak, while 2017 reflects wealth disclosed after the crackdown. Blue bars indicate hidden assets held offshore, and red bars indicate hidden assets held onshore. All the values are expressed as a percentage of GDP of the corresponding year.

June 2017, and complementing the start of AEoI with other major tax havens. In addition, Law 1819 of 2016 criminalized tax evasion for the first time, introducing prison sentences of 48 to 108 months in addition to monetary penalties.

The magnitude of the shock faced by wealthy individuals is evident in the data. As part of a voluntary disclosure program launched in 2015, taxpayers could declare previously hidden onshore or offshore assets in their wealth tax filings for 2015, 2016, and 2017. Participants could regularize past liabilities in exchange for a reduced penalty of 10 to 13 percent of disclosed wealth, whereas non-disclosure exposed individuals to substantially higher fines upon detection (Londoño-Vélez and Ávila-Mahecha, 2021). Figure 1 panel (a) shows the value of hidden assets (onshore and offshore) disclosed under the program as a percentage of GDP. In particular, the values correspond to net worth possessed as of January 2015, 2016, and 2017. The graph shows a sharp increase in the disclosure of offshore hidden assets following the 2016 leak. Moreover, consistent with this trend, tax revenues from omitted wealth increased from 0.03 to 0.18 percent of GDP between 2016 and 2017 (Figure 1, panel (b)).

Overall, data and reports from Colombian tax authorities indicate that the crackdown increased the likelihood of detecting tax evasion. This higher detection risk induced responses by wealthy individuals with previously undisclosed offshore assets, as illustrated in Figure 1. Moreover, reports from tax authorities reveal that these individuals employed illegal schemes to transfer income from their firms to personal offshore accounts. In the

following sections, I examine both theoretically and empirically the economic impact of this crackdown on Colombian firms owned by users of offshore vehicles and potentially affected by this shock.

3 Theoretical Framework

This section develops a simple theoretical framework in the spirit of Allingham and Sandmo (1972) to illustrate how a crackdown on offshore secrecy affects the wealth allocation decisions of business owners and the real outcomes of their firms. The framework also clarifies the implications for government tax revenues, taking into account changes in both corporate and wealth taxation. The aim of this model is not to provide a fully fledged general equilibrium analysis, but rather to illustrate the key trade-off faced by wealthy business owners between investing in domestic productive capital and concealing wealth in tax-avoidance vehicles whose expected returns depend on government enforcement.

3.1 Model Setup

Business Owner and Wealth Allocation Consider a risk-neutral business owner endowed with initial personal wealth normalized to $W = 1$. The owner allocates this wealth between (i) investment in a domestic, owner-managed firm and (ii) a tax-avoidance vehicle that can be located onshore or offshore. All decisions are made at the beginning of the period.

Owner-Managed Firm The domestic firm produces output using capital as the only input according to a Cobb-Douglas production function

$$F(K) = aK^{\alpha}, \qquad \alpha \in (0,1),$$

where $K \leq 1$ denotes capital invested by the owner. Firm profits are subject to a proportional corporate income tax rate $\tau_C \in (0,1)$.

Tax-Avoidance Vehicle The remaining wealth, $(1-K)$, is transferred to a tax-avoidance vehicle that yields a gross return $(1+r^o)$. This vehicle may represent an offshore shell

company, trust, or other opaque financial structure. Transferring wealth into this vehicle entails a fixed cost γ_v, capturing legal, administrative, and concealment costs.

Wealth placed in the avoidance vehicle is legally required to be reported to tax authorities and is subject to a proportional wealth tax rate $\tau_W \in (0, 1)$. However, the owner may choose to conceal this wealth. Concealment is detected with probability $\delta_v \in [0, 1]$ and if detected, the owner must pay the wealth tax on concealed wealth and returns.

A crackdown on offshore secrecy is modeled as an exogenous increase in δ_v, reflecting data leaks, or policies such as information-sharing agreements.

Government Government revenues consist of two components: corporate income tax revenue from domestic production and expected wealth tax revenue from concealed wealth. Total tax revenue is therefore given by

$$T(\delta_v, K) = \underbrace{\tau_C a K^\alpha}_{\text{Corporate income tax}} + \underbrace{\delta_v \tau_W (1 - K)(1 + r^o)}_{\text{Expected wealth tax}}.$$

Preferences The business owner has linear utility over net income and net wealth. The discount rate is normalized to zero. These assumptions imply risk neutrality and allow the analysis to focus on expected returns.

3.2 Optimal Capital Allocation

The owner chooses capital K to maximize expected utility:

$$U(K) = (1 - \tau_C)F(K) + (1 - \delta_v)(1 - K)(1 + r^o) + \delta_v(1 - \tau_W)(1 - K)(1 + r^o) - \gamma_v.$$

The first term captures after-tax profits from domestic production. The second and third terms represent the expected payoff from the tax-avoidance vehicle, accounting for the probability of detection. The final term is the fixed cost of concealment.

The optimal capital choice K^* satisfies the first-order condition equating the marginal after-tax return on domestic investment with the expected marginal return of the avoidance vehicle:

$$(1 - \tau_C)F'(K^*) = (1 - \delta_v \tau_W)(1 + r^o).$$

Under the Cobb-Douglas technology, this condition yields a closed-form solution:

$$K^* = \left(\frac{(1-\tau_C) a \alpha}{(1-\delta_v \tau_W)(1+r^o)} \right)^{\frac{1}{1-\alpha}}.$$

This expression illustrates how optimal capital is determined by the trade-off between the after-tax return on domestic investment and the expected return on concealed wealth.

3.3 Comparative Statics

I now study how a crackdown on offshore secrecy affects investment. Differentiating K^* with respect to δ_v yields

$$\frac{\partial K^*}{\partial \delta_v} = \frac{\tau_W}{(1-\alpha)(1-\delta_v \tau_W)} \left(\frac{a\alpha(1-\tau_C)}{(1-\delta_v \tau_W)(1+r^o)} \right)^{\frac{1}{1-\alpha}} > 0.$$

An increase in the probability of detection lowers the expected net return of concealing wealth offshore, inducing the owner to reallocate wealth toward domestic productive capital.

The model delivers the following testable implication.

Proposition 1 (Capital Reallocation). *A crackdown on offshore secrecy, captured by a higher probability of detection δ_v, leads to an increase in domestic capital investment.*

Government Revenue Effects A higher probability of detection δ_v, affects government revenues through two distinct channels. To see this, recall that total tax revenue is given by:

$$T(\delta_v, K) = \tau_C a K^\alpha + \delta_v \tau_W (1-K)(1+r^o).$$

First, there is a *mechanical effect*. Holding the owner's capital choice fixed, a higher probability of detection directly increases expected wealth tax revenues by raising the likelihood that concealed wealth is taxed. Theoretically, this effect is strictly positive and proportional to the stock of wealth placed in the avoidance vehicle.

Second, there is a *behavioral effect*. As shown above, an increase in δ_v induces the business owner to reallocate wealth from the tax-avoidance vehicle toward domestic productive capital. This increase in capital raises firm output and profits, thereby expanding the corporate income tax base. Through this channel, stronger enforcement indirectly increases corporate tax revenues.

Formally, totally differentiating government revenue with respect to δ_v yields

$$\frac{dT}{d\delta_v} = \underbrace{\tau_W(1-K^*)(1+r^o)}_{\text{Mechanical wealth-tax effect}} + \underbrace{\tau_C a\alpha(K^*)^{\alpha-1}\frac{dK^*}{d\delta_v}}_{\text{Real behavioral response effect}} ,$$

where the first term captures the direct impact on wealth tax revenues and the second term captures the indirect effect operating through higher domestic investment.

Proposition 2 (Government Revenue Effects). *A crackdown on offshore secrecy raises government revenues through two channels: (i) a mechanical increase in expected wealth tax collections from concealed assets, and (ii) a behavioral increase in corporate income tax revenues driven by higher domestic capital investment.*

These predictions provide a direct link between policies aimed at curbing offshore secrecy by wealthy individuals and observable firm-level outcomes, which I take to the data in the following sections.

4 Data and Outcome Variables

This section describes the main data sources and outcome variables used in the analysis. In particular, the empirical analysis relies on microdata from three primary sources.

First, I use the Offshore Leaks Database compiled by the International Consortium of Investigative Journalists (ICIJ). This database contains information on more than 810,000 offshore entities linked to individuals and firms in more than 200 countries and territories. The information comes from two primary sources: leaked documents from corporate service providers and public corporate registers (ICIJ, 2021). Major leaks include the Panama Papers in 2016 and the Pandora Papers in 2021, which originated from Mossack Fonseca and Alemán, Cordero, Galindo, and Lee, two large Panamanian law firms that assist individuals and firms in incorporating shell companies in secrecy jurisdictions. The database identifies individuals and firms acting as shareholders, directors, or intermediaries of offshore entities, which I will refer to as users of offshore vehicles.[6] Importantly, the published data do not include personal information on bank accounts, financial transactions,

[6]Many activities carried out by offshore entities are legal. However, the secrecy surrounding these structures undermines transparency and can facilitate tax evasion, fraud, and other illicit activities. This is highlighted in ICIJ's data disclaimer, which reads, "There are legitimate uses for offshore companies and trusts. The inclusion of a person or entity in the ICIJ Offshore Leaks Database is not intended to suggest or imply that they have engaged in illegal or improper conduct."

or private communications. From this database, I use three key variables: the full names of users of offshore entities, the country of their personal or entity contact addresses, and the year of incorporation.

To study firm-level real outcomes, I use balance sheet and income statement data from the Superintendencia de Sociedades (or Supersociedades), the Colombian agency that oversees corporations. Firms with annual revenues or assets exceeding 30,000 times the legal minimum wage (approximately 7 million USD in 2015) are required to report financial information to this agency. I restrict the sample to firms that report positive assets, equity, and liabilities, and whose reported values satisfy the basic accounting identity. Moreover, to ensure that the sample comprises active firms, I keep those that report positive sales for at least two years prior to the leak. My main outcome variables from this source are physical capital (property, plant, and equipment) and its main components: land and buildings, and machinery and equipment. Moreover, to better understand changes in capital and its broader implications, I rely on five additional variables: total assets, cash and cash equivalents, retained earnings, total equity, and profits before taxes.

Crucially, Supersociedades also reports the full names of firms' shareholders, which allows me to link individuals exposed in the Offshore Leaks Database to firm-level outcomes.[7] I exploit Colombian naming conventions, typically two given names and two surnames (paternal and maternal), to obtain an accurate match between the Offshore Leaks Database and Supersociedades. Appendix A.1 provides further details on this matching procedure. In particular, I identify 2,055 users of offshore vehicles linked to an address in Colombia, from which the matching procedure yields 1,431 shareholders of Colombian firms. This group of shareholders owns 1,505 firms in Supersociedades, and each of these individuals has participation in an average of three firms. This is consistent with the idea that business income is important in the upper tail of the income distribution, where offshore tax evasion is more likely to occur (Hurst and Lusardi, 2004).

Regarding labor market outcomes, I use employer-employee matched panel data covering the universe of formal employment contracts in Colombia. This information comes from the Integrated Social Security Contributions Settlement Worksheet (PILA)[8] or firms' monthly social security payment reports. I restrict the sample to workers employed for 30 days per month and earning at least the legal minimum wage. The main outcome from this data source will be the annual average employment of firms. In particular, I use

[7] This information is no longer reported in firms' financial statements after 2015; therefore, it is available only for the pre-period (2012–2015).

[8] PILA is the acronym for *Planilla Integrada de Liquidación de Aportes*

unique firm identifiers to match PILA to the main sample of treated and control firms in Supersociedades.

Finally, to shed light on the mechanisms through which wealthy individuals transfer funds to offshore accounts, I use the universe of Colombian customs records, which cover all import transactions between 2012 and 2019. Each transaction reports the importer's tax identification number, allowing linkage to the firm-level identifiers used in the other datasets, as well as the country of origin. I use this database to identify whether firms engage in transactions with jurisdictions known as major tax havens and to examine whether such transactions change following the crackdown.

5 Empirical Strategy

This section describes the empirical strategy used to identify the impact of the crackdown on offshore secrecy on firms' economic outcomes. Estimating this effect is challenging because firms whose shareholders use offshore vehicles may differ systematically from the average firm in the economy, as their shareholders are among the wealthiest individuals. Moreover, given these differences, they may be differentially exposed to shocks around the 2016 crackdown. To address these concerns, I compare outcomes of firms whose shareholders are linked to offshore structures with those of similar firms in observable characteristics that are not linked to offshore activity, before and after 2016. I will do this in a matching difference-in-differences framework.

Matching Strategy To construct the matched sample, I first define treated and control firms. A treated firm is defined as a firm whose shareholders face a higher probability of detection following the release of the Panama Papers in April 2016. Specifically, treated firms are those whose shareholders are associated with the use of offshore vehicles on or before 2015, as recorded in the Offshore Leaks Database. Importantly, an association with offshore vehicle use in 2015 refers to appearing as a user of an offshore entity incorporated on or before that year and does not require the individual's name to have been publicly disclosed in the Panama Papers, as it may appear in later leaks. I classify these firms as treated because, regardless of public disclosure, they became subject to a higher probability of detection due to the expansion of tax information exchange agreements following the leak. Specifically, a firm is classified as treated if at least one of the following conditions holds: (i) a shareholder of the firm in 2015 appears as a user of an offshore vehicle;

(ii) a shareholder of the firm in 2015 is a relative of, or shares two last names in identical order with a user of an offshore vehicle[9]; or (iii) more than 50% of the firm's ownership in 2015 belongs to another firm satisfying either of the previous two conditions.

Regarding the counterfactual, a firm is considered a potential control if: (i) no shareholder appears as user of an offshore vehicle, either directly or through shared last names, at any point in the pre-leak period (2012–2015); (ii) the firm is neither a parent nor a subsidiary of a firm related to an offshore structure; (iii) the firm belongs to the same asset and age decile as the treated firm in the pre-leak period; and (iv) the firm operates in the same economic sector. Among all potential controls, I match each treated firm with a control firm with the closest propensity score. The propensity score is estimated using a linear probability model that predicts treatment status as a quadratic function of average assets and firm age in the pre-treatment period.

Summary Statistics Table 1 panel (a) summarizes the main characteristics of treated and control firms prior to matching. In the full sample, there are 1,034 treated firms and 24,773 control firms. Treated firms are, on average, older and differ in sectoral composition: they are more likely to operate in agriculture and less likely to be in manufacturing. This pattern is consistent with the high prevalence of family-owned or closely held firms in Latin America's agricultural sector (Schneider, 2016), in contrast to manufacturing, where larger firms with greater separation between ownership and management are more common.

Panel B shows that the matching procedure successfully matches 1,010 treated firms, representing a matching rate of 97%. The final matched sample consists of control and treated firms that closely resemble along observable dimensions. On average, they are relatively large and old firms, with roughly 8 million USD in assets, and 21 years of existence. The sectoral composition mirrors Colombia's broader economic structure, with most firms operating in services. In addition, ownership and management are closely linked: approximately 80% of firms are owner-managed.[10]

Event Study To estimate the economic impact of the crackdown, I estimate the following event-study specification on the matched sample:

[9]To avoid false positives or misclassification of treatment when using last names, I omit the twenty most common last names according to the National Civil Registry of Colombia.

[10]Following prior work that treats ownership stakes above 20% as indicative of dominant influence in governance (e.g., Comiskey and Mulford, 1986), I define owner-managed firms as those where shareholders have representation in the board of directors above this threshold.

Table 1: Descriptive Statistics

	Full Sample			*Balanced Sample*		
	Leaked	Non-Leaked	Diff (1)-(2)	Leaked	Non-Leaked	Diff (3)-(4)
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Firm Characteristics						
N	1,034	24,773		1,010	1,010	
Age	21.24	20.16	1.09***	21.27	21.85	-0.58
	(0.40)	(0.08)	(0.41)	(0.43)	(0.43)	(0.61)
Employment	125.61	143.21	-17.60	122.82	123.19	-0.37
	(29.71)	(6.08)	(30.32)	(13.26)	(13.32)	(18.79)
Owner-managed	0.81	0.81	-0.00	0.81	0.79	0.03
	(0.02)	(0.00)	(0.02)	(0.02)	(0.02)	(0.03)
Assets (Million USD)	8.31	10.00	-1.69	8.28	8.67	-0.39
	(2.76)	(0.56)	(2.82)	(0.67)	(0.67)	(0.94)
Physical Capital (Million USD)	1.10	1.90	-0.79	1.10	1.20	-0.10
	(1.31)	(0.27)	(1.34)	(0.12)	(0.12)	(0.17)
Equity (Million USD)	4.88	5.82	-0.95	4.89	4.38	0.50
	(2.09)	(0.43)	(2.13)	(0.41)	(0.41)	(0.58)
Pre-Tax Profits (Million USD)	0.42	0.42	0.00	0.41	0.38	0.03
	(0.19)	(0.04)	(0.19)	(0.06)	(0.06)	(0.09)
Liquidity Ratio	2.79	2.48	0.31***	2.80	2.72	0.08
	(0.09)	(0.02)	(0.09)	(0.10)	(0.10)	(0.15)
Panel B: Industry Shares						
Agricultural	0.12	0.07	0.05***	0.12	0.12	0.00
	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)
Manufacturing	0.12	0.16	-0.04***	0.12	0.12	-0.00
	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)
Construction	0.11	0.11	0.01	0.12	0.12	0.00
	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)
Services	0.64	0.64	-0.00	0.63	0.63	-0.00
	(0.01)	(0.00)	(0.02)	(0.02)	(0.02)	(0.02)

Note: This table presents summary statistics of treated and control firms for both, the full sample and the matched sample. Treated firms are defined as those where shareholders in 2015 or their family members are related to the use of offshore vehicles before the Panama Papers leak in 2016. In the full sample, control firms correspond to the rest of firms not treated, while in the matched sample, control firms correspond to a group of firms with similar observable characteristics, including age and size, that results from a propensity score matching. Columns (1) to (3) report the characteristics of treated firms and control firms, and the difference in means between both groups, using the full sample of firms. While columns (4) through (6) show the same summary statistics for the matched sample. The values of assets, physical capital, equity and pre-tax income are reported in 2015 Million USD. Employment, age and liquidity ratio are reported in levels. Owner-managed, agricultural, manufacturing, construction and services correspond to dummy variables identifying belonging to each corresponding group. Standard deviations are reported in parenthesis. *$p < 0.1$, *$p < 0.05$, *p*< 0.01

$$Y_{jt} = \sum_{\tau=2012}^{2019} \beta_\tau \mathbb{1}[t = \tau] \times D_j + \mu_j + \mu_t + \epsilon_{jt} \tag{1}$$

where Y_{jt} denotes the outcome of interest for firm j in year t (e.g., physical capital and employment), μ_j and μ_t are firm and year fixed effects, and D_j is an indicator for treated firms or those with shareholders linked to offshore structures. The coefficients β_τ capture the effect of the crackdown relative to the baseline year (2015). Standard errors are clustered at the firm level.

To summarize the effects on firm-level outcomes, I also estimate the following difference-in-differences specification:

$$Y_{jt} = \beta Post_t \times D_j + \mu_j + \mu_t + \epsilon_{jt} \tag{2}$$

where $Post_t$ is an indicator equal to one for years after the crackdown (2016 onward).

Identification relies on the parallel trends assumption: absent the crackdown, outcomes for treated and control firms would have evolved similarly. While this assumption is not directly testable, I take two steps to support its plausibility. First, I guarantee that treated and control firms are similar in observable characteristics, including size, age, and economic sector, prior to the crackdown. Second, I examine pre-trends by estimating the coefficients β_τ for years leading up to the crackdown or $\tau \leq 2015$.

6 Results

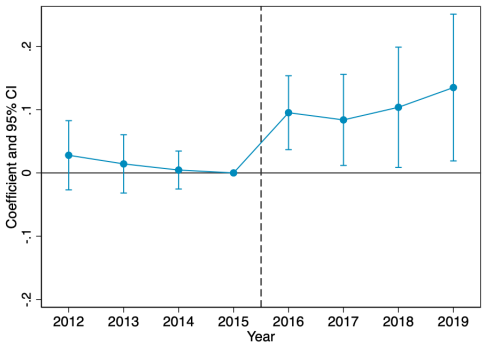
This section presents the estimated effects of the crackdown on offshore secrecy on firms' real economic outcomes, using the matching difference-in-differences framework described in Section 5.

6.1 Assets and Capital Accumulation

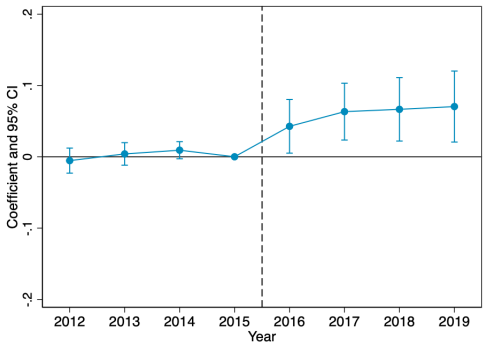
Panels (a) through (e) of Figure 2 plot event-study estimates from equation 1 when the dependent variables are total assets, physical capital, cash and cash equivalents, machinery and equipment, and lands and buildings, all normalized by pre-leak average assets. Focusing first on total assets, the event-study coefficients are relatively flat and close to zero in the pre-leak period, supporting the parallel trends assumption. After the leak, treated firms experience a statistically significant increase in asset values of approximately 9% rel-

Figure 2: Effects on Assets and Capital Accumulation

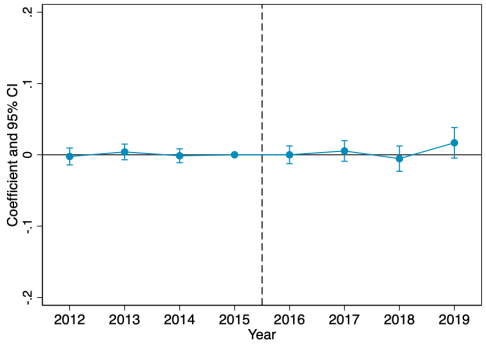
(a) Assets/Pre-Assets



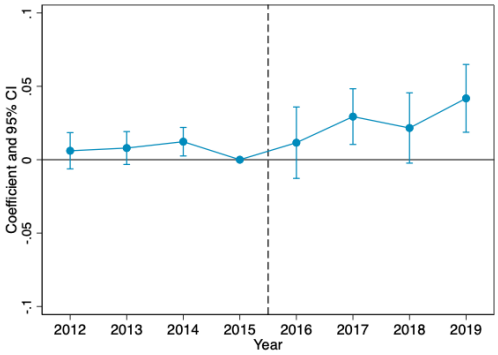
(b) Physical Capital/Pre-Assets



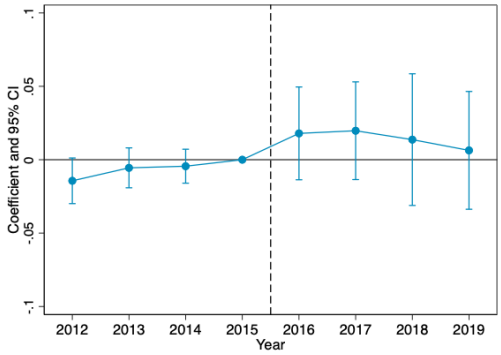
(c) Cash and Equivalents/Pre-Assets



(d) Machinery and Eq./Pre-Assets



(e) Land and Buildings/Pre-Assets



Note: Panels (a) through (e) report event-study estimates after fitting equation (1) on the value of total assets, physical capital, cash and cash equivalents, machinery and equipment, or land and buildings in yearly balance-sheet data. The coefficients capture the effect of the crackdown on offshore financial secrecy on each of these respective accounts. All the values are normalized by the firm-specific average value of assets in the period prior to the leak. Thus, the estimates are expressed as percentage point changes of pre-leak value of assets. The dashed vertical line marks the Panama Papers leak in April 2016. Blue lines denote 95% confidence intervals, with standard errors clustered at the firm level.

ative to the pre-leak level. Importantly, the effect does not revert over time and remains positive at least through 2019.

To further disentangle this effect, Panels (b) and (c) of Figure 2 decompose the increase in assets into the effects on physical capital, measured as property, plant and equipment, and cash and equivalents, respectively. In line with the theoretical predictions derived in Section 3, Panel (b) shows a positive and significant impact on physical capital that explains around six percentage points of asset growth. In contrast, panel (c) shows no variation in cash and equivalents following the crackdown. Again, I find evidence supporting the parallel trends assumption, with coefficients close to zero prior to the leak. These estimates suggest that the increase in assets stems from higher physical capital accumulation rather than a simple reallocation of owners' cash from offshore accounts to domestic firms to reduce their tax burden.

Nonetheless, although not cash, an increase in physical capital could still reflect the accumulation of owners' personal property (e.g., real estate) rather than productive capital. Panels (d) and (e) of Figure 2 further disaggregate physical capital into machinery and equipment, and land and buildings. While the effect on land and buildings is small and statistically insignificant, the crackdown has a positive and statistically significant effect on the value of machinery and equipment, which is more likely to be associated with productive investments.

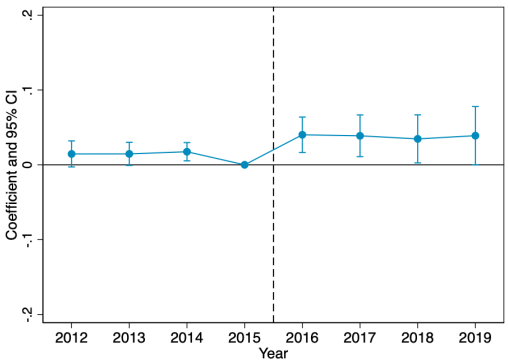
Next, I examine how firms finance their expansion in physical capital. Panels (a) and (b) of Figure 3 present the event study estimates for retained earnings and equity, respectively. As previous outcomes, these variables are normalized by pre-leak average assets. The results show that the increase in physical capital is driven by equity financing, particularly by higher retained earnings. Panel (a) shows a significant rise in retained earnings among treated firms, which is accompanied by a corresponding increase in total equity (panel (b)) with a magnitude similar to the increase in total assets.

As discussed in Section 2, one mechanism through which wealthy individuals transferred funds offshore was through trade misinvoicing. For instance, individuals may have inflated the prices of goods imported from tax havens as a way to shift funds to personal accounts held in those jurisdictions. To assess the plausibility of this channel, I examine the effect of the crackdown on the probability that firms import goods from jurisdictions commonly classified as major tax havens.[11] Figure 4, panels (a) and (b), present the results for the probability of importing goods from major tax havens and from all

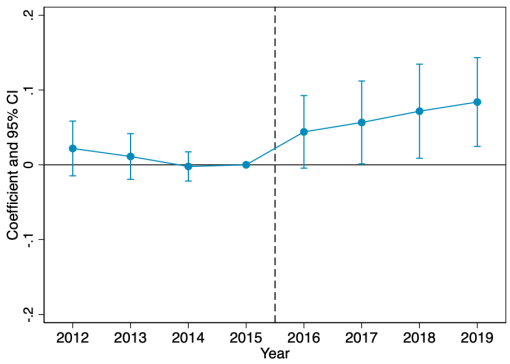
[11]The following countries are classified as major tax havens: Panama, the Netherlands, the British Virgin Islands, Switzerland, Ireland, and Luxembourg.

Figure 3: Effects on Retained Earnings

(a) Retained Earnings/Pre-Assets



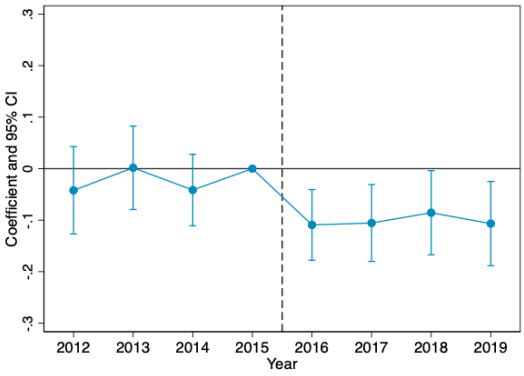
(b) Equity/Pre-Assets



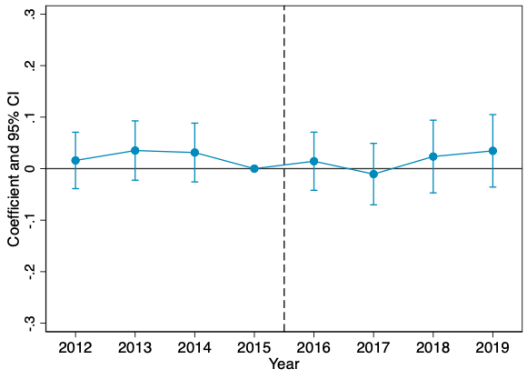
Note: Panels (a) and (b) report event-study estimates after fitting equation (1) on the value of total retained earnings (panel (a)) or equity (panel (b)) in yearly balance-sheet data. The coefficients capture the effect of the crackdown on offshore financial secrecy on each of these respective accounts. All the values are normalized by the firm-specific average value of assets in the period prior to the leak. Thus, the estimates are expressed as percentage changes of pre-leak value of assets. The dashed vertical line marks the Panama Papers leak in April 2016. Blue lines denote 95% confidence intervals, with standard errors clustered at the firm level.

Figure 4: Effects on Imports from Tax Havens and Rest of Countries

(a) Probability of Imports from Tax Havens



(b) Probability of Imports from Rest



Note: Panels (a) and (b) report event-study estimates after fitting equation (1) on the probability of importing goods from tax havens (panel (a)) or the probability of importing goods from the rest of the countries or non-tax havens (panel (b)) in yearly balance-sheet data. The coefficients capture the effect of the crackdown on offshore financial secrecy on each of these respective variables. The dependent variables are dummies of whether the country has imports from tax havens (panel (a)) or other countries (panel (b)). The dashed vertical line marks the Panama Papers leak in April 2016. Blue lines denote 95% confidence intervals, with standard errors clustered at the firm level.

Table 2: Crackdown Effects on Real Outcomes of Firms

	(1)	(2)	(3)	(4)	(5)
	Dependent Variable (ratio to pre-leak assets)				
	Assets	Cash & Eq.	Physical Capital	Retained Earnings	Equity
Post × Leaked Shareholder	0.093**	0.004	0.057***	0.027**	0.056**
	(0.037)	(0.006)	(0.020)	(0.013)	(0.025)
Observations	11,690	11,683	11,348	11,558	11,690
R-squared	0.423	0.606	0.652	0.625	0.613
Firm FE	Yes	Yes	Yes	Yes	Yes
Mean Dep. Var.	1.000	0.061	0.177	0.056	0.553
Clusters Treated Firms	901	901	901	901	901
Clusters Control Firms	924	924	924	924	924

Note: This table presents the main results of the paper, showing the impact of a crackdown on offshore secrecy on real economic outcomes. Columns (1) through (5) display the difference-in-differences coefficients from estimation of equation (2) on the value of assets, cash and equivalents, physical capital, retained earnings and equity, all normalized by the firm-specific pre-leak value of assets. Leaked shareholder or treated firms correspond to firms where shareholders in 2015 or their family members are related to the use of offshore vehicles before the Panama Papers leak in 2016. The results correspond to the matched sample. All specifications include year and firm fixed effects. The standard errors are clustered at the firm level and are reported in parenthesis. *$p < 0.1$, *$p < 0.05$, *p*< 0.01

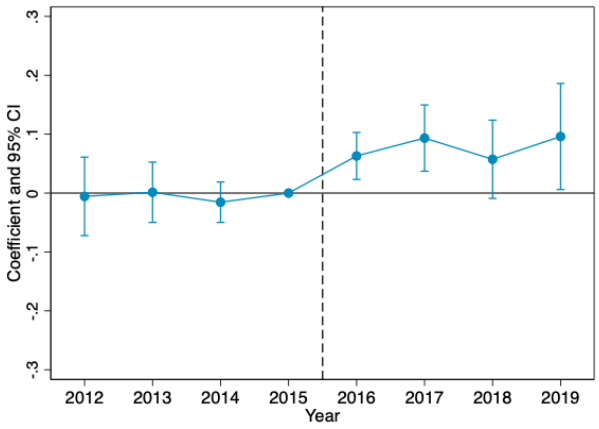
other countries, respectively. While I find no significant effect on imports from non–tax-haven countries, treated firms are approximately 10% less likely to import goods from jurisdictions classified as tax havens following the leak.

To better understand the magnitudes of these firm-level real responses, Table 2 summarizes these results using the difference-in-differences estimates from equation 2. Column (1) shows that treated firms increased total assets by approximately 9% in the years following the crackdown. Column (3) indicates that about six percentage points of this increase are attributable to higher physical capital, corresponding to roughly a 32% increase in this component. Finally, the expansion is primarily equity-financed: approximately three percentage points of asset growth correspond to higher retained earnings, implying an increase of approximately 48% in retained earnings among treated firms.

6.2 Employment

Following Section 3 main proposition, in a production function where labor complements capital, employment should also respond to the increase in physical capital, particularly if the increase in capital corresponds to productive investments. Figure 5 reports event-study estimates from equation 1 for the natural logarithm of annual employment. Pre-leak coefficients close to zero indicate a similar evolution in employment between treated and control firms leading to the crackdown, supporting the identification assumption. Following the leak, treated firms increase employment by roughly 8% relative to control firms (see Table A.1).

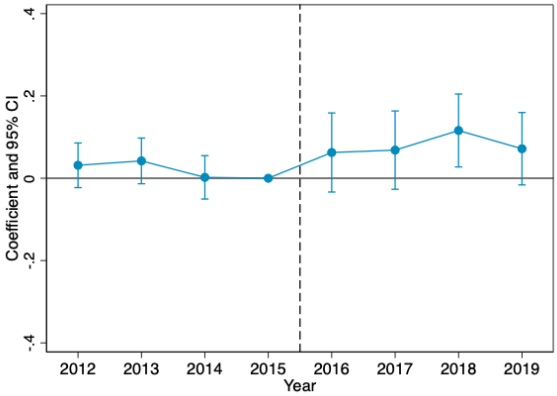
Figure 5: Effects on Ln(Employment)



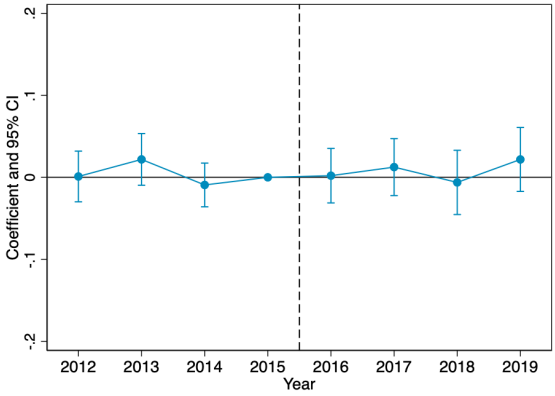
Note: This figure reports event-study estimates after fitting equation (1) on the natural logarithm of annual employment reported in monthly employer-employee data. The annual value corresponds to the yearly average of monthly formal employees in each firm. The coefficients capture the effect of the crackdown on offshore financial secrecy on firms' total employment. The dashed vertical line marks the Panama Papers leak in April 2016. Blue lines denote 95% confidence intervals, with standard errors clustered at the firm level.

Figure 6: Effects on Net Income and Profit Margins

(a) Pre-Tax Profits



(b) Profit Margins



Note: Panels (a) and (b) report event-study estimates after fitting equation (1) on the value of pre-tax profits (panel (a)) or profit margins (panel (b)), both computed using yearly income statements. The coefficients capture the effect of the crackdown on offshore financial secrecy on these variables. Pre-tax profits are normalized by the average value of total revenues in the period prior to the leak. Thus, the estimates are expressed as percentage changes of pre-leak revenues. The dashed vertical line marks the Panama Papers leak in April 2016. Blue lines denote 95% confidence intervals, with standard errors clustered at the firm level.

6.3 Profits

Furthermore, to understand the aggregate real economic implications of the expansion of capital and employment, it is important to assess the impact on firms' earnings and profitability. These effects might not be evident in the short run, as higher capital and employment may involve, among others, installation, training, and learning costs. Figure 6 plots the impact on pre-tax profits (normalized by pre-leak revenues) and profit margins. Panel (a) shows a positive and statistically significant increase in pre-tax profits among treated firms, emerging about two years after the leak, while Panel (b) shows no change in profit margins. Table A.2 reports the corresponding difference-in-differences estimates from equation 2. The results imply an increase in profits equivalent to 6 percentage points of pre-leak revenues, or roughly 57% profits growth among treated firms. The combination of higher profits and unchanged margins is consistent with scale expansion under a Cobb–Douglas production function with constant returns to scale and constant markups.

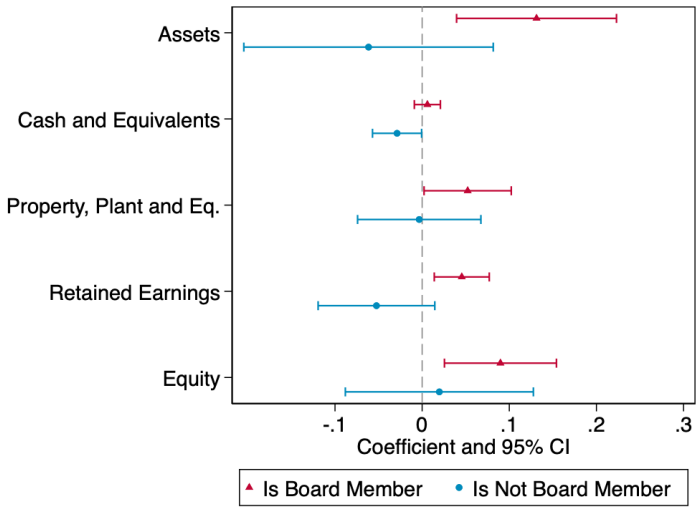
Overall, the main estimates indicate that the crackdown on offshore secrecy increased the liquidity of treated firms through higher retained earnings and lower outflows to tax havens, and that this additional liquidity was used by firms to expand capital and employment. Furthermore, these effects resulted in higher pre-tax profits, while profit margins remain unchanged.

6.4 Heterogeneity

To shed light on the mechanisms underlying the impact on capital accumulation, employment, and profits, I estimate the effects separately for different firms' subgroups. These subgroups are defined by pre-leak characteristics that are expected to influence firms' responses following the crackdown.

Owner-managed Firms As exposed in Section 3, the increase in capital accumulation stems from changes in shareholders' wealth allocation decisions following the crackdown. In particular, the framework illustrates the effect of the crackdown on owner-managed firms, where business decisions are more closely tied to owners' personal interests (Alstadsæter et al., 2014; Leite, 2024). But, are the estimated effects consistent with these theoretical mechanisms? To answer this question, I define firms as owner-managed if shareholders hold more than 20% of board representation, consistent with prior research that uses this threshold to indicate dominant governance influence (e.g.,

Figure 7: Effects on Firm Outcomes (by management independence)



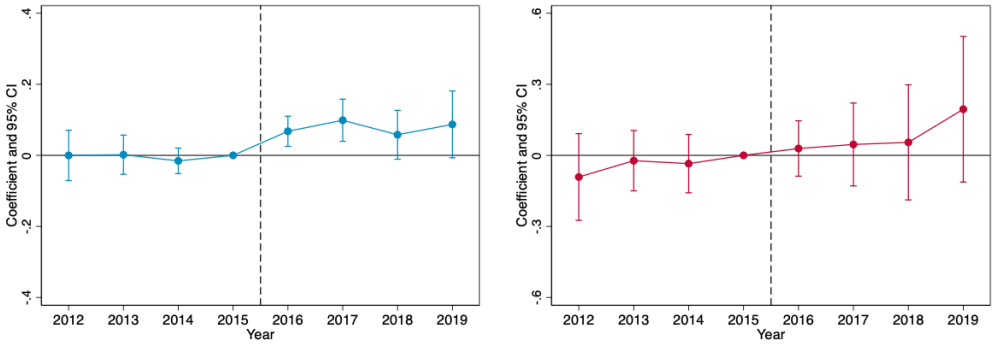
Note: This figure plots difference-in-differences estimates after fitting equation (2) on the total value of total assets, cash and equivalents, property, plant and equipment, retained earnings or equity, all normalized by the firm-specific average value of assets in the period prior to the leak. Each line corresponds to a different regression. The blue line reports coefficients for a sample of firms classified as owner-managed, and the red line plots estimates for the rest of the sample or not owner-managed firms. In particular, I classify firms as owner-managed when shareholders have more than 20% of board representation. When firms don't report information about board members, I classify them as owner-managed firms, as they are very likely to be closely held firms. The figure plots 95% confidence intervals, with standard errors clustered at the firm level.

Comiskey and Mulford, 1986). Figure 7 presents event-study estimates separately for owner-managed and the rest of the firms. The increases in assets, physical capital, retained earnings, and equity are concentrated entirely among owner-managed firms. Consistent with this pattern, the positive effects on employment and profits are also driven by owner-managed firms, as shown in Figures 8 and 9, respectively. Importantly, the effects for non-owner-managed firms are noisier and should be interpreted with caution as the main sample has a very low prevalence of this type of firm (less than 20% of the main sample).

To further support this result, I classify firms using another proxy for limited separation between ownership and management. In particular, firms are more likely to be owner-managed when ownership is concentrated among a small group of individuals. I classify firms as closely held if they have fewer than the median number of shareholders prior to the crackdown (less than five). Figure A.1 presents the difference-in-differences estimates using this classification. The effects are larger among closely held firms with fewer shareholders, where shocks to owners are more likely to affect managerial decisions.

Figure 8: Effects on Ln(Employment) (by management independence)

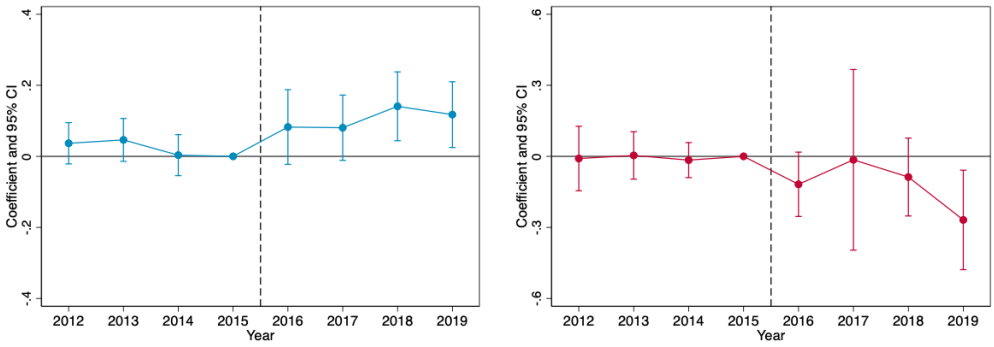
(a) Owner-managed (=1) (b) Owner-managed (=0)



Note: Panels (a) and (b) plot event-study estimates after fitting equation (1) on the natural logarithm of annual employment reported in monthly employer-employee data. The annual value corresponds to the yearly average of monthly formal employees in each firm. Panel (a) reports coefficients for a sample of firms classified as owner-managed, and panel (b) plots estimates for the rest of the sample or not owner-managed firms. In particular, I classify firms as owner-managed when shareholders have more than 20% of board representation. When firms don't report information about board members, I classify them as owner-managed firms, as they are very likely to be closely held firms. The dashed vertical line marks the Panama Papers leak in April 2016. Blue lines denote 95% confidence intervals, with standard errors clustered at the firm level.

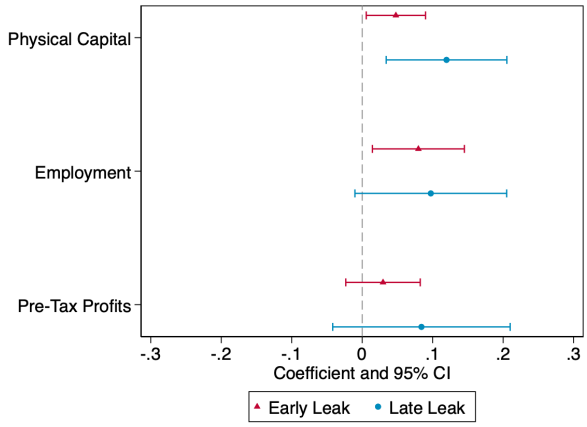
Figure 9: Effects on Pre-Tax Profits (by management independence)

(a) Owner-managed (=1) (b) Owner-managed (=0)



Note: Panels (a) and (b) plot event-study estimates after fitting equation (1) on the value of pre-tax profits reported in income statement data. Pre-tax profits are normalized by the average value of total revenues in the period prior to the leak. Panel (a) reports coefficients for a sample of firms classified as owner-managed, and panel (b) plots estimates for the rest of the sample or not owner-managed firms. In particular, I classify firms as owner-managed when shareholders have more than 20% of board representation. When firms don't report information about board members, I classify them as owner-managed firms, as they are very likely to be closely held firms. The dashed vertical line marks the Panama Papers leak in April 2016. Blue lines denote 95% confidence intervals, with standard errors clustered at the firm level.

Figure 10: Effects on Firm Outcomes (by leak)

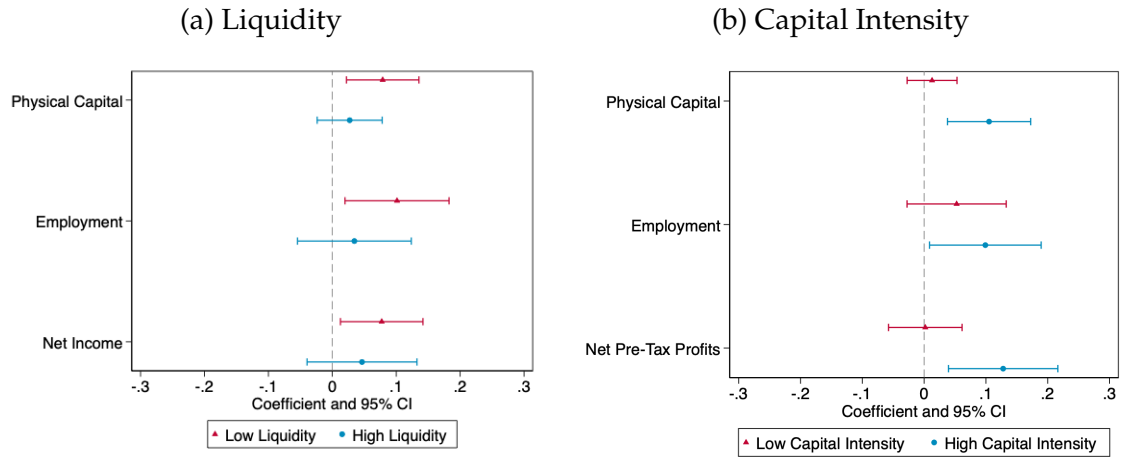


Note: This figure plots difference-in-differences estimates after fitting equation (2) on the value of physical capital (normalized by the firm-specific average value of assets in the period prior to the leak), the natural logarithm of employment, or pre-tax profits (normalized by the firm-specific average value of total revenue in the period prior to the leak). Each line corresponds to a separate regression. The blue line reports coefficients for a sample of firms where shareholders are exposed for the first time in the Pandora Papers in 2021 (late leak), and the red line plots estimates for a sample firms where shareholders are exposed on the Panama Papers (2016) or the Paradise Papers (2017) (early leaks). The figure plots 95% confidence intervals, with standard errors clustered at the firm level.

Early vs. Late Leak I further examine whether these responses are driven by the public exposure of the business owner's name in the leak or by an increase in the probability of detection associated with being an offshore vehicle user at the time of the leak. To do so, Figure 10 presents the estimates classifying firms by the timing of exposure in an offshore data leak. In particular, all firms whose owners are identified as offshore vehicle users in 2015 are treated, but exposure occurs at different times: some owners are named in the Panama Papers (2016), others in the Paradise Papers (2017), and others in the Pandora Papers (2021). I therefore divide treated firms into early-leak (2016–2017) and late-leak (2021) groups. Although the late-leak represents less firms and estimates are imprecise, I find slightly higher effects on capital and pre-tax profits for this group of firms. While individuals in the early leak might have less time to adjust as they immediately face the higher costs of concealing wealth, late-leak owners have more time to avoid detection by changing their behavior. Moreover, the positive effects for late-leak firms suggest that a higher probability of detection, rather than public disclosure itself, is triggering real responses.

Liquidity Firms' real responses to the crackdown may depend on pre-leak characteristics such as liquidity. In particular, cash-rich firms are more likely to be operating near their optimal capital and employment levels before the crackdown and, therefore, less

Figure 11: Effects on Firm Outcomes (by pre-leak characteristics)



Note: This figure plots difference-in-differences estimates after fitting equation (2) on the value of physical capital (normalized by the firm-specific average value of assets in the period prior to the leak), the natural logarithm of employment, or pre-tax profits (normalized by the firm-specific average value of total revenue in the period prior to the leak). Each line corresponds to a separate regression. The red line reports coefficients for a sample of firms classified as cash-constrained (panel (a)) or with low capital intensity (panel (b)), and the blue line plots estimates for the rest of the sample (cash-rich (panel (a)) or high capital intensity (panel (b))). I classify firms as cash-constrained or cash-rich using the quick ratio (current assets net of inventories divided by current liabilities), and place them in either group based on whether their pre-leak quick ratio is above or below the median of the total sample. Similarly, I classify firms as high- or low-capital-intensity using the ratio of property, plant, and equipment to total revenues, and place them in either group based on whether their pre-leak capital intensity is above or below the total sample median. The figure plots 95% confidence intervals, with standard errors clustered at the firm level.

likely to adjust these choices in response to additional liquidity. I test this hypothesis by measuring liquidity using the quick ratio (current assets net of inventories divided by current liabilities), and classifying firms as cash-rich or cash-constrained based on whether their pre-crackdown quick ratio is above or below the sample median. Figure 11 reports results by liquidity group. The effects are larger among cash-constrained firms, consistent with the idea that cash-rich firms are closer to their optimal scale and therefore, less responsive to liquidity shocks.

Capital Intensity Firms' capital intensity is also likely to shape the response of capital accumulation. In particular, additional liquidity following the crackdown is more likely to translate into higher investment among capital-intensive firms. I classify firms based on pre-crackdown capital intensity, measured as the ratio of property, plant, and equipment to total revenues. Figure 11 reports the corresponding difference-in-differences estimates. As expected, the effects are more pronounced for capital-intensive firms, where physical capital is a core input in the production technology.

Taken together, the heterogeneity effects shed light on the underlying mechanisms. First, the stronger responses among owner-managed and closely held firms confirm that

the increases in capital and employment stem from a shock to shareholders. Second, the results by leak timing show that the main effects are driven by an increase in the expected probability of detecting hidden offshore wealth. Finally, the effects are concentrated among cash-constrained and capital-intensive firms, where capital is more likely to boost firm growth.

6.5 Robustness and Internal Validity

This section presents several robustness checks to strengthen the internal validity of my main results. The main identification assumption behind my main findings is that, absent treatment, outcomes for treated and control firms would have evolved similarly. The event-study coefficients prior to the crackdown support this assumption. Figure A.2 further supports this by showing that, prior to the 2016 leak, treated and control firms followed parallel trends in all main outcomes, after which outcomes diverge, with higher growth among treated firms. However, even with pre-parallel trends, other threats to identification remain.

A first concern is that control firms do not provide a clean counterfactual. In particular, the Offshore Leaks Database captures only a subset of individuals using offshore vehicles, leaving some affected firms in the control group and potentially biasing my main estimates. If the direction of the effect is the same for all firms linked to offshore tax evasion, the contamination of the control group could push our results towards zero, potentially attenuating the estimates. To address this concern, I construct an alternative control group by restricting the sample to firms whose owners appear as shareholders of a single firm in Supersociedades. The logic behind this exercise is that individuals engaged in offshore tax evasion are also likely to adopt onshore tax avoidance or evasion strategies by operating multiple firms. Figure A.3 presents estimates using this alternative control group. The results are similar to the baseline estimates, suggesting limited spillover effects or low contamination of my control group.

A second concern is the misclassification of treated firms due to an inaccurate matching between the Offshore Leaks Database and Supersociedades. Although Colombian naming conventions, typically including two first names and two last names, reduce the likelihood of homonyms, false positives may still arise. In particular, the latter are more likely to arise when using only surnames to match individuals in the Offshore Leaks Database to their family firms in Supersociedades. To rule out that my main estimates are driven by treatment misclassification, Figure A.4 reports results excluding treated firms

matched solely on last names. The estimates are not statistically different from the baseline estimates, alleviating concerns about misclassification.

A third concern is the presence of contemporaneous shocks differentially affecting treated and control firms. In particular, Colombia's adoption of International Financial Reporting Standards (IFRS) beginning in 2015 and fully implemented in 2016 could confound the results. The matching procedure partially addresses this concern, ensuring that treated and control firms are similar in observable characteristics, namely size, age, and economic sector, reducing the chances that firms are differentially affected by contemporaneous shocks. To further rule out a differential impact of IFRS adoption, I use additional information reported by firms to Supersociedades. Starting in 2015, the agency required firms to separately report retained earnings arising from accounting revaluations resulting from IFRS adoption and from regular operations. Figure A.5 compares results using total retained earnings and retained earnings net of IFRS-related revaluations. The estimates are positive and statistically similar for both measures, suggesting that the observed increase in retained earnings and capital accumulation is not driven by the differential impact of IFRS adoption.

Finally, reporting to Supersociedades is conditional on firm-size thresholds, resulting in an unbalanced panel even if conditioning on firm survival in the post-period. The latter implies that my main estimates could hide changes in Supersociedades firm composition following the crackdown. To address this concern, Figure A.6 examines the effect of the crackdown on firm survival, both in the economy and within the Supersociedades database. The results show no effect on either survival margin, ruling out changes in firm composition or entry-exit dynamics as drivers of the main findings.

7 Government Revenues

The real effects on capital, employment, and profits documented above have direct implications for government tax revenues. Existing evidence shows that the 2016 crackdown on offshore secrecy increased wealth tax revenues. In particular, Londoño-Vélez and Ávila-Mahecha (2021) show that the Panama Papers leak increased the probability that individuals named in the leak disclosed previously omitted offshore wealth. Consistent with the latter, Figure 1 shows an increase in disclosed offshore wealth following the 2016 crackdown. The estimates in this paper indicate an additional revenue channel: higher corporate income tax revenues arising from real behavioral responses of business

owners linked to offshore tax evasion.

In the theoretical framework in Section 3, the change in corporate income tax revenues following the leak can be expressed as

$$\Delta CorporateIncomeTaxRevenues = \tau_C a \alpha (K^*)^{\alpha-1} \frac{dK^*}{d\delta_v}$$

where the effective corporate income tax rate scales the response of taxable income to the crackdown.

I use back-of-the-envelope calculations to approximate the above expression using data on effective corporate income tax rates (τ_C) reported by Colombian tax authorities [12], and the percentage change in pre-tax profits estimated in Section 5:

$$\%\Delta CorporateIncomeTaxRevenues \approx \tau_C (\%\Delta CorporateNetIncome)$$

In particular, the percentage change in taxable income is inferred from the difference-in-differences estimates presented in Table A.2.

Table 3: Implied Corporate Tax Revenue Change

Effective CIT τ	Δ Pre-Tax Profits (treated)	Δ CIT Revenue (treated)
23%	57%	13%
32%	57%	18%

Note: This table presents the impact of real behavioral responses reported in Table A.2 on corporate income tax revenues. The first column reports the average effective corporate income tax rates for 2016 (23%) and 2019 (32%) computed from national aggregates reported by the national tax authority (DIAN). Column (2) reports the impact (in percentage) of the crackdown on pre-tax profits. Finally, column (3) reports the estimated effect of the crackdown on corporate income tax revenues from treated firms, which is computed multiplying the percentage change in pre-tax profits by the effective corporate income tax rate.

Table 3 reports the resulting estimates. In 2016 and 2019, the average effective corporate income tax rate in Colombia was 23% and 32%, respectively. Under these tax rates, the real behavioral responses imply an increase in corporate income tax revenues among treated firms of approximately 13% and 18% following the crackdown. Importantly, these estimates reflect only partial equilibrium responses and assume that capital generating the additional corporate tax revenues was idle prior to the crackdown.

Although these back-of-the-envelope calculations highlight substantial revenue gains, they do not account for the costs of cracking down on offshore evasion. However, Colom-

[12] I assume that the effective corporate income tax rate payed by treated firms is the same as the average effective tax rates at the national level using aggregates on total corporate income tax paid and total corporate taxable income reported by the tax authority.

bia's response to offshore leaks and the implementation of the AEoI indicate that the availability of third-party information has made international tax enforcement far more cost-effective. Before the expansion of transparency initiatives, enforcing compliance on offshore wealth was likely very expensive. Financial secrecy in tax havens severely limited access to information, making the detection of concealed assets costly, uncertain, and often infeasible. The introduction of AEoI fundamentally changed this environment: third-party information on foreign-held assets reduces information asymmetries, increases detection probabilities, and enables more targeted, data-driven audits. Overall, by lowering enforcement costs, transparency initiatives strengthen tax authorities' capacity and amplify the revenue gains from curbing offshore evasion, both directly, through higher tax collection, and indirectly, through the broader economic gains and fiscal externalities documented in this paper.

8 Conclusions

This paper shows that a global crackdown on offshore financial secrecy can generate real economic gains beyond its well-documented redistributive effects. Exploiting the unexpected Panama Papers leak in Colombia and linking offshore vehicle users to firm-level administrative data, I show that a higher probability of detecting hidden offshore wealth leads business owners to retain more earnings inside their firms and use this additional liquidity to increase physical capital and employment. These increases in factor accumulation translate into higher pre-tax profits, with effects concentrated in owner-managed and closely held firms where ownership and control are closely aligned.

Beyond firm-level outcomes, the findings also point to important fiscal gains from the crackdown. While prior work highlights higher wealth tax revenues driven by increased disclosure, this paper shows that real behavioral responses also increase corporate income tax revenues. More broadly, the results suggest that offshore tax evasion by wealthy individuals potentially distorts capital allocation and that reducing financial secrecy can partially reverse these distortions, generating positive economic and fiscal effects.

References

Allingham, M. G. and Sandmo, A. (1972). Income tax evasion: A theoretical analysis. *Journal of public economics*, 1(3-4):323–338.

Alstadsæter, A., Bjørkheim, J. B., Davies, R. B., and Scheuerer, J. (2025a). Pennies from haven: Tax havens and employee compensation. *Skatteforsk Working Paper*, (25).

Alstadsæter, A., Collin, M., and Økland, A. (2025b). Safely opening pandora's box: a guide for researchers working with leaked data. *International Tax and Public Finance*, 32(6):1644–1666.

Alstadsæter, A., Davies, R. B., Parenti, M., and Toubal, F. (2024). The real effects of tax havens. In *Research Handbook on the Economics of Tax Havens*, pages 121–139. Edward Elgar Publishing.

Alstadsæter, A., Godar, S., Nicolaides, P., and Zucman, G. (2023). Global tax evasion report 2024. Technical report, European Union Tax Observatory.

Alstadsæter, A., Johannesen, N., and Zucman, G. (2018). Who owns the wealth in tax havens? macro evidence and implications for global inequality. *Journal of Public Economics*, 162:89–100.

Alstadsæter, A., Johannesen, N., and Zucman, G. (2019). Tax evasion and inequality. *American Economic Review*, 109(6):2073–2103.

Alstadsæter, A., Kopczuk, W., and Telle, K. (2014). Are closely held firms tax shelters? *Tax Policy and the Economy*, 28(1):1–32.

Alstadsæter, A., Planterose, B., Zucman, G., and Økland, A. (2022). Who owns offshore real estate? evidence from dubai. *EU Tax Observatory Working Paper*, (1).

Bach, L., Bozio, A., Guillouzouic, A., Leroy, C., and Malgouyres, C. (2024). Follow the money! why dividends overreact to flat-tax reforms. *HAL open science Working Paper*, (02415470).

Bachas, P., Collin, M., Flores, T., Lyu, H., and Scot, T. (2024). *Offshore data leaks and tax enforcement in developing countries*. World Bank.

Baselgia, E. (2023). The compliance effects of the automatic exchange of information: Evidence from the swiss tax amnesty. *EU Tax Observatory Working Paper*, (19).

Bilicka, K., Güçeri, I., and Koumanakos, E. (2025). Dividend taxation and firm performance with heterogeneous payout responses. *American Economic Journal: Economic Policy*, 17(2):1–29.

Bilicka, K., Qi, Y., and Xing, J. (2022). Real responses to anti-tax avoidance: Evidence from the uk worldwide debt cap. *Journal of Public Economics*, 214:104742.

Bilicka, K. A., Devereux, M. P., and Güçeri, İ. (2024). Tax policy, investment and profit shifting. *NBER Working Paper*, (33132).

Boas, H. F., Johannesen, N., Kreiner, C. T., Larsen, L. T., and Zucman, G. (2024). Taxing capital in a globalized world: The effects of automatic information exchange. *NBER Working Paper*, (32714).

Brounstein, J. (2025). The transparency tax: Discouraging firm ownership via tax havens in ecuador. Unp.

Comiskey, E. E. and Mulford, C. W. (1986). Investment decisions and the equity accounting standard. *Accounting Review*, pages 519–525.

Fullerton, D. and Karayannis, M. (1994). Tax evasion and the allocation of capital. *Journal of Public Economics*, 55(2):257–278.

Guyton, J., Langetieg, P., Reck, D., Risch, M., and Zucman, G. (2021). Tax evasion at the top of the income distribution: Theory and evidence. *NBER Working Paper*, (28542).

Hong, Q. and Smart, M. (2010). In praise of tax havens: International tax planning and foreign direct investment. *European economic review*, 54(1):82–95.

Hurst, E. and Lusardi, A. (2004). Liquidity constraints, household wealth, and entrepreneurship. *Journal of political Economy*, 112(2):319–347.

Johannesen, N. (2023). The end of bank secrecy: implications for redistribution and optimal taxation. *Oxford Review of Economic Policy*, 39(3):565–574.

Johannesen, N. (2024). Offshore tax evasion in developing countries: Evidence and policy discussion. *WIDER Working Paper*, (2024/15).

Johannesen, N., Miethe, J., and Weishaar, D. (2022). Homes incorporated: Offshore ownership of real estate in the uk. *CESifo Discussion Paper*, (17738).

Klemm, M. A. D. and Liu, M. L. (2019). *The impact of profit shifting on economic activity and tax competition*. International Monetary Fund.

Leenders, W., Lejour, A., Rabaté, S., and Van't Riet, M. (2023). Offshore tax evasion and wealth inequality: Evidence from a tax amnesty in the netherlands. *Journal of Public Economics*, 217:104785.

Leite, D. (2024). The firm as tax shelter micro evidence and aggregate implications of consumption through the firm.

Londoño-Vélez, J. and Ávila-Mahecha, J. (2021). Enforcing wealth taxes in the developing world: Quasi-experimental evidence from colombia. *American Economic Review: Insights*, 3(2):131–148.

Londoño-Velez, J. and Tortarolo, D. (2025). Revealing 21% of gdp in hidden assets: Evidence from argentina. *Journal of Public Economics*, 250:105471.

Lopez, M. and Michallet, B. (2024). Employment effects of a weakening in european anti-tax avoidance rules: evidence from france. *EU Tax Observatory Working Paper*, (21).

Moon, T. S. (2022). Capital gains taxes and real corporate investment: Evidence from korea. *American Economic Review*, 112(8):2669–2700.

Obermaier, F. and Obermayer, B. (2017). *The Panama Papers: Breaking the story of how the rich and powerful hide their money*. Simon and Schuster.

Peydró, J., Rincón-Castro, H., Sarmiento-Paipilla, N. M., and Granados, A. (2025). Wealth taxes and firms' capital structures: Credit supply and real effects. *Borradores de Economía*, (1316).

Risch, M. (2024). Does taxing business owners affect employees? evidence from a change in the top marginal tax rate. *The Quarterly Journal of Economics*, 139(1):637–692.

Schneider, S. (2016). *Family farming in Latin America and the Caribbean: looking for new paths of rural development and food security*. Number 137. working paper.

Skinner, J. and Slemrod, J. (1985). An economic perspective on tax evasion. *National Tax Journal*, 38(3):345–353.

Souillard, B. (2022). Profit shifting, employee pay, and inequalities: Evidence from us-listed companies. *CESifo Working Paper*, (9720).

Suárez Serrato, J. C. (2018). Unintended consequences of eliminating tax havens. *NBER Working Paper*, (24850).

Yagan, D. (2015). Capital tax reform and the real economy: The effects of the 2003 dividend tax cut. *American Economic Review*, 105(12):3531–3563.

Appendix A Data

A.1 Matching Offshore Leaks Database and Supersociedades

Offshore Leaks Database The Offshore Leaks Database reports the full names of individuals associated with offshore vehicles, including shareholders, directors, intermediaries, and ultimate beneficial owners of offshore entities. I begin by restricting the sample to individuals who either report an address in Colombia or are officers of offshore entities with a Colombian address. I standardize all names by removing accents, diacritics, and special characters, and I manually harmonize name order so that first names precede last names. To improve match quality, I retain only individuals whose names contain at least two first names or two last names. I further restrict the sample to officers of offshore entities incorporated on or before 2015, ensuring that offshore exposure predates the Panama Papers leak.

Supersociedades From the Supersociedades database, I get the full names of firm shareholders. I apply the same name cleaning procedures as in the Offshore Leaks data, removing accents, diacritics, and special characters. I drop observations that do not correspond to valid personal identification numbers. From this source, I get a database with firm ids, all the completenames of shareholders of each firm and their respective personal ID numbers.

Matching procedure Using the cleaned data of Supersociedades and Offshore Leaks, I perform an initial match between full shareholder names and full names in the Offshore Leaks Database for the period 2012–2015, the years for which shareholder name information is available. To improve the matching, I classify as users of offshore vehicles all individuals who are not matched by name but share the same personal ID as a matched individual, capturing cases where incomplete or inconsistent names prevent direct matching. I also classify as users of offshore vehicles, individuals who belong to the same firm as a matched offshore user and share a last name with that individual, as these cases likely correspond to close family members.

Extension to last names Finally, I identify additional individuals who may not appear directly in the Offshore Leaks Database but have close family members who do so on their behalf. I classify individuals as family members when they share both paternal and maternal last names, which strongly suggests sibling relationships. Given the lower precision of this procedure, I exclude the twenty most common last names according to the Colombian National Registry. As a robustness check, I re-estimate all main results excluding individuals identified solely through family-based matching. The results remain unchanged, indicating that the findings are not driven by potential misclassification arising from last names matches.

Appendix B Additional Figures and Tables

Table A.1: Crackdown Effects on Employment

	(1)
	Dependent Variable
	Ln(Emloyment)
Post × Leaked Shareholder	0.078***
	(0.029)
Observations	10,889
R-squared	0.935
Firm FE	Yes
Mean Dep. Var.	3.267
Clusters Treated Firms	690
Clusters Control Firms	740

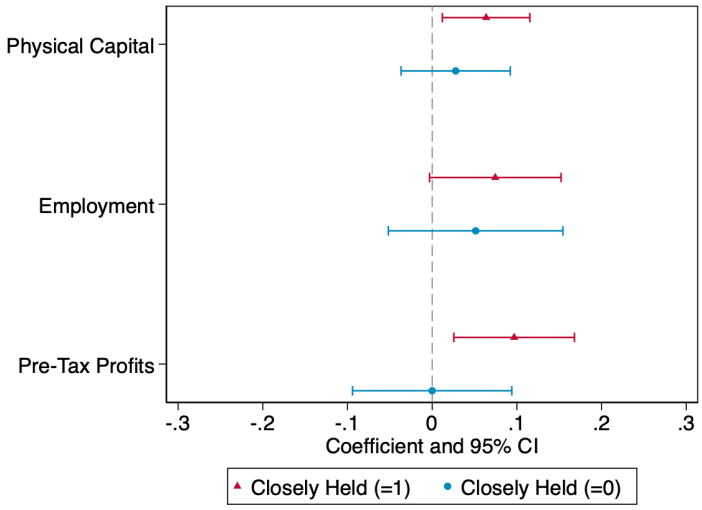
Note: This table presents the results of the impact of a crackdown on offshore secrecy on employment. It shows the difference-in-differences coefficients from estimation of equation (2) on the natural logarithm of employment. Leaked shareholder or treated firms correspond to firms where shareholders in 2015 or their family members are related to the use of offshore vehicles before the Panama Papers leak in 2016. The results correspond to the matched sample. All specifications include year and firm fixed effects. The standard errors are clustered at the firm level and are reported in parenthesis. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table A.2: Crackdown Effects on Profits

	(1)	(2)
	Dependent Variable	
	Net Income	Profit Margins
Post × Leaked Shareholder	0.061**	0.004
	(0.027)	(0.011)
Observations	11,649	10,702
R-squared	0.302	0.492
Firm FE	Yes	Yes
Mean Dep. Var.	0.106	0.0962
Clusters Treated Firms	900	878
Clusters Control Firms	924	902

Note: This table presents the results of the impact of a crackdown on offshore secrecy on pre-tax profits and profit margins. It shows the difference-in-differences coefficients from estimation of equation (2) on the pre-tax profits, normalized by average total revenues in the pre-leak period, and profit margins. Leaked shareholder or treated firms correspond to firms where shareholders in 2015 or their family members are related to the use of offshore vehicles before the Panama Papers leak in 2016. The results correspond to the matched sample. All specifications include year and firm fixed effects. The standard errors are clustered at the firm level and are reported in parenthesis. *$p < 0.1$, *$p < 0.05$, *p*< 0.01

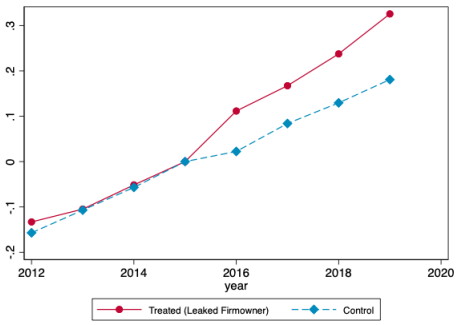
Figure A.1: Crackdown Effects on Firm Outcomes (by number of shareholders)



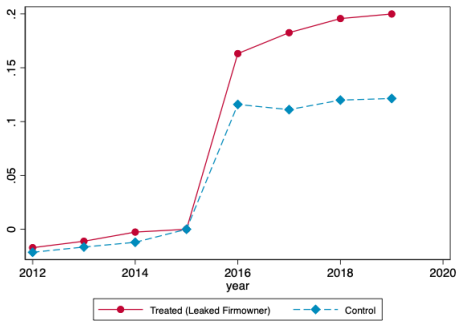
Note: This figure plots difference-in-differences estimates after fitting equation (2) on the value of physical capital (normalized by the firm-specific average value of assets in the period prior to the leak), the natural logarithm of employment, or pre-tax profits (normalized by the firm-specific average value of total revenue in the period prior to the leak). Each line corresponds to a separate regression. The red line reports coefficients for a sample of firms classified as closely held, and the blue line plots estimates for the rest of the sample or not closely held firms. I identify closely held firms depending on the total number of shareholders, and classify firms as closely held if they have above or below the median number of shareholders in the total sample, which equals five. The figure plots 95% confidence intervals, with standard errors clustered at the firm level.

Figure A.2: Raw Means

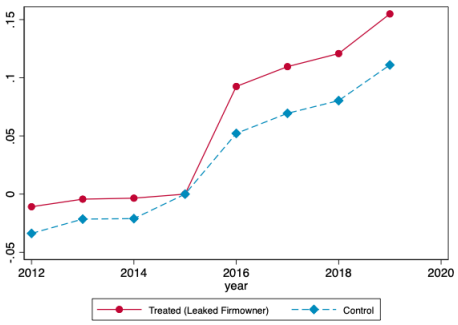
(a) Assets/Pre-Assets



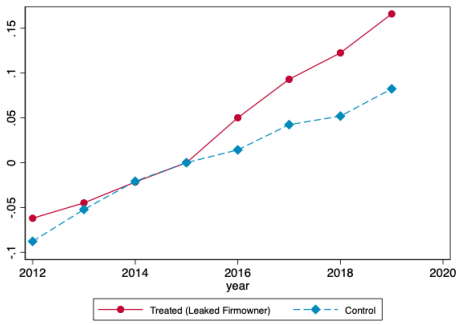
(b) Physical Capital/Pre-Assets



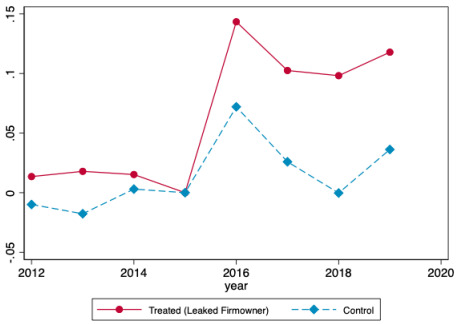
(c) Retained Earnings/Pre-Assets



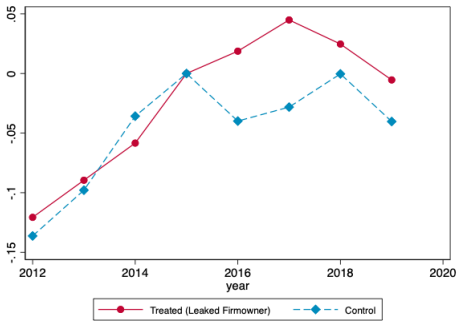
(d) Equity/Pre-Assets



(e) Net Income/Pre-Income

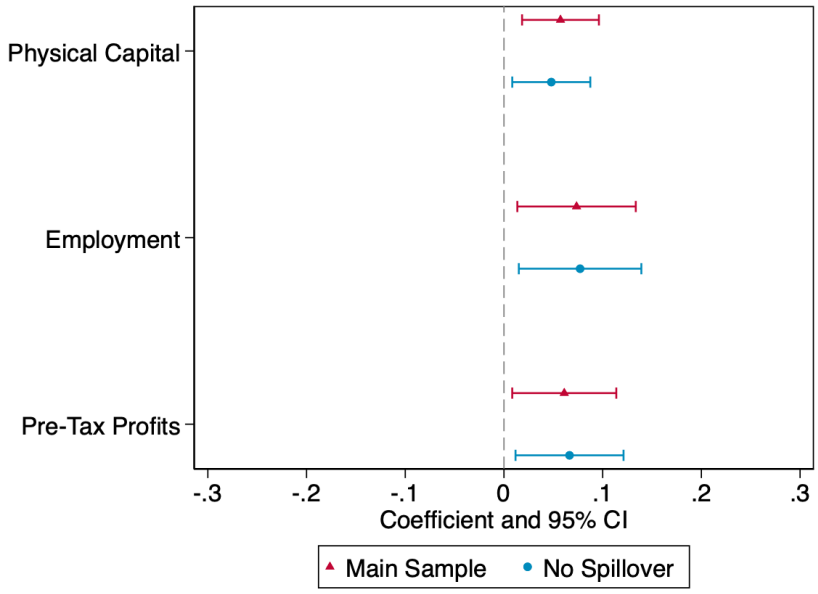


(f) Ln(Employment)



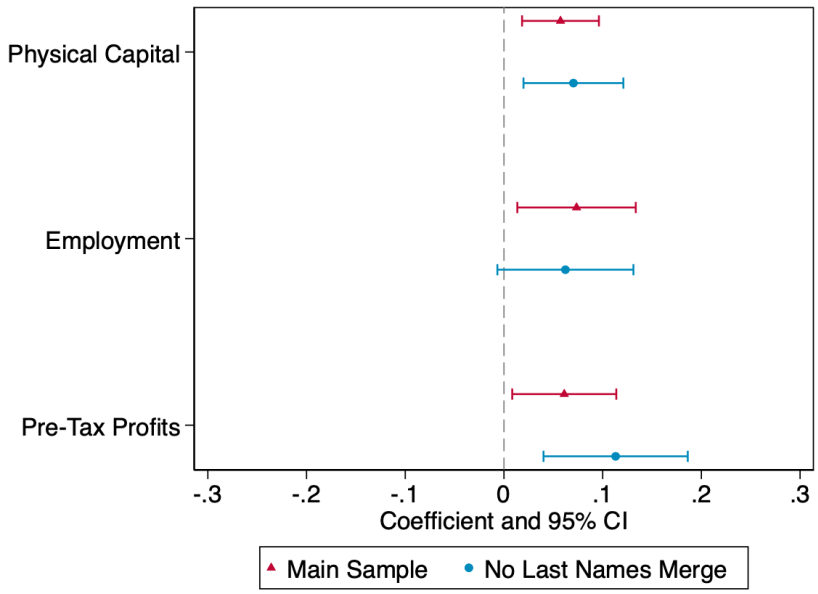
Note: Panels (a) through (d) plot the trajectories of total assets, physical capital (measured as property, plant and equipment), retained earnings, and equity, all normalized by the firm-specific average value of assets in the period prior to the leak. Panel (e) plots the evolution of pre-tax profits normalized by average total revenues in the period prior to the leak. Panel (f) plots the evolution of the natural logarithm of employment. All values are raw means, normalized to be zero in 2015, the year prior to the leak.

Figure A.3: Crackdown Effects on Firm Outcomes (No Spillover)



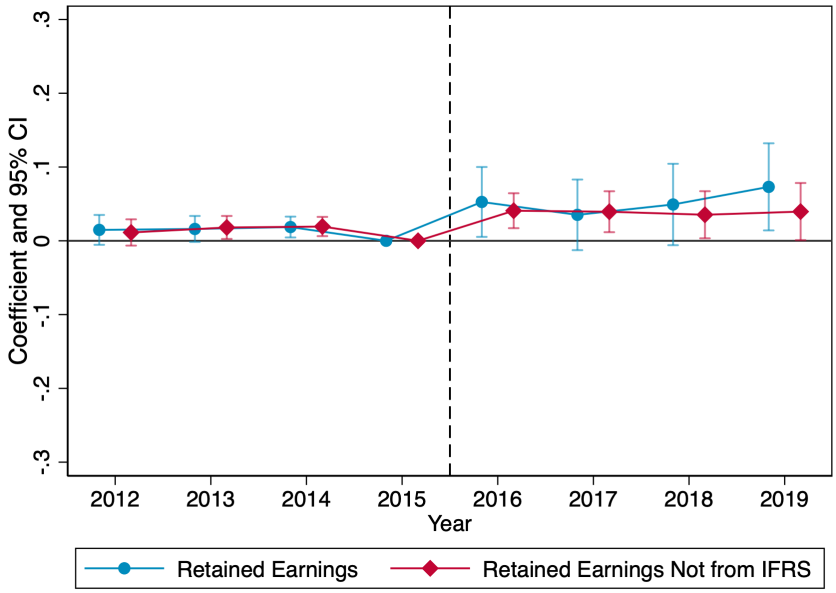
Note: This figure plots difference-in-differences estimates after fitting equation (2) on the value of physical capital (normalized by the firm-specific average value of assets in the period prior to the leak), the natural logarithm of employment, or pre-tax profits (normalized by the firm-specific average value of total revenue in the period prior to the leak). Each line corresponds to a separate regression. The red line reports coefficients for the main sample of firms, and the blue line plots estimates for a sample of firms where the control group has limited spillover effects. In particular, this alternative control group restricts the sample to firms whose owners operate only a single firm, a profile that is unlikely among offshore tax evaders, who typically operate complex firm networks). The figure plots 95% confidence intervals, with standard errors clustered at the firm level.

Figure A.4: Crackdown Effects on Firm Outcomes (No Last Names Merge)



Note: This figure plots difference-in-differences estimates after fitting equation (2) on the value of physical capital (normalized by the firm-specific average value of assets in the period prior to the leak), the natural logarithm of employment, or pre-tax profits (normalized by the firm-specific average value of total revenue in the period prior to the leak). Each line corresponds to a separate regression. The red line reports coefficients for the main sample of firms, and the blue line plots estimates for a sample of firms where I omit those that are matched using solely using shareholders' last names. The figure plots 95% confidence intervals, with standard errors clustered at the firm level.

Figure A.5: Retained Earnings (IFRS Adoption)

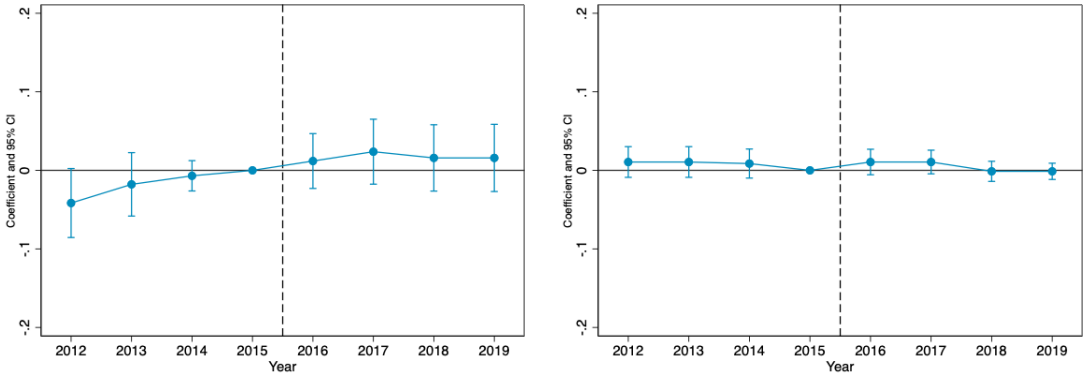


Note: This figure reports event-study estimates after fitting equation (1) on the total value of retained earnings reported in yearly balance-sheet data, normalized by the firm-specific average value of assets in the period prior to the leak. The blue line reports estimates for total retained earnings, while the red line plots estimates for total retained earnings net of the effects driven by the adoption of International Financing Reporting Standards (IFRS). The dashed vertical line marks the Panama Papers leak in April 2016. The figure plots 95% confidence intervals, with standard errors clustered at the firm level.

Figure A.6: Survival

(a) Survival in Supersociedades

(b) Firm Survival



Note: Panels (a) and (b) plot event-study estimates after fitting equation (1) on a dummy equal to 1 if the firm reports information to the agency overseeing corporations (Supersociedades) (panel (a)) or a dummy equal to 1 if the firm is active in the corresponding year (panel (b)). The estimates show the effect of the crackdown on offshore secrecy on survival of treated firms in the sample and in the economy. The dashed vertical line marks the Panama Papers leak in April 2016. Blue lines denote 95% confidence intervals, with standard errors clustered at the firm level.