Profit shifting, employee pay, and inequalities: Evidence from US-listed companies

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Abstract: Over the last few years, corporate tax avoidance has become a salient policy issue and has regularly been accused of aggravating income inequalities. Yet, systematic empirical evidence on its distributional implications remains lacking. In this paper, I explore the effect of profit shifting activities of multinational enterprises on employee pay. Using a rich database on executives, foreign subsidiaries, and financial statements of US-listed companies, I find that this effect substantially varies across occupations: while the compensation of chief executive officers and chief financial officers increases when their firm enters tax havens, non-executives, on the contrary, see their wage fall. Also, these reactions are more pronounced in intangible-intensive sectors. These new empirical findings are consistent with economic theory, cast light on the consequences of profit shifting, and might help explain recent trends in income inequalities.

Keywords: Employee pay, multinational enterprises, profit shifting, tax havens, income inequalities.

JEL codes: F16, H26, J30, M12.

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1 Introduction

Multinational enterprises (MNEs) use loopholes, mismatches between tax systems, and other technicalities of the law to artificially decrease profits recorded in high-tax countries and inflate those booked in low-tax countries. Doing so reduces their tax liability and refers to "profit shifting", one of the most aggressive forms of corporate tax planning. Profit shifting has considerably gained the public's attention in a period marked by several tax scandals, budget deficits, rising inequalities, a globalization backlash, and a pandemic underlining the importance of public goods. However, although its methods are now well-documented (Beer, de Mooij, and Liu, 2020), its consequences are still poorly understood. In particular, little is known about its effect on employee pay. We expect MNEs to pay a premium to their top executives when engaging in tax avoidance as the latter are compensated on an after-tax basis to alleviate agency costs associated with moral hazard and adverse selection (Newman, 1989; Gaertner, 2014). Regarding non-executives, the literature predicts that income shifting gives MNEs private information on profits that improves their bargaining power vis-à-vis their workers and thereby compresses wages (Krautheim and Schmidt-Eisenlohr, 2016). All the same, to the best of my knowledge, no paper tackles these questions empirically.

The present paper is a first step in this direction. I compile a database on foreign subsidiaries, executives, and financial statements of companies listed on the Standard & Poor's (S&P) 1500 index between 1993 and 2014. Armed with this database, I then conduct an event study. I estimate the effect of firm entry in tax havens on employee pay, separating chief executive officers (CEOs) and chief financial officers (CFOs) on the one hand from non-executives on the other hand. The results lend credence to economic theory. The compensation of CEOs and CFOs goes up when their firm expands its network of subsidiaries in tax havens, whether it is expressed in absolute value or as a ratio of the firm's average wage. Conversely, payments to non-executives decrease in the meantime, and I show that it is not attributable to a drop in employment. Profit shifting thus deepens income inequalities within corporations, and this pattern is all the more noticeable in sectors using intangible assets intensively insofar as intellectual

property offers additional opportunities to shift profits (Beer et al., 2020).

The remainder of the paper is divided into three parts: section 2 introduces the data, section 3 lays out the econometric approach and the results, and section 4 briefly concludes.

2 Data

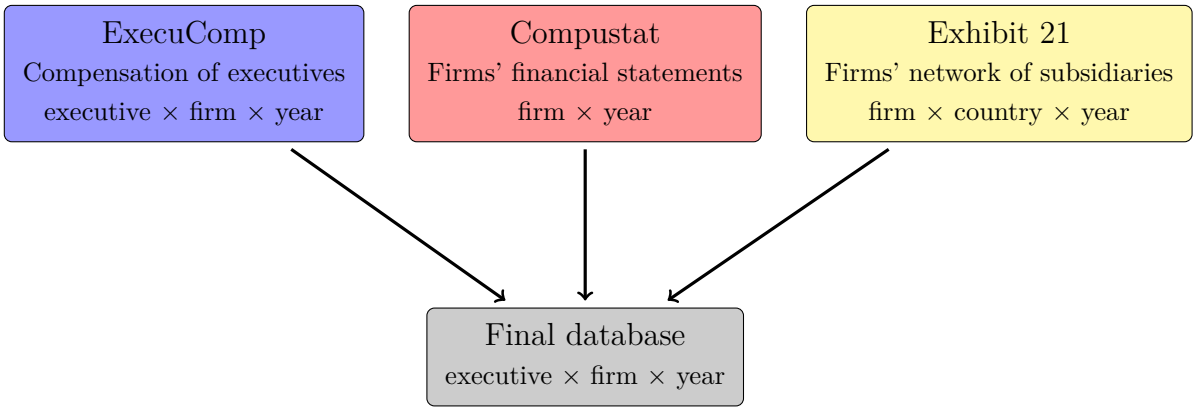
The data used for the study originate from three sources: ExecuComp, Compustat, and Exhibit 21 filings (see figure 1).

ExecuComp follows executives of S&P 1500 companies and provides extensive details on their function and compensation. Given that these firms account for approximately 90 percent of US market capitalization, this dataset allows me to track executives over time and across the largest US publicly listed firms. It is worth mentioning that these enterprises are the most likely to engage in aggressive tax planning. As anecdotal evidence indeed suggests, firms have to incur a significant fee to recruit tax experts that solely the largest ones are able to afford and find profitable to pay. For instance, Caterpillar paid PricewaterhouseCoopers $55 million for developing its tax-dodging strategy (US Senate Permanent Subcommittee on Investigations, 2014).

Compustat consists of balance sheet, income statement, and cash flow information of all publicly held corporations in North America. Accordingly, I can extract from this database S&P 1500 companies' employment and labor expenses, as well as their global assets, sales, and pre-tax income, all of which gauge firms' economic activities and will be used as control variables in the econometric exercise.

Finally, I merge these data with Exhibit 21 filings to have an overview of the location of S&P 1500 firms' subsidiaries. The Securities and Exchange Commission (SEC) requires US-listed corporations to disclose each year a list of their "significant" subsidiaries in Exhibit 21 of Form 10-K. A subsidiary is considered "significant" if its assets represent at least 10 percent of all assets or if its income exceeds 10 percent of consolidated income.

FIGURE 1 – Construction of the database



Furthermore, any subsidiary is deemed "significant" if by combining all undisclosed subsidiaries into one affiliate, this affiliate accounts for at least 10 percent of assets or revenues. In other words, Exhibit 21 filings include subsidiaries where at least 90 percent of firms' consolidated assets and revenues are recorded and, therefore, depict a clear picture of the worldwide network of US-listed companies' subsidiaries. [1] Corporations electronically file the reports since the 1990s and the reports are publicly available on the website of the SEC. I leverage an updated version of the database constructed by Dyreng and Lindsey (2009) that covers the 1993-2014 period. In total, the database used for this paper contains 33,376 executives linked to 3,695 enterprises listed on the S&P 1500 between 1993 and 2014.

3 Econometric analysis

3.1 Equations and identification strategy

I assess the effect of profit shifting on employee pay with two distinct equations, as I differentiate between executives and non-executives. The first equation is:

1. Note that companies are not obliged to uncover financial information concerning each of these subsidiaries. Besides, even though firms may have incentives to under-report the number of subsidiaries in tax havens, Dyreng, Hoopes, Langetieg, and Wilde (2020) argue that most disclosures are accurate. See their paper and Dyreng and Lindsey (2009) for more details on these data.

$$log(compensation_{e,i,t}) = \sum_{k=0}^{5} \alpha_k TH_{i,t}^{t-k} + \sum_{k=0}^{5} \beta_k \mathbb{1}_{e,i,t}^{CEO,CFO} TH_{i,t}^{t-k} + \sum_{k=1}^{5} \gamma_k TH_{i,t}^{t+k} \quad (1)$$
$$+ \sum_{k=1}^{5} \delta_k \mathbb{1}_{e,i,t}^{CEO,CFO} TH_{i,t}^{t+k} + \lambda X_{e,i,t} + \upsilon_e + \phi_i + \psi_t + \epsilon_{e,i,t}$$

The left-hand side variable $compensation_{e,i,t}$ is the compensation of executive e working for S&P 1500 company i in year t. It encompasses the salary, bonuses, stock and option awards, long-term incentive plans, pensions, and all other pay. [2]

On the right-hand side, $\mathbb{1}_{e,i,t}^{CEO,CFO}$ is a binary variable equal to one if executive e is the CEO or the CFO of firm i in year t. In the rest of the paper, the accent is placed on CEOs and CFOs because they are the highest-ranking executives setting the "tone at the top" when it comes to tax strategies (Dyreng, Hanlon, and Maydew, 2010). TH reflects profit shifting activities of MNEs. $TH_{i,t}^{t-k}$ is a dummy variable equal to one in year t if firm i has at least one subsidiary located in a tax haven in year $t-k$. A country is defined as a tax haven if it appears either on the list proposed by Hines and Rice (1994) or on the list elaborated by Dyreng and Lindsey (2009), two standard classifications in the economics and accounting literature, so the final list comprises 50 tax havens (see table 1 in the online appendix). The $TH_{i,t}^{t-k}$ variables inform on the dynamics of the effect: $\alpha_0 + \beta_0$ indicates the immediate impact of firms' entry in tax havens for CEOs and CFOs, $\alpha_0 + \beta_0 + \alpha_1 + \beta_1$ translates the total impact for the same individuals after one year, and so on. Symmetrically, $TH_{i,t}^{t+k}$ is a dichotomous variable equal to one in year t if firm i has at least one subsidiary incorporated in a tax haven in year $t+k$. These variables can be used for a placebo test and examine the existence of pre-trends. The idea is as follows: if the coefficients are not statistically different from zero, the evolution of compensations does not depend on future profit shifting activities. Besides, note that in this case $TH_{i,t}^{t}$ is unlikely to be a proxy for past unobserved executive $\times$ firm $\times$ year shocks. Finally, I insert a vector of controls composed of

2. This variable corresponds to the compensation variable $TDC1$ in ExecuComp. The calculation method of the $TDC1$ variable slightly changed in 2006 and I cope with this issue drawing on the correction procedure used in Gabaix, Landier, and Sauvagnat (2014).

executives' age, firms' assets, sales, and pre-tax income (in logarithm),[3] firms' number of foreign subsidiaries (in both non-haven countries and tax havens), and a battery of fixed effects. The addition of firms' number of foreign subsidiaries into the right-hand side variables ensures that the effect is specific to entry in tax havens. Executive, firm, and year fixed effects absorb fixed characteristics of executives, systematic differences in compensations across companies, global trends in compensations, and year shocks. The identifying assumption is that, absent profit shifting and all else equal, compensations in treated and non-treated enterprises would have evolved similarly.

In the same vein, I investigate the impact of firm entry in tax havens on wages of non-executives with the difference-in-difference equation:

$$log(wages_{i,t}) = \sum_{k=0}^{5} \zeta_k TH_{i,t}^{t-k} + \sum_{k=1}^{5} \eta_k TH_{i,t}^{t+k} + \lambda X_{i,t} + \phi_i + \psi_t + \epsilon_{i,t} \quad (2)$$

where $wages_{i,t}$ stands for all payments made by firm i in year t to non-executives, calculated as the difference between all payments to employees and compensations received by executives in the same year.[4] The independent variables mirror those in the triple-difference equation (1), except that the vector $X_{i,t}$ this time includes only the firm-specific controls because the analysis is performed at the firm $\times$ year level.

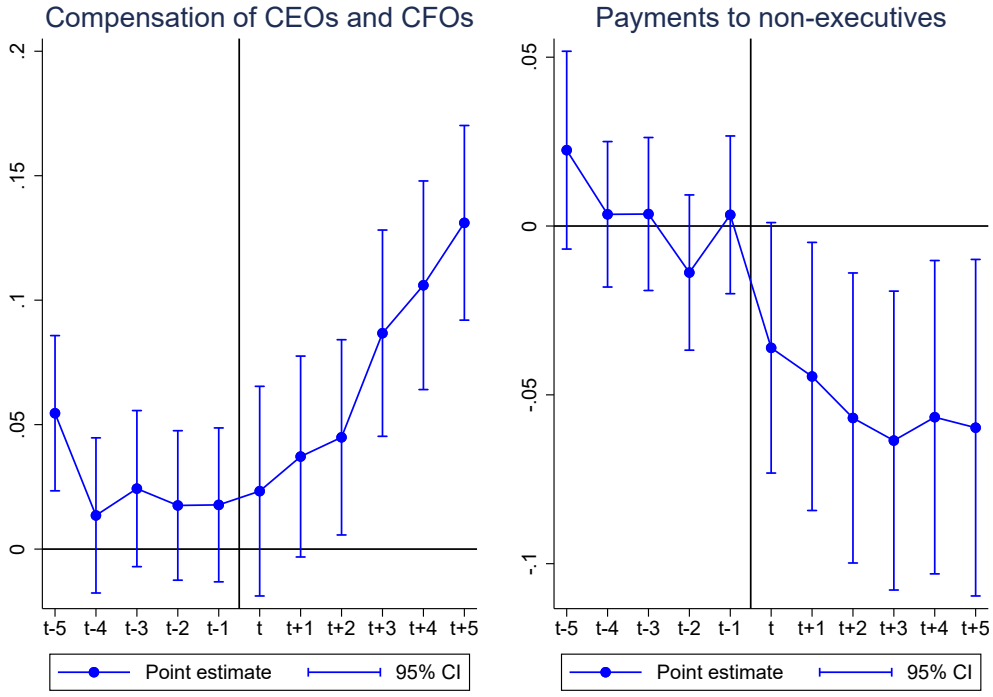
3.2 Results

The estimation results of equations (1) and (2) can be visualized in figure 2. Overall, the $\hat{\gamma} + \hat{\delta}$ (left subfigure) and the $\hat{\eta}$ (right subfigure) are not significantly different from zero as expected and back up the parallel trends assumption. The results reveal that the compensation of CEOs and CFOs grows as firms establish a presence in tax havens ($+15$ percent after five years), while payments to non-executives reduce (-5 percent

3. By construction, loss-making firms are ruled out. Nevertheless, the results are preserved if assets, sales, and pre-tax income are integrated without the logarithm transformation. Figures are available upon request. Sales correspond to the variable denoted $SALE$, assets to the variable denoted AT, and pre-tax income to the variable equal to $PI - SPI$ (Compustat codes).

4. Payments to employees are given by $XLR_{i,t}$ in Compustat, so $wages_{i,t} = XLR_{i,t} - \sum_e compensation_{e,i,t} = XLR_{i,t} - \sum_e TDC1_{e,i,t}$.

FIGURE 2 – Effect of profit shifting on employee pay (1)

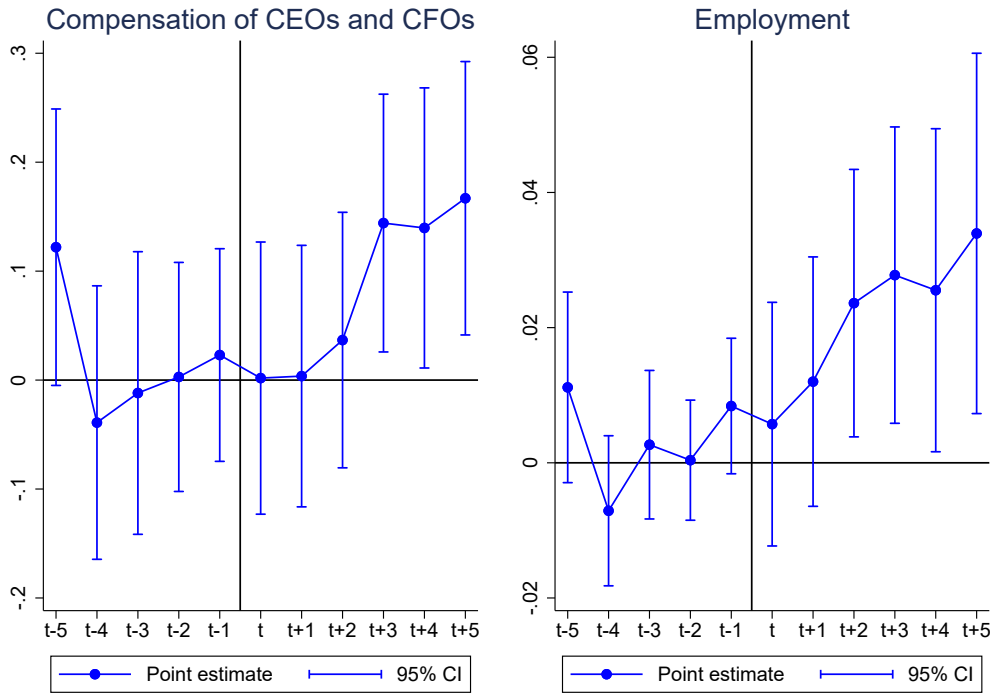


Notes. This figure depicts the point estimates for equations (1) and (2). The subfigure on the left depicts the $\hat{\gamma} + \hat{\delta}$ in black and the sum of the $\hat{\alpha} + \hat{\beta}$ in blue. In this regression, standard errors are clustered at the firm $\times$ year level. The subfigure on the right depicts the $\hat{\eta}$ in black and the sum of the $\hat{\zeta}$ in blue. In this regression, standard errors are clustered at the firm level.

after five years). Interestingly, table A2 in the online appendix suggests that these variations are more pronounced in MNEs operating in the most intangible-intensive sectors. This non-linearity is in line with the fact that MNEs using intangible assets have more opportunities to shift profits due to a more opaque transfer pricing process for intellectual property.

I evaluate the robustness of the results in figure 3 and the online appendix. First, I demonstrate in figure 3 that the ratio of CEOs' and CFOs' earnings to the average wage increases by 15 percent too five years post entry in tax havens (left subfigure). Moreover, if anything, employment rises, which means that the decline in payments to non-executives displayed in figure 2 cannot be explained by job cuts (right subfigure).

FIGURE 3 – Effect of profit shifting on employee pay (2)



Notes. This figure replicates figure 2 with alternative dependent variables. The left-hand side variable is the logarithm of the ratio $\frac{compensation_{e,i,t}}{XLR_{i,t}/EMP_{i,t}}$ in the subfigure on the left and employment in the subfigure on the right. As in figure 2, the subfigure on the left depicts the $\hat{\gamma} + \hat{\delta}$ in black and the sum of the $\hat{\alpha} + \hat{\beta}$ in blue, and standard errors are clustered at the firm $\times$ year level. Likewise, the subfigure on the right depicts the $\hat{\eta}$ in black and the sum of the $\hat{\zeta}$ in blue, and standard errors are clustered at the firm level.

Next, I verify that the findings are not sensitive to the definition of a tax haven. More precisely, I restrict the set of tax havens by removing six countries, namely: Hong Kong, Ireland, Luxembourg, Malaysia, Singapour, and Switzerland. Insofar as these countries are relatively large and well-connected to the rest of the world, companies might invest in these countries for reasons unrelated to tax avoidance. By contrast, foreign direct investments in small and remote islands such as the Bahamas and Niue are more prone to be fully motivated by tax purposes. The results, reproduced in figures A1 and A2 in the online appendix, are along the same lines and then reinforce the benchmark results outlined in figure 2.

All in all, these observations support economic theory. Companies pay top executives based on accounting financial performance to align interests and reduce operating risks. Hence, CEOs and CFOs are rewarded when MNEs shift profits towards tax havens. Non-executives, for their part, have lesser knowledge of the surplus they bargain over with the firm they work for and this informational rent for MNEs leads to lower wages.

4 Conclusion

Exploiting detailed information on S&P 1500 companies, the paper points to an asymmetric effect of profit shifting on employee pay. The compensation of CEOs and CFOs goes up but non-executives, on the opposite, experience a decline in their pay. This result implies that profit shifting practices of MNEs exacerbate income inequalities. From a policy perspective, it justifies the implementation of anti-tax avoidance measures as a way to curb income inequalities. More generally, this paper could enrich ongoing discussions and debates about the reform of the international corporate taxation system.

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Online appendix

TABLE A1 – List of tax havens

Countries listed only in Hines and Rice (1994)	British Virgin Islands, Jordan, Maldives, Saint Martin, Channel Islands, UK Caribbean Islands
Countries listed only in Dyreng and Lindsey (2009)	Aruba, Costa Rica, Guernsey, Jersey, Malaysia, Mauritius, Nauru, Niue, Samoa, San Marino, Seychelles
Countries listed in both classifications	Andorra, Anguilla, Antigua, Bahamas, Bahrain, Barbados, Barbuda, Belize, Bermuda, Cayman Islands, Cook Islands, Cyprus, Dominica, Gibraltar, Grenada, Hong Kong, Ireland, Isle of Man, Lebanon, Liberia, Liechtenstein, Luxembourg, Macau, Malta, Marshall Islands, Monaco, Montserrat, Netherlands Antilles, Panama, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Switzerland, Turks and Caicos Islands, Vanuatu

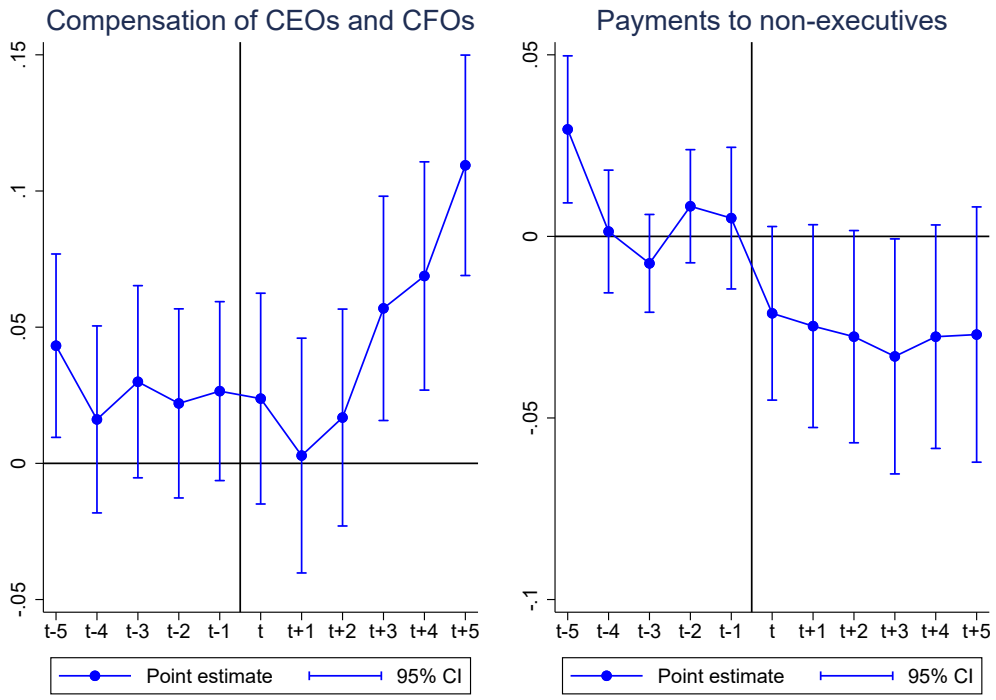
Notes. Combined, these two lists contain 52 tax havens. Due to data limitations however, Channel Islands and UK Caribbean Islands are omitted in the analysis.

TABLE A2 – Effect of profit shifting on employee pay: the role of intangible assets

	(1) $log(compensation_{e,i,t})$	(2) $log(wages_{i,t})$
$TH^t_{i,t}$	-0.09^a	-0.02
	(0.02)	(0.02)
$TH^t_{i,t} \times INTANGIBLES_{i,t}$	-0.24^a	-0.11^c
	(0.06)	(0.06)
$\mathbb{1}^{CEO,CFO}_{e,i,t} TH^t_{i,t}$	0.25^a	
	(0.02)	
$\mathbb{1}^{CEO,CFO}_{e,i,t} TH^t_{i,t} \times INTANGIBLES_{i,t}$	0.18^b	
	(0.08)	
Controls	Yes	Yes
Executive FEs	Yes	No
Firm FEs	Yes	Yes
Year FEs	Yes	Yes
Nb. of obs.	105,790	4,059

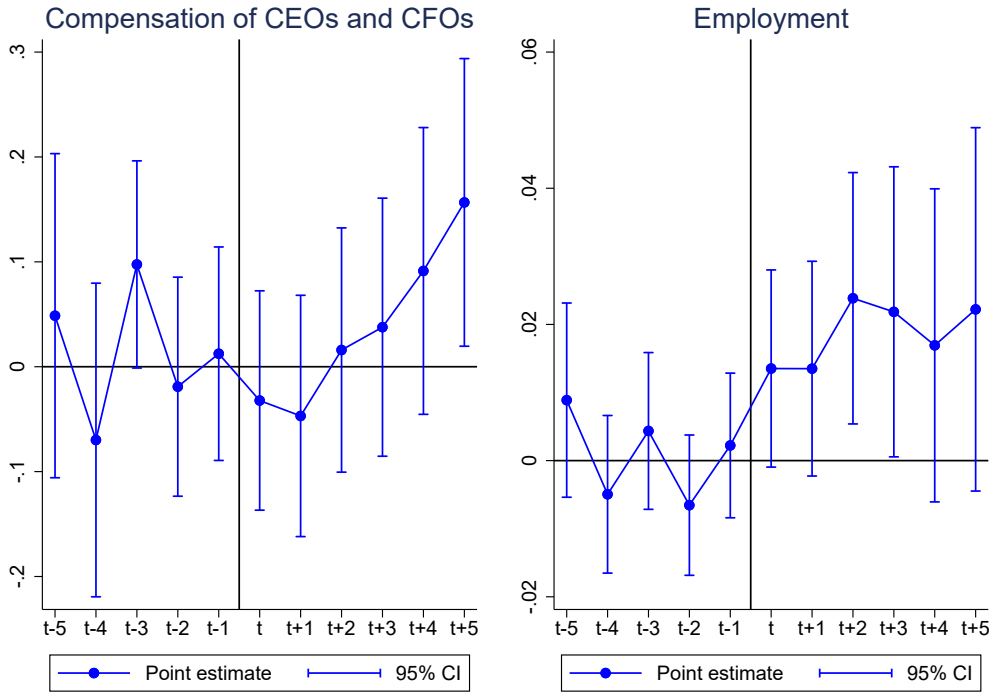
Notes. This table reports results from two regressions. Column (1) reports the results of a modified version of equation (1), in which lead and lag $TH^{t\pm k(k\geq 1)}_{i,t}$ variables are omitted for clarity and a new variable interacting $TH^t_{i,t}$ with $INTANGIBLES_{i,t}$ is introduced. Similarly, column (2) reports the regression results of a modified version of equation (2), in which lead and lag $TH^{t\pm k(k\geq 1)}_{i,t}$ variables are omitted for clarity and a new variable interacting $TH^t_{i,t}$ with $INTANGIBLES_{i,t}$ is introduced. In both cases, $INTANGIBLES_{i,t}$ denotes the industry-level (4-digit SIC) average intangible assets ($INTAN_{i,t}$ in Compustat) to total assets ratio ($AT_{i,t}$ in Compustat). Standard errors, in parentheses, are clustered at the firm × year level in column (1) and at the firm level in column (2). $^d p < 0.15$, $^c p < 0.10$, $^b p < 0.05$, $^a p < 0.01$.

FIGURE A1 – Replication of figure 1 with a restricted set of tax havens



Notes. This figure replicates figure 2 from the main text. This time, the set of tax havens omits Hong Kong, Ireland, Luxembourg, Malaysia, Singapour, and Switzerland.

FIGURE A2 – Replication of figure 2 with a restricted set of tax havens



Notes. This figure replicates figure 3 from the main text. This time, the set of tax havens omits Hong Kong, Ireland, Luxembourg, Malaysia, Singapour, and Switzerland.