Profit Shifting, Employee Pay, and Inequalities: Evidence from US-Listed Companies

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Abstract: Corporate tax avoidance has become a salient policy issue and has regularly been accused of aggravating income inequalities. However, systematic evidence on this topic remains lacking. I empirically explore in this paper 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. On the one hand, chief executive officers and chief financial officers receive higher compensations when their firm enters tax havens. On the other hand, non-executive employees, if anything, see their wages fall. Furthermore, the inequality-deepening effect of profit shifting is driven by companies that reward executives on an after-tax basis and more pronounced in companies that are intensive in intangible assets. These new empirical findings cast light on the distributional consequences of profit shifting, the evolution of income inequalities, public opinion about globalization, and ongoing debates on corporate tax reforms.

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

JEL codes: F16, H26, J30, M12.

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1 Introduction

The past decades have witnessed the emergence and expansion of multinational enterprises (MNEs), the digitalization of economic activities, and the development of the offshore industry, all of which have fueled corporate tax avoidance. To reduce their average effective tax rate and lighten their tax burden, MNEs engage in profit shifting activities. They use legal technicalities to artificially deflate profits recorded in high-tax countries and inflate those booked in tax-friendly jurisdictions. These practices are now under the glare of the public spotlight due to the recurrence of tax scandals, the persistence of budget deficits, the rise of income inequalities, and the COVID-19 pandemic stressing the role of public goods. Nevertheless, although the income-shifting methods employed by MNEs are relatively well-documented in the existing literature (Beer, de Mooij, and Liu, 2020), their consequences remain largely ignored. In particular, little is known about their distributional impact.

This paper empirically examines the effect of profit shifting on both employee pay and income inequalities. Through the lens of a collective bargaining model, profit shifting induces two opposite effects on wages. On the one hand, it increases the overall surplus to be shared between the firm and its employees (positive effect). On the other hand, it gives the firm private information on profitability, thereby generating an information asymmetry that alters the bargaining power of employees (negative effect). On the whole, we expect the majority of employees to receive lower wages as the negative effect should dominate (Krautheim and Schmidt-Eisenlohr, 2016). This effect is however less plausible for top executives since they design firms' tax strategies. In addition, some executives are compensated on an after-tax basis to alleviate the agency costs associated with moral hazard and adverse selection. Accordingly, from an theoretical viewpoint, profit shifting should increase the compensation of top executives and especially that of top executives paid on an after-tax basis. If anything, it should also decrease the wage of non-executive employees and thus deepen income inequalities. All the same, no paper confronts these predictions with the data.

The present paper is a first step in this direction. In the first part, I compile a database on financial statements, executives, and foreign subsidiaries of companies listed on the Standard & Poor's (S&P) 1500 index between 1993 and 2013. The data originate from three complementary sources: Compustat, ExecuComp, and Exhibit 21 reports. Compustat provides access to balance sheets, income statements, and cash flows of US-listed firms. ExecuComp, as the name hints, contains a wide range of details about the function and compensation of executives in S&P 1500 firms. Exhibit 21 reports filled every year by US-listed firms to the Securities and Exchange Commission (SEC) allow reconstructing the worldwide network of their subsidiaries at the country level. Armed with this disaggregated database, I then conduct an event study. I estimate the impact of firm entry in

tax havens [1] on employee pay while separating chief executive officers (CEOs) and chief financial officers (CFOs) from non-executive employees. The point estimate is purged of confounding factors thanks to a wide array of controls as well as executive, firm, and year fixed effects.

The baseline results are broadly in line with the aforementioned theoretical predictions. Compensations of CEOs and CFOs go up when their firm enters tax havens. The increase is mainly driven by MNEs using after-tax compensation incentives. In these companies, I estimate a 8 percent increase post entry. It is statistically significant at the standard level of 5 percent and mostly takes the form of higher non-equity incentive plans (i.e., cash paid and tied to financial performance). The pattern contrasts with the one observed for non-executive employees. Overall payments to non-executive employees, if anything, decrease in the meantime. The reduction amounts to 3 percent maximum and is statistically significant only at the 10 percent level. Profit shifting therefore accentuates within-corporation income inequalities. Moreover, evidence attests that inequalities widen more remarkably in intangible-intensive MNEs. Again, this observation is consistent with earlier work showing that a strategic management of intellectual property offers supplementary opportunities to route income through tax-friendly jurisdictions such as tax havens (e.g., Dischinger and Riedel, 2011; Karkinsky and Riedel, 2012; Griffith, Miller, and O'Connell, 2014; Alstadsæter, Barrios, Nicodème, Skonieczna, and Vezzani, 2018).

The findings are corroborated by multiple sensitivity tests. They cannot be explained by a decline in total employment and they hold when scrutinizing more directly the executive-to-average-worker pay ratio. In addition, they hold with alternative sets of tax havens. The benchmark exercise follows Dyreng and Lindsey (2009) and categorizes 46 foreign countries as tax havens. Adopting the classification elaborated by Hines and Rice (1994), also popular in the literature, yields the same conclusions. On the same note, the same conclusions are reached after removing six tax havens, namely: Hong-Kong, Ireland, Luxembourg, Malaysia, Singapore, and Switzerland. Workhorse international trade theories argue that foreign direct investments (FDIs) should be directed to large and central countries (Brainard, 1993; Head and Mayer, 2004; Helpman, Melitz, and Yeaple, 2004). Given that Hong-Kong, Ireland, Luxembourg, Malaysia, Singapore, and Switzerland meet

1. Other indicators have been used in the literature to quantify corporate tax avoidance, including effective tax rates and cash effective tax rates (Hanlon and Heitzman, 2010). The problem with these indicators lies in the fact that they capture not only tax avoidance but more generally tax liability, so changes in these variables could have nothing to do with changes in tax avoidance. For instance, effective tax rates would significantly decrease in the case of tax loss carryforward even if the loss is unrelated to tax avoidance in the first place. Therefore, the interpretation would be complex since we would not know whether we are estimating a tax avoidance effect or a more global tax liability effect. Importantly, we are interested in profit shifting and this is crucial since economic theory does not predict the same outcome if the decrease in corporate taxes stems from profit shifting (see page 5 and section 2). Finally, tax haven foreign direct investments do not encompass all tax avoidance strategies and firms can still shift profits toward low-tax non-haven countries, but employing a conservative metric of tax avoidance and profit shifting is a key advantage for this study.

these criteria, FDIs of US-listed firms in these countries may very well be unrelated to tax avoidance. Conversely, it is fair to assume that investments in small and remote islands in the likes of Bahamas have little economic substance and fall within the sole scope of profit shifting. I further verify that executive turnover prior to entry in tax havens and relocations of activities to low-cost countries do not contaminate the effect of profit shifting on employee pay. Lastly, I go over some measurement issues and confirm that employee pay does not depend on future profit shifting activities. The latter test certifies that there is no pre-existing trend influencing the results, guarantees that entry in tax havens is uncorrelated with past (executive-)firm-year unobserved shocks, and greatly alleviates reverse causality concerns.

These original findings have policy implications. First, they shed light on the evolution of income inequalities (Alvaredo, Chancel, Piketty, Saez, and Zucman, 2017; Hoffmann, Lee, and Lemieux, 2020). The CEO-to-worker compensation ratio has increased four-fold between 1989 and 2017 and the surge of executive compensation has nurtured the growth of top 1 percent incomes (Mishel and Wolfe, 2019). The causes of rising inequalities have received particular attention in the recent literature and the globalization process has recurrently been evoked as one of the factors behind this phenomenon (Jaumotte, Lall, and Papageorgiou, 2013). Corporate tax avoidance has often been accused of aggravating income inequalities in newspapers and reports as well,[2] but there is still no systematic evidence on this topic. The present paper fills this gap and uncovers a new mechanism whereby globalization fosters inequalities. In a sense, it helps understand the escalating hostility toward MNEs and globalization (Helpman, 2017; Rodrik, 2018). Second, the conclusions may enrich ongoing discussions about the international taxation system. Both scholars and policy makers acknowledge that the current system, inherited from the early 20th century, is outdated. It offers MNEs the opportunity to exploit loopholes, mismatches in tax rules, and other opportunities to shift profits to low or no-tax jurisdictions and avoid taxes. Several reforms are discussed at the international level to address these issues and finally align the tax system with the way economic activities are carried out nowadays. Perhaps surprisingly, the debates tend to focus on two outcomes: countries' tax revenues and attractiveness. My paper puts the accent on a neglected dimension, income inequalities, and asserts that such reforms could be useful in curbing rising within-country income inequalities.

Literature and contributions The paper resonates with two distinct strands of the literature. An old body of the literature tackles the effect of corporate income taxation on wages. Corporate income taxation can affect wages through two channels: a direct one, through rent sharing (Arulampalam, Devereux, and Maffini, 2012; Azémar and Hubbard, 2015; Fuest, Peichl, and Siegloch, 2018), and an indirect one, through capital reallocation

2. See for example https://www.europarl.europa.eu/news/en/headlines/economy/20191213STO69020/corporate-taxes-meps-want-to-tackle-tax-avoidance-by-big-companies https://www.oxfam.org/en/inequality-and-poverty-hidden-costs-tax-dodging, and https://inequality.org/research/6-facts-corporate-tax-avoidance/.

(Harberger, 1962; Clausing, 2013; Gravelle, 2013). On the one hand, corporate income taxes directly compress wages by undermining the quasi-rent over which workers and firms bargain. On the other hand, an increase in corporate income taxes results in capital outflows. Capital outflows in turn decrease the capital-labor ratio, labor marginal productivity, and wages. Hence, both channels entail that the burden is passed onto workers to some extent. In the context of profit shifting, the capital reallocation story is not pertinent because economic activities are rarely relocated. Should we interpret profit shifting as a reduction in tax rates, these models would posit a positive effect of profit shifting on wages. Yet, I empirically show that profit shifting could in fact be detrimental for the great majority of employees, so we cannot analyze profit shifting as a simple tax cut in these models. Although the size of the "pie" increases, most of workers also have a weaker bargaining power and the share of the "pie" they receive diminishes (Krautheim and Schmidt-Eisenlohr, 2016). I affirm that the second effect definitely needs to be taken into account when delving into the nexus between profit shifting and employee pay.

Another line of research, nascent and fast-growing, studies profit shifting activities of MNEs. It shows that MNEs locate their intangible assets in tax havens, manipulate transfer prices, record sales in low-tax countries, and proceed with intra-firm loans, treaty shopping, and corporate inversions to minimize tax expenses. I refer to Beer et al. (2020) for a recent survey. The tax dodging techniques of MNEs are relatively well-known. Nonetheless, only a few papers investigate the consequences of profit shifting. They document a positive effect on firm value (Desai and Dharmapala, 2009), firm investments (Overesch, 2009; Goldbach, Nagengast, Steinmüller, and Wamser, 2019), and industry concentration (Martin, Parenti, and Toubal, 2020). As previously discussed, a number of companies pay top executives based on accounting financial performance to coordinate interests and reduce operating risks. Hence, CEOs and CFOs should assumably be rewarded when MNEs establish a presence in tax havens. Non-executive employees, for their part, have lesser knowledge of the surplus they bargain over with the firm they work for. This informational rent for MNEs should lead to lower wages (Krautheim and Schmidt-Eisenlohr, 2016). Micro-data evidence on this is missing. I provide support for these predictions in this paper and find that they are all the more true in intangible-intensive enterprises.

The remainder of the paper is organized as follows. In section 2, I propose a simplistic model to illustrate the channels whereby profit shifting can influence employee pay and to formulate a couple of hypotheses. The two next sections explore their empirical validity. Section 3 introduces the data, while section 4 lays out the econometric approach, the results, and the robustness checks. Section 5 finally concludes.

2 Theory

In this section, I use the standard model of collective bargaining to show how profit shifting can affect employee pay. I simplify it and remove unnecessary details to ease the

exposition. I then derive two hypotheses that will be tested in the ensuing sections.

2.1 Conceptual framework

Consider the case of a single firm. The firm produces a good by employing L workers, each paid w. The firm makes a post-tax profit $\pi(w,t)$, t being the effective tax rate. Naturally, assume that $\partial\pi(w,t)/\partial w < 0$ and $\partial\pi(w,t)/\partial t < 0$. Let $\bar{\pi}$ be the outside option of the firm, i.e., the maximum profit it would receive if it unilaterally withdraws from the negotiations. Symmetrically, denote $u(.)$ the utility of workers and $\bar{w}$ their outside option.

The firm and its workers bargain over the wage w. The typical Nash-bargaining wage w^* solves the problem:

$$\begin{aligned} \max_{w} \quad & (L\,(u(w)-u(\bar{w})))^{\kappa}\,(\pi(w,t)-\bar{\pi}) \\ s.t. \quad & w \geq \bar{w} \\ & \pi(w,t) \geq \bar{\pi} \end{aligned} \tag{1}$$

where $\kappa > 0$ symbolizes the relative bargaining power of workers. Assume that the firm always participates, i.e., $\pi(\bar{w},t) \geq \bar{\pi}$. The first-order condition for maximization gives:

$$\kappa \frac{u'(w)}{u(w)-u(\bar{w})}\,(\pi(w,t)-\bar{\pi}) - L = 0 \tag{2}$$

Recall that $u'(w)\,(w-\bar{w}) \approx u(w)-u(\bar{w})$. The solution w^* verifies:

$$w^* = \bar{w} + \kappa \frac{(\pi(w^*,t)-\bar{\pi})}{L} \tag{3}$$

Equation (3) says that the negotiated wage is equal to the non-cooperative payoff of workers plus a share of the quasi-rent per worker. The share is increasing in the bargaining power of workers.

2.2 Testable predictions

Hypothesis 1: Profit shifting activities erode wages of non-executive employees and improve executive pay, in particular that of executives compensated on an after-tax basis.

Profit shifting increases the quasi-rent via a reduction in the effective tax rate t. Under full information and all other things being equal, it follows from equation (3) that profit shifting increases wages. Interestingly however, the literature predicts otherwise. According to Krautheim and Schmidt-Eisenlohr (2016), $\pi(.)$ is not the only variable directly affected by profit shifting in equation (3). There are in fact two conflicting forces at play. They claim that income shifting, besides reducing effective tax rates, generates an informatio-

nal rent for the firm that strengthens its bargaining power (lower κ). The (non-formal) reasoning is the following. Profits, once shifted by the firm, are not perfectly observed by workers. It becomes optimal for workers not to put the firm at risk to prevent a situation in which there is no production and no surplus, so they accept a lower share of the surplus. Krautheim and Schmidt-Eisenlohr (2016) tell that this harmful effect dominates and wages go down as a consequence. I refer to their paper for formal derivations and more details on the neutral bargaining solution.

To summarize, profit shifting triggers two different effects. The surplus becomes larger and the bargaining power of workers deteriorates. The sign of the total effect is ambiguous and ultimately hinges on the extent to which profit shifting weakens workers' bargaining power. In this regard, if anything, the negative effect might be at most moderate for top executives insofar as they define business strategies, oversee their implementation, and run firms' financial operations.[3] On top of that, some of them are precisely paid on an after-tax basis to align their interests to those of the firm. These top executives should presumably be rewarded when their firm shift profits for tax purposes. All in all, we thus expect uneven effects of profit shifting on employee pay.

Hypothesis 2: The inequality-deepening effect of profit shifting is amplified in intangible-intensive sectors.

MNEs employ various techniques to artificially move profits toward no- or low-tax countries. One consists in locating intellectual property rights in these jurisdictions and using intra-firm royalty payments (Dischinger and Riedel, 2011; Karkinsky and Riedel, 2012; Griffith et al., 2014; Alstadsæter et al., 2018), and non-financial inter-company transactions like royalty payments have been found to account for most of profit shifting (Heckemeyer and Overesch, 2017). For these reasons, I posit that the mechanisms emphasized in the previous paragraph are stronger in intangible-intensive corporations.

3 Data

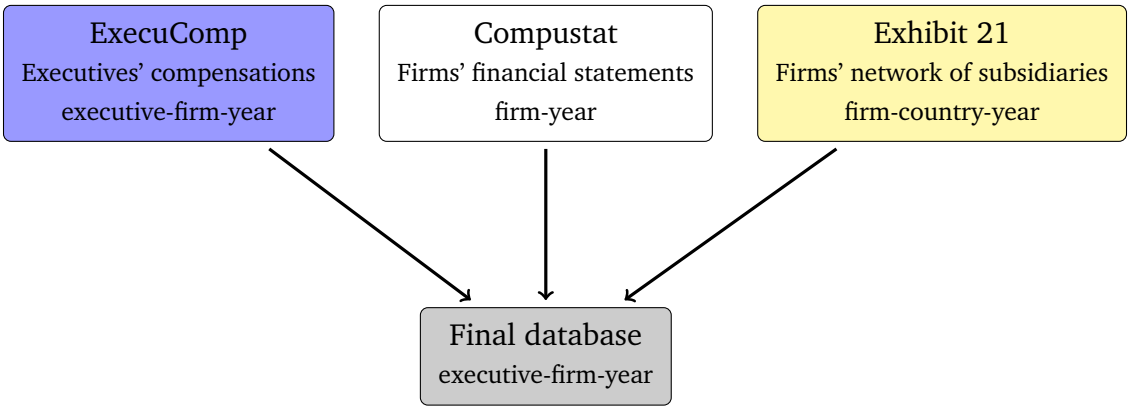
We now turn to the empirical analysis. To conduct it, I construct a panel database on financial statements, foreign subsidiaries, and executives of S&P 1500 companies between 1993 and 2013. I hereby explain where the data come from and describe the final sample.

3.1 Sources

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

3. As we shall see in the next section, the breakdown between executives and non-executives emerges from the data at hand.

FIGURE 1 – Construction of the database



ExecuComp follows executives of S&P 1500 companies and provides extensive details on their function and compensation. Since these firms account for approximately 90 percent of US market capitalization, this dataset allows us to track executives over time and across the largest US publicly listed firms. This feature proves useful because these enterprises are the most likely to engage in FDIs and profit shifting. Internationalization is a costly process, and merely the largest and most productive firms find profitable to pay these costs (Helpman et al., 2004). The same applies to profit shifting. Undertaking such activities requires a deep understanding of tax codes (Jones, Temouri, and Cobham, 2018; Bilicka, Devereux, and Guceri, 2020), and this competence has a price that solely the largest firms can afford. Tax-aggressive firms have to incur a significant fee to recruit tax experts. For instance, anecdotal evidence suggests that Caterpillar paid Pricewaterhouse-Coopers nearly $55 million for developing its tax-dodging strategy (US Senate Permanent Subcommittee on Investigations, 2014).

The second source, Compustat, consists of balance sheet, income statement, and cash flow information of all publicly held corporations in North America since the 1950s. The vast coverage and the richness of the information make it prevalent in accounting, economics, finance, international business, and management. The data are consolidated at the firm level. I extract from Compustat S&P 1500 companies' total employment and labor expenses. I also retain their global assets, sales, and pre-tax income, all of which gauge firms' economic activities worldwide and will be used as control variables in the econometric exercise.

Lastly, I merge these data with Exhibit 21 filings to have an overview of the location of S&P 1500 firms' subsidiaries. The SEC obliges US-listed corporations to divulge each year a list of their significant subsidiaries in Exhibit 21 of Form 10-K, be it inside or outside the US. 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. Moreover, any subsidiary is deemed significant if by combining all undisclosed subsidiaries into one sub-

FIGURE 2 – Non-exhaustive list of the significant subsidiaries reported by Johnson & Johnson in Exhibit 21 filings in 2012

EX-21 5 ex21-subsidiariesxform10xk.htm SUBSIDIARIES

EXHIBIT 21

SUBSIDIARIES

Johnson & Johnson, a New Jersey corporation, had the domestic and international subsidiaries shown below as of December 30, 2012. Certain U.S. subsidiaries and international subsidiaries are not named because they were not significant in the aggregate. Johnson & Johnson has no parent.

Name of Subsidiary	Jurisdiction of Organization
U.S. Subsidiaries:	
Acclarent, Inc.	Delaware
ALZA Corporation	Delaware
Animas Corporation	Delaware
Biosense Webster, Inc.	California
CNA Development LLC	Delaware
Codman & Shurtleff, Inc.	New Jersey
Cordis Corporation	Florida
Cordis International Corporation	Delaware
Cordis LLC	Delaware
DePuy Mitek Holding Corporation	Delaware
DePuy Mitek, LLC	Massachusetts
DePuy Orthopaedics, Inc.	Indiana
Rutan Realty LLC	New Jersey
Scios Inc.	Delaware
SterilMed, Inc.	Minnesota
Synthes USA Products, LLC	Delaware
Synthes USA, LLC	Delaware
Synthes, Inc.	Delaware
The Anspach Effort, LLC	Florida
Wellness & Prevention, Inc.	Michigan
International Subsidiaries:	
Almaco Holding AG	Switzerland
Apsis	France
Apsis Germany GmbH	Germany
Beijing Dabao Cosmetics Co., Ltd.	China
Berna Biotech Korea Corporation	Korea, Republic of
Berna Rhein B.V.	Netherlands
Biosense Webster (Israel) Ltd.	Israel
Cilag Advanced Technologies GmbH	Switzerland
Cilag AG	Switzerland
Cilag GmbH International	Switzerland

sidiary, this fictive subsidiary 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. Therefore, they depict a faithful picture of the worldwide network of US-listed companies' subsidiaries. One caveat is that firms may have incentives to under-report the number of subsidiaries in tax havens. Importantly, Dyreng, Hoopes, Langetieg, and Wilde (2020) defend that most disclosures are rather accurate. [4] The reports are electronically filed since 1993 and publicly available on the Electronic Data Gathering, Analysis, and Retrieval (EDGAR) platform of the SEC (see 2 for an example). For this paper, I leverage an updated version of the database produced by Dyreng and Lindsey (2009) that spans the 1993-2013 period.

3.2 Descriptive statistics

Once assembled, the database contains 31,978 executives linked to 3,665 enterprises listed on the S&P 1500 index between 1993 and 2013. Figure 3 outlines some summary statistics about the presence of S&P 1500 firms in tax havens. A country is defined as a tax haven if it appears on the list elaborated by Dyreng and Lindsey (2009), typical in the

4. Note that companies are not obliged to uncover financial information concerning each of these subsidiaries. See Dyreng and Lindsey (2009) and Dyreng et al. (2020) for more details on these data.

TABLE 1 – List of tax havens (Dyreng and Lindsey, 2009)

Andorra, Anguilla, Antigua and Barbuda, Aruba, Bahamas, Bahrain, Barbados, Belize, Bermuda, Cayman Islands, Cook Islands, Costa Rica, Cyprus, Dominica, Gibraltar, Grenada, Guernsey, Hong Kong, Ireland, Isle of Man, Jersey, Lebanon, Liberia, Liechtenstein, Luxembourg, Macau, Malaysia, Malta, Marshall Islands, Mauritius, Monaco, Montserrat, Nauru, Netherlands Antilles, Niue, Panama, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Samoa, San Marino, Seychelles, Singapore, Switzerland, Turks and Caicos Islands, Vanuatu.

tax avoidance literature. They cross the classifications of the Organization for Economic Cooperation and Development (OECD), International Monetary Fund (IMF), the US Stop Tax Havens Abuse Act, and the Tax Research Organization (TRO) for 2008, and they label a country as a tax haven if it appears at least twice. On the whole, 46 countries are treated as tax havens (see table 1).

Among the 3,665 firms included in the sample, 1,521 firms entered tax havens for the first time at some point between 1993 and 2013. 1,724 enterprises disclosed no physical presence at all. The remaining ones had at least one subsidiary in a tax haven over the entire period. It means that the number of firms operating in tax havens has soared between 1993 and 2013. Appendix figure AF1 plots for each year the share of operating firms present in tax havens. The share goes from 15 percent in 1993 to 48 percent in 2013. [5] This surge is consistent with the view that profit shifting practices have considerably developed in the 1990s and 2000s. Also, it indicates that, beyond data availability, the 1993-2013 period is convenient to analyze the impact of profit shifting on employee pay. [6] Two fifths of firms establish a presence in tax havens (switchers), making it possible to compare them with similar firms never or always implanted in tax havens.

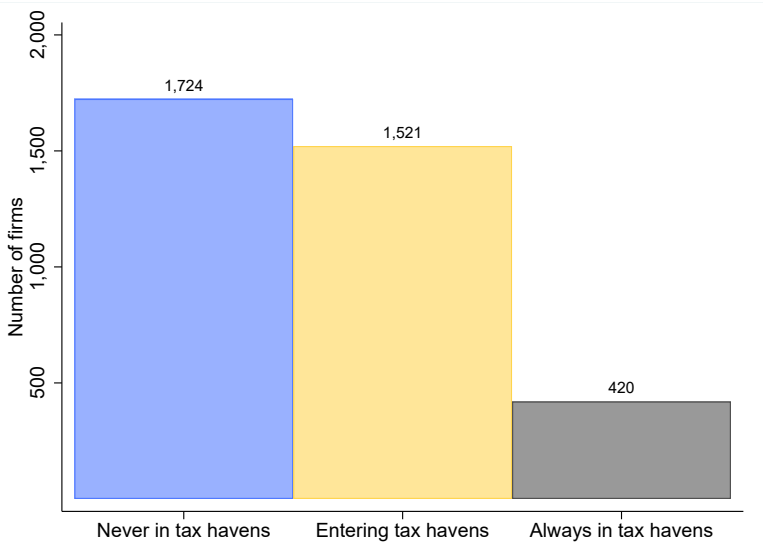
Figure 4 visualizes the distribution of compensations and total payments to non-executive employees for two types of firms: those present in tax havens and those not present in tax havens. Compensations encompass salaries, bonuses, stock and option awards, non-equity incentive plans, pensions, and other pay. They correspond to the compensation variable $TDC1$ in ExecuComp. [7] Total payments to non-executive employees, for their part, are calculated as the difference between all payments to employees and compensations received by executives in the same year. Overall payments to employees correspond to XLR in Compustat. Denote $compensation_{e,i,t}$ the compensation of executive e working for firm i in year t. Payments to non-executive employees in firm i and year t are given

5. See Souillard (2021a) for additional and more detailed figures on US-listed firms and tax havens.

6. Note that 2013 marks the launch of the Base Erosion and Profit Shifting (BEPS) project by the OECD and G20.

7. The calculation method of $TDC1$ changed in 2006 subsequent to the promulgation of Financial Accounting Statement (FAS) 123R. The variable is corrected accordingly following the procedure of Gabaix, Landier, and Sauvagnat (2014).

FIGURE 3 – Firms' presence in tax havens



by:

$$payments_{i,t} = XLR_{i,t} - \sum_{e} compensation_{e,i,t} = XLR_{i,t} - \sum_{e} TDC1_{e,i,t}$$

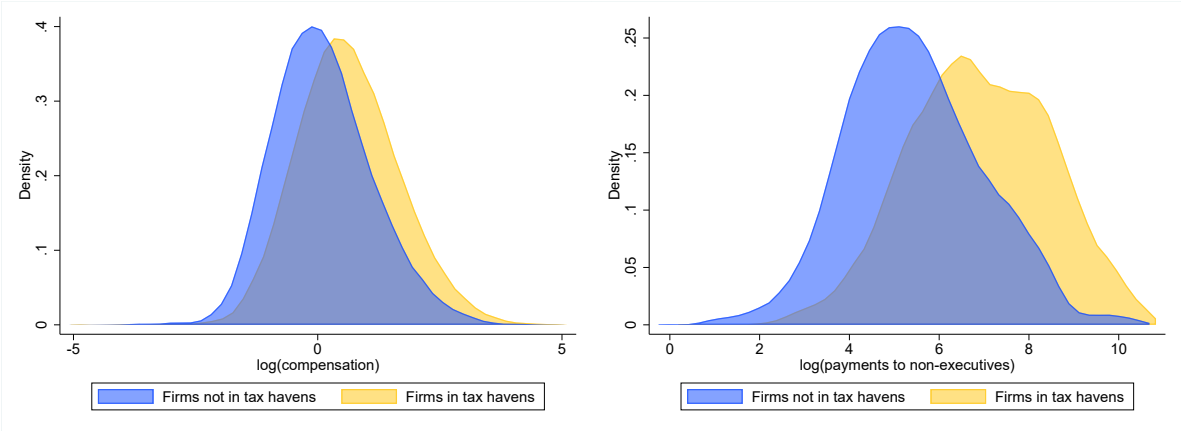
Primary evidence in figure 4 is mixed. Together, the two graphs exhibit a positive correlation between presence in tax havens and employee pay. The correlation between profit shifting and executive compensation coincides with hypothesis 1. On the contrary, the fact that payments to non-executive employees are higher in firms located in tax havens is at first sight not coherent with hypothesis 1. Nonetheless, one should bear in mind that the correlation may simply be spurious. Insofar as firms in tax havens are larger and more productive and such firms pay higher wages (Helpman, Itskhoki, Muendler, and Redding, 2017), the correlation may have nothing to do with profit shifting activities *per se*. Put otherwise, investigating the effect of profit shifting on employee pay requires a more systematic analysis.

4 Econometric analysis

Section 4 goes from correlation to causation to evaluate the empirical validity of hypotheses 1 and 2. I start with the average effect of profit shifting on executive and non-executive pay (hypothesis 1). I clarify the econometric exercise and identification strategy, and then expose and discuss the results. Finally, I explore the existence of heterogeneous effects and focus on the possible role of intangible assets (hypothesis 2).

FIGURE 4 – Distribution of employee pay

(a) Executive compensation (b) Payments to non-executive employees



Notes: This figure plots the distribution of executive (left subfigure) and non-executive employee (right subfigure) pay. Both are in million US dollars.

4.1 Main equations

I quantify the average effect of profit shifting on employee pay with two equations, as I separate executives and non-executive employees.

4.1.1 Equation for executives

The first equation is:

$$\begin{aligned} log(compensation_{e,i,t}) &= \alpha TH_{i,t} + \beta \mathbb{1}_{e,i,t}^{CEO/CFO} \times TH_{i,t} + \gamma \mathbb{1}_{e,i,t}^{CEO/CFO,\ after\text{-}tax} \times TH_{i,t} \quad (4) \\ &+ \lambda X_{e,i,t} + \upsilon_e + \phi_i + \psi_t + \epsilon_{e,i,t} \end{aligned}$$

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. On the right-hand side, $TH_{i,t}$ is a dummy variable equal to one if firm i has at least one subsidiary located in a tax haven in year t. $\mathbb{1}_{e,i,t}^{CEO/CFO}$ is a binary variable equal to one if executive e is the CEO or the CFO of firm i in year t. I allow for asymmetric effects across executives and the accent is placed on these C-level executives in the rest of the paper. This is motivated by the fact that CEOs and CFOs are the highest-ranking executives setting the "tone at the top" when it comes to tax strategies (Dyreng, Hanlon, and Maydew, 2010). $\mathbb{1}_{e,i,t}^{CEO/CFO,\ after\text{-}tax}$ interacts the previous variable with a dichotomous equal to one if firm i compensates its executives on an after-tax basis. As mentioned earlier, such executives might be rewarded to a higher degree as activities carried out in tax havens precisely aim at lightening the tax burden. A caveat is that after-tax incentives are not directly observable. Drawing on Gaertner (2014), firms paying their executives on an after-tax basis are identified based on the firm-specific sensitivity of exe-

cutive compensation to total income tax expense conditional on pre-tax income. Firms whose sensitivities are negative and statistically significant at the 5 percent level are coded as after-tax incentive firms. [8]

To minimize endogeneity, I insert a vector of controls and a battery of fixed effects. $X_{e,i,t}$ is composed of executive- and firm-specific variables. It comprises executives' age and within-firm experience, two CEO and CFO dummies, as well as firms' assets, sales, pre-tax income (in logarithm), and number of foreign subsidiaries in non-haven countries. [9] The latter variable ensures that the effect is specific to entry in tax havens. The executive fixed effects υ_e absorb fixed characteristics of executives (e.g., education). The firm fixed effects ϕ_i neutralize systematic differences in compensations across companies. Companies paying executives on an after-tax basis make executives bear additional risk, so they have to pay a premium to get them accept the contract. The firm-level fixed effects, together with the other independent variables, should capture such thing. Lastly, year fixed effects correct for global trends in compensations and macroeconomic shocks.

The coefficients of interest, α, β, and γ, express the change in compensations (in percentage) subsequent to firm entry in tax havens. Their estimation requires variation in $TH_{i,t}$, i.e., switching firms. The identification relies on the assumption that, absent tax haven FDIs, compensations of treated and non-treated executives having common attributes and working for comparable firms would have evolved similarly.

4.1.2 Equation for non-executives

I investigate the impact of firm entry in tax havens on non-executive employee pay with the generalized difference-in-differences model:

$$log(payments_{i,t}) = \zeta TH_{i,t} + \lambda X_{i,t} + \phi_i + \psi_t + \epsilon_{i,t} \quad (5)$$

where the dependent variable $payments_{i,t}$ stands for all payments made by firm i in year t to non-executive employees. The independent variables mirror those introduced in equation (4), except that the vector $X_{i,t}$ includes only firm-specific controls this time because the analysis is performed at the firm-year level.

8. For this purpose, I use the variables denoted TXT and PI in Compustat.

9. In Compustat, sales correspond to the variable denoted $SALE$, assets to the variable denoted AT, and pre-tax income to the variable equal to PI. 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.

4.2 Results

4.2.1 Benchmark results

The estimation results of equations (4) and (5), fully reported in Appendix table AT1, are best summarized by figure 5. They lend credence to hypothesis 1. The left part of the graph outlines the effect of firm entry in tax havens on the compensation of CEOs and CFOs paid on an after-tax basis ($\hat{\alpha} + \hat{\beta} + \hat{\gamma}$, second bar) and CEOs and CFOs not receiving after-tax incentives ($\hat{\alpha} + \hat{\beta}$, first bar). The compensation of CEOs and CFOs in after-tax incentive firms grows by 8 percent as these firms establish a physical presence in tax havens. The point estimate is statistically significant at the 5 percent level. Appendix figure AF2 goes a step further and zooms in on seven subcomponents: salary, bonuses, non-equity incentive plans, pensions, option awards, stock awards, and other pay. Non-equity incentive plans, which on average account for 16 percent of executive compensation, seem to be the key element behind the rise of CEOs' and CFOs' compensations in after-tax incentive firms. By contrast, compensations of other CEOs and CFOs hardly vary. As for the remaining executives, the downward shift in Appendix table AT1 should be interpreted with caution as their function is poorly reported in the database and $\hat{\alpha}$ is statistically significant only at the 10 percent level.

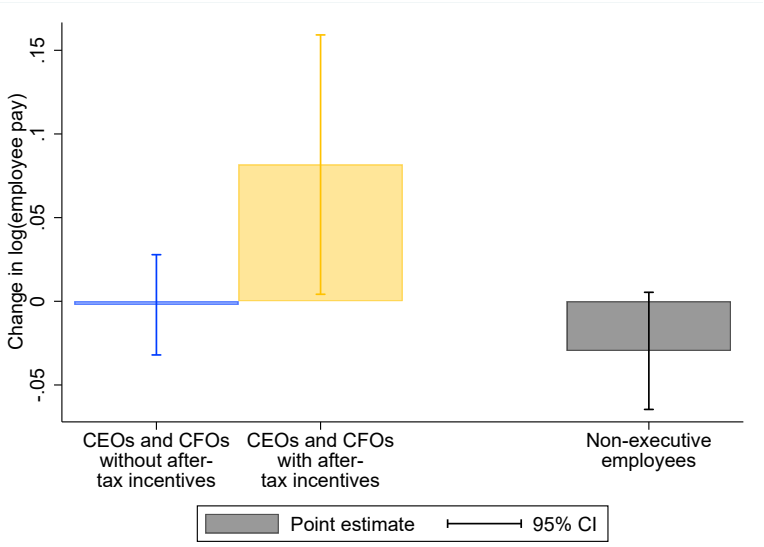
The right part of figure 5 ($\hat{\zeta}$, third bar) reveals that overall wages of non-executive employees fall by 3 percent in the meantime. The coefficient is significant at the 10 percent level too. In Appendix table AT2, I show that employment (labeled EMP in Compustat) rises by 2 percent post entry in tax havens. Consequently, the decline in total payments to non-executive employees cannot be explained by job cuts and the average wage, if anything, decreases by around 5 percent ($= 0.97 \times 0.98$).

It is worth noting that the coefficients associated with the covariates coincide with our expectations. For example, the results validate the existence of a compensation premium for top C-level executives. The premium amounts to 43 and 21 percent respectively for CEOs and CFOs. In addition, we notice a positive relationship between firms' activities worldwide broadly defined and employee pay.

4.2.2 Robustness tests

Alternative dependent variables Six distinct exercises, reviewed hereafter, gauge and support the robustness of the main findings. First, I re-estimate equation (4) by writing executives' earnings as a ratio of their firm's average wage. Although such an equation does not reflect the effect of firm entry in tax havens on the level of employee pay, looking at the gap between executives and other employees enables us to investigate the impact on within-firm pay inequalities more directly. Combined, the regression results above imply a 14-percent increase ($= 1.08/0.95$) in the pay gap between CEOs and CFOs and non-executive employees in after-tax incentive companies. The results of the new

FIGURE 5 – Benchmark results



Notes: The first bar depicts the regression result for $\hat{\alpha} + \hat{\beta}$, the second bar for $\hat{\alpha} + \hat{\beta} + \hat{\gamma}$, and the third bar for $\hat{\zeta}$. The full results are given in Appendix table AT1 and standard errors are clustered at the firm level.

equation, to be found in Appendix table AT3 column (1), report an effect of comparable magnitude. They show that the relative compensation of CEOs and CFOs in after-tax incentive companies increase by 18 percent post entry and this increase is statistically significant at the 5 percent level. In the same vein, I also replace in equation (5) overall payments to non-executive employees by the average wage of non-executives, equal to $payments_{i,t}/employment_{i,t}$. The results in Appendix table AT3 column (2) slightly diverge from the benchmark ones. They signal that the average wage of non-executive employees does not significantly fluctuate post entry in tax havens. Thus, they suggest that the benchmark estimate for equation (5) should be considered as an lower-bound value. This notwithstanding, they do not query the inequality-deepening effect of profit shifting between executive and non-executive employees.

Alternative tax haven classifications Another series of tests revises the group of tax havens. There is to date no unique definition of tax havens because a low statutory corporate income tax rate is not a sufficient condition to be treated as a tax haven. Other criteria are determinant too (e.g., minimal reporting of information, lack of transparency obligations, few effective exchanges of information), and since they are sometimes difficult to assess, characterizing a country as a tax haven can be an arbitrary task. That is why I reproduce the results when adopting the classification proposed by Hines and Rice (1994). [10] A complementary exercise eliminates six major tax havens, as in Souillard (2021a). Hong Kong,

10. The two lists share 37 tax havens in common. Unlike Dyreng and Lindsey (2009), Hines and Rice (1994) integrate the British Virgin Islands, Jordan, Maldives, and Saint Martin. Furthermore, they do not

Ireland, Luxembourg, Malaysia, Singapore, and Switzerland are large countries and well-connected to the rest of the world. Therefore, FDIs of US-listed firms in these countries do not necessarily reflect tax-avoiding strategies. On the opposite, FDIs in small and isolated jurisdictions such as the Bahamas and Jersey are more prone to have no or little economic substance and to be utterly motivated by tax purposes. These jurisdictions attract a high number of companies that is indeed disproportionate with what international trade theories would predict (see Appendix figure AF3). The results are displayed in figure 6 and attached in Appendix tables AT6 and AT7. They globally match the benchmark ones, both economically and statistically. Hence, the inequality-deepening effect of profit shifting on employee pay is robust across tax haven classifications.

Missing values Next, I cope with missing data. The number of observations is rather low in equation (5)/figure 5 (third bar)/Appendix table AT1 because only 16 percent of companies in the sample disclose total staff expenses. To overcome this shortcoming, I calculate industry-year averages of the total labor costs to employment ratio and impute missing values by multiplying these averages with firm-level employment. The employment variable being well-filled, this methodology borrowed from Donangelo, Gourio, Kehrig, and Palacios (2019) allows increasing the size of the sample five fold. The regression results are visible in Appendix table AT4 and concur with the reference ones. They corroborate that the negative impact on firm entry in tax havens on non-executive pay cannot be attributed to a selection problem.

Relocation to low-cost countries For some companies, profit shifting might be accompanied by a relocation of activities to low-cost countries. The treatment variable could partly capture this and thereby reduce $\hat{\zeta}$, even with the number of subsidiaries in non-haven countries among the regressors. In Appendix table AT5, I extend equation (5) to better adjust for labor costs differentials across countries. To this end, I retrieve data on gross monthly minimum wages from the International Labour Organization (ILO) and compute a firm-year proxy for the average cost of labor for firm i in year t:

$$average\ cost_{i,t} = \frac{\sum_c FDI_{i,c,t} \times cost_{c,t}}{\sum_c FDI_{i,c,t}}$$

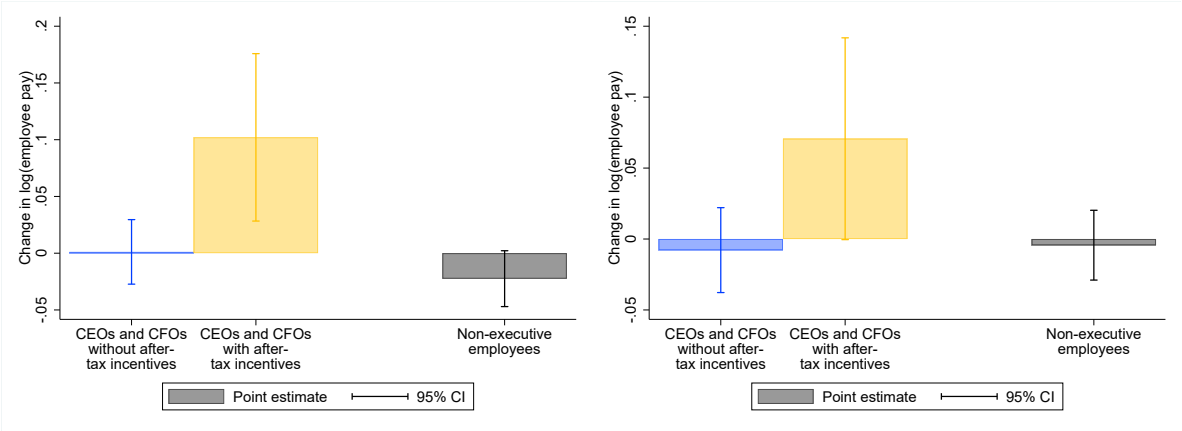
where $FDI_{i,c,t}$ represents the number of firm i's subsidiaries in country c and year t. Controlling for the average value of labor costs and total employment, the novel point estimate is similar to the benchmark one and more importantly never significantly positive. The conclusion is intact if GDP per capita (World Bank), more exhaustive, is used in lieu of the minimum wage. [11]

integrate Aruba, Costa Rica, Malaysia, Mauritius, Nauru, Niue, Samoa, San Marino, and Seychelles.

11. Many countries are missing in the ILO database. Among others, Mexico is not covered and data prior to 2015 for Germany are unavailable. As a consequence, both countries are dropped in the computation of $average\ cost_{i,t}$. Moreover, note that the correlation between $cost_{c,t}$ and $GDP\ per\ capita_{c,t}$, both in current US dollars, is equal to 0.93.

FIGURE 6 – Sensitivity test: alternative tax haven classification

(a) List of Hines and Rice (1994) (b) Exclusion of six tax havens



Notes: In each graph, the first bar depicts the regression result for $\hat{\alpha}+\hat{\beta}$, the second bar for $\hat{\alpha}+\hat{\beta}+\hat{\gamma}$, and the third bar for $\hat{\zeta}$. The full results are given in Appendix tables AT6 and AT7.

Executive turnover Another threat to identification, specific to equation (4) this time, is that some firms appoint new executives before entering in tax havens. Souillard (2021b) provides evidence that firms strategically recruit experienced top executives to establish a physical presence in foreign markets, and that these executives with international experience receive higher compensations all other things being equal. The increase in executive compensation detected after firm entry in tax havens could then arise from the fact that firms hire more costly executives just before investing in tax havens. To alleviate the problem caused by such turnover, equation (4) is regressed on the subsample of executives who stayed in the firm during the five years preceding firm entry in tax havens. The results to be seen in Appendix figure AF4 align with the ones reported thus far and attest that endogenous executive mobility is unlikely to drive the benchmark results.

Common trends In equations (6) and (7), I scrutinize the evolution of employee pay before firm entry in tax havens. An issue hitherto glossed over is that the benchmark results could be ascribable to pre-existing trends. To check that this is not the case, I enrich equations (4) and (5) with additional terms:

$$\begin{aligned} log(compensation_{e,i,t}) &= \sum_{k=0}^{5}\alpha_k TH_{i,t}^{t+k} + \sum_{k=0}^{5}\beta_k \mathbb{1}_{e,i,t}^{CEO/CFO} \times TH_{i,t}^{t+k} \\ &\quad + \sum_{k=0}^{5}\gamma_k \mathbb{1}_{e,i,t}^{CEO/CFO,\ after\text{-}tax} \times TH_{i,t}^{t+k} + \lambda X_{e,i,t} + \upsilon_e + \phi_i + \psi_t + \epsilon_{e,i,t} \end{aligned} \tag{6}$$

$$log(payments_{i,t}) = \sum_{k=0}^{5}\zeta_k TH_{i,t}^{t+k} + \lambda X_{i,t} + \phi_i + \psi_t + \epsilon_{i,t} \tag{7}$$

$TH_{i,t}^{t+k}$ ($k \in \{0,...,5\}$) 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 $t+k$. The collection of variables informs on the dynamics of the effect and serves as a placebo test. If the coefficients associated with the $TH_{i,t}^{t+k}(k \geq 1)$ variables are not statistically different from zero, then the evolution of employee pay does not depend on future profit shifting activities. The regression results point in this direction. Reassuringly, none of the $\{\alpha_k, \beta_k, \gamma_k, k \in \{1,...,5\}\}$ and $\{\zeta_k, k \in \{1,...,5\}\}$ coefficients is significant at the 5 percent level (see Appendix figures AF5 and AF6) and the p-values of the joint significance tests are equal to 25 and 54 percent respectively. These tests substantiate that employee pay does not significantly change up to five years before entry in tax havens. The absence of pre-trends is preserved if we expand or narrow the five-year window, backs up the parallel trends assumption, confirms that the treatment variable does not pick up the effect of unobserved (executive-)firm-year shocks, and more generally mitigates endogeneity concerns.

4.3 The role of intangible assets

Before concluding, I examine whether intangible assets exacerbate the impact of profit shifting on employee pay and inequalities (hypothesis 2). I interact in equations (4) and (5) the treatment variables with a variable $INTANGIBLES_{i,t}$ denoting the firm-level intangibles ($INTAN$ in Compustat) to total assets ratio (AT in Compustat). [12] The regression results laid out in Appendix table AT8 show that the effect of profit shifting is magnified in intangible-intensive firms. Take two firms A and B entering a tax haven at some point and paying their executives on an after-tax basis. Assume that A is in the first quartile of the intangible intensity distribution (i.e., $INTANGIBLES_{i,t} \approx 0.01$) and that B is in the third quartile of the intangible intensity distribution (i.e., $INTANGIBLES_{i,t} \approx 0.26$). The point estimates reveal that total payments to non-executive employees would remain almost the same in firm A post entry, while non-executive employees in firm B would experience a 5 percent loss in terms of total payments. Furthermore, the compensation of the CEO and CFO would grow by 4 percent in firm A and by 9 percent in firm B.

5 Conclusion

In the existing literature, the effect of profit shifting on employee pay has been studied merely from a theoretical perspective. The present paper bridges the gap between theory and data. I first outline a toy model to explain the potential mechanisms at play. On this basis, I derive two testable predictions and I assess their empirical validity with a rich database on S&P 1500 firms' financial statements, foreign subsidiaries, and executives. I observe how employee pay evolves before and after firm entry in tax havens, and the results are three-fold. First, compensations of CEOs and CFOs remunerated on an after-tax basis increase when their firm establishes subsidiaries in tax havens. Second, wages

12. The first quartile corresponds to 1 percent, the median to 8 percent, the third quartile to 26 percent, and the maximum value is 93 percent.

of non-executive employees, if anything, decline in the meantime. Third, the inequality-deepening effect is more pronounced in intangible-intensive firms. These findings are in line with our predictions and have policy-relevant implications. By suggesting that profit shifting increases within-firm pay inequalities, they cast light on the recent evolution of income inequalities and highlight a new mechanism whereby globalization fosters income inequalities. Moreover, they justify the design of anti-tax avoidance measures as an instrument to curb income inequalities.

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Appendix

FIGURE AF1 – Firms' presence in tax havens over time

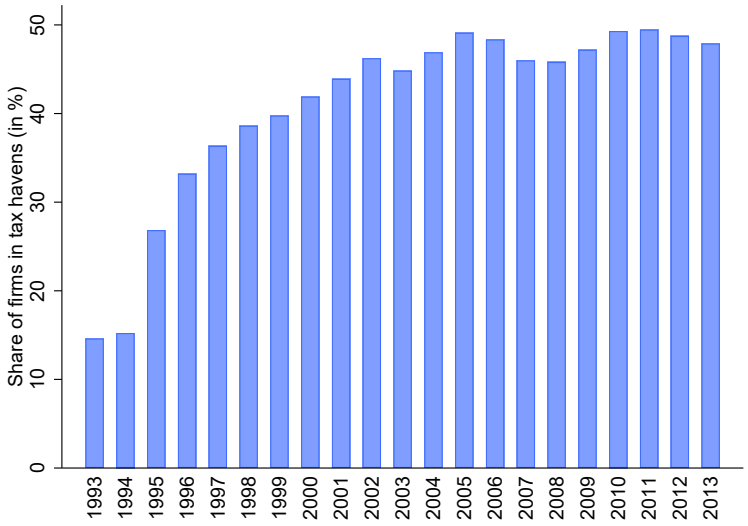
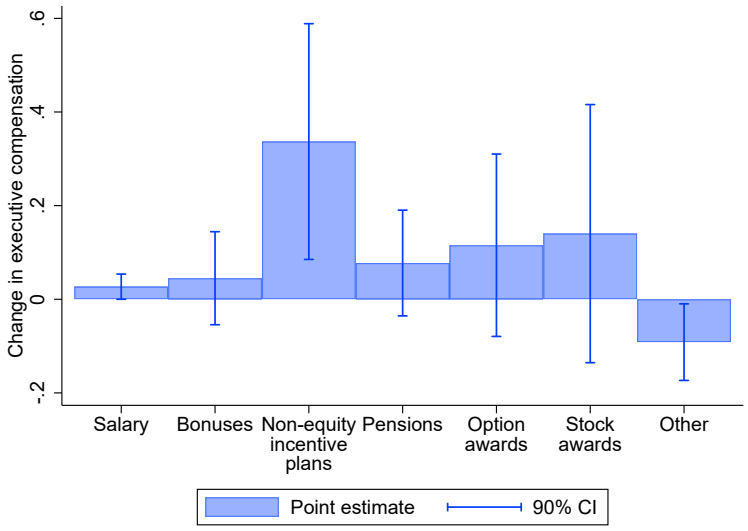


TABLE AT1 – Benchmark results

Column	(1)	(2)
Dependent variable	$log(compensation_{e,i,t})$	$log(payments_{i,t})$
$TH_{i,t}$	-0.03^{c}	-0.03^{d}
	(0.01)	(0.02)
$\mathbb{1}_{e,i,t}^{CEO/CFO} \times TH_{i,t}$	0.02	
	(0.02)	
$\mathbb{1}_{e,i,t}^{CEO/CFO,\ after\text{-}tax} \times TH_{i,t}$	0.08^{c}	
	(0.05)	
$log(assets_{i,t})$	0.12^{a}	0.20^{a}
	(0.02)	(0.04)
$log(sales_{i,t})$	0.08^{a}	0.74^{a}
	(0.03)	(0.05)
$log(\textit{pre-tax income}_{i,t})$	0.11^{a}	-0.03^{a}
	(6.59e-3)	(7.29e-3)
$\textit{Subsidiaries in non-haven countries}_{i,t}$	2.50e-4^{b}	6.78e-5
	(1.16e-4)	(5.59e-5)
$age_{e,t}$	1.95e-3	
	(8.03e-3)	
$experience_{e,i,t}$	3.04e-4	
	(8.41e-4)	
$CEO_{e,i,t}$	0.43^{a}	
	(0.02)	
$CFO_{e,i,t}$	0.21^{a}	
	(0.02)	
Executive FEs	Yes	No
Firm FEs	Yes	Yes
Year FEs	Yes	Yes
R-squared	0.83	0.99
No. of obs.	101,232	5,248

Notes: Standard errors, in parentheses, are clustered at the firm level. $^{d}p < 0.15$, $^{c}p < 0.10$, $^{b}p < 0.05$, $^{a}p < 0.01$.

FIGURE AF2 – Benchmark results by subcomponent



Notes: This figures represent the effect of firm entry in tax on seven compensation subcomponents for CEOs and CFOs in after-tax incentive firms. The coefficients are obtained by replacing the dependent variable in equation (4). The dependent variables are in million US dollars and the standard errors are clustered at the firm level.

TABLE AT2 – Employment effect of firm entry in tax havens

Dependent variable	$log(employment_{i,t})$
$TH_{i,t}$	0.02^{b}
	(0.01)
$log(assets_{i,t})$	0.29^{a}
	(0.02)
$log(sales_{i,t})$	0.62^{a}
	(0.03)
$log(\textit{pre-tax income}_{i,t})$	-0.04^{a}
	(4.23e-3)
$\textit{Subsidiaries in non-haven countries}_{i,t}$	6.78e-5
	(1.16e-4)
Firm FEs	Yes
Year FEs	Yes
R-squared	0.98
No. of obs.	30,261

Notes: Standard errors, in parentheses, are clustered at the firm level. $^{d}p < 0.15$, $^{c}p < 0.10$, $^{b}p < 0.05$, $^{a}p < 0.01$.

TABLE AT3 – Effect of firm entry in tax havens on within-firm inequalities and the average wage of non-executive employees

Column	(1)	(2)
Dependent variable	$log\left(\frac{compensation_{e,i,t}}{\text{total payments to employees}_{i,t}/employment_{i,t}}\right)$	$log\left(\frac{payments_{i,t}}{employment_{i,t}}\right)$
$TH_{i,t}$	-0.09^{c}	4.29e-3
	(0.05)	(0.17)
$\mathbb{1}_{e,i,t}^{CEO/CFO} \times TH_{i,t}$	0.21^{a}	
	(0.03)	
$\mathbb{1}_{e,i,t}^{CEO/CFO,\ after\text{-}tax} \times TH_{i,t}$	0.05	
	(0.08)	
$log(assets_{i,t})$	0.06	-0.11^{a}
	(0.07)	(0.03)
$log(sales_{i,t})$	0.05	0.20^{a}
	(0.08)	(0.04)
$log(\text{pre-tax income}_{i,t})$	0.11^{a}	-4.68e-3
	(0.02)	(5.83e-3)
$\text{Subsidiaries in non-haven countries}_{i,t}$	3.64e-06	-1.11e-4^{c}
	(3.06e-4)	(5.67e-5)
$age_{e,t}$	-0.01	
	(0.01)	
$experience_{e,i,t}$	2.80e-3	
	(2.01e-3)	
$CEO_{e,i,t}$	0.43^{a}	
	(0.04)	
$CFO_{e,i,t}$	0.22^{a}	
	(0.04)	
Executive FEs	Yes	No
Firm FEs	Yes	Yes
Year FEs	Yes	Yes
R-squared	0.85	0.95
No. of obs.	17,700	5,073

Notes: Standard errors, in parentheses, are clustered at the firm level. $^{d}p < 0.15$, $^{c}p < 0.10$, $^{b}p < 0.05$, $^{a}p < 0.01$.

TABLE AT4 – Sensitivity test: imputed labor costs

Dependent variable	$log\left(\widetilde{payments}_{i,t}\right)$
$TH_{i,t}$	-0.03^{c}
	(0.02)
$log(assets_{i,t})$	0.29^{a}
	(0.04)
$log(sales_{i,t})$	0.67^{a}
	(0.05)
log(*pre-tax income*$_{i,t}$)	-0.06^{a}
	(7.43e-3)
Subsidiaries in non-haven countries$_{i,t}$	2.96e-04^{b}
	(1.54e-4)
Firm FEs	Yes
Year FEs	Yes
R-squared	0.94
No. of obs.	25,458

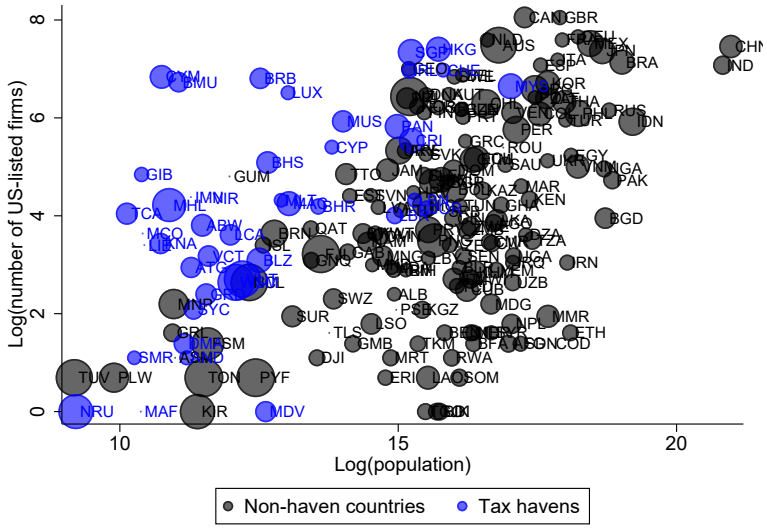
Notes: Standard errors, in parentheses, are clustered at the firm level. $^{d}p < 0.15$, $^{c}p < 0.10$, $^{b}p < 0.05$, $^{a}p < 0.01$.

TABLE AT5 – Sensitivity test: adjusting for relocation effects

Column	(1)	(2)
Dependent variable	$log(payments_{i,t})$	$log(payments_{i,t})$
$TH_{i,t}$	-0.04^{b}	-0.03^{c}
	(0.02)	(0.02)
$log(assets_{i,t})$	0.20^{a}	0.22^{a}
	(0.03)	(0.04)
$log(sales_{i,t})$	0.74^{a}	0.71^{a}
	(0.04)	(0.05)
$log(\textit{pre-tax income}_{i,t})$	-0.03^{a}	-0.03^{a}
	(6.66e-3)	(7.16e-3)
$\textit{Subsidiaries in non-haven countries}_{i,t}$	2.38e-5	1.64e-5
	(6.43e-5)	(6.44e-5)
$log(\textit{employment}_{i,t})$	0.49^{a}	0.49^{a}
	(0.04)	(0.04)
$average\ cost_{i,t}$	-2.02e-5	
	(2.32e-5)	
$average\ GDP\ per\ capita_{c,t}$		6.25e-7
		(4.57e-7)
Firm FEs	Yes	Yes
Year FEs	Yes	Yes
R-squared	0.99	0.99
No. of obs.	4,798	5,059

Notes: Standard errors, in parentheses, are clustered at the firm level. $^{d}p < 0.15$, $^{c}p < 0.10$, $^{b}p < 0.05$, $^{a}p < 0.01$.

FIGURE AF3 – Presence of US-listed firms in foreign countries



Notes: This figure comes from Souillard (2021a). It represents on the y-axis the number of US-listed firms disclosing at least one subsidiary in each foreign country at some point between 1993 and 2013 and on the x-axis the total population of each country. The population size data are from 2003 and come from the World Bank. Bubble size for country c is proportional to the sum of bilateral distances $\sum_j dist_{jc}$, retrieved from the Geodist database of CEPII.

TABLE AT6 – Sensitivity test: list of Hines and Rice (1994)

Column	(1)	(2)
Dependent variable	$log(compensation_{e,i,t})$	$log(payments_{i,t})$
$TH_{i,t}$	-0.02^{d}	-0.02^{d}
	(0.01)	(0.02)
$\mathbb{1}_{e,i,t}^{CEO/CFO} \times TH_{i,t}$	0.03	
	(0.02)	
$\mathbb{1}_{e,i,t}^{CEO/CFO,\ after\text{-}tax} \times TH_{i,t}$	0.10^{b}	
	(0.05)	
$log(assets_{i,t})$	0.12^{a}	0.20^{a}
	(0.02)	(0.04)
$log(sales_{i,t})$	0.08^{a}	0.74^{a}
	(0.03)	(0.05)
$log(pre\text{-}tax\ income_{i,t})$	0.11^{a}	-0.03^{a}
	(6.59e-3)	(7.28e-3)
$Subsidiaries\ in\ non\text{-}haven\ countries_{i,t}$	2.50e-4^{b}	6.55e-5
	(1.16e-4)	(5.39e-5)
$age_{e,t}$	1.93e-3	
	(8.01e-3)	
$experience_{e,i,t}$	6.30e-4	
	(8.68e-4)	
$CEO_{e,i,t}$	0.43^{a}	
	(0.02)	
$CFO_{e,i,t}$	0.20^{a}	
	(0.02)	
Executive FEs	Yes	No
Firm FEs	Yes	Yes
Year FEs	Yes	Yes
R-squared	0.83	0.99
No. of obs.	101,232	5,248

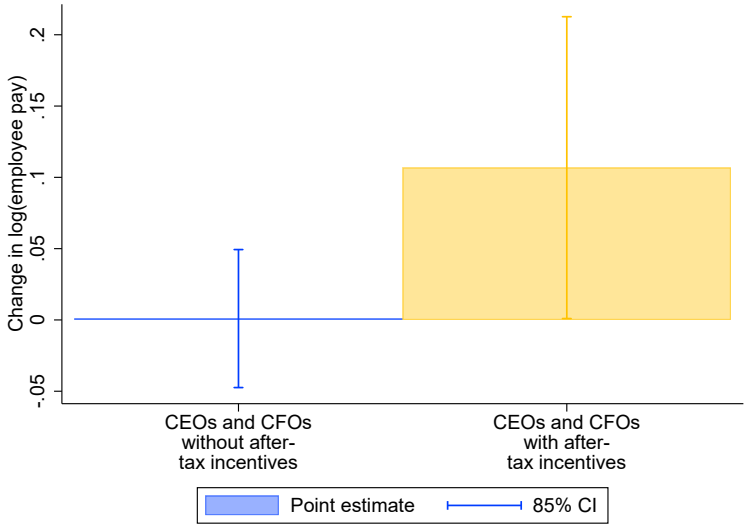
Notes: Standard errors, in parentheses, are clustered at the firm level. $^{d}p < 0.15$, $^{c}p < 0.10$, $^{b}p < 0.05$, $^{a}p < 0.01$.

TABLE AT7 – Sensitivity test: exclusion of six tax havens

Column	(1)	(2)
Dependent variable	$log(compensation_{e,i,t})$	$log(payments_{i,t})$
$TH_{i,t}$	-0.01	-4.35e-3
	(0.02)	(1.85e-2)
$\mathbb{1}_{e,i,t}^{CEO/CFO} \times TH_{i,t}$	4.76e-3	
	(0.02)	
$\mathbb{1}_{e,i,t}^{CEO/CFO,\ after\text{-}tax} \times TH_{i,t}$	0.08^{c}	
	(0.04)	
$log(assets_{i,t})$	0.12^{a}	0.20^{a}
	(0.02)	(0.04)
$log(sales_{i,t})$	0.08^{a}	0.74^{a}
	(0.03)	(0.05)
$log(\textit{pre-tax income}_{i,t})$	0.11^{a}	-0.03^{a}
	(6.59e-3)	(7.25e-3)
$\textit{Subsidiaries in non-haven countries}_{i,t}$	1.94e-4^{d}	4.58e-5
	(1.20e-4)	(5.08e-5)
$age_{e,t}$	1.88e-3	
	(8.01e-3)	
$experience_{e,i,t}$	-1.03e-e	
	(8.39e-4)	
$CEO_{e,i,t}$	0.44^{a}	
	(0.02)	
$CFO_{e,i,t}$	0.22^{a}	
	(0.02)	
Executive FEs	Yes	No
Firm FEs	Yes	Yes
Year FEs	Yes	Yes
R-squared	0.83	0.99
No. of obs.	101,232	5,248

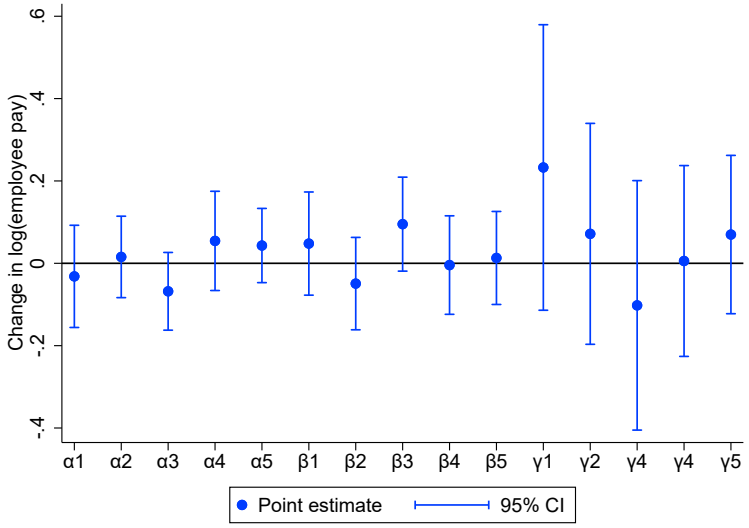
Notes: Standard errors, in parentheses, are clustered at the firm level. $^{d}p < 0.15$, $^{c}p < 0.10$, $^{b}p < 0.05$, $^{a}p < 0.01$.

FIGURE AF4 – Sensitivity test: the endogenous executive mobility issue



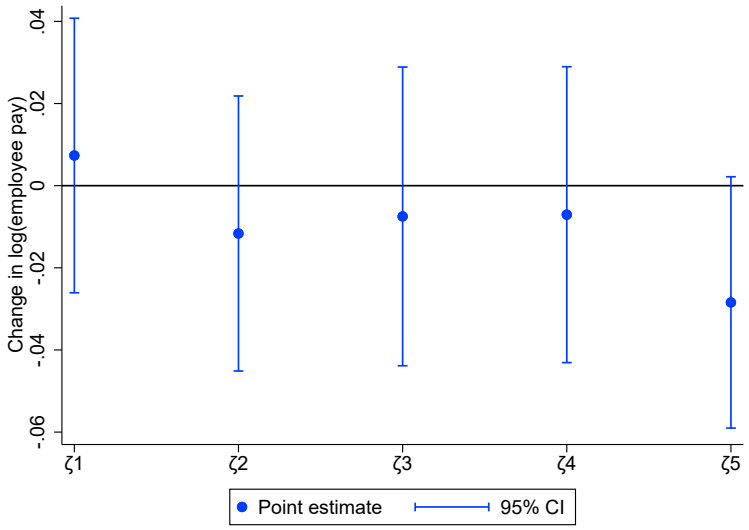
Notes: The figure depicts the regression results of equation (4) when only executives with at least a five-year experience within the company are retained. The first bar depicts the regression result for $\hat{\alpha} + \hat{\beta}$, the second bar for $\hat{\alpha} + \hat{\beta} + \hat{\gamma}$. Standard errors are clustered at the firm level.

FIGURE AF5 – Pre-trends in equation (6)



Notes: The figure depicts the $\hat{\alpha}_k$, $\hat{\beta}_k$, and $\hat{\gamma}_k$, $k \in \{1, ..., 5\}$, when estimating equation (6). Standard errors are clustered at the firm level.

FIGURE AF6 – Pre-trends in equation (7)



Notes: The figure depicts the $\hat{\zeta}_k, k \in \{1, ..., 5\}$, when estimating equation (7). Standard errors are clustered at the firm level.

TABLE AT8 – The magnifying effect of intangible assets

Column	(1)	(2)
Dependent variable	$log(compensation_{e,i,t})$	$log(payments_{i,t})$
$TH_{i,t}$	-0.01	-0.01
	(0.02)	(0.02)
$TH_{i,t} \times INTANGIBLES_{i,t}$	-0.14^{b}	-0.17^{b}
	(0.06)	(0.08)
$\mathbb{1}_{e,i,t}^{CEO/CFO} \times TH_{i,t}$	0.01	
	(0.02)	
$\mathbb{1}_{e,i,t}^{CEO/CFO} \times TH_{i,t} \times INTANGIBLES_{i,t}$	0.12^{c}	
	(0.07)	
$\mathbb{1}_{e,i,t}^{CEO/CFO,\ after\text{-}tax} \times TH_{i,t}$	0.03	
	(0.06)	
$\mathbb{1}_{e,i,t}^{CEO/CFO,\ after\text{-}tax} \times TH_{i,t} \times INTANGIBLES_{i,t}$	0.25	
	(0.22)	
$log(assets_{i,t})$	0.11^{a}	0.21^{a}
	(0.03)	(0.04)
$log(sales_{i,t})$	0.09^{a}	0.74^{a}
	(0.03)	(0.05)
$log(\textit{pre-tax income}_{i,t})$	0.10^{a}	-0.03^{a}
	(6.88e-3)	(7.41e-3)
$\textit{Subsidiaries in non-haven countries}_{i,t}$	2.45e-4^{b}	8.05e-5
	(1.16e-4)	(5.67e-5)
$age_{e,t}$	3.97e-3	
	(7.83e-3)	
$experience_{e,i,t}$	1.38e-3^{c}	
	(7.81e-4)	
$CEO_{e,i,t}$	0.44^{a}	
	(0.02)	
$CFO_{e,i,t}$	0.21^{a}	
	(0.02)	
Executive FEs	Yes	No
Firm FEs	Yes	Yes
Year FEs	Yes	Yes
R-squared	0.83	0.99
No. of obs.	94,793	4,869

Notes: Standard errors, in parentheses, are clustered at the firm level. $^{d}p < 0.15$, $^{c}p < 0.10$, $^{b}p < 0.05$, $^{a}p < 0.01$.

In column (1):

— (1+0.01)$\left(TH_{i,t} + \mathbb{1}_{e,i,t}^{CEO/CFO} \times TH_{i,t} + \mathbb{1}_{e,i,t}^{CEO/CFO,\ after\text{-}tax} \times TH_{i,t}\right)$ is equal to 0.04 with a standard error equal to 0.06.

— (1+0.26)$\left(TH_{i,t} + \mathbb{1}_{e,i,t}^{CEO/CFO} \times TH_{i,t} + \mathbb{1}_{e,i,t}^{CEO/CFO,\ after\text{-}tax} \times TH_{i,t}\right)$ is equal to 0.09 with a standard error equal to 0.04.

In column (2):

— $(1 + 0.01)TH_{i,t}$ is equal to -0.01 with a standard error equal to 0.02.

— $(1 + 0.26)TH_{i,t}$ is equal to -0.05 with a standard error equal to 0.02.