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Tax-induced Investments in Tax Havens by Spanish Multinationals*

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Abstract

Tax havens may play a key role in the profit-shifting activity of multinational companies (MNCs), since, among other characteristics, they are the territories with the most beneficial taxes for foreign investors. This paper shows that Spanish MNCs with higher average foreign non-haven tax rates are more likely to invest in tax havens. This outcome is robust to at least two different tax haven lists and various definitions of the average non-haven tax rate. The size of the foreign and domestic activity of the Spanish MNCs, as well as their use of intangible assets and the fact of belonging to the Ibex 35 index, also positively affect the probability of investing in tax havens. By economic sectors, once the endogeneity problem is controlled for, the incentive of third countries' high taxes on investments in tax havens is greater for manufacturers than for service firms, but this effect is especially high for financial firms. Moreover, within the Ibex 35 index of companies, only the financial firms exert a positive effect on the likelihood of investing in these low-tax territories. Additionally, it seems that while foreign non-haven taxes positively influence the number of different tax havens used by Spanish firms, they have no effect on the number of affiliates located within them. The paper also estimates that Spanish MNCs have been able to save about 4 billion euros per year in corporate income tax in the period 2013-2018 as a result of these practices.

Keywords: Spanish multinationals, tax haven investments, profit-shifting, probability model

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1. Introduction

Tax scandals such as LuxLeaks, SwissLeaks, and the Panama Papers brought to light the use of tax havens by multinationals (and natural persons) to reduce their taxes at the expense of high-tax countries. Although the double non-taxation phenomenon is not new, economic globalization and digitalization have increased the development of aggressive tax planning strategies by multinational companies (MNCs) (OECD, 2019; IMF, 2019). Moreover, the lack of financial resources during the 2008 crisis and the current coronavirus crisis, and the injustice of the largest companies not paying taxes, have put international taxation problems at the core of government agendas.

The present paper focuses on the profit-shifting strategy of MNCs, consisting of artificially shifting profits from affiliates in high-tax territories to affiliates in low-tax ones, within corporate groups. Tax havens could play an important role in this aggressive tax planning activity: although there is no single definition for them, they are typically identified by their favourable tax conditions for foreign investors, and are usually small, well-governed territories (Dharmapala and Hines, 2009). MNCs can set up affiliates in tax havens for three reasons: legitimate economic reasons, including the reduced taxes applied by tax havens; aggressive tax planning reasons, especially profit shifting; and tax evasion reasons. However, the data indicate that while tax havens are primarily used by individuals for tax evasion purposes, the primary use of them by MNCs is tax avoidance. From the foreign operations of US firms, Dharmapala (2020) finds evidence consistent with the location of holding companies, intellectual property, and financial activities in havens to a disproportionate degree in comparison to indicators such as employment or tangible assets.

We examine whether Spanish MNCs set up affiliates in tax havens to reduce their taxes by means of profit shifting. It is the first empirical work on this issue using data for Spain. The

descriptive analysis of such data shows that only around 16% of Spanish large firms have any tax haven affiliate, even though, in general terms, Spain applies the territorial tax system for taxing foreign profits when repatriated. Following Gumpert et al. (2016), we estimate the effect of the foreign non-haven tax rates of Spanish MNCs on their probability of owning a tax haven affiliate to test our research question. A positive result is interpreted as an indicator of the use of tax havens by MNCs to reduce their taxes by means of profit shifting.

The answer to the above question is affirmative: Yes, it seems that Spanish MNCs set up affiliates in tax havens to reduce their taxes. Particularly, a one percentage point higher foreign non-haven tax rate for MNCs is associated with a 3.9% greater demand for a tax haven affiliate. The likelihood of setting up a tax haven affiliate is also higher for profitable Spanish companies, companies in the financial sector, those with a high level of intangible fixed assets and those belonging to the Ibex 35 index.

The rest of the paper is structured as follows: section two briefly reviews the empirical literature on tax havens and profit shifting; section three presents the descriptive analysis of the data; section four explains the empirical methodology; section five presents the results; section six shows our robustness checks; section seven develops additional analyses based on two alternative definitions of the dependent variable; section eight estimates the tax revenue consequences of these practices for Spain and Spanish MNCs; and section nine concludes and indicates some additional lines of research.

2. Literature on the Determinants of Tax Haven Investments

As said in the introduction, the primary use of tax havens by MNCs is tax avoidance. Companies take advanced of the reduced taxes applied by tax havens to accomplish so-called aggressive tax planning strategies, including profit shifting. The literature on profit shifting is

plentiful and there is consensus about the existence of the activity, but not its magnitude (see, for instance, Dharmapala, 2014; Heckemeyer and Overesch, 2017; Dyreng and Hanlon, 2019; or Beer et al., 2020). Two different methods have been used for analysing this aggressive tax avoidance activity: direct and indirect. Direct methods examine particular profit shifting strategies; for instance, Clausing (2001, 2003, 2006) provides evidence on the transfer pricing strategy, which consists of a deviation of the arm's-length principle through manipulation of the transfer prices applied to transactions within a corporate group, and Buettner et al. (2012) and Blouin et al. (2014) provide evidence on the thin capitalisation strategy, which consists of an excessive level of debt within a corporate group.

The most popular indirect method is that of Hines and Rice (1994). It bases the existence of profit shifting on finding a negative relationship between reported profits and taxes in a particular territory, after controlling for the real economic activity in such territory. Using a cross-section of country level data on US firms, these authors obtain disproportionate shares of reported profits in tax havens. Many authors have followed this method to research profit shifting: see, for instance, Castillo-Murciego and López-Laborda (2017) for Spain. There are also other most recent indirect methods, for instance, that of Dharmapala and Riedel (2013), which examines how an income shock in the parent company is distributed between high and low tax affiliates.

One issue in studying the magnitude of profit shifting is the data. On the one hand, most micro studies are based on Bureau van Dijk's Amadeus and Orbis databases. This database provides poor information, especially regarding the affiliates located in the most beneficial territories in terms of taxation, i.e., the tax havens (Tørsløv et al., 2020; Fuest et al., 2021). This shortcoming is only recently beginning to be overcome with the publication of Country-by-

Country (CbC) reports.[1] According to 2017 country-by-country data, US firms had accumulated earnings of US$3 trillion in tax havens (Clausing et al., 2020; Clausing, 2020a and 2020b). Also, Fuest et al. (2021) have recently taken advantage of the CbC report filed by large German companies to evaluate the magnitude of profit shifting. They have concluded that 9% of the global profits of German MNCs are reported in tax havens and that about 40% of them are a result of tax-induced profit shifting activity.

On the other hand, studies based on macro data cannot control for the real economic activity of firms and tend to overestimate profit shifting (Dharmapala, 2014; Heckemeyer and Overesch, 2017; Beer et al., 2020). In an attempt to fill this gap, using new macroeconomic data known as foreign affiliates statistics, Tørsløv et al. (2020) designed an original methodology to provide bilateral estimates of profit shifting to tax havens. These authors estimate that close to 40% of multinational profits are shifted to tax havens globally each year.

The present paper does not evaluate reported profits in tax havens, but whether Spanish MNCs invest in them for profit shifting reasons, using firm-level data from the micro database Sabi (from the Bureau van Dijk). It is especially related to two micro studies examining the determinants of tax haven investments. Both Desai et al. (2006) and Gumpert et al. (2016) found evidence consistent with tax haven investments for tax avoidance reasons. Particularly, tax haven investments for profit-shifting reasons are considered to be found where there is a positive effect of multinationals' non-haven taxes on investments in tax havens, since tax havens allow companies located in high tax jurisdictions to relocate profits.

[1] The CbC report is introduced by countries in the context of the OECD/G20 BEPS project and provides a complete picture of the global distribution of profits and real economic activity of MNCs when consolidated global group revenue is higher than €750 million.

Using US firm-level data, Desai et al. (2006) found, on the one hand, such positive effect of foreign non-haven tax rates on investments in the largest tax havens. With data from German MNCs, Gumpert et al. (2016) also found evidence supporting tax haven investments for profit-shifting reasons. Among German manufacturing firms, a 1 percentage point higher foreign non-haven tax rate is associated with a 2.3% greater demand for a tax haven affiliate.

On the other hand, Desai et al. (2006) obtained a negative effect of taxes on investment in the remaining tax havens. They took this contradictory result to mean that the smaller tax havens were being used by US MNCs to delay US taxation of slightly-taxed foreign income. This last result might be related to the international tax system applied by the US. Until the 2017 Tax Cuts and Jobs Act (TCJA), the US applied a worldwide tax system, which meant that companies had to pay the difference between domestic and foreign taxes when profits were repatriated. Only MNCs headquartered in countries applying a territorial tax system, like German MNCs and most OECD MNCs, can benefit from reduced foreign taxes at the end of the day.

We take the Gumpert et al. (2016) model as a starting point to add evidence to the scarce empirical literature on the determinants of tax haven investments. In particular, ours is the first empirical work using data on Spanish companies. We also contribute to the empirical literature by estimating the model for all economic sectors and by considering alternative tax haven lists and various definitions of the foreign non-haven tax rates of MNCs. Finally, we examine whether foreign tax rates influence the number of tax havens and tax haven affiliates used by MNCs, in addition to the probability of owning, at least, a tax haven affiliate. Furthermore, we explore the consequences for Spain’s tax revenue of the profit-shifting activity of its MNCs.

3. Descriptive Analyses of Data

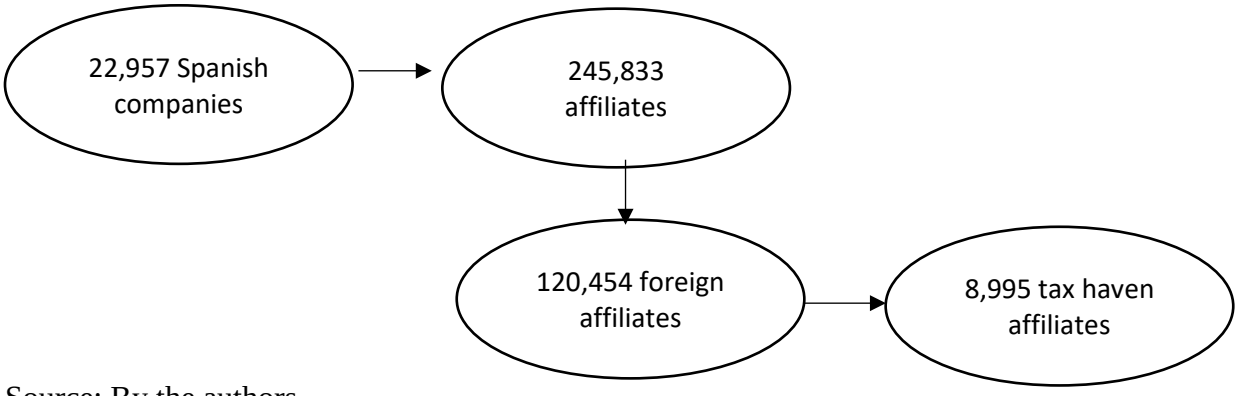
We use data on Spanish companies taken from the Bureau van Dijk's Sabi database for the period 2013-2018, which contains firm-level accounting and ownership information on Spanish and Portuguese firms.

From an original list of 5,280 large and very large[2] Spanish companies in the year 2018 (some of which were not available in the Sabi database for the first year of the period 2013-2018), we selected those companies that are MNCs with at least a non-tax haven affiliate in any year of the sample. Following the empirical literature, a MNC is considered when a company has a minimum degree of participation of 10% in at least one foreign affiliate. Then, for a particular year in the period 2013-2018, only those companies continuing to meet both requirements –being a multinational and having a non-tax haven affiliate – are included. Finally, the sample comprises a data pool of 4,809 different Spanish companies, most of which are included in the sample in more than one year.

The tax haven list taken as reference is that of the seminal paper of Hines and Rice (1994) but extended by Tørsløv et al. (2020) with Belgium and The Netherlands (hereafter, "the extended Hines and Rice list"). The total number of Spanish companies and their affiliates for 2013-2018 is shown in Figure 1.

[2] According to the Bureau van Dijk, very large companies are those with turnover higher than €100 million, total assets higher than €200 million or number of employees higher than 1,000; and large companies are those with turnover higher than €10 million, total assets higher than €20 million or number of employees higher than 150.

Figure 1. Total Number of Parent and Affiliate Observations



Source: By the authors.

As can be seen from Figure 1, around 50% of total affiliates are foreign affiliates, of which around 7.5% are tax haven affiliates.

Additionally, Table 1 shows that only 15.57% of Spanish large and very large MNCs had a tax haven affiliate for the period 2013-2018. This percentage is slightly less than the 20.4% found for German firms between 2002 and 2008[3] (Gumpert et al., 2016) and would reflect that profit shifting is not a cost-free activity for companies. By contrast, the percentage of US MNCs with tax haven affiliates was 59% in 1999 (Desai et al., 2006).

As can also be seen in Table 1, the percentage of Spanish parent companies with tax havens varies by economic sector: 11.52% for the manufacturing sector, 14.68% for the service sector, and 27.65% for the financial sector. For Germany, the percentage of parent companies with a tax haven affiliate is also higher in the service than in the manufacturing sector (Gumpert et al., 2016).

Moreover, in more than 60% of cases, Spanish companies have only a single tax haven

[3] German multinationals who hold shares or voting rights of 10% or more in a company with a balance sheet total of more than €3 million. The percentage of German companies that have any tax haven affiliate is 82% for large multinationals subject to CbC reporting in 2016 and 2017 (Fuest et al., 2021).

affiliate, and when they have more than one tax haven affiliate, it is more common for them to operate in the same rather than in different tax havens. Again, there are differences across economic sectors. In addition to being the sector with the highest percentage of affiliates in tax havens, the financial sector has the highest percentage of companies owning more than one tax haven affiliate, whether in the same or a different country.

Table 1. Number of Spanish Companies with Tax Haven Operations: 2013-2018, by Sector

	All Firms	Manufacturing	Service	Financial	Other
Total number of parent years	22,957	6,703	10,674	2,951	2,625
Of which, with TH affiliate	3,575 (15.57%)	772 (11.52%)	1,567 (14.68%)	816 (27.65%)	420 (16.00%)
Of which, with more than one (same or different country)	1,417 (39.63%)	216 (27.98%)	631 (40.27%)	400 (49.02%)	170 (40.48%)
Of which, with more than one (different country)	1,021 (28.55%)	165 (21.37%)	462 (29.48%)	280 (34.31%)	114 (27.14%)

Source: By the authors.

Table 2 shows the distribution of Spanish companies' operations across the main tax havens, measured by the number of foreign affiliates and the number of Spanish parent companies operating within their borders. Furthermore, it shows some features of such tax havens: their corporate income tax rate, the existence or not of a Double Taxation Treaty with Spain, the territorial or worldwide tax system applied by Spain with them, their GDP, and their membership of the OECD and the EU.

Table 2. Tax Havens: Average 2013-2018

	Share by number of affiliates (%)	Share by number of parents (%)	CIT rate (%)[1]	DTT [2]	ITS[3]	GDP[4]	OECD	EU
Netherlands (the)	28.52	21.54	25.00	1	Territorial	885.28	1	1
Panama	14.28	15.15	25.00	1	Territorial	43.81	0	0
Belgium	10.47	11.33	33.16	1	Territorial	512.35	1	1
Switzerland	8.87	10.09	17.92	1	Territorial	637.52	1	0
Ireland	8.69	7.06	12.50	1	Territorial	310.94	1	1
Luxembourg	6.67	7.38	28.33	1	Territorial	62.01	1	1
Hong Kong	5.81	6.62	16.50	1	Territorial*	269.14	0	0
Singapore	4.18	5.06	17.00	1	Territorial	296.92	0	0
Andorra	2.93	4.20	10.00	1*	Territorial	NA	0	0
Cyprus	1.71	2.35	12.50	1	Territorial	11.48	0	1
Malta	1.61	1.58	35	1*	Territorial	24.26	0	1
Cayman Islands (the)	1.15	1.02	0.00	0	Worldwide	NA	0	0

Source: By the authors. (1) CIT rate: Standard Corporate Income Tax Rate (source: https://home.kpmg/it/it/home/services/tax/tax-tools-and-resources/tax-rates-online/corporate-tax-rates-table.html). (2) DTT: existence (1) or otherwise (0) of a Double Taxation Treaty between the corresponding tax haven and Spain during 2013-2018 (source: Tax Agency and the Ministry of Finance and Public Function). (*) The DTT between Andorra and Spain exists from 2015 on and the one between Cyprus and Spain from 2014. (3) ITS: type of International Tax System applied by Spain (source: Spanish Corporate Income Tax law and bilateral DTT). (*) Spain has applied the Territorial system with Hong Kong since 01-04-2013, when Hong Kong ceased to be considered a tax haven for Spain. (4) GDP (source: Tax Foundation).

As can be seen from Table 2, taking into account the extended Hines and Rice list, Spain's main tax haven is the Netherlands, followed by Panama and Belgium, all of which are countries where Spain applies the exemption method for the correction of double international taxation,[4] and thus where Spanish firms ultimately benefit from their favourable tax conditions.

Table A1 in the Annex compares descriptive statistics for Spanish MNCs with and without tax haven operations. It shows that companies with tax haven affiliates are larger in terms of turnover, total assets, number of employees and number of affiliates, than those without them. Moreover, those companies operate overseas to a greater extent and have a higher volume of profits before taxes and intangible assets. By economic sectors, a large share of them operate in the financial sector: 22% vs. 11% for companies without tax haven operations. Finally, although they face higher foreign tax rates, they pay less tax, which is in line with the profit shifting activity.

4. Empirical Methodology

The empirical analysis takes as reference the theoretical model developed by Gumpert et

[4] Spain applies the exemption method for the correction of double international taxation with those territories that Spanish law does not consider to be tax havens and with which a Double Taxation Treaty is in force or which have a Corporate Income tax rate of 10% or more. Spain also applies the exemption method with Gibraltar. Additionally, it is assumed that there is a certain level of economic activity in the territories where the Spanish companies operate. Otherwise, according to the special regime of Controlled Foreign Corporations applied by Spanish Corporate Tax Law, profits are taxed in Spain directly, without any tax benefit from the profit shifting activity.

al. (2016) to evaluate the determinants of tax haven investments. This model assumes that companies can reallocate part of their actual profits earned in a high tax jurisdiction to low tax ones, especially tax havens. As a result, reported profits in that jurisdiction can be represented as follows:

$$\pi_i = \rho_i - \varphi_i - \frac{a}{2}\frac{\varphi_i^2}{\rho_i} \quad (1)$$

Reported profits in country *i* (π_i) are equal to real profits (ρ_i) minus shifted profits (φ_i) and minus expenses ($\frac{a}{2}\frac{\varphi_i^2}{\rho_i}$), such as legal expenses or expenses related to the reallocation of intrafirm trade, once the fixed cost of setting up a foreign affiliate is sunk. As can be seen from the last term of the formula, such expenses rise as shifted profits increase in comparison to real profits, where *a* is a company-specific parameter that captures how much profit-shifting costs increase with the shifted profits.

Thus, according to the above equation, on the one hand, profit shifting provides tax savings to firms derived from a reduction in the corporate income tax rate to which actual profits are subject. But, on the other hand, it causes costs that, in some cases, can exceed profits. As a result, profit shifting does not benefit all firms. Gumpert et al. (2016) predicted that the higher the foreign tax rate in jurisdictions other than tax havens in which the MNC operates, the higher the tax saving derived from profit shifting and hence, the higher the likelihood of setting up a tax haven affiliate. In addition, they derived that more profitable MNCs are better able to cope with the marginal and fixed setup costs related to the establishment of a tax haven affiliate and the subsequent profit shifting activity. Also, the actual profits of the individual affiliates limit the tax incentive to shift profits from the high tax countries where they are situated. The main objective of Gumpert et al. (2016) – and also ours – is to determine the impact of foreign non-haven tax

rates of MNCs on the probability of establishing a tax haven affiliate.

In this paper, we incorporate as explanatory variables to the specification proposed by Gumpert et al. (2016) the ownership of intangible assets by firms and their membership of the Ibex 35 stock market index. The use of intangible assets tries to better control for the cost of reallocating profits by firms. Intangible assets might make the profit shifting activity easier for firms, due to the lack of transparency in the transfer pricing process (Dischinger and Riedel, 2011). In the same vein, industry fixed effects are also included. Also, estimates of the model are carried out for the different economic sectors separately. Membership of the Ibex 35 index is controlled for to check if the associate companies are more likely to invest in tax havens than other firms (Observatorio de Responsabilidad Social Corporativa, 2015). As a result, the estimated linear probability model is the following:

$$y_{jt} = \beta_0 + \beta_1 \tau_{jt} + \beta_2 p_{jt} + \beta_3 p_{jt}^2 + \beta_4 nh_{jt} + \beta_5 nh_{jt}^2 + intang_{jt} + ibex_{jt} + \alpha_\rho + \gamma_t + u_{jt} \quad (2)$$

The dependent variable (y_{jt}) is a dummy variable that is equal to 1 if a Spanish company firm *j* holds at least one affiliate in at least one tax haven in year *t*, and the value 0 otherwise. The main independent variable is the average tax rate of firm *j* in year *t* (τ_{jt}). A positive effect of the tax rate on the probability of investing in at least one tax haven is interpreted as an indicator of tax haven investments for profit shifting reasons. It is calculated from the standard corporate income tax rates a multinational *j* faces at its foreign non-tax haven locations, weighted by real profits of firms in the corresponding territories. Gumpert et al. (2016) took the number of employees as proxy for the real profits of the individual affiliate (adjusted by the participation of the parent in the affiliate). Instead, we have decided to weight the tax rate of each country by the number of affiliates in the corresponding territory, because there are a lot of missing data in the Sabi database regarding the number of employees.

However, the number of employees is used to define the following independent variables because it is assumed that missing data are randomly distributed among companies: the natural logarithm of the number of employees of the parent firm j in t (p_{jt}) and the same squared (p_{jt}^2), and the natural logarithm of the number of employees of the foreign non-haven affiliates of the firm j in t (nh_{jt}) and the same squared (nh_{jt}^2). These variables are used as proxy for corporate profitability and ability to cope with the marginal and fixed setup costs related to profit shifting. Additionally, equation (2) incorporates the logarithm of the intangible fixed assets of the parent company ($intang_{jt}$) and the dummy variable $ibex_{jt}$, which takes the value of one for companies belonging to the Ibex 35 index.[5] Lastly, year fixed effects (γ_t) and industry fixed effects are included (α_ρ).

We first estimate the model by Ordinary Least Squares, generating a Pooled Linear Probability Model. Next, we consider that a possible endogeneity problem might exist between the dependent variable and the average tax rate (Gumpert et al., 2016). A MNC might set up an affiliate in a high tax territory only once it has an affiliate in a tax haven to which profits can be diverted. At this scenario, not only high tax rates would have influenced investments in tax havens, but also investments in tax havens would have influenced investments in non-haven ones and hence, the foreign non-haven average tax rate. Like Gumpert et al. (2016), we address the possible endogeneity problem with an instrumental variable approach, producing a Pooled Linear Instrumental Variable Model.

The average tax rate of MNCs is instrumented by using static ownership data for the first

[5] We took the companies belonging to the Ibex 35 index from 2013 to 2018, most of which are active in the service sector and the financial sector.

year for which information is available for a firm. For instance, if there is available information starting from 2015 for a MNC, the average tax rate for that multinational is calculated from 2016 on by using the static ownership data of 2015 and the corporate tax rates of the corresponding year. For every MNC, one year is lost from the sample, so that the sample is limited to the period 2014-2018. Moreover, those MNCs with available information from 2018 on are eliminated from the sample. As a result, for this reduced sample there are 4,405 Spanish companies, instead of 4,809 (for the general sample). And the total number of parent observations is 19,590, instead of 22,957. It should also be noted that for this instrument of the average tax rate, the weighting factor, i.e., the number of affiliates, is fixed over the years.

Logit and Probit models were also estimated, and the results were very similar to those presented in the following section. However, we rule out the estimation of firm fixed-effect models, due to the pooled structure of the data and the presence of an identification problem derived from the fact that only a few companies changed the status of their binary variable over the years. Moreover, we consider that all important factors affecting the opportunity of firms to accomplish profit shifting are controlled for by the model variables (such as the one representing the use of intangibles) and the industry dummies.

5. Results

This section presents the results of the estimates of equation (2) for the full sample and by economic sectors applying both the Pooled Linear Probability Model and the Pooled Linear Instrumental Variable Model. The descriptive statistics of the model variables are in Table A2 in the Annex.

5.1 Results for the full sample

Columns (1) and (2) of Table 3 show the estimates for the Pooled Linear Probability Model without and with industry dummies, respectively. And columns (3) and (4) show the

estimates for the Pooled Linear Instrumental Variable Model, from the reduced sample.

Table 3. Pooled Linear Probability Model and Pooled Linear Instrumental Variable Model

	(1) OLS	(2) OLS	(3) 2SLS	(4) 2SLS
τ_{jt}	0.5682***	0.6129***	0.6267***	0.6809***
	(0.0714)	(0.0711)	(0.0938)	(0.0924)
ps_{jt}	-0.0471***	-0.0084	-0.0485***	-0.0090
	(0.0095)	(0.0097)	(0.0103)	(0.0106)
ps_{jt}^2	0.0049***	0.0023**	0.0047***	0.0021**
	(0.0009)	(0.0010)	(0.0010)	(0.0010)
$nths_{jt}$	-0.0024	-0.0008	-0.0042	-0.0028
	(0.0053)	(0.0052)	(0.0059)	(0.0057)
$nths_{jt}^2$	0.0063***	0.0054***	0.0067***	0.0058***
	(0.0007)	(0.0006)	(0.0007)	(0.0007)
$intang_{jt}$	0.0200***	0.0191***	0.0198***	0.0190***
	(0.0014)	(0.0014)	(0.0015)	(0.0015)
$ibex_{jt}$	0.2089***	0.1491***	0.2080***	0.1425***
	(0.0391)	(0.0364)	(0.0426)	(0.0396)
N	9,300	9,298	7,953	7,952
R^2	0.1643	0.1896	0.1664	0.1937
Year dummies	Yes	Yes	Yes	Yes
Industry dummies	No	Yes	No	Yes
Instrument	No	No	Yes	Yes
F-statistics	-	-	5,317.84***	5,238.7***

Source: By the authors. Robust Standard Errors are in parentheses.

The main independent variable in the model indicates that an increase in the foreign average tax rate of Spanish MNCs makes it more probable that they own a tax haven affiliate, which is in line with investments for profit-shifting reasons. Moreover, this result is similar for all specifications, and this is because according to the Wooldridge endogeneity test, the null hypothesis of exogeneity of the tax rates cannot be rejected. Thus, it seems that the average tax rate variable is exogenous and does not need to be instrumented. Nevertheless, when instrumented, the F statistic is significant, which means that the instrument is valid.

According to the Pooled Linear Probability Model with industry fixed effects (column 2), an increase in the average foreign tax rate of the non-tax haven affiliates of a Spanish MNC is associated with a 0.61% greater likelihood of this company owning a tax haven affiliate. Since around 15.57% of Spanish companies in the sample have tax haven affiliates, this translates into

a 3.9% (0.6129 / 0.1557) greater demand for a tax haven affiliate. This result is a little higher than that of Gumpert et al. (2016). But unlike their paper, the present one includes firms in all economic sectors and the list of tax havens is extended with two important countries: Belgium and The Netherlands.

Also, the profitability of firms, proxied by the number of employees, the use of intangible assets and membership of the Ibex 35 index, spurs the probability of firms investing in tax havens, all this being consistent with the profit-shifting activity of MNCs. These results are also similar in all the four estimates reflected in Table 1.

5.2 Results by economic sectors

This subsection presents the estimates by economic sectors for both the Pooled Linear Probability model (Table 4) and the Pooled Linear Instrumental Variable Model (Table 5).

Table 4. Pooled Linear Probability Model: Economic Sectors

	(1) Manufacturing[1]	**(2) Service[2]**	**(3) Financial[3]**	**(4) Other[4]**
τ_{jt}	0.4778*** (0.0992)	0.5329*** (0.1099)	1.6930*** (0.4217)	0.2681 (0.2593)
ps_{jt}	0.0204 (0.0343)	-0.0115 (0.0119)	0.0375 (0.0331)	0.0040 (0.0211)
ps_{jt}^2	0.0012 (0.0033)	0.0014 (0.0012)	-0.0017 (00.0046)	0.0026 (0.0022)
$nths_{jt}$	0.0073 (0.0093)	-0.0206*** (0.0075)	0.0474** (0.0235)	0.0386*** (0.0139)
$nths_{jt}^2$	0.0016 (0.0013)	0.0093*** (0.0010)	-0.0000 (0.0022)	0.0043*** (0.0016)
$intang_{jt}$	0.0236*** (0.0024)	0.0191*** (0.0020)	0.0094 (0.0070)	0.0097** (0.0042)
$ibex_{jt}$	0.1196 (0.1812)	0.0561 (0.0542)	0.2676*** (0.0637)	0.0669 (0.1043)
N	3,477	4,253	661	907
R^2	0.1054	0.1725	0.1796	0.3196
Year dummies	Yes	Yes	Yes	Yes
Instrument	No	No	No	No

Source: By the authors. (1) Manufacturing sector: Nace Rev2 C: 1000-3400; (2) Service sector: Nace Rev2 G-J y L-S: 4500-6399 y 6701-9610; (3) Financial sector: Nace Rev2 K: 6400-6700; (4) Other: Nace Rev2 A-B, D-F y T-U.

Table 4 exhibits a particularly high effect of the tax rate on the probability of setting up a

tax haven affiliate for the financial sector, which matches with the higher amount of companies with tax haven affiliates in such sector in comparison to the other sectors. The large presence of banks in tax havens came to light with the tax scandals (Bouvatier et al., 2017; Fatica et al., 2020). Moreover, one can see that the effect of the Ibex 35 variable comes entirely from the financial firms, too. Inversely, intangible fixed assets only have a positive effect on the three other sectors.

The effect of the tax rate on the probability of investing in a tax haven is also positive for the manufacturing and service sectors, but considerably lower than for the financial sector. Comparing the first two, the effect is higher for the manufacturing than for the service sector once the possible endogeneity problem is controlled for and the instrument is valid (Table 5). It seems that, for the service sector, the Pooled Linear Probability Model overestimates the result (Table 4) due to the endogeneity problem: the null hypothesis of exogeneity of foreign tax rates is rejected for this subsample at 5% level of significance. Gumpert et al. (2016) examined manufacturing and service firms and they obtained a larger result for the first sector, too. They stated that this is “consistent with service firms facing high marginal costs of income reallocation and relatively little variability in these costs” (p. 727).

Table 5. Pooled Linear Instrumental Variable Model: Economic Sectors

	(1) Manufacturing	(2) Service	(3) Financial	(4) Other
τ_{jt}	0.6260***	0.4168***	2.3693***	0.7741**
	(0.1149)	(0.1452)	(0.6359)	(0.3785)
ps_{jt}	0.0133	-0.0118	0.0412	0.0062
	(0.0378)	(0.0131)	(0.0367)	(0.0227)
ps_{jt}^2	0.0014	0.0011	-0.0021	0.0022
	(0.0036)	(0.0013)	(0.0051)	(0.0024)
$nths_{jt}$	0.0057	-0.0225***	0.0326	0.0378**
	(0.0100)	(0.0082)	(0.0258)	(0.0161)
$nths_{jt}^2$	0.0020	0.0098***	0.0009	0.0042**
	(0.0014)	(0.0011)	(0.0024)	(0.0018)
$intang_{jt}$	0.0238***	0.0183***	0.0089	0.0101**
	(0.0027)	(0.0021)	(0.0076)	(0.0045)
$ibex_{jt}$	0.1751	0.0486	0.2528***	0.1012
	(0.1896)	(0.0583)	(0.0718)	(0.1186)
N	2,968	3,678	553	753
R^2	0.1040	0.1719	0.1759	0.3176
Year dummies	Yes	Yes	Yes	Yes
Instrument	Yes	Yes	Yes	Yes
F-statistics	2,908.08***	1,896.73***	380.553***	381.882***

Source: By the authors.

6. Robustness Checks

As stated in the introductory section, there is no single definition of tax havens. Hence, results could depend on the selected tax haven list. For this reason, the first robustness test in this section consists of replicating the estimates by using two alternative tax haven lists: the original Hines and Rice list and the Spanish list, which has evolved over time. The second robustness test consists of using alternative definitions of the main independent variable: the average tax rate.

6.1 Alternative tax haven lists

Table 6 summarizes the tax haven list established by the Spanish legislation for each year between 2013 and 2018.

Table 6. Spanish List of Tax Havens

Anguilla, Antigua and Barbuda, Bahrain, Bermuda, Brunei Darussalam, Cook Islands (the), Cayman Islands (the), Cyprus* (2013-2014), Dominica, Fiji, Falkland Islands (the) [Malvinas], Guernsey, Gibraltar, Grenada, Guam, Hong Kong* (2013), Isle of Man, Jersey, Jordan, Lebanon, Liberia, Saint Lucia, Liechtenstein, Macao, Monaco, Northern Mariana Islands (the), Montserrat, Mauritius, Nauru, Oman* (2013-2015), Solomon Islands, Seychelles, Turks and Caicos Islands (the), Saint Vincent and the Grenadines, Virgin Islands (British), Virgin Islands (U.S.), Vanuatu

Source: By the authors. (*) These territories were included in the Spanish tax haven list only

during the years of the sample indicated in parentheses.

From the Hines and Rice (1994) original tax haven list, there are 4,897 Spanish MNCs with at least one non-tax haven affiliate. From the Spanish list, there are 5,012. Moreover, 11.64% of Spanish companies have a tax haven affiliate from the Hines and Rice original tax haven list and only 1.63% from the Spanish list.

Table 7 replicates the estimates of Table 3 for the Pooled Linear Probability Modelusing these alternative tax haven lists. Columns (1) and (2) show the results for the Hines and Rice (1994) original tax haven list; and columns (3) and (4) for the Spanish list.

Table 7. Pooled Linear Probability Model: Alternative Tax Haven Lists

	(1) Original HR list[1]	**(2) Original HR list**	**(3) Spanish list[2]**	**(4) Spanish list**
τ_{jt}	0.4052***	0.4637***	-0.0280	-0.0206
	(0.0602)	(0.0601)	(0.0240)	(0.0239)
ps_{jt}	-0.0537***	-0.0186**	-0.0066**	-0.0006
	(0.0085)	(0.0088)	(0.0032)	(0.0035)
ps_{jt}^2	0.0057***	0.0032***	0.0010**	0.0006
	(0.0008)	(0.0009)	(0.0004)	(0.0004)
$nths_{jt}$	-0.0134 ***	-0.0105**	-0.0144***	-0.0136***
	(0.0048)	(0.0048)	(0.0026)	(0.0027)
$nths_{jt}^2$	0.0066***	0.0058***	0.0028***	0.0026***
	(0.0006)	(0.0006)	(0.0028)	(0.0004)
$intang_{jt}$	0.0110***	0.0105***	0.0021***	0.0021***
	(0.0013)	(0.0013)	(0.0005)	(0.0005)
$ibex_{jt}$	0.2412***	0.1912***	0.3334***	0.3238***
	(0.0410)	(0.0415)	(0.0444)	(0.0448)
N	9,562	9,560	9,724	9,722
R^2	0.1405	0.1646	0.1291	0.1350
Year dummies	Yes	Yes	Yes	Yes
Industry dummies	No	Yes	No	Yes
Instrument	No	No	No	No

Source: By the authors. (1) The sample comprises a pool of 4,897 large and very large Spanish parent companies; (2) The sample comprises a pool of 5,012 large and very large Spanish parent companies.

As can be seen in Table 7, the effect of the average tax rate on the probability of setting up a tax haven affiliate is also positive for the original Hines and Rice tax haven list. Moreover, the magnitude of the result is very similar to that obtained for the extended Hines and Rice list

when considering that only around 12% of Spanish companies invest in tax havens under this original list. In contrast, the result is not statistically significant for the Spanish list. This is consistent with the fact that Spain applies the tax credit method with the territories of its own tax haven list, which ultimately eliminates the profit-shifting incentives.

6.2 Alternative average tax rates

Table 8 contains various definitions of the main independent variable that are used alternatively as a proxy for the average tax rate.

Table 8. Alternative Average Tax Rate: Definitions

τ_{jt}**(a)**	MNC average foreign non-haven tax, unweighted
τ_{jt}**(b)**	MNC average foreign non-haven tax, weighted by the number of affiliates and adjusted by the participation of the parent in the affiliate
τ_{jt}**(c)**	MNC average foreign non-haven tax, weighted by the GDP
τ_{jt}**(d)**	MNC average foreign non-haven tax, weighted by the number of affiliates and the GDP
τ_{jt}**(e)**	MNC average foreign non-haven tax, weighted by the number of affiliates and the GDP and adjusted by the participation of the parent in the affiliate

Source: By the authors.

In the same way as Gumpert et al. (2016), the GDP is taken as a weighting factor for the calculation of the average tax rates for definitions (c) to (e). Moreover, the shareholding of the parent in the affiliates is also considered for definitions (b) and (e).

Table 9 replicates the estimates of Table 3 for the Pool Linear Probability Model with industry dummies using the alternative definitions of the average tax rate.

Table 9. Pooled Linear Probability Model: Alternative Average Tax Rate

	(1) τ_{jt}(a)	(2) τ_{jt}(b)	(3) τ_{jt}(c)	(4) τ_{jt}(d)	(5) τ_{jt}(e)
Average tax rate	0.5451***	0.6155***	0.8748***	0.9213***	0.8758***
	(0.0715)	(0.0717)	(0.0638)	(0.0642)	(0.0645)
ps_{jt}	-0.0083	-0.0111	-0.0077	-0.0080	-0.0106
	(0.0097)	(0.0098)	(0.0096)	(0.0096)	(0.0098)
ps_{jt}^2	0.0023**	0.0027***	0.0023**	0.0023**	0.0026***
	(0.0010)	(0.0010)	(0.0009)	(0.0009)	(0.0010)
$nths_{jt}$	-0.0010	0.0003	-0.0035	-0.0034	-0.0019
	(0.0052)	(0.0053)	(0.0052)	(0.0052)	(0.0052)
$nths_{jt}^2$	0.0055***	0.0053***	0.0055***	0.0055***	0.0053***
	(0.0006)	(0.0006)	(0.0006)	(0.0006)	(0.0006)
$intang_{jt}$	0.0193***	0.0190***	0.0180***	0.0179***	0.0180***
	(0.0014)	(0.0014)	(0.0014)	(0.0014)	(0.0014)
$ibex_{jt}$	0.1516***	0.1540***	0.1519***	0.1439***	0.1484***
	(0.0364)	(0.0367)	(0.0362)	(0.0361)	(0.0370)
N	9,298	9,149	9,298	9,298	9,149
R^2	0.1885	0.1888	0.1985	0.1999	0.1976
Year dummies	Yes	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes	Yes
Instrument	No	No	No	No	No

Source: By the authors.

As can be seen in Table 9, the effect of the average tax rate of MNCs on the likelihood of completing tax haven investments is positive for all alternative definitions of the average tax rate variable but increases somewhat when the GDP is used as a weighting factor.

7. Number of Tax Havens and Tax Haven Affiliates

This section evaluates whether higher tax rates stimulate not only the ownership of subsidiaries in tax havens, but also the number of tax havens where a multinational is established, or the number of subsidiaries incorporated by each company in tax havens. Table 10 estimates the model defined in equation (2), changing the dependent binary variable to a variable quantifying the number of tax haven used by Spanish companies (columns 1 and 2) and the number of tax haven affiliates (columns 3 and 4). Again, Ordinary Least Squares are applied, generating a Pooled Linear Model with and without industry dummies, respectively.

Table 10. Pooled Model: Alternative Dependent Variables

	(1) Number of Tax Havens	(2) Number of Tax Havens	(3) Number of TH affiliates	(4) Number of TH affiliates
τ_{jt}	0.1706 (0.1268)	0.2769** (0.1262)	-0.6997* (0.3757)	-0.3460 (0.3785)
ps_{jt}	-0.1201*** (0.0249)	-0.0684*** (0.0249)	-0.0178 (0.0897)	0.0211 (0.0854)
ps_{jt}^2	0.0116*** (0.0028)	0.0077*** (0.0028)	-0.0043 (0.0117)	-0.0101 (0.0116)
$nths_{jt}$	-0.1423*** (0.0209)	-0.1389*** (0.0207)	-0.7380*** (0.1334)	-0.7252*** (0.1303)
$nths_{jt}^2$	0.0209*** (0.0031)	0.0317*** (0.0031)	0.1263*** (0.0198)	0.1260*** (0.1260)
$intang_{jt}$	0.0415*** (0.0031)	0.0411*** (0.0031)	0.0815*** (0.0111)	0.0860*** (0.0118)
$ibex_{jt}$	2.3861*** (0.2428)	2.3157*** (0.2466)	9.7367*** (1.4434)	9.7356*** (1.4580)
N	9,300	9,298	9,300	9,298
R^2	0.3443	0.3525	0.2975	0.3015
Year dummies	Yes	Yes	Yes	Yes
Industry dummies	No	Yes	No	Yes
Instrument	No	No	No	No

Source: By the authors.

According to Table 10, it seems that while higher taxes boost the number of different tax havens used by Spanish parent firms, they have no effect or even discourage the number of total tax haven affiliates of MNCs. On the one hand, the result of columns (1) and (2) might mean that profit shifting is easier if Spanish MNCs diversify the location of their subsidiaries in tax havens. On the other hand, the results of columns (3) and (4) could mean than the number of affiliates located in each tax haven is not relevant for profit shifting. Additionally, these last results suggest that lower foreign non-haven taxes could foster tax haven investments for reasons other than profit shifting (column 3).

The huge effect of the Ibex variable is noteworthy for these estimates, in such a way that the Ibex-35 companies, and financial firms in particular (Tables 4, 5), besides being more likely to invest in a tax haven, have many more subsidiaries in tax havens and are also established in many more tax havens (as reflected also in Table 1). The relatively high coefficient of

determination for these estimates is also striking.

8. Tax Revenue Consequences for Spain

Estimates of the consequences for tax revenue of profit shifting by MNCs can be seen in Crivelli et al. (2015), OECD (2015), Clausing (2016, 2020a, 2020b), Güvenen et al. (2017), Fuest et al. (2021) or Tørsløv et al. (2020). Tørsløv et al. (2020) estimated that profit shifting reduced corporate tax revenue for the world as a whole by around 10% in 2015 (20% for the European Union). Germany had the highest percentage, 28% (corresponding to US$ 55 billion in shifted profits), and Spain had 14% (US$ 14 billion in shifted profits). In absolute terms, the main profit shifting destination is Ireland, with $106 billion (58% of corporate tax revenue). Fuest et al. (2021) have estimated a similar figure for German corporate tax revenue loss derived from profit shifting to tax havens: €5.7 billion per year.

This section analyses the tax revenue consequences for Spain derived from the profit-shifting activity carried out by Spanish companies, both directly and through affiliates established in other countries. Beyond estimating the tax revenue losses for Spain, we try to answer the following questions: Do all Spanish companies with a tax haven affiliate have tax savings, i.e., do all companies with a tax haven affiliate accomplish profit shifting? Do tax savings come only from MNCs with at least one tax haven affiliate, i.e., are tax haven territories the only destinations of paper profits?

Section a presents the theory on the tax consequences of profit shifting for MNCs and countries. Section b presents the applied methodology and the results obtained.

8.1 Tax revenue consequences: The theory

Table 11 and Table 12 summarize the possible scenarios for companies and residence countries derived from the profit-shifting activity of domestic MNCs, depending on countries' international tax systems and the corporate income tax rate they apply. Table 11 concentrates on

profit shifting between foreign affiliates and Table 12 on profit shifting from the residence country to abroad.

Table 11. Profit Shifting Between Foreign Affiliates: Tax Savings for Domestic MNCs and Tax Losses/Profits for Residence Countries Depending on the International Tax System (ITS) and the Standard Corporate Income Tax (CIT) Rate of Residence Countries

ITS/CIT rate	Relatively high*	Relatively low*
Territorial	**1.** Tax Savings for MNCs: Yes Tax Losses for countries: No	**2.** Tax Savings for MNCs: Yes Tax Losses for countries: No
Worldwide	**3.** Tax Savings for MNCs: No Tax Profits for countries: Yes	**4.** Tax Savings for MNCs: Yes Tax Losses for countries: No

Source: By the authors.

Note (*): The level of the standard CIT rate of residence countries is defined in comparison to the level of the CIT rate of countries to which profits are shifted.

Considering first the focus of this paper, i.e., profit shifting from high tax foreign affiliates to low tax ones, only MNCs resident in countries applying worldwide tax systems and relatively high CIT rates (country type 3) do not benefit from this activity at the end of the day. This is because when profits are repatriated to the parent company, it must pay the difference between the CIT rate of the group's residence country and the foreign tax rate. The only incentive for these MNCs is to defer taxation in the residence country.

From the point of view of countries, we see the opposite to what happens to MNCs: type 3 countries benefit from the profit-shifting activity of their MNCs abroad. This is due to the lower tax credit they must pay, as MNCs' profits are subject to lower tax rates.

As to the rest of scenarios (country types 1, 2, and 4), companies benefit from profit shifting to low tax countries at the end of the day. This is clear when the residence country applies the territorial tax system (country types 1 and 2), since slightly taxed profits are exempt from taxation when repatriated, but also happens when the residence country applies a worldwide tax system and a relatively low CIT rate (country type 4). In this last scenario, when

MNCs repatriate profits, they remain subject to a reduced tax.

For type 1, 2, and 4 countries, the profit-shifting activity is irrelevant. Type 1 and 2 countries exempt foreign profits from taxation when repatriated. Type 4 countries tax foreign profits when repatriated but allow a tax credit for taxes paid abroad. To the extent that they apply a limited tax credit method, such tax credits will be always low, independent of the tax rates applied to foreign profits.

Thus, no country is harmed by the profit-shifting activity of its MNCs from high tax to low tax foreign affiliates ones; the countries which are harmed will be those foreign high tax countries in which affiliates are located, and from which profits are shifted to low tax countries. Moreover, type 3 countries can benefit from such activity. Thus, domestic countries may only be harmed by the profit-shifting activity of foreign multinational groups operating within their borders. However, such a scenario is beyond the scope of this research.

Table 12. Profit Shifting from the Residence Country to Abroad: Tax Savings for Domestic MNCs and Tax Losses/Profits for Residence Countries Depending on the International Tax System (ITS) and the Standard Corporate Income Tax (CIT) Rate of Residence Countries

ITS/CIT rate	Relatively high	Relatively low
Territorial	**1.** Tax Savings for MNCs: Yes Tax Losses for countries: Yes	**2.** -
Worldwide	**3.** Tax Savings for MNCs: No Tax Losses for countries: No	**4.** -

Source: By the authors.

Note (*): The level of the standard CIT rate of residence countries is defined in comparison to the level of the CIT rate of countries where profits are shifted to.

We now consider profit shifting from a domestic MNC to a foreign affiliate. Different from Table 11 above, as can be seen in Table 12, MNCs only benefit from profit shifting from their residence country to abroad if they are residents of type 1 countries, i.e., countries applying a territorial tax system and with relatively high CIT rates. For type 3 countries, companies do not

benefit from the tax planning activity at the end of the day; and for type 2 and 4 countries, profit shifting makes no sense, since companies are subject to relatively low tax rates in their country of residence.

The tax revenue of MNCs' residence countries is only harmed if they apply a territorial tax system, since they stop taxing a portion of the profits generated in their territory.

8.2 Tax savings for Spanish MNCs: Methodology and results

Based on the theory above, Spain can be classified as a type 1 country (Table 11 and Table 12), since it applies a CIT rate of 25% and a territorial tax system to most countries. Particularly, Spain only applies the worldwide tax system to those territories in the Spanish list of tax havens (Gibraltar excluded, as an EU territory) and to the non-haven countries with neither a double taxation treaty in place with Spain, nor a statutory CIT rate of at least 10%.

This means that Spanish MNCs can benefit from profit shifting, both between foreign affiliates and from Spain to abroad. From the point of view of the country, the possible tax revenue losses come from profit shifting from Spain to abroad only.

In order to calculate the tax savings for Spanish MNCs derived from profit shifting, we compare the consolidated taxation of Spanish MNCs at a scenario without profit shifting (all else being equal), with their actual consolidated taxation figure in the Sabi database. Therefore, the tax savings for a MNC can be represented as follows:

$$Tax\ savings_{jt} = Taxation\ without\ PS_{jt} - Taxation\ with\ PS_{jt}(Sabi) \qquad (3)$$

Where $Tax\ savings_{jt}$ is the tax savings for a multinational *j* in period *t*; $Taxation\ without\ PS_{jt}$ is the estimated consolidated taxation without profit shifting for a multinational j in period *t;* and $Taxation\ with\ PS_{jt}(Sabi)$ is the real consolidated taxation for a multinational *j* in period *t*, taken from the Sabi database.

For every Spanish multinational, consolidated taxation without profit shifting is estimated by taking the product between the weighted average tax rate of countries where the corresponding MNC operates and its consolidated profit before tax as an indicator for its global CIT base, taken from the Sabi database. It can be represented as follows:

$$Taxation\ without\ PS_{jt} = \\ = Weighted\ average\ tax\ rate_{jt} * Profit\ before\ tax(Sabi)_{jt} \quad (4)$$

The average tax rate considered is the MNCs' average non-haven tax rate weighted by the GDP. On the one hand, unlike the average tax rate of section 6 (τ_{jt}(c)), now we include the Spanish CIT rate in the average tax rate because the consolidated profit before tax includes both the profit generated in third countries where the MNC is active and that generated in Spain.[6] The CIT rate of tax havens remains outside the average tax rate to calculate the estimated consolidated taxation because we assume that there is no real economic activity within the border of these territories, i.e., we assume that these territories act only as recipients of paper profits. The tax haven list taken in this section is again the extended Hines and Rice (1994) tax haven list. On the other hand, the GDP approximates the level of real economic activity in each country.[7] Finally, we continue using standard CIT rates as indicator of the CIT of countries.

One last and important assumption for estimating MNCs' taxation in the absence of the profit-shifting activity is that the definition of the corporate groups we consider for calculating the average tax rate matches that of the Sabi database, from which information about

[6] We did not consider the Spanish CIT rate in the previous sections because although the probability of investing in tax havens may also be influenced by the CIT rate in the multinational residence country, this effect cannot be estimated due to lack of variation (Gumpert et al., 2016).

[7] We assume that there are no differences between the home and the source countries regarding the generation of real profits.

consolidated taxation and consolidated profit before tax is taken.

We take the same limited sample of companies as in the previous sections to estimate the revenue consequences of profit shifting: a data pool of 4,809 different Spanish companies. However, this sample is now more limited due to the lack of consolidated information in the Sabi database for some of the companies. Moreover, we disregard the negative values of consolidated taxation and consolidated profit before tax.

The results for the tax savings of Spanish MNCs derived from profit shifting during the period 2013-2018 can be seen in Table 13.

Table 13: Tax savings (TS) 2013-2018 (€ Thousand). Descriptive Statistics

	(1) Tax Savings	(2) TS companies with tax havens	(3) TS companies without tax havens
Average	1,936	9,036	715
Average if TS>0	3,877	17,112	1,603
Maximum	1,115,095	1,115,095	297,011
Minimum	-502,095	-502,095	-239,183
Sum	24,669,328	16,898,441	7,770,887
Sum if TS>0	33,158,910	21,458,877	11,700,033

Source: By the authors.

As can be seen in column (1), the Spanish MNCs of the sample have, in global terms, tax savings that amount to more than €24 billion (33 billion if only positive values are considered) during the period 2013-2018, i.e., around €4 billion per year.[8] In average terms, each MNC saves almost €2 million for 2013-2018, that is, around €300,000 per year.

Comparing the two kinds of multinationals (columns 2 and 3), in average terms, both Spanish companies with tax haven affiliates and those without them have positive tax savings.

[8] If we approximate the share of the global CIT tax base for each country with its GDP, we can estimate that, of the €4 billion saved per year, €660,000 thousand would correspond to profit shifting from Spain to abroad and, therefore, the rest to profit shifting through affiliates established in other countries. The latter figure would also approximate the maximum revenue loss for Spain as a result of that activity (Table 12), i.e., the loss if the tax rate of the benefit recipient country were zero.

That means that profit shifting is not limited to tax havens. However, the tax savings are higher for Spanish companies with a tax haven affiliate than for companies with no tax haven affiliate. This is consistent with the greatest volume of profit shifting to tax havens. Also, the total tax savings are higher for the first group of companies: total tax savings of this group of Spanish companies (€16.9 billions) accounts for 68.50% of total tax savings (€24.7 billions). And these results persist for positive tax savings (both for average tax savings and for total tax savings).

In response to the questions raised at the beginning of this section, on the one hand, it seems that not all MNCs with tax haven affiliates use tax havens for profit shifting reasons, since not all of them have positive tax savings. However, in this regard, it is worth remembering the rough assumptions and simplifications our estimates are based on. For instance, the matching between our multinational groups and those of the Sabi database or the distribution of consolidated profits between countries, which is based on the GDP of countries. On the other hand, it seems that profit shifting also happens within multinational groups with no tax haven affiliates.

9. Conclusions and the Way Forward

Tax havens seem to be ideal territories for MNCs to artificially transfer their profits to in order to pay less tax, to the detriment of high tax territories where economic activity takes place. They have the most favourable tax conditions for foreign investors and other profit shifting-friendly characteristics, such as stable governments.

The base erosion of high tax countries became more significant during the 2008 crisis, and again since the current coronavirus crisis began, because of the financial constraints of governments. To tackle this problem, there are international proposals by the OECD (2020a, 2020b) and the EU (2016a, 2016b), as well as individual initiatives by countries (see, for

instance, Gastaldi and Zanardi, 2019), that try to limit the aggressive tax planning strategies of MNCs.

This paper tried to disentangle the features of Spanish companies that invest in tax havens by using a model based on the profit-shifting activity of MNCs. In line with the literature, our estimates suggest that companies with higher foreign non-haven tax rates have a higher probability of setting up tax haven affiliates. This is consistent with the profit-shifting activity of MNCs, since it is probable that companies with high foreign taxes were the most interested in shifting profits to low tax territories, particularly tax havens. By economic sector, the positive result is especially high for financial firms, followed by manufacturing and service firms. Moreover, the size of companies, the use of intangible assets and membership of the Ibex 35 index also increase the probability of investing in tax haven territories. Furthermore, higher taxes also increase the number of different tax havens used by MNCs.

The paper also concludes that Spanish companies have saved around 4 billion euros per year in corporate income tax in the period 2013-2018, as a result of profit shifting. Moreover, Spanish companies both with and without tax haven affiliates have positive tax savings, which would mean that profit shifting is not only directed to tax haven territories. Nevertheless, tax savings are higher for Spanish companies with at least one tax haven affiliate than for companies with no tax haven affiliate.

Some avenues of progress are opened from this research. As Gumpert et al. (2016: 714) themselves recognised and our analysis of the tax revenue consequences indicates, although tax havens are probably the best territories to move profits to, companies could also benefit from "reallocating taxable income to affiliates located in nonhaven countries that have moderately low tax rates". Therefore, the analysis made in this paper can be completed by investigating in which

territories (tax havens or not) Spanish MNCs invest for profit shifting reasons. In this study, the key issue will be to order the foreign affiliates according to the taxation of foreign profits at the end of the day, i.e., when foreign profits are repatriated to Spain. To this end, the withholding tax rates of territories and the Spanish international tax system applied to every jurisdiction should be taken into account, in addition to corporate income tax rates.

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Annex

Table A1. Spanish Companies with and without Tax Haven Operations: Average 2013-2018

Financial information	Parents with TH affiliates	Parents without TH affiliates
Turnover (€M)	294.43	101.26
Total Assets (€M)	1,126.40	179.73
Intangible Assets (€M)	29.02	6.69
Number of Employees	836.35	332.87
Taxation (€M)	0.16	1.05
CIT rate	0.28	0.27
Profit/Loss before tax	32.21	5.26

Group information	Parents with TH affiliates	Parents without TH affiliates
Total Affiliates/Parent	31.36	6.9
Foreign Affiliates/Parent	17.62	2.96
Foreign Affiliates/Total Affiliates (%)	67.02	63.26

Industry information	Parents with TH affiliates	Parents without TH affiliates
Manufacturing firms (%)	21.59	30.61
Service firms (%)	43.83	47.00
Financial firms (%)	22.83	11.02
Other (%)	11.75	11.38

Source: By the authors.

Table A2. Descriptive Statistics of the Model Variables

Variable	N	Mean	Std. Dev.	Min	Max
y_{jt}	22,957	0.16	0.36	0	1
p_{jt}	20,255	411.66	2,370.14	1	89,500
nh_{jt}	22,858	381.61	4,195.71	1	225,000
$intang_{jt}$	16,614	10.28	82.72	-0.93	4,158
$ibex_{jt}$	22,957	0.01	0.07	0	1
τ_{jt}	22,741	0.2717	0.05	0.09	0.55
τ_{jt}(a)	22,741	0.2715	0.05	0.09	0.55
τ_{jt}(b)	22,267	0.2712	0.06	0.09	0.55
τ_{jt}(c)	22,712	0.2935	0.06	0.1	0.55
τ_{jt}(d)	22,724	0.2834	0.06	0.09	0.55
τ_{jt}(e)	22,250	0.2823	0.06	0.09	0.55

Source: By the authors.