

# Structured management and tax planning practices in the firm

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## Abstract

This paper considers the effect of structured management practices on tax planning behavior of domestic and multinational enterprises (MNEs). In principle, management practices improve productivity and hence should increase taxable corporate income of firms. However, better managed firms may also be better at tax avoidance, which makes the net effect unclear. We empirically explore this relationship using a unique dataset on managerial structures matched to firm-level financial data for 19 countries; we have five main findings. First, we show that firms with more structured management practices have higher reported profits, and the relationship is stronger for MNEs. Second, MNEs with more structured practices have higher reported profits in low tax countries relative to high tax countries. Third, using the MNE parent company information, we classify firms as being in a high or low-tax host or home country. We show that MNEs from a high-tax home country operating in a low-tax host country exhibit a positive relationship between reported profits and structured management practices, while the opposite relationship exists for MNEs from high-tax home countries located in high-tax host countries. Fourth, we show that these firms also tend to report close to zero returns on assets in high-tax countries. Fifth, we show that “aggressive tax avoiders” (firms from high-tax home countries operating in low-tax host countries) tend to adopt more structured management practices in their firms. These patterns are consistent with structured management firms shifting profits out of high-tax country affiliates into low-tax country affiliates.

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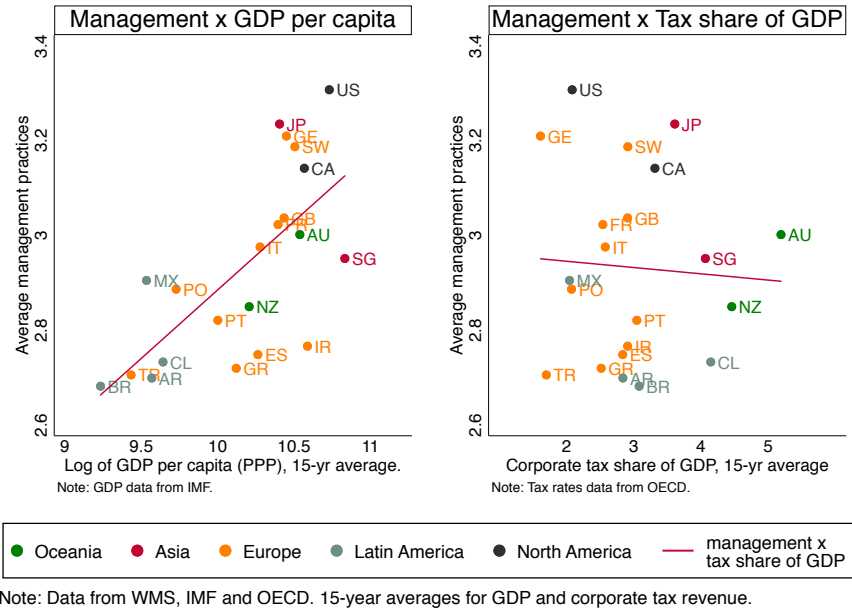
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# 1 Introduction

The revelations from Panama and Paradise papers in 2015 exposed a sizable amount of international tax avoidance by firms, and in particular multinational enterprises (MNEs). Despite a multilateral effort to curb such practices — the OECD Base Erosion and Profit Shifting (BEPS) initiative was set up in 2016 — the extent of profit shifting has been increasing over time (Clausing [2016], OECD (2017)). While recent evidence suggests that the size of profit shifting is substantial (Habu [2017], Torslov et al. [2018]), we still know little about the types of firms that are the largest profit-shifters, and what drives or enables them.

In this paper we explore the relationship between adoption of structured management practices and firms’ propensity to engage in profit shifting. As higher adoption of structured management practices improves productivity (Bloom et al. [2013, 2014], Giorelli [2019]), in principle this higher productivity should also increase firm revenues and thus their taxable corporate income. However, firms adopting these more structured management practices could also be more effective at legally avoiding taxation. We see this pattern in Figure 1: while there is country-level correlation between adoption of structured management practices and GDP per capita, there is no relationship between the level of adoption of these practices and the GDP share of corporate tax receipts. This raises the question of whether a link between firm structured management and tax *avoidance* exists.

Figure 1: Strong relationship between management and GDP, but not tax receipt share



We propose a novel explanation for why some firms differ in their propensity to legally avoid paying corporate taxes. [Habu \[2017\]](#) finds that there are no observable differences between firms that report positive taxable profits and firms that report no taxable profits to revenue authorities. She attributes these differences to the unobservable propensity of a firm to be an aggressive tax avoider. In this paper we explore the relationship between structured management and reported profits and we find that management practices could be one of the previously unobserved factors that explain why some firms pay substantially lower taxes.

Using a unique dataset that matches structured management practices from the World Management Survey (WMS) and detailed firm accounts information from Bureau van Dijk’s Orbis, we explore how structured management practices may affect the tax paying behavior of domestic firms and MNEs.<sup>1</sup> We have five main findings that relate the management quality to the amount of reported profits at the firm level. Our main hypothesis is that, if more structured management enables firms to minimize their overall tax bill, we would expect to see a relationship between the amount of profit reported in low tax jurisdictions and structured management. In particular, a firm looking to lower its overall tax bill would report high taxable profits in low-tax jurisdictions and low taxable profits in high-tax jurisdictions.

We start by documenting the basic relationship between the adoption of structured management practices in firms and their reported profits. While we find a positive relationship for both domestic firms and MNEs, the relationship is markedly stronger for MNEs. Further, we classify firms based on the location of their operations, identifying whether they operate in low tax or high tax countries. We show that MNEs operating in low-tax countries (relative to high-tax countries) exhibit an even stronger positive relationship. We find no relationship between reported profits and structured management practices in high tax countries. This suggests that firms with more structured management practices may specifically locate their affiliates in low-tax countries to minimize their overall tax commitments.

To understand this relationship, we classify firms based on their parent company location and country of operation, identifying whether they are firms from high-tax “home” countries, and whether they operate in high- or low-tax “host” countries. In particular, we focus on MNEs from high tax home countries that could have an incentive to relocate their profits from high tax to low tax host countries. We find that foreign MNEs from high-tax home countries that adopt more structured management are more profitable in low-tax host countries. We observe the opposite relationship between structured management and reported profits in MNEs from high-tax home countries operating in high-tax host countries. This suggests that a better managed parent company located in a high-tax

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<sup>1</sup>The WMS sample covers firms with more than 50 employees that operate in the manufacturing sector.

country reports higher profits in their affiliates located in low-tax host countries relative to their affiliates located in high-tax host countries. This provides preliminary evidence for better managed firms in high tax home countries optimizing their overall tax bill and locating profits in low-tax jurisdictions at the expense of high-tax jurisdictions.

To unpack these patterns, we focus on firms that are known to be more aggressive tax avoiders: those with near zero returns on assets (ROA) (Habue [2017], Johannesen et al. [2016]). We find there is a higher incidence of ROAs bunching around zero for structured management firms in high-tax countries than in low-tax countries. This is consistent with tax planning behaviour of aggressive tax avoiders that report hardly any taxable profits in high tax jurisdictions. Finally, we classify firms as “aggressive tax avoiders” if they have parent companies from high-tax home countries and operate in low-tax host countries. We find aggressive tax avoiders tend to adopt more structured management practices in their firms relative to other firms. These patterns are consistent with profit shifting behavior: structured management firms shifting profits out of high-tax country affiliates into low-tax country affiliates.

Our evidence suggests that firms adopting more structured management practices also tend to engage in more aggressive tax planning practices. These structured management firms consistently locate more of their profits in low-tax affiliates than in high-tax affiliates, minimizing their overall tax bill. This pattern is more pronounced for firms that are headquartered in high-tax countries, suggesting such management practices could be allowing for more aggressive tax planning behavior.

In general, the profit shifting literature focuses on showing the existence and measuring the extent of profit shifting. We know that it is most cost-effective for larger, multinational firms with links to tax havens to report lower profits in high-tax countries (Desai et al. [2006], Dowd et al. [2017], Gumpert et al. [2016], Hines and Rice [1994]). Firms use a variety of strategies to avoid paying corporate taxes, such as debt shifting (Desai et al. [2004], Huizinga et al. [2008]), transfer pricing (Cristea and Nguyen [2016], Davies et al. [2018]) and intellectual property location (Dischinger and Riedel [2011]). Still, we do not fully understand why some multinational firms choose to aggressively minimize their tax bill and others do not. We propose that this may be linked to their ability to do so, proxy for this ability with a measure of structured management at the firm level. This adds a novel explanation for why some firms are more likely to engage in aggressive tax planning.

## 2 Data

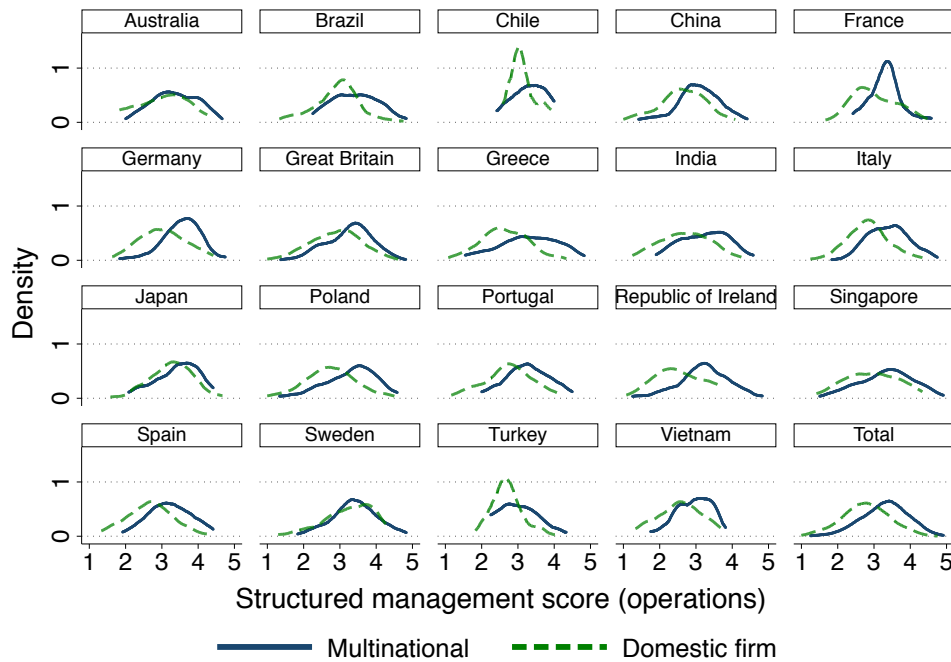
To explore the relationship between profit shifting and structured management practices we link two proprietary datasets: the World Management Survey (WMS) for the structured management measures and Bureau van Dijk’s Orbis for firm financial information. We

describe each in turn.

## 2.1 Management data: World Management Survey

To measure the level of adoption of structured management practices in a firm we use a unique dataset from the WMS, a project that has systematically collected data on the adoption of structured management practices in firms since 2004.<sup>2</sup> The WMS focuses on medium- and large-sized firms, selecting a random sample of firms with employment of between 50 and 5,000 workers. The WMS methodology, described in [Bloom and Van Reenen \[2007\]](#), employs a double-blind, interview-based evaluating tool that defines and scores a set of 18 basic management practices on a scoring grid from one (“little/no formal management practices”) to five (“best practice”). The topics covered include adoption of lean manufacturing practices, performance monitoring, target setting and people management.

Figure 2: Multinationals adopt more structured management practices everywhere



While there are 18 topics covering these different areas of management, in this paper we focus on the 12 topics that directly relate to operations management and exclude the questions relating to people management. We build an index of “structured operations practices” following the convention from previous work in this literature: we standardize each of the 12 questions, average across the index and standardize again. When we refer to

<sup>2</sup>See [Bloom et al. \[2014\]](#) for a survey.

“structured management” we mean this operations-focused average score. We also follow the convention set in [Cornwell et al. \[2019\]](#) and divide firms into two groups, based on a methodological cutoff of the practices measured: firms earning scores above 3 on the 1 to 5 scale are categorized as having adopted a minimum level of “structured” management practices, while those with scores below 3 have, at best, an “unstructured” set of practices. The survey collects additional information on ownership and firm organization, though it does not include any financial data.

The average firm in each of the countries in our sample has a structured management operations score between 2.7 and 3.4, though the firms within each country span scores between 1 and 4.9. [Figure 2](#) shows the distribution of management scores for MNEs and domestic firms. It is immediately clear that MNEs adopt more structured management practices in all the countries in our sample.

## 2.2 Firm financials: Bureau van Dijk (Orbis)

Firm financial data comes from the global corporate data source Bureau van Dijk. We use data between 2009 and 2017. The main variables include operating revenue, profit and loss before tax (P&LBT), total assets, taxation from income statement, earnings before interest and tax (EBIT). We matched 4,371 firms in the WMS with at least one year of financial data in Orbis, yielding 29,299 year-firm observations. [Table 1](#) shows the summary statistics for the sample used in this paper. To construct this set of summary statistics we first averaged each variable across all years that we had available data, and then collapsed the data by country.

The first thing to note is that while the average share of MNEs varies widely by country — only 6% of firms are foreign MNEs in Turkey but 60% of the firms in Great Britain are foreign MNEs — in general there is a substantial share of MNEs in the sample (43%). The average ROA for firms within a country is 4%, and the median number of employees is 250. The average effective tax rate (ETR) in a sample of our firms is 16%. This ranges from the low of 9% in the known tax havens or Ireland and Singapore to high of 28% in Italy and 26% in Japan. The structured management score is highest in highly developed countries, such as Sweden, Germany and Japan. Note that while these are not the countries where firms pay highest ETRs in our sample, they are countries with high corporate statutory tax rates. The structured management score is lowest in Vietnam, Turkey and China. These countries do not have the lowest statutory corporate tax rates in our sample and neither do firms reporting lowest ETRs. This is important, as otherwise we could have been picking up the simple correlation with more structured management in high tax-countries that would have been unrelated with tax planning practices.

Table 1: Descriptive statistics

	<b>N firms</b>	<b>N firm x yr</b>	<b>MNE share</b>	<b>Avg ROA</b>	<b>Median Emp</b>	<b>Tax rate PLBT</b>	<b>Structured management</b>
Australia	111	853	0.85	0.03	616	0.19	3.31
Brazil	145	461	0.24	-0.00	351	0.20	3.04
Chile	35	194	0.46	0.06	1480	0.21	3.21
China	503	1931	0.29	0.05	485	0.11	2.75
France	107	873	0.52	0.03	142	0.12	3.18
Germany	270	1892	0.62	0.06	307	0.15	3.35
Great Britain	686	5227	0.60	0.06	196	0.16	3.11
Greece	377	2755	0.25	0.00	122	0.14	2.79
India	180	1108	0.22	0.03	541	0.21	2.82
Ireland	99	638	0.55	0.04	104	0.09	2.90
Italy	351	3008	0.44	0.03	180	0.28	3.08
Japan	100	703	0.36	0.04	272	0.26	3.32
Poland	175	1350	0.38	0.04	250	0.17	2.95
Portugal	178	1415	0.38	0.01	143	0.18	2.94
Singapore	270	1164	0.58	0.05	400	0.09	3.16
Spain	194	1579	0.43	0.04	149	0.19	2.91
Sweden	213	1845	0.73	0.08	197	0.15	3.37
Turkey	229	1229	0.06	0.04	325	0.13	2.73
Vietnam	148	1074	0.25	0.05	200	0.13	2.64
Total	4371	29299	0.43	0.04	250	0.16	3.04

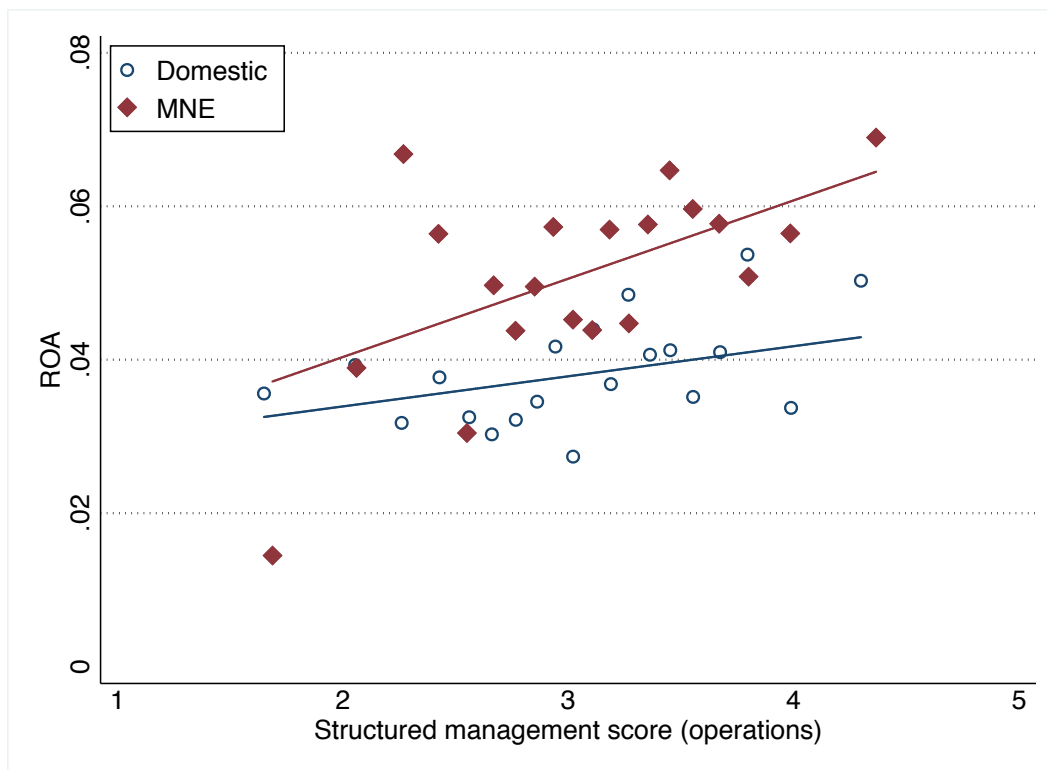
Note: Data from Orbis and the World Management Survey. The total number of observations is the count of firm-year available data points (total from column 2), though not all firms have all years available. To arrive at the summary statistics in this table, we first averaged across the values for each firm across all years with available data, and then averaged across countries.

### 3 Empirical findings

#### 3.1 Management-ROA relationship is steeper for MNEs

There is a large literature that documents the correlational and causal relationship between the adoption of structured management practices and better firm outcomes. These include higher sales, labor productivity, R&D expenditures, survival, and profitability (see Bloom et al. [2014] for a survey). We separate the WMS sample of MNEs from domestic firms and plot the relationship between ROA and the structured operations management score in Figure 3, including country and year fixed effects. We note a positive relationship for both types of firms, but the relationship is significantly stronger for MNEs. This suggests that MNEs with more structured practices are even more profitable on average than similarly-managed domestic firms. This lends support to the hypothesis that more structured management is correlated with higher firm profitability and, in principle, higher tax payments.

Figure 3: MNEs are better managed everywhere



Note: Graph uses 29,299 firm-year observations. There are 1,871 MNEs and 2,483 domestic firms in the sample. The binscatter graph includes controls for country and year fixed effects. The structured management operations score is the average of 12 operations questions in the WMS. The slope of the ROA-management relationship for MNEs is significantly different from the slope for domestic firms.



### 3.2 Management-ROA relationship for MNEs in low- and high-tax countries

To understand whether there is a link between structured management and profit shifting, we focus on the sample of MNEs. As profit shifting involves transfers of profits across borders between related parties, by definition this is only possible for a multinational company with multiple affiliates across various countries. We consider the reported profits of firms in low corporate tax rate country-year cells relative to high corporate tax country-year cells. We define low tax country-year cells as those countries having statutory corporate tax rate below median in a given year. Considering the recent statutory corporate tax rate changes among many countries in the world, we allow each country to change from high tax to low tax during the sample period by using the pooled data. For instance, UK had 30% statutory corporate tax rate in 2007, but had gradually lowered in main corporate rate to 19% in 2017.

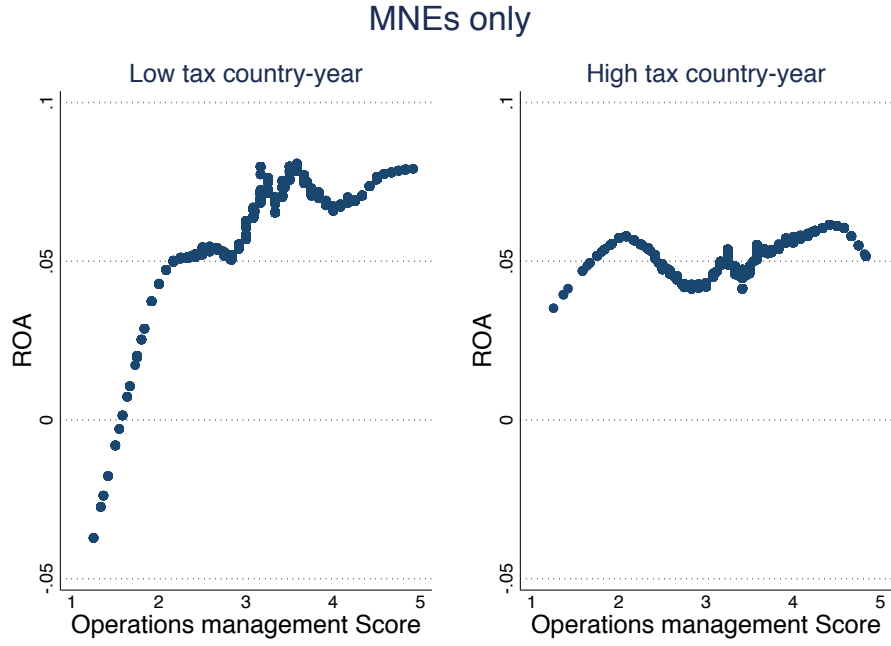
Figure 4 plots the ROA-structured management relationship for firms in low-tax countries and high-tax countries. The pattern suggests that the relationship between ROA and structured operations management is most pronounced in low-tax countries, while it is flat in high tax countries. This provides suggestive evidence that firms with more structured management report high profits in low tax countries. As our descriptive statistics show that firms with more structured management are not located in low statutory corporate tax rate countries, this suggests that these firms could be shifting profits to low tax countries to minimize their tax bill. This evidence is strengthened by the apparent lack of relationship between ROA and structured management in high tax countries. Firms operating in those countries have similar profitability across all values of structured management.

### 3.3 MNEs from high tax home countries in low/high tax hosts

Having observed that MNEs with more structured management systematically report higher profitability in low tax countries we now split the sample of MNEs by the location of their headquarter. In particular, we divide our MNEs into those headquartered in high tax home and low tax home countries. Again, we define low tax country-year cells as those countries having statutory corporate tax rate below median in a given year. We focus our analysis on MNEs from high-tax home countries and consider the profits of their affiliates abroad. We assume that those MNEs may have larger incentives to relocate their profits from the high-tax home countries than MNEs that are headquartered in low-tax countries. For instance, we assume that an Irish MNE will have little incentive to shift profits to another low-tax location, while a German MNE is more likely to shift profits into low-tax jurisdiction.

In Figure 5 we plot the relationship between ROA and structured management for

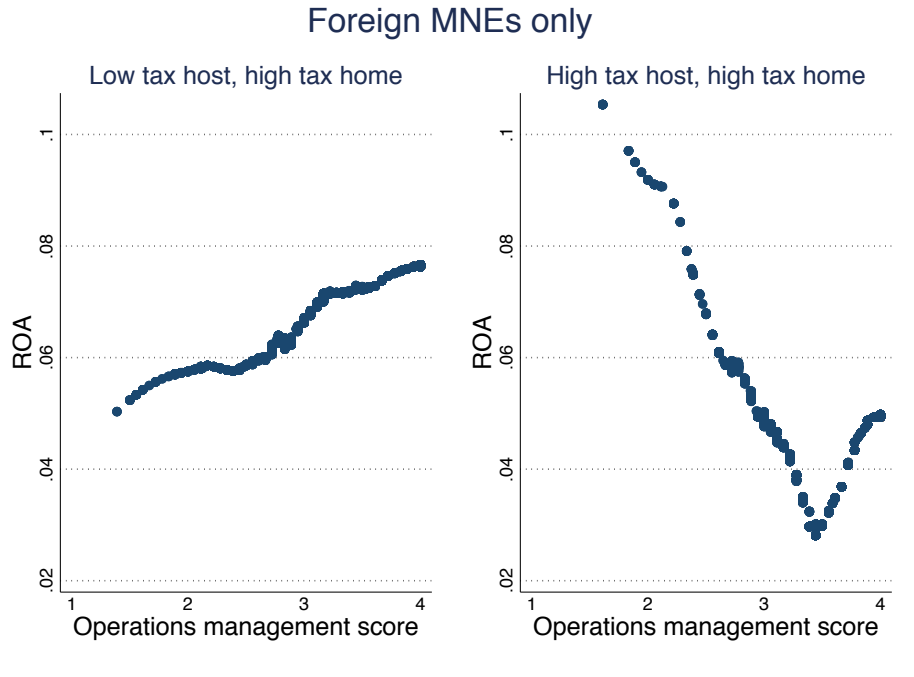
Figure 4: ROA and management practices in low- and high-tax countries



MNEs headquartered in high tax countries and we split their affiliates into those located in low tax host countries and high tax host countries. We show two clear patterns: first, there is a positive relationship between ROA and structured operations management in firms operating in low-tax countries. Second, we see the opposite relationship for firms operating in high-tax host countries.

This creates a puzzle. It has been established that more structured management practices yields higher productivity across firms. The difference in profit reporting practices relative to affiliate location suggests that these differences are not based on pure profitability. We interpret this as evidence that these MNEs may shift profits from high-tax jurisdictions towards low-tax jurisdictions in order to minimize their overall tax bill. The lower profitability of MNEs in high tax jurisdictions may be simply be a feature of lower reported profitability that includes the actual profits made in that jurisdiction minus the amounts of profits shifted into the low-tax jurisdiction. Conversely, since firms with more structured management report higher profits in low-tax jurisdictions, these could be a function of both local profitability of those affiliates plus the amounts of profits shifted from high-tax jurisdictions.

Figure 5: Differences in relationship by low-tax and high-tax host countries



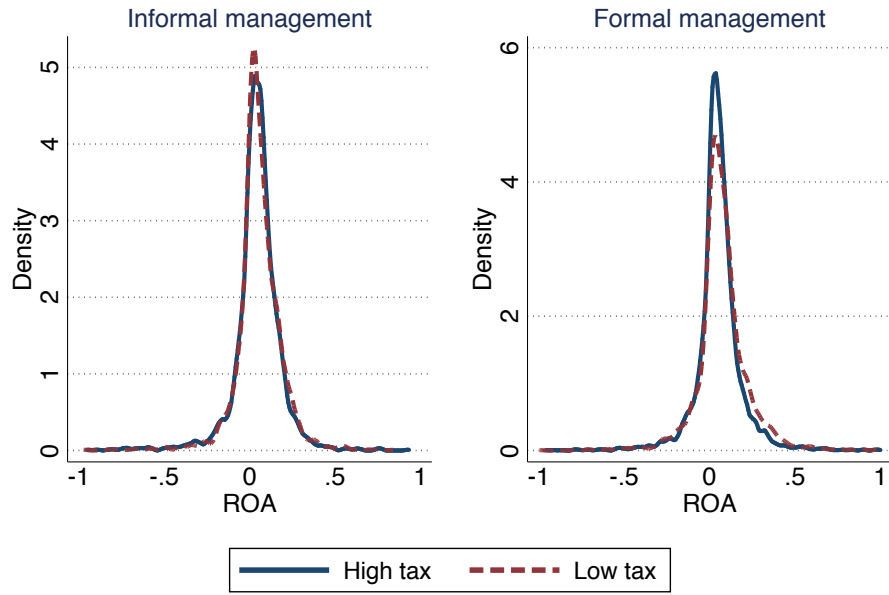
### 3.4 More bunching around zero ROA for better managed firms in high tax country-years

We complement the descriptive evidence by comparing the propensity of MNEs to report near zero ROAs. Previous literature ([Johannessen et al. \[2016\]](#)) has noted that a large share of firms reporting near zero accounting profits can suggest profit shifting, especially if those firms are located in high-tax countries. We plot the distributions of ROAs around zero for two groups of firms: those with formal management structures in place and those with informal management structures in place.<sup>3</sup> Within each graph we compare MNE affiliates operating in high statutory corporate tax rate country-year cells and those operating in low statutory corporate tax rate country-year cells.

The evidence from [Figure 6](#) shows that for firms with more management structures in place a larger fraction of MNEs operating in high tax countries reports near zero ROAs than for MNEs operating in low tax countries. The same is not true for MNEs with informal management structures in place. For those firms we see no difference in terms of the fraction of firms reporting near zero ROAs. This suggests that firms with formal management structured in high-tax countries report lower profits than they do in low-tax countries. This is consistent with the strong and positive relationship between structured

<sup>3</sup>As detailed in the Data section, we follow the convention in [Cornwell et al. \[2019\]](#) and classify firms with “formal management” if they have an average management score above 3 on the 1 to 5 scale.

Figure 6: Bunching around zero ROA for better managed firms



Note: We define aggressive tax avoidance as having a near-zero tax rate. Data from Orbis for 2009-2016. The threshold we used to define near-zero was  $\pm 0.05$  from 0.

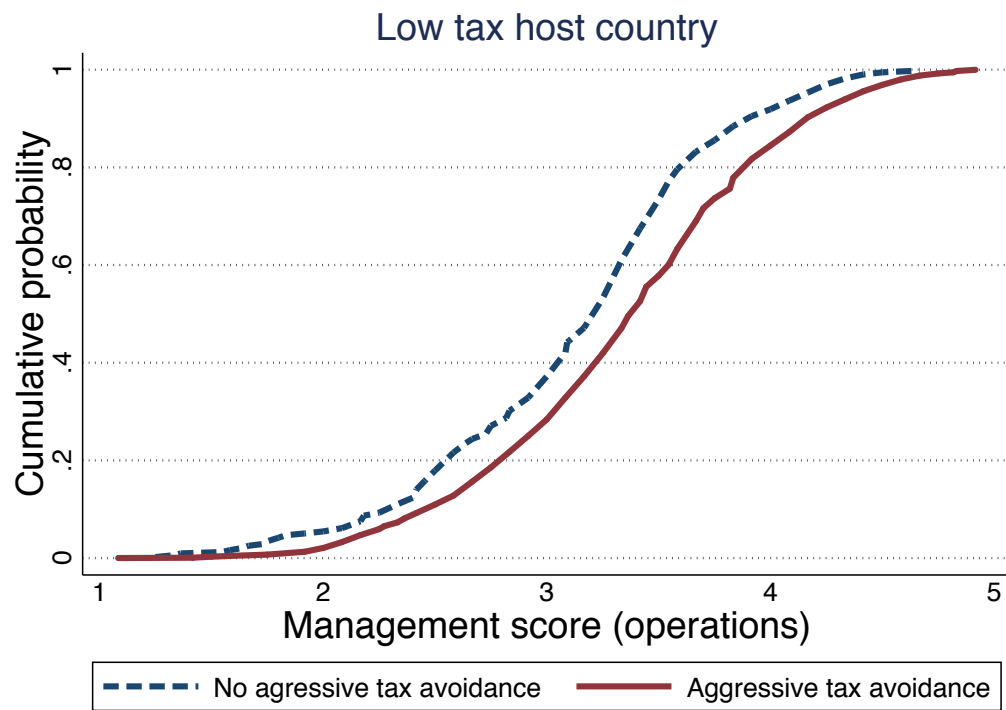
management and ROA in low-tax host countries and strong and negative relationship between management and ROA in high-tax host countries in Figure 5.

### 3.5 Aggressive tax avoiders are better managed in low tax host countries

If a parent company is located in high-tax country, it will have incentive to locate profits in low-tax country, while locating low (at the extreme, none) profits in the high-tax country. This behaviour will be consistent with tax minimization. In turn, a parent company located in low-tax country, will not have the same incentive, as shifting between low-tax locations is costly and does not minimize the tax bill.

In Figure 7 we plot the cumulative probability distribution of management quality for MNEs that are operating in low tax countries. We compare firms that are headquartered in high-tax countries (“avoiders”) and firms that are headquartered in low-tax countries. We find that avoiders in low-tax host countries have more structured management practices. For example, a typical firm in this situation would be a German firm locating their affiliates in Ireland. This corroborates previously presented evidence that MNEs from high-tax home countries report high profits in low-tax countries if they have more structured management.

Figure 7: Aggressive avoiders



## 4 Regression Evidence

In this section we discuss the result from regression analysis that confirms the non-parametric evidence from sections 3.1-3.3. In Table 2 we show two sets of results. Columns 1-3 present evidence from regressions using continuous management score, ranging from 1 to 5. Columns 4-6 use binary management score, where we define formal management as scores of 3 or above.

The regression analysis shows results from three different models that correlate returns of assets (ROA) to structured management and tax rates. Result 1 corresponds to a model in which ROA is a function of structured management and MNE status. We show that being a multinational does not in itself correlate with ROA, but MNEs with structured management have more than two times higher ROA than domestic firms.

Result 2 corresponds to a model in which ROA is a function of structured management and whether an MNE is operating in a high-tax country. Results from column 2 suggest that an MNE operating in a high-tax country reports higher profitability. However, that effect is offset by more structured management. For firms with formal practices, there is no relationship between management and ROA in high-tax countries (column 5).

Result 3 corresponds to a model in which ROA is a function of structured management and whether an MNE from high-tax home country is operating in low-tax or high-tax host country. As before, firms operating in high-tax host countries have higher profitability. The relationship between structured management and ROA is positive for low-tax host countries, while the negative interaction term between structured management and high-tax host indicator implies that this relationship is negative in high-tax host countries. Firms with more structured management in high-tax host countries are likely to have lower the ROA (column 3). The relationship is even starker when we consider the coarser binary management definition in column 6. MNEs in high-tax host countries with formal management practices will have lower ROA than those in low-tax host countries.

Table 2: Summary of results

	Continuous management			Binary management		
	(1) roa	(2) roa	(3) roa	(4) roa	(5) roa	(6) roa
<b>Result 1</b>						
MNE=1	-0.001 (0.007)			0.013*** (0.002)		
Operations mgmt	0.004** (0.002)	0.020*** (0.003)	0.013*** (0.003)			
MNE=1 $\times$ Operations mgmt	0.005** (0.002)					
Formal mgmt=1				0.007*** (0.002)	0.019*** (0.004)	0.019*** (0.004)
MNE=1 $\times$ Formal mgmt=1				0.006* (0.003)		
<b>Result 2</b>						
High tax (home)=1		0.063*** (0.014)			0.010** (0.004)	
High tax (home)=1 $\times$ Operations mgmt		-0.019*** (0.004)				
High tax (home)=1 $\times$ Formal mgmt=1					-0.013** (0.005)	
<b>Result 3</b>						
High tax (host)=1			0.025* (0.014)			0.008 (0.006)
High tax (host)=1 $\times$ Operations mgmt			-0.008** (0.004)			
High tax (host)=1 $\times$ Formal mgmt=1						-0.014*** (0.005)
Year x Country FE	✓	✓	✓	✓	✓	✓
Observations	29160	13420	13420	29160	13420	13420
$R^2$	0.0307	0.0219	0.0206	0.0308	0.0208	0.0209

Note: Data from Orbis and the World Management Survey.

## 5 Discussion

The results presented in this paper are suggestive of the presence of tax planning practices among firms with more structured management practices in our sample. This is first look at the issues of profit shifting and aggressive tax avoidance from an organizational economics lens. Using publicly available proprietary accounting data, we have shown correlations between measures usually associated with profit shifting behaviour and structured management. We discuss several issues with the presented evidence and next steps we intend to take to develop the analysis presented in this draft.

The literature shows that using accounting data to uncover profit shifting practices comes with its own limitations. Profits reported by firms are generally different between tax returns and accounting statements. [Habu \[2017\]](#) shows that accounting profits overstate what is reported for tax purposes on tax returns. This difference is markedly larger for multinational firms. This has two main implications for our work. First, the evidence shown here may be even more pronounced if we use tax returns data instead of accounting data for reported MNE profits. Second, having only accounting level data prevents us from identifying potential tax avoiders appropriately as proxies from accounting data are unreliable.

One solution is to use administrative data instead, as in [Habu \[2017\]](#). She identifies zero taxable profit reporting firms in the UK as aggressive tax avoiders. In a future draft, we will conduct a deeper exploration of the relationship using a combination of three detailed datasets from the UK: HMRC (UK tax authorities) administrative tax data, FAME accounting data, and the WMS UK and ONS (Office for National Statistics) MOPS data. We think the UK is a good case study for three reasons. First, the UK makes the full population of tax returns available to researchers. The set of firms in Orbis data with available financial information is skewed towards MNEs, as the share of MNEs in the sample is much higher than in the random sample of WMS data for a number of countries. This means that in this draft, we focus on MNEs only for WMS data. Having access to full population of tax returns will enable us to consider domestic firms in addition to MNEs. Second, the UK corporate tax rate has been substantially cut from 30% in 2007 to 20% in 2015, moving the UK from a high-tax to a low-tax environment during the sample period. This would allow us to study the relationship between tax planning practices and management in both high and low tax environments and how it changes as tax rates change. Third, the WMS has over 1,000 observations for UK firms, including 4 waves of panel data (2004, 2006, 2010, 2014) and the ONS also has new data on management practices from 2018 onwards (ONS MOPS data). This combined dataset will allow us to conduct a substantially deeper exploration of our research question.



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