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High ownership concentration and income shifting in multinational groups

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Abstract

Purpose – Prior literature shows that income shifting is widely performed by multinational groups, but no research as yet has studied alignment between controlling and minority interests on tax avoidance in multinational groups with high ownership concentration. This study aims to analyze the effect of high ownership concentration on cross-jurisdictional tax-motivated income shifting.

Design/methodology/approach – To test the hypotheses, this study focuses on European multinational groups. Data are collected on European parent firms and each subsidiary. The model considers the natural logarithm of profit before tax and tax incentive.

Findings – Findings show that subsidiaries shift income for tax avoidance purposes. The alignment of shareholders' interests and ownership concentration leads to higher levels of tax avoidance through subsidiaries' infra-group transactions. High ownership concentration decreases the influence of minority interests and allows parent company shareholders to choose a tax avoidance strategy more freely.

Practical implications – The results suggest that taxation levels need to be harmonized to reduce the incentive for tax avoidance and the incentive of governments to reduce their statutory tax rate, to shift profits inwards and reduce outward flow. Without international coordination, this approach may lead to the unevenness of legislative frameworks around the world, and bring significant disadvantages for some countries, influencing economic growth and business development.

Originality/value – This study extends prior findings showing that tax-motivated income shifting as a method of tax avoidance in European multinational groups is stronger in groups with high levels of ownership concentration. This means that managers have the incentive to shift income between subsidiaries for tax and ownership benefits in favor of the parent company's shareholders and against minority interests.

Keywords Ownership concentration, Multinational groups, Income shifting decisions, Corporate governance, Corporate strategy, Tax avoidance

Paper type Research paper

1. Introduction

Companies shift income for tax avoidance purposes with the aim of maximizing economic benefits. When spending on tax is lowered, increase in net income accrues to the parent company and minority shareholders. The hypothesis of this study is that the tax benefit of the parent company's shareholders is strengthened by a high level of ownership concentration. Tax-motivated income shifting is carried out by transferring income from

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high-tax to lower-tax countries; income shifting on the basis of ownership occurs when income is transferred from low-controlled firms to high-controlled companies. Parent company shareholders can maximize their benefits at the expense of minority interests by shifting income for both purposes.

The literature extensively explores tax avoidance and income shifting for tax avoidance purposes, but to the best of our knowledge has not yet fully described the relationship between income shifting and high ownership concentration. Richardson *et al.* (2016) find that concentrated ownership at the parent company level has a negative relationship with tax avoidance due to the alignment effect between majority and minority shareholders. However, it has not been established whether parent companies and subsidiaries differentiate income shifting for these purposes in cases where affiliate minority shareholders hold less than 10% of equity. Neither has analysis been made of cross-jurisdiction areas.

The importance of business groups in Europe, and the possibility that groups and their "internal market" are associated with greater agency problems make significant our analysis. Highly concentrated business groups are similar to an independent firm in which decisions are made without regard to minority opinions and awarding minorities fiscal benefits. In other words, we expect that tax incentives will be stronger in the case of high ownership concentration.

On the basis of these considerations, our study aims to test the effect of high ownership concentration on tax-motivated income shifting and tax avoidance when a group has a very low level of minority interests. We aim to establish whether a high level of ownership concentration leads to alignment between the interests of minority and majority in terms of decrease of tax avoidance. We focus on countries others than China and take Europe as a setting. The study analyzes parent companies in Italy, France, Germany, Spain and UK, which control subsidiaries in 16 other countries.

Performing ordinary least square regression models, we find that multinational groups with a high level of ownership concentration shift income for tax purposes more than multinational groups with dispersed ownership. This finding is based on empirical evidence of income shifting between subsidiary and subsidiaries, but not between parent company and subsidiaries. Our findings show that in a multinational group with highly concentrated ownership, income shifting occurs at the level of subsidiaries. This is probably because the minority shareholders have limited influence and shareholders of the parent company are in a position to choose a strategy of tax avoidance. The absence or the low level of minority interests allows management to choose the best tax-avoidance strategies, with less concern for the protection of minority interests.

This research contributes to the literature highlighting some business strategies undertaken in relation to the ownership structure. Firstly, we describe income shifting strategy for tax avoidance among European groups. Secondly, showing that in European groups the close alignment of controlling and minority interests does not reduce tax-motivated income shifting when ownership is highly concentrated. On the contrary, subsidiaries controlled by parents with highly concentrated ownership take more tax avoidance measures by shifting income from high-tax to low-tax countries. Prior findings about the effect of high ownership concentration on tax motivated income shifting have been far from unanimous and our results thus make an important contribution to the field.

The study consists of eight sections. Section 2 contains a literature review and research hypothesis. Sections 3, 4 and 5 describe the research method, the sample, the correlation matrix and the descriptive statistics. Sections 6 and 7 show our findings and the robustness tests. Section 8 concludes.

2. Literature review and hypothesis development

2.1 Ownership concentration

The literature investigates ownership structure (Badertscher *et al.*, 2013; Chan *et al.*, 2013) and its relationship and impacts on different issues (Alipour, 2013; Chung, 2008; Hossain *et al.*, 2006; Karajeh, 2019; Kim Ph *et al.*, 2007). Moreover, prior research also examines different forms of ownership and their relationship with performance, financial structure, disclosure, business strategies, etc. (Farhangdoust *et al.*, 2020; Faysal *et al.*, 2020; Hashmi *et al.*, 2018; Lappalainen and Niskanen, 2012; Pham and Nguyen, 2019; Zhao, 2010). Driffield *et al.* (2018) study the relationship between foreign ownership and firm performance, showing that relying on a binary distinction between foreign and domestic firms may lead to distorted conclusions. Mcguire and Wilson, (2014) find that tax avoidance is higher when there is a big difference between percentages of voting rights and cash flow rights. Lim, (2011) shows that tax evasion and the cost of debt are negatively associated, and that the presence of institutional owners strengthens this negative association. Moreover, shocks to institutional ownership can reduce the effective tax rate and facilitate tax planning using subsidiaries. Furthermore, the biggest decreases are observed among high effective tax rate firms, and the biggest increases among low effective tax rate firms, which is consistent with the finding that institutional ownership pushes firms toward a common level of tax avoidance (Bird and Karolyi, 2017). Increases in the level of institutional ownership are thus associated with increases in tax avoidance, which also has implications for the effect of increased ownership concentration on tax avoidance (Khan *et al.*, 2017).

In multinational groups, Faccio and Lang (2002) examine the theory which holds that high control rights lead to significant benefits at the expense of minorities. Bertrand *et al.* (2002) and Young *et al.* (2008) explore the effects of the entrenchment vs alignment theories in pyramidal structures and opaque governance contexts. Results mainly show that entrenchment allows parent company shareholders to expropriate minorities in subsidiaries. On the other hand, where there is alignment between control and minority shareholders, expropriation of minorities is mitigated (Carney *et al.*, 2017; Morck *et al.*, 2005).

Looking at China, Richardson *et al.* (2016) investigate cash flow and voting rights, focusing on firms where voting rights up to 91.6%. They find a significant and positive non-linear inverted U-shape association between a concentrated ownership structure and tax avoidance. At a lower level, increased ownership concentration reflected in voting rights has a positive impact on tax avoidance because of the entrenchment effect. However, the relationship is the opposite above the minimum level for effective control, and beyond this point, voting rights are negatively related to tax avoidance. Fan and Wong, (2002) and Shleifer and Vishny, (1986) define the alignment effect as the fact that any appreciation of the controlling shareholder's stake helps to reduce the agency conflict, and its costs, by aligning the majority shareholder interests with those of minorities. From a similar point of view, Gomes (2000) states that shareholders use ownership concentration to "send a good message" outside the company. This is a further demonstration of the alignment effect: increasing concentration over the necessary level contributes to reduce tax avoidance behaviors and opportunism. Despite these meaningful results, they however concern a single country with the same tax rate for all companies. Moreover, the study does not examine highly concentrated firms, in which majority power is incontrovertible. There appear however to be no existing studies on the relation between tax-motivated income shifting and ownership concentration with controlling percentage higher than 90%, and in a context different from China. This research aims to fill this gap, investigating the European context and considering high levels of ownership concentration. Moreover, our analysis looks at tax-motivated income shifting in cross-jurisdiction areas rather than single country

tax avoidance. The study aims to extend Huizinga and Laeven (2008) by testing the enhancing effect of ownership on income shifting carried out for tax reasons, as a method of tax avoidance in European groups. We develop our hypotheses analyzing the interaction between tax-motivated income shifting and ownership concentration and expect that the tax incentive will be stronger when group ownership is highly concentrated. When minority interests account for 10% or less, it is possible to assume that the group is like a non-group company, where management and shareholders are free from the influence of minority interests and to pursue tax-avoidance strategies.

2.2 Tax avoidance

Tax avoidance is an important strategy and is thought to be used by management for illegal as well as legal purposes. As a strategy it can be considered lawful and acceptable, providing advantages to all shareholders or it can be considered deceptive and providing advantages for only certain categories. It is a complex phenomenon which sometimes obscures the underlying economics of a business transaction (Desai and Dharmapala, 2006).

A model for the measurement of income shifting for tax avoidance purposes has to date been used mainly by multinational groups. Previous researchers study income shifting issues using basic and undeveloped methods (Collins *et al.*, 1998; Jacob, 1996 and Klassen *et al.*, 1993). Only recently has income shifting been studied internationally through the concepts of profitability and tax incentive. Huizinga and Laeven (2008) developed the first model, which takes into account tax differences between affiliates in different host countries on the basis of varying national taxation levels, as well profit shifting between affiliates and parent companies.

Several studies have been developed using this model (Dharmapala and Riedel, 2013; Klassen and Laplante, 2012; De Simone *et al.*, 2017). Beer and Loeprick, (2015) investigated the relationship between income shifting for tax avoidance purposes and company features. The literature has also described territorial and worldwide tax regimes and reinvestment (Markle, 2016) tax enforcement and public listing status (Beuselinck *et al.*, 2015), financial constraints (Dyreng and Markle, 2016), and International Financial Reporting Standards versus local generally accepted accounting principles (De Simone, 2016). Prior results show that income shifting at parent and subsidiary level is widely performed by multinational groups for tax avoidance purposes. However, there appear to be no studies on the relation between income shifting for tax purposes and ownership structure. We thus extend the known findings by testing the enhancing effect of concentrated ownership on income shifting carried out for tax avoidance purposes.

2.3 Theoretical framework

This study relies on agency theory to investigate the effect of high ownership concentration on income shifting for tax purposes. The information asymmetry leads the agent to engage in behaviors to expropriate the welfare of the principal (Berle and Means, 1932; Shleifer and Vishny, 1997). Where there is separation between ownership and control (Jensen and Meckling, 1976) controlling shareholders may have the incentive and the ability to expropriate minorities. Moreover, the use of internal markets inside a group is associated with agency problems (Bertrand *et al.*, 2002; Claessens *et al.*, 2000; Faccio *et al.*, 2001; Johnson *et al.*, 2000; Leuz *et al.*, 2009; Lins, 2003; La Porta *et al.*, 1999).

In the light of the above and given that in business groups, controlling shareholders often have to deal with different minorities, i.e. minorities from each company of the group, we investigate the relationship between income shifting and ownership concentration in the framework of agency theory. We investigate the tax incentive to shift income at subsidiary level (*H1*) and between the parent and its subsidiaries (*H2*). We examine each link that the

subsidiary has with all the others (*H1*) and with all its parents (*H2*) in different countries. Because a very low presence of minority shareholders increases the incentive to look for tax advantages, we expect to find a strong relation with high ownership concentration. In high ownership concentration, the alignment effect becomes less important and there are greater efforts towards tax-motivated income shifting, because controlling shareholders are subject to fewer objections from minority shareholders and can obtain all benefits. We argue that the U-shaped pattern identified in shareholdings may continue and change again after 90% in groups with highly concentrated ownership.

H1. Tax-motivated income shifting among subsidiaries is stronger when ownership is highly concentrated.

H2. Tax-motivated income shifting between parent company and its subsidiaries is stronger when ownership is highly concentrated.

3. Model

Huizinga and Laeven (2008) suggest the idea that each entity discloses both real profits and also profits achieved from income shifting. Readers are not able to distinguish between them and thus real profit is unknown and has to be estimated. They use the Cobb–Douglas production function to evaluate profits of economic activity, and in line with Hines and Rice (1994), real profit is calculated by subtracting labor costs from the total output. They built a model that proposes the reported income as a function of capital inputs and labor, productivity, tax incentive and opportunity.

Following Markle (2016), the model used in this study introduces an indicator variable and its interaction with tax.

$$\begin{aligned} Ln(PBT) = {} & \beta\, C\,subsidiaries + \beta\, Ownership90 + \beta\, C\,subsidiaries{*}Ownership90 \\ & + \beta\, ln(TangibleAssets) + \beta\, ln(CompExp) + \beta\, ln(GDP) \\ & + parent\,firm\,and\,year\,fixed\,effects + e \end{aligned} \tag{1}$$

$$\begin{aligned} Ln(PBT) = {} & \beta\, C\,parent + \beta\, Ownership90 + \beta\, C\,parent{*}Ownership90 \\ & + \beta\, ln(TangibleAssets) + \beta\, ln(CompExp) + \beta\, ln(GDP) \\ & + parent\,firm\,and\,year\,fixed\,effects + e \end{aligned} \tag{2}$$

We use the natural logarithm of profit before income tax expense (PBT) as our dependent variable. Following Markle (2016), the variable is always positive and measures the level of income shifting that multinational groups perform for tax avoidance purposes. C represents Tax Incentive, and is defined following prior studies (Beuselinck *et al.*, 2015; Markle, 2016; De Simone, 2016). Following Huizinga and Laeven (2008), tax incentive is split into two variables: one represents the tax difference of a subsidiary *vis-à-vis* its parent firm (C parent) and the other represents the (weighted) sum of the tax difference *vis-à-vis* subsidiaries in other (foreign) countries (C subsidiaries). Appendix presents the definition of variables.

Our results are expected to reveal strategies as follows. In case of a tax convenience to move income among subsidiaries, β of C subsidiaries should be negative. In other words, a

negative relationship means that an income shifting strategy among subsidiaries and motivated by tax exists. In case of a tax convenience to move income between the parent and the subsidiary, β of C parent should be negative; in other words, a negative relationship means that an income shifting strategy between the parent and the subsidiary motivated by tax exists.

Ownership90 is a dummy variable which takes value 1 when the subsidiary is owned at 90% or more and 0 otherwise. Variable C subsidiaries × Ownership90 is derived from the multiplication of C subsidiaries and Ownership90. Looking at the interpretation of this variable, if the tax convenience of moving income among subsidiaries is emphasized by Ownership90, β of C subsidiaries × Ownership90 should be negative; in other words, a negative relationship means that greater tax-motivated income shifting occurs among subsidiaries if the control of the parent on the subsidiary is higher than 90%. The same parent can have more than one subsidiary. If the parent controls the subsidiary by more than 90%, we expect that the parent will do more income shifting among subsidiaries. If the parent controls the subsidiary at less than 90%, we expect that the parent will do less income shifting among subsidiaries.

Variable C parent × Ownership90 is derived from the multiplication of C parent and Ownership90. It shows that if the intent to avoid tax by shifting income between the parent and subsidiary is emphasized by Ownership90, β of C parent × Ownership90 should be negative. In other words, a negative relationship means that more tax-motivated income shifting between the parent and the subsidiary occurs if the control of the subsidiary is higher than 90%. The same parent can have more than one subsidiary. If the parent controls the subsidiary by more than 90%, we expect that the parent will shift more income between the parent and the subsidiary. If the parent controls the subsidiary at less than 90%, we expect that the parent will shift less income between the parent and the subsidiary.

We use the same control variables in the literature (Huizinga and Laeven, 2008; Markle, 2016). We use tangible fixed assets in thousands of euro at the end of the fiscal year as a proxy of capital. We also use the variable compensation expense as cost of salaries in thousands of euro at the end of the fiscal year as a proxy of labor. The use of gross domestic product (GDP) as an adequate indicator of productivity (Markle, 2016). Finally, we include parent-firm fixed effect to control for systematic differences in reported income and year fixed effect.

4. Sample

We investigate international groups in Europe. Data are taken from the Amadeus database and sample selection is detailed in Table 1. Affiliated groups in banking and insurance industries are excluded because their profitability is less easily estimated using assets and compensation. We require that the group be profitable, reporting a return on sales at least of 3%, due to the fact that group losses may themselves lead to change income shifting strategies (Stock, 2013). European firms are matched with domestic and foreign subsidiaries using ownership data. As this research focuses on international profit shifting, our sample includes only multinational groups identified as firms with one (or more) subsidiary with the headquarter outside the country of the parent. This selection leads to a starting sample of 17,949 parent firms.

For these 17,949 parents, we consider data relating to all their subsidiaries. We require basic accounting information to be available over all the years (i.e. data on assets, earnings, taxation, sales). Affiliates under joint control are also excluded. This leads to a sample of 33,012 observations.

Description	*N*
Observed companies	29,990,166
Deleted: firms with US SIC codes equals to 6, firms not profitable and without foreign subsidiaries.	−29,972,217
Parents	17,949
Non-banks and non-insurance controlled firms for the 17,949 parents	103,612
Deleted: subsidiaries with missing accounting data	−70,600
Subsidiaries	33,012
Subsidiaries-years from 2009 to 2015 (unbalanced sample)	199,863
Deleted: Subsidiaries-years with missing accounting data and without foreign subsidiaries	−193,303
Sample for *H1*	6,560
Subsidiaries -years from 2009 to 2015 (unbalanced sample)	199,863
Deleted: Subsidiaries-years with missing accounting data and with parent and subsidiary in the same country	−197,312
Sample for *H2*	2,551

Table 1.
Sample selection

Following the Huizinga and Laeven (2008) model, we use unconsolidated information from 2009 to 2015. This period of analysis is used because data is required to be complete. Although complete parent company data is available up to 2017, subsidiary financial statements are approved more slowly and complete data for subsidiaries are available only up to 2015. These criteria yield a starting sample of almost 200,000 subsidiary-year observations, of which we consider only companies with positive income. Finally, observations with missing data for our main variables are dropped. To test *H1* and *H2*, we need to have subsidiaries and parents located in different countries, and thus deleted all observations not meeting these requirements. The sample size thus differs for the two hypotheses. The final sample for *H1* is 6,560 subsidiary-year observations, and for *H2*, it is 2,551 subsidiary-year observations.

We analyze groups with headquarters in the five largest European countries: France, Germany, Italy, Spain and the UK. Table 2 Panel A shows the subsidiary-year observations distributed by country. It can be seen that a high number of subsidiaries are in the same nation as the parent although it is possible that they move income to different firms in the same group in other countries. Table 2 Panel B shows the same information as Panel A, deleting the observations with data missing for C parent. Many subsidiaries are located in Spain and Portugal, fewer in the UK probably because of its prevailing model of dispersed ownership.

5. Descriptive statistics and correlation matrix

Table 3 shows descriptive statistics for the sample used for *H1* (Panel A) and *H2* (Panel B). The mean of profitability (Panel A – about €20m; Panel B – about €8m) is far from the €1/1.5mof the median (Panels A and B). This reflects the fact that our sample includes both listed and non-listed companies owned at least at 50%. To perform the analysis, we thus use a logarithm. C parent and subsidiaries show an average value close to zero. This is because for corporate groups, these are weighted averages of bilateral tax differences (Markle, 2016). The coefficient of mean C subsidiaries in Panel A is positive (0.11) with a high standard deviation (0.94), given that the statutory tax rate of subsidiaries in the analysis is differentiated. The coefficient of mean C parent in Panel B is negative (−0.01) with a low

Country	Germany	Spain	France	UK	Italy
Austria	5	–	–	–	–
Belgium	161	49	265	75	46
Germany	644	40	184	130	136
Spain	241	1,874	400	121	306
Finland	26	2	8	9	7
France	1	–	30	2	2
UK	–	–	8	16	–
Greece	–	–	–	–	1
Croatia	2	–	–	–	–
Italy	71	49	72	31	645
Lithuania	–	–	1	–	–
Malta	–	–	–	2	–
Netherland	16	6	16	14	6
Polonia	2	–	9	–	3
Portugal	94	457	157	37	74
Sweden	7	–	–	–	–
Total = 6,560					
Country	Germany	Spain	France	UK	Italy
Austria	5	–	–	–	–
Belgium	142	49	–	30	46
Germany	–	40	167	16	133
Spain	210	–	365	11	299
Finland	26	2	7	4	7
France	1	–	–	–	2
UK	–	–	5	–	–
Greece	–	–	–	–	1
Croatia	2	–	–	–	–
Italy	64	47	63	3	–
Lithuania	–	–	1	–	–
Malta	–	–	–	2	–
Netherland	16	6	16	–	3
Polonia	2	–	9	–	3
Portugal	89	436	141	–	73
Sweden	7	–	–	–	–
Total = 2,551					

Table 2.
Sample composition

standard deviation (0.13), meaning that statutory tax rate of the parent is higher than the statutory tax rate of its subsidiary for the five parent countries.

Table 3 shows that the sample is made up of about 80% subsidiary-years controlled at 90%, and the rest of the sample is controlled at under 90% and above 50%. This characteristic reflects a difference between European and Chinese company ownership dispersion/concentration. Looking at control variables, we present the descriptive statistics of tangible assets and compensation expense. Finally, no multicollinearity issues exist (Table 4).

6. Results and discussion

To establish consistency with prior results, we estimate equations (1) and (2) on the main sample without the variable of interest and its interaction term. Models 1 and 2 in Table 5 replicate Markle (2016). Model 1 uses C subsidiaries [equation (1)], whereas Model 2 uses C

Panel A	Mean	SD	25th percentile	Median	75th percentile
Dependent variables					
PBT	19,978	175,418	459	1,451	4,362
ln (PBT)	7.320	1.931	6.128	7.280	8.381
Independent variables					
C subsidiaries	0.107	0.945	−0.061	0.028	0.131
Ownership90	0.821	0.383	1.000	1.000	1.000
TangibleAssets	60,779	522,673	219	1,482	7,217
ln (TangibleAssets)	7.216	2.589	5.389	7.301	8.884
CompExp	28,670	216,564	1,351	3,373	9,170
ln (CompExp)	8.214	1.598	7.209	8.124	9.124
GDP	25,389	5,639	22,700	23,200	31,500
ln (GDP)	10.117	0.227	10.030	10.052	10.358
Panel B	Mean	SD	25th percentile	Median	75th percentile
Dependent variables					
PBT	7,889	37,707	361	1,101	3,368
ln (PBT)	7.014	1.866	5.889	7.004	8.122
Independent variables					
C parent	−0.007	0.130	−0.089	−0.043	0.075
Ownership90	0.846	0.361	1.000	1.000	1.000
TangibleAssets	35,725	305,914	151	1,068	5,468
ln (TangibleAssets)	6.876	2.513	5.017	6.974	8.607
CompExp	19,571	173,673	985	2,599	6,780
ln (CompExp)	7.913	1.567	6.893	7.863	8.822
GDP	24,147	6,723	16,700	23,100	32,600
ln (GDP)	10.053	0.281	9.723	10.048	10.392

Table 3.
Descriptive statistics

parent [equation (2)]. Findings on the labor, productivity and tax are similar both in the European and also international background (Huizinga and Laeven, 2008; Markle, 2016). On the basis of the results of Model 1, we confirm the negative relation between C subsidiaries and profit before tax (coefficient −0.084, *p*-value 0.090). As C subsidiary is calculated such that a negative value indicates a tax incentive to shift income among controlled-firms, a negative value is interpreted as income shifting for tax avoidance reasons. On the basis of the results of Model 2, the coefficient on C parent is statistically significant (coefficient

Panel A		1	2	3	4	5	6
1	ln (PBT)	1.000					
2	C subsidiaries	0.014	1.000				
3	Ownership90	0.012	0.058	1.000			
4	ln (TangibleAssets)	0.514	0.022	−0.103	1.000		
5	ln (CompExp)	0.649	0.019	0.040	0.540	1.000	
6	ln (GDP)	0.177	0.019	−0.017	0.076	0.235	1.000
	Panel B	1	2	3	4	5	6
1	ln (PBT)	1.000					
2	C parent	−0.121	1.000				
3	Ownership90	0.066	0.043	1.000			
4	ln (TangibleAssets)	0.531	−0.125	−0.046	1.000		
5	ln (CompExp)	0.688	−0.108	0.088	0.610	1.000	
6	ln (GDP)	0.229	0.141	0.138	0.070	0.250	1.000

Table 4.
Pearson correlation matrix

−0.693, *p*-value 0.096). A negative relation defines the existence of an income shifting strategy between the parent and the subsidiary motivated by tax. In other words, we confirm results from prior literature on European multinational groups.

The main results of the research are shown in Table 6. Model 3 tests *H1* with the interaction of "C subsidiaries" with "Ownership90" and Model 4 tests *H2* with the interaction between "C parent" and "Ownership90." The results of Model 3 show a negative relation between "C subsidiary" and "Ownership90" and the natural logarithm profit before tax (coefficient −0.165, *p*-value 0.003). This indicates that firms owned at least at 90% shift more income among subsidiaries than firms owned at less than 90%. The results of Model 4 show no significant relation between "C parent × Ownership90" and profits before tax (coefficient 0.264, *p*-value 0.836). There is no evidence that firms owned at least at 90% shift income differently between parent and subsidiaries compared to firms owned at less than 90%. In other words, these results show that tax avoidance through income shifting is stronger in international groups based in Europe with a high level of ownership concentration, at the subsidiary level. On the other hand, at the level of parent companies, there are no significant results, probably because the European countries of parent companies have similar taxation rates.

Once again, agency conflict between controlling shareholders and minorities plays a crucial role and company ownership structure exerts an influence on strategies and opportunistic choices. Our results confirm that business groups may see higher levels of

		Model 1		Model 2	
ln (PBT)	Sign	Coefficient	*p*-value	Coefficient	*p*-value
C subsidiaries	–	−0.084	0.090	–	–
C parent	–	–	–	−0.693	0.096
ln (TangibleAssets)	+	0.150	<0.000	0.112	<0.000
ln (CompExp)	+	0.592	<0.000	0.644	<0.000
ln (GDP)	?	0.407	0.010	0.596	0.002
Constant		Omitted		−4.912	0.009
Parent firm and year fixed effect		Yes		Yes	
Adj. R^2		0.460		0.501	
Observations		6,560		2,551	

Table 5. Multivariate regression (income shifting)

		Model 3		Model 4	
ln (PBT)	Sign	Coefficient	*p*-value	Coefficient	*p*-value
C subsidiaries	–	0.031	0.633		
Ownership90	?	0.183	0.048	0.223	0.144
C subsidiaries × Ownership90	–	−0.165	0.003		
C parent	–			−0.943	0.409
C parent × Ownership90	?			0.264	0.836
ln (TangibleAssets)	+	0.154	<0.000	0.116	<0.000
ln (CompExp)	+	0.588	<0.000	0.636	<0.000
ln (GDP)	?	0.414	0.009	0.577	0.004
Constant	Omitted		Omitted		
Parent firm and year fixed effect		Yes		Yes	
Adj. R^2		0.461		0.501	
Observations		6,560		2,551	

Table 6. Multivariate regression (income shifting and ownership concentration)

agency conflict, especially when different categories of minority are involved and they have low decisional power, as is the case for the companies in our sample where minority shareholders hold less than 10% of equity. Agency theory in fact holds that information asymmetry may enable and even encourage controlling shareholders to expropriate minority shareholders. Our findings confirm that a very low presence of minority shareholders increases the incentive for the majority to look for tax advantage, and the tendency to take the available opportunity. In other words, the alignment effect becomes less important, and more effort is made toward tax-motivated income shifting because controlling shareholders are subject to fewer objections from minority shareholders and can obtain all benefits.

We contribute to the literature, extending the findings of Huizinga and Laeven, (2008), by showing that the incentive to shift income is confirmed only at the level of subsidiaries and where variation in taxation levels can explain the strategy. We suggest that in researching income shifting strategy, it is important to take account of context and the taxation rate of parent companies and subsidiaries, which were ignored by prior literature. This research also extends the findings of Richardson *et al.* (2016) showing that in European multinational groups, the alignment between parent company and minority interests does not reduce the amount of tax-motivated income shifting when ownership is highly concentrated. On the contrary, subsidiaries controlled by parent companies by more than 90% perform more tax avoidance activities by shifting their income from high-tax to low-tax countries. Extending the analysis to include minority interests less than 10%, we provide a possible explanation for their possibly controversial result. In fact, when minorities become insignificant, the parent company meets fewer obstacles to shifting more income for tax avoidance purposes and managers have incentives to push the benefits of parent company owners. In cases where income is shifted from low controlled to high controlled companies, ownership reasons appear to complement tax avoidance purposes. This result is useful in light of conflicting prior findings.

On the surface, these results provide clear confirmation of *H1* of the study: concentrated multinational groups shift more income than dispersed multinational groups with the same tax incentives and opportunities. Our hypothesis is also confirmed for tax avoidance by using income shifting between subsidiaries but not between parent and subsidiaries. The difference is both statistically and economically significant and shows interesting results in the hitherto little examined setting of Europe.

7. Robustness

We perform several robustness tests. Tables 6 and 8 run the multivariate analysis, respectively, for income shifting and the interaction with ownership concentration in subsamples of countries with at least 10 subsidiaries. To reduce the country-specific bias, we selected only the countries with a larger number of observations. Table 7 shows results for C parent (coefficient −1.890; *p*-value 0.105) and Table 8 for C subsidiaries × Ownership90 (coefficient −0.159; *p*-value 0.001) confirming *H1*.

Tables 9 and 10 run the multivariate analysis, respectively, for income shifting and the interaction with ownership concentration, changing the regression panel model effects. The main analysis uses parent company fixed effects. However, results from a large panel data set may suffer from model specification and we repeat the analysis using parent company random effects.

Table 9 shows results for C parent (coefficient −2.476; *p*-value 0.031), and Table 10 for C subsidiaries × Ownership90 (coefficient −0.159; *p*-value 0.001). These results improve the statistical significance for the Income Shifting results of the main analysis (significant only

at 10%) and show that more income is shifted between parent and subsidiary than among subsidiaries. The negative coefficient shows the presence of tax motivated income shifting between the parent and the subsidiary, which confirms results from prior literature on European groups. Next, our hypothesis is robust to parent company random effect for the interaction with ownership concentration. Income shifting among subsidiaries motivated by tax is significant when group ownership is highly concentrated, and not in all groups. Income shifting among subsidiaries motivated by tax is not independent of ownership concentration.

We also run the multivariate analysis respectively for income shifting and the interaction with ownership concentration using a Tobit regression. Econometric models with thresholds in dependent variables suggest the use of Tobit regressions, and we thus modified the ordinary regression used in the literature to test the robustness of results with a Tobit regression. We set the lower level limit at 0 and investigate the positive values of the logarithms, retaining panel regressions with industry fixed effects.

These results (untabulated) further improve the significance of the analysis. In addition, the negative coefficients for the interactions with ownership concentration are significant for both types of income shifting. So, the Tobit regression gives statistically significant results for *H1* and *H2*. We confirm that when minorities become insignificant, the parent company meets fewer obstacles to shifting more income for tax avoidance purposes.

		Model 1		Model 2	
ln (PBT)	Sign	Coefficient	p-value	Coefficient	p-value
C subsidiaries	−	0.032	0.414	–	–
C parent	−	–	–	**−1.890**	**0.105**
ln (TangibleAssets)	+	0.164	0.000	0.126	0.000
ln (CompExp)	+	0.539	0.000	0.648	0.000
ln (GDP)	?	0.644	0.000	0.776	0.000
Parent firm and year fixed effect		Yes		Yes	
Adj. R^2		0.460		0.501	

Note: Countries with at least 10 subsidiaries

Table 7. Multivariate regression (income shifting)

		Model 3		Model 4	
ln (PBT)	Sign	Coefficient	*p*-value	Coefficient	*p*-value
C subsidiaries	−	0.024	0.556		
Ownership90	?	0.147	0.117	0.176	0.228
C subsidiaries × Ownership90	−	−0.159	0.001		
C parent	−			−0.940	0.540
C parent × Ownership90	?			−0.559	0.404
ln (TangibleAssets)	+	0.168	0.000	0.126	0.000
ln (CompExp)	+	0.533	0.000	0.641	0.000
ln (GDP)	?	0.655	0.000	0.662	0.003
Parent firm and year fixed effect		Yes		Yes	
Adj. R^2		0.461		0.501	
Observations		6,560		2,551	

Note: Countries with at least 10 subsidiaries

Table 8. Multivariate regression (income shifting and ownership concentration)

8. Conclusion

This study analyzes the effect of high ownership concentration in multinational groups on tax-motivated income shifting. Prior literature has investigated the field extensively (Beer and Loeprick, 2015; Beuselinck *et al.*, 2015; Dharmapala and Riedel, 2013; Dyreng and Markle, 2016; Huizinga and Laeven, 2008; De Simone *et al.*, 2017).

Few studies investigate the effect of ownership concentration on tax avoidance. Richardson *et al.* (2016) find non-linear association between ownership concentration and tax avoidance, specifically, a negative association with tax avoidance above a threshold of ownership concentration because of the alignment effect between controlling and minority shareholders. No study as yet has looked at the effect of high concentration of ownership above the concentration level analyzed by Richardson *et al.* (2016) and outside the context of China. Moreover, income shifting of this type has not as yet been studied at parent and subsidiary level.

We find that where ownership is highly concentrated, the alignment effect becomes weaker. Tax-motivated income shifting becomes more important as the controlling shareholder meets fewer obstacles, or no obstacles at all when the minority is completely absent, and can obtain all the benefits. Using a sample of European companies, we first confirm that both subsidiaries and parent companies take income shifting measures for the purpose of avoiding tax. Next, testing our hypotheses, we find that in European groups with

Table 9. Multivariate regression (income shifting)

ln (PBT)	Sign	Model 1 Coefficient	Model 1 *p*-value	Model 2 Coefficient	Model 2 *p*-value
C subsidiaries	–	0.030	0.446		
C parent	–			−2.476	0.031
ln (TangibleAssets)	+	0.164	0.000	0.130	0.000
ln (CompExp)	+	0.538	0.000	0.640	0.000
ln (GDP)	?	0.670	0.000	0.897	0.000
Parent firm random effect and year fixed effect		Yes		Yes	
Adj. R2		0.460		0.501	

Note: Parent firm random effects

Table 10. Multivariate regression (income shifting and ownership concentration)

ln (PBT)	Sign	Model 3 Coefficient	Model 3 *p*-value	Model 4 Coefficient	Model 4 *p*-value
C subsidiaries	–	0.023	0.583		
Ownership90	?	0.137	0.142	0.121	0.412
C subsidiaries*Ownership90	–	−0.159	0.001		
C parent	–			−1.754	0.240
C parent*Ownership90	?			−0.501	0.457
ln (TangibleAssets)	+	0.167	0.000	0.129	0.000
ln (CompExp)	+	0.532	0.000	0.634	0.000
ln (GDP)	?	0.680	0.000	0.821	0.000
Parent firm random effect and year fixed effects		Yes		Yes	
Adj. R2		0.461		0.501	
Observations		6,560		2,551	

Note: Parent firm random effects

highly concentrated ownership the subsidiaries shift income for tax avoidance purposes in higher amounts than groups with less concentrated ownership and with lower percentage of control.

These findings make two main contributions. First, they suggest that research into tax avoidance strategies performed with income shifting needs to take into account the levels of taxation in different countries. Second, they suggest that group ownership concentration is relevant to the business strategy related to the income shifting activities. In European groups with very low levels of minorities, they show that the parent company appears to be free to follow tax avoidance strategies, which conflicts with prior results. Our findings indicate that a very low level of minority interests allows the parent company to follow the best tax-motivated strategy, without running risks related to expropriation of benefits from other shareholders. These findings thus extend the strand of research on ownership concentration as well as the strand on income shifting strategy motivated by tax. Managers may ignore minority interests not well protected by law and regulation; on the other hand, they have the incentive to maximize tax benefits for the parent company shareholder, and are aware that the best way is without (or with a low level) of minority interests. As most European countries have recently approved laws and regulations to improve the protection of minority interests, it is likely that management motivation will prevail.

Our findings have significant implications for practitioners and society as well as for regulators. They suggest that taxation levels across Europe and worldwide need to be harmonized in order to reduce the incentive for tax avoidance by multinational groups. The tendency of multinationals to shift profits worldwide to reduce their tax bills currently provides incentive to national governments to reduce their statutory tax rate, to shift profits inwards and reduce outward flow, in a process seen in several European countries recently. Without international coordination, this approach may lead to unevenness of legislative frameworks around the world, and bring significant disadvantages for some countries. It is also likely to influence the economic growth and business development of certain regions, as well as generating a massive redistribution of national tax revenues with impact on whole societies. Investors too need to pay attention to company ownership and overall international structure, taking into account that very low percentages of equity in multinational business groups may increase income shifting which is potentially detrimental to minority interests.

Our research is not without limitations. The major limitation is the choice of selected European countries. The high level of taxation of the countries where parents are located means that it is not profitable to shift income from subsidiaries to parents, but applying the model to different European countries or countries in other continents may well produce a different picture. Further limitations are related to the operationalization of measurement variables used in the model.

Our study raises interesting questions for future studies. It would be particularly interesting to examine other characteristics besides ownership structure that impact on income shifting strategy and also focus on other countries.

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Appendix

Dependent variables	
PBT	Profit Before income Tax expense (000/Euro)
ln (PBT)	Natural logarithm of PBT
Independent variables	
C subsidiaries	$C_i = \frac{1}{(1-\pi_i)} \frac{\sum_{k \neq i}^{n} \frac{B_k}{1-\pi_k} (\pi_i - \pi_k)}{\sum_{k=1}^{n} \frac{B_k}{1-\pi_k}}$, where π_i is the statutory tax rate of subsidiary i. π_k is the statutory tax rate of subsidiary k, where k runs from 1 to n, where n is the number of subsidiaries controlled by the parent. B_k is the true profits of subsidiary k. Revenue is used as a proxy.[13]
C parent	Statutory tax rate of subsidiary i – statutory tax rate of parent
Ownership90	1 if parent controls subsidiary at least at 90%; 0 otherwise
TangibleAssets	Tangible fixed assets (000/Euro)
ln(TangibleAssets)	Natural logarithm of TangibleAssets
CompExp	Labor compensation (000/Euro)
ln(CompExp)	Natural logarithm of CompExp
GDP	Per capita Gross Domestic Product observed in the country of subsidiary's headquarter
ln(GDP)	Natural logarithm of per capita GDP

Figure A1.
Variable definitions

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