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Evidence on Tax Savings by Multinational Holding Structures

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Non-Technical Summary

Form follows function is a principle usually associated with modern architecture and industrial design. According to that principle, the shape of a building or an object should be primarily based on its intended function or purpose. This article analyzes the extent to which the form of multinational groups follows the function of minimizing tax payments.

The paper provides evidence on the group structures of multinationals and analyzes to what extent these structures are tax-efficient. Therefore, the kind of architecture traced in this paper refers to the structuring of multinational groups. While the corporate income tax can hardly be avoided if a subsidiary is active in a country, withholding taxes depend on the structure in which the subsidiary is embedded. By vertically inserting holding companies or adjusting the superior/subordinate relationship of subsidiaries, multinationals can often influence their total tax burden, especially regarding the repatriation of profits by means of dividends. The paper traces group structures on a micro level across 58 countries in the years 1996 to 2008.

The results show that a higher withholding tax between two members of a group located in different countries increases the probability of indirect participation. Put differently, holdings are generally established at positions of the group structure where they can at least potentially cause savings in withholding taxes. Operative subsidiaries tend to be held via subsidiaries located in countries with low withholding taxes towards the country of the superior foreign-based company unit. However, in about half of the observations, the existence of an intermediate subsidiary does not lower the overall tax burden, and in 5% of the cases the tax burden on repatriated profits with such a holding company is even higher than without it. Although group structures generally seem to be tax driven, there are non-tax influencing factors which sometimes prevail. Apart from drivers of the vertical company structure, the paper shows a horizontal driver: once a form of group taxation is available, groups seem to spread their national investments across more subsidiaries.

Taxes do matter for the group structure, but given other influencing factors and especially given the need for hierarchical clarity, their influence has limits. *Form follows function* holds, but this paper reveals that the function goes beyond saving withholding taxes or netting profits and losses. Multinationals aim at saving taxes by holding structures, but in the setup of their business structure, they remain – maybe irrationally – sovereign. In architecture and multinational groups alike, the credo seems to be that as you are, so are your buildings and as are your buildings, so are you.

Das Wichtigste in Kürze

Das Prinzip *Form folgt Funktion* ist aus der modernen Architektur und dem Industriedesign bekannt. Auf Basis dieses Prinzips sollte sich die Form eines Gebäudes oder eines Gegenstandes vor allem aus der beabsichtigten Funktion bzw. dem Zweck herleiten. Dieser Aufsatz untersucht, inwieweit die Form multinationaler Konzerne der Funktion der Steuerzahlungsminimierung folgt.

Das Papier liefert Evidenz zu den Strukturen multinationaler Konzerne und untersucht, inwieweit diese Strukturen steuerlich effizient sind. Die in diesem Aufsatz betrachtete Architektur bezieht sich somit auf multinationale Konzernstrukturen. Zwar kann die Gewinnsteuer auf der Ebene der in einem Land aktiven Tochtergesellschaft kaum vermieden werden, Quellensteuern jedoch hängen von der Struktur ab, in die die Tochter eingebettet ist. Durch das Zwischenschalten von Holdinggesellschaften oder durch die Anpassung des Über/Unterordnungsverhältnisses von Töchtern können multinationale Unternehmen oft ihre Gesamtsteuerlast beeinflussen. Dies gilt insbesondere hinsichtlich Repatriierungssteuern auf ausgeschüttete Dividenden. Das Papier analysiert Mikrodaten auf Unternehmensebene über 58 Länder hinweg von 1996 bis 2008.

Die Ergebnisse zeigen, dass eine höhere Quellensteuer zwischen zwei in verschiedenen Ländern befindlichen Konzerntöchtern die Wahrscheinlichkeit einer indirekten Beteiligung erhöht. Anders gesagt werden Holdings also grundsätzlich dort eingesetzt, wo sie zumindest potenziell zur Ersparnis von Quellensteuern beitragen können. Operative Töchter werden tendenziell von Töchtern gehalten, die sich in Ländern mit geringen Quellensteuern gegenüber der Muttergesellschaft befinden. Die Existenz einer Zwischengesellschaft führt jedoch in rund der Hälfte aller Fälle zu gar keiner Steuerersparnis und in 5% aller Fälle ist die Steuerlast auf repatriierte Gewinne mit Zwischenholding sogar höher als wenn es sie nicht gäbe. Obwohl Gruppenstrukturen also grundsätzlich steuerlich getrieben sind, bestehen doch nichtsteuerliche Einflussfaktoren, die sich manchmal durchsetzen. Neben Treibern der vertikalen Konzernstruktur zeigt das Papier einen horizontalen Treiber: bei Verfügbarkeit einer Gruppenbesteuerungsoption scheinen Konzerne ihre nationalen Investitionen auf mehr Tochtergesellschaften zu verteilen.

Steuern sind für die Konzernstruktur bedeutsam. Angesichts weiterer Einflussfaktoren und der Notwendigkeit hierarchischer Klarheit hat der Steuereinfluss jedoch Grenzen. Die Form folgt tatsächlich der Funktion, aber es zeigt sich, dass dabei nicht nur auf das Sparen von Quellensteuern und die Verrechnung von Gewinne und Verlusten geachtet wird. Multinationale Unternehmen wollen zwar grundsätzlich Steuern sparen, in der Schaffung ihrer Holdingstrukturen bleiben sie jedoch – vielleicht irrationalerweise – souverän. Sowohl in der Architektur als auch bei multinationalen Konzern scheint das Credo zu gelten, dass die Konstruktionen die man errichtet so sind wie man selbst und man selbst so ist wie diese Konstruktionen.

Form Follows Function?

- Evidence on tax savings by multinational holding structures*

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August 2012

Abstract: I provide evidence on the group structures of multinationals and analyze to what extent these structures are tax efficient. While the corporate income tax can hardly be avoided if a subsidiary is active in a country, withholding taxes depend on the structure in which the subsidiary is embedded. By vertically inserting holding companies or adjusting the superior/subordinate relationship of subsidiaries, multinationals can often influence their total tax burden, especially regarding the repatriation of profits by means of dividends. I analyze group structures across 58 countries in the years 1996 to 2008 using the MiDi database provided by the German Central Bank (*Deutsche Bundesbank)*. The results show that a higher withholding tax between two members of a group located in different countries increases the probability of indirect participation. However, in about half of the observations, the existence of an intermediate subsidiary does not lower the overall tax burden, and in 5% of the cases the tax burden on repatriated profits with such a holding company is even higher than without it. Although group structures generally seem to be tax driven, there are non-tax influencing factors which sometimes prevail. Besides drivers of the vertical company structure, I provide evidence of a horizontal driver: once a form of group taxation is available, groups seem to spread their national investments across more subsidiaries.

Keywords: Corporate Taxation, Foreign Direct Investment, Holdings, Multinational Firms, Withholding Taxes

JEL Classification: F23, H25, H32

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1. Introduction

Form follows function is a principle usually associated with modern architecture and industrial design.[1] According to that principle, the shape of a building or an object should be primarily based on its intended function or purpose. In this article, I analyze the extent to which the form of multinational groups follows the function of minimizing tax payments.

By cutting the tax wedge, the legal minimization of avoidable tax payments, ceteris paribus, leads to higher after tax net profits, which can be considered the basic goal of a corporation. By introducing holdings or adjusting the superior/subordinate relationship of subsidiaries in different countries, multinationals can shape their tax duties. Therefore, the kind of architecture I have in mind refers to the structuring of multinational groups.

The setup of a multinational group structure is determined by many influencing factors. Organizational considerations and aspects in order to avoid principal agent conflicts can play a role and might demand a structure differing from the tax optimal one. I provide empirical evidence on multinational structures and I analyze to what extent they are tax optimal. This allows me to draw conclusions on the role and weight of tax aspects for multinationals. In the theoretical literature, the assessment of the tax impact on corporate decisions varies from negligible to paramount. On the one hand, practitioners say that the tax department only serves as an enabler of the ongoing business and that managers on all levels have EBIT incentives. On the other hand, in public perception, multinationals are often thought of as avoiding taxes by utilizing tax havens and clever structures.

My identification of group structures adds some levels of detail to previous prominent studies dealing with the topic such as Desai, Foley and Hines (2002) and Mintz and Weichenrieder (2010). These and others are summarized in a short literature review in this section. In Section 2, I provide an insight into those descriptive variables derived from the MiDi database which are of general interest and into those which I think are new to the literature. My new aspect particularly refers to the exact identification of the length and elements of holding chains. Following, in Sections 3 and 4, I develop and test hypotheses dealing with tax effects on the group structure and present several sensitivity tests and variations. Finally, Section 5 concludes with a summary of the results.

[1] The phrase dates back to 1896 when architect L.H. Sullivan used it in his essay “The tall office building artistically considered.” It was republished in The Craftsman in 1905 titled “Form and function artistically considered”.

Literature Review

There is some existing literature analyzing holding chains from a tax perspective. Mintz and Weichenrieder (2010) provide a comprehensive overview of multinational holding structures. Their work provides a fine insight into repatriation strategies and shows detailed descriptive empirical evidence based on the MiDi database.

Desai, Foley and Hines (2002) analyze the role of chains of ownership for U.S. based firms operating abroad. They gather empirical evidence from the annual survey of U.S. Direct Investment Abroad by the Bureau of Economic Analysis and conclude that indirect participation of foreign operations has become more and more popular. Even in their data from 1997, already 30% of aggregate foreign assets were held indirectly via some kind of holding company. In addition, according to the evidence found by Desai, Foley and Hines (2002), the concentration of ownership chains is particularly high in Europe.

Mintz (2004) pays particular attention to the holdings' function as financing hubs. Multinationals are supposed to use these conduit entities for means of indirect debt financing instead of directly providing the loans to operative subsidiaries. So-called conduit countries, as Mintz (2004) puts it, can be identified by their large amounts of both capital inflows and capital outflows. The paper provides a concise model and some descriptive indications, but abstains from empirical evidence on a micro level.

Hines and Rice (1994) provide an insight into the role of tax havens serving as holding countries for U.S. multinationals. According to them, these locations played a paramount role in the late 1980s, accounting for more than a quarter of U.S. foreign investment and nearly a third of U.S. profits. Desai, Foley and Hines (2006a) present more current evidence on the aspect of tax havens. They show empirical evidence that international firms with leeway regarding their transfer prices are most likely to use tax havens. Tax haven countries seem to fulfill two tasks: allocating taxable income away from the high-tax jurisdiction and facilitating deferral of foreign income in the credit country.[2] Dharmapala and Hines (2009) identify the factors determining whether a country becomes a tax haven or not. Apart from low tax rates as an obvious attractor, they make out the quality of governments as particularly attractive to multinationals.

I would like to mention that there are extensive studies on the impact of taxes on the size of foreign direct investments. The meta studies of De Mooij and Ederveen (2003) as well as of

[2] Desai, Foley and Hines (2006b) provide a model for analyzing to what extent tax havens divert economic activity.

Feld and Heckemeyer (2009) provide overviews of some of the seminal works in this field. This paper, however, is not about the level but about the form of investments. Thus, leaving aside investment size aspects, it fully concentrates on how taxes influence the structure of multinational groups.

2. Data and Descriptive Statistics

Data

The empirical analysis uses the *MiDi* database for multinationals, which is provided by the German Central Bank (*Deutsche Bundesbank)*. The comprehensive micro database covers information on both direct investment positions held in Germany by foreign investors and direct investment positions of German investors held abroad. The data allows me to identify the structure of groups and to trace it over time. In this paper, I use micro panel data for the period from 1996 to 2008. The data collection is imposed by German law, which requires reporting for certain international transactions and positions.[3] This aspect of MiDi is worth emphasizing, as I am thus able to observe virtually all major German outbound investments. In this study, I only analyze subsidiaries which are located outside Germany and are owned by a group with its headquarters in Germany.[4] I consider a sample of subsidiaries located in 57 countries. My sample consists of the four BRIC countries[5], 29 countries which were members of the OECD in 2008[6], and the eight EU member states which were not OECD countries in 2008.[7] In order to complete the picture of conceivable group structures, I additionally include some tax havens[8] and those other larger economies showing substantial investment stocks.[9] While the headquarters of the multinational groups covered in my dataset

[3] Sec. 26 of Foreign Trade and Payments Act (*Aussenwirtschaftsgesetz*) in connection to the Foreign Trade and Payments Regulation (*Aussenwirtschaftsverordnung*). Since 2002, FDI has to be reported if the participation is 10% or more and the balance sheet total of the respective foreign investment in Germany exceeds EUR 3 million. For details see Lipponer (2008). Though previous years showed lower threshold levels, I apply this one uniformly for all years in the panel. For general interpretations of the dataset from a tax and finance perspective see Mintz and Weichenrieder (2010).

[4] I exclude observations from mining, agriculture, non-profit and membership organizations because special tax regimes may be available. Furthermore, I exclude observations whose German parent is not an incorporated and legally independent entity, as well as subsidiaries which are not legally independent.

[5] The BRIC countries are Brazil, Russia, India, and China.

[6] These covered OECD countries in 2008 are Australia, Austria, Belgium, Canada, the Czech Republic, Denmark, Finland, France, Greece, Hungary, Iceland, Ireland, Italy, Japan, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, the Slovak Republic, South Korea, Spain, Sweden, Switzerland, Turkey, the United Kingdom, and the United States.

[7] These EU countries are Bulgaria, Cyprus, Estonia, Latvia, Lithuania, Malta, Slovenia, and Romania.

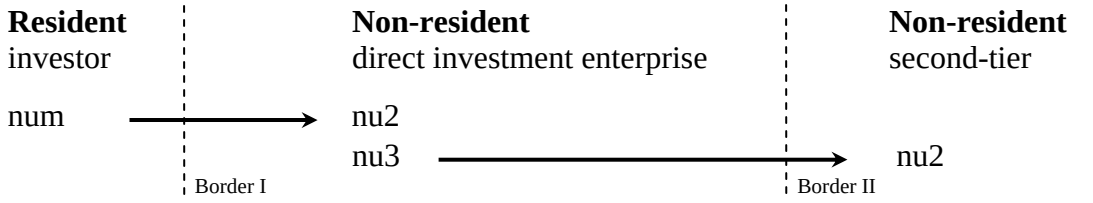
[8] These tax havens are the Bermuda Islands, the Cayman Islands, the Dominican Republic, Hong Kong, Liechtenstein, and Singapore.

[9] These additional countries are Chile, Colombia, Croatia, Indonesia, Malaysia, Peru, Taiwan, Thailand, the United Arab Emirates, and Uruguay.

are always located in Germany, I can also observe investments in directly held subsidiaries and in indirectly held subsidiaries if they are held by 100 percent.

For this study, I only take into consideration 100 percent participations concerning both directly and indirectly held subsidiaries. In the first part of the paper I disregard country holdings, since they add no additional information to the international setup of the group. Only when dealing with the presence of a group taxation rule are country holdings taken into account, as they can be used to net the profits and losses of the national subsidiaries.

From the data in the MiDi dataset, I have managed to reconstruct and identify the exact group concerning 100 percent participations. The dataset only uses two unique identifiers for its directly and indirectly held outbound subsidiaries.[10] These numbers, titled "nu2" and "nu3", have attached country information and are organized as follows:



The crucial aspect for my identification is that each "nu3" is a "nu2" in another line of the dataset. With this information, I managed to reconstruct the entire group structure concerning 100 percent participations. For each observed subsidiary, I could spot its exact location in the overall group structure.

What can we make of this information? Descriptively, I can show the length and width of group structures and trace them over time. Although it is not permissible to infer cause-and-effect relationships from these descriptive statistics, their observation over time is interesting. There are some drivers suggesting more complex and sophisticated holding structures over time and some working against the very same development. The internationalization of business and the increased size of multinational groups are supposed to cause more complex holding structures. By contrast, generally sinking or even vanishing withholding taxes imply leaner structuring, as tax-motivated holding structures from the past might become obsolete.

[10] See Lipponer (2008) for further details on the MiDi dataset.

For my empirical estimations I use the withholding tax rates on dividends. A multinational firm has different means to repatriate profits,[11] either by paying interest on previously provided intercompany loans, by paying royalties or by distributing intercompany dividends. The latter can be considered the most important one in terms of volume and also in the potential sensitivity to tax treaty regulations.[12] That is why I focus on repatriation via dividends in this paper. In addition to the simple withholding tax rate, I also regard the method of how the interest or dividend is treated in the receiving country, i.e. whether it is tax exempt, the tax is credited or deducted, or if there is double taxation. For each year, each single country pair is considered. Altogether, each of the four required matrices of withholding tax relationships show 58-by-57 combinations each for 13 years resulting in 42,978 observed values.[13] Changes in the withholding tax rates influence the tax efficiency of holding structures in the respective sphere. Still, my identification strategy regarding the tax efficiency of group structures builds as much on those withholding tax relationships that remain unchanged as on those that were changed. This results from analyzing the tax savings potential of intermediate subsidiaries for each year of the dataset. Put differently, my analysis is dynamic in the sense that it perceives the status of each group structure in each single year.

Descriptive Statistics

I first present an overview of the length of holding chains and the width of group structures over time. General drivers of the supposed development have been put forward above.

Concerning the length of holding chains, I identify seven vertical levels at maximum. A chain so long, however, rarely appears in the dataset. About 70% of all subsidiaries are directly held by the mother, some 24% are held via one intermediary subsidiary, and the remaining 6% are held via two or more subsidiaries.

Across all considered years, the average group observable in the dataset consists of about 4 subsidiaries. Between 1996 and 2008, the average number of subsidiaries per group increased from 3.55 to 4.50. Table 1 below provides further descriptive insight into group structures.

[11] Altshuler and Grubert (2003) provide an overview of the repatriation strategies available to multinationals. The general distinction of how profits may be repatriated and the conclusion that there is a trade-off for the subsidiary between reinvesting or transferring excess funds to the parent company are in line with the rationale put forward by Altshuler and Grubert (2003).

[12] Tax treaties also limit the tax withhold if intercompany interest or royalties are paid. Tax savings are, however, very unlikely because these types of income tax treaties or national tax legislation usually consider a credit system, whereas the foreign tax credits only include withholding taxes since interest and royalty expenses are deductible.

[13] See Tables 14 and 15 in the Appendix for an excerpt of the matrix. The full dataset is available upon request.

Table 1: Top 20 Subsidiary Locations in the Sample

Subsidiary Country	Observations	Domestic	Country #1	Country #2	Country #3
United States	4.865	4.514	Switzerland (95)	Netherlands (78)	UK (31)
United Kingdom	3.362	2.916	Denmark (207)	Netherlands (160)	Sweden (66)
France	3.100	2.585	Netherlands (188)	Switzerland (93)	Luxembourg (67)
Spain	1.800	1.319	Netherlands (141)	Switzerland (134)	France (67)
Netherlands	1.773	1.519	Switzerland (103)	Belgium (36)	Spain (14)
Italy	1.452	960	Netherlands (157)	Switzerland (122)	France (98)
Austria	1.168	910	Switzerland (120)	Netherlands (67)	Luxembourg (17)
Switzerland	1.115	792	Netherlands (165)	Austria (52)	France (29)
Belgium	816	349	Netherlands (262)	France (68)	Switzerland (53)
Australia	636	378	Netherlands (63)	Switzerland (63)	United States (34)
Sweden	601	356	Netherlands (82)	UK (61)	Switzerland (45)
Canada	557	202	United States (224)	Netherlands (61)	Switzerland (39)
Brazil	461	241	Switzerland (55)	Netherlands (32)	Spain (47)
Czech Republic	448	117	Austria (170)	Netherlands (99)	Switzerland (40)
Mexico	416	178	United States (135)	Netherland (25)	Spain (21)
Denmark	398	207	Sweden (66)	Switzerland (52)	Netherlands (40)
China	398	132	Hong Kong (86)	Singapore (47)	Switzerland (46)
Ireland	394	160	Netherlands (64)	UK (47)	United States (29)
Poland	376	149	Netherlands (81)	Austria (70)	Switzerland (19)
Hungary	361	139	Austria (156)	Netherlands (40)	Switzerland (16)
Observations	**24,497**	**18,123**			

This table shows the 20 countries where most of the observed subsidiaries of the sample are located. The column *Domestic* depicts the observations where the observed subsidiary is held by a country holding. The three columns to the right show the three countries where most of the holdings of the respective country's subsidiaries are located. The number in brackets shows the respective number of total holding observations. For example, I count 4.865 subsidiary observations in the USA between 1996 and 2008; 4.514 of which are held by country holdings. Most of German multinationals' US subsidiaries, which are not nationally held, are held by holdings in Switzerland with 95 holding observations in total. The second most popular holding country for US subsidiaries is the Netherlands, followed by the UK.

The table above displays which countries serve as a host for many holdings. It shows how many holdings are located in the respective country. This overview of holding countries above is very general. In the development of my hypotheses, I will outline in detail that the justification to install a holding company depends on the location of the operating subsidiary. This can be explained by different withholding taxes depending on which country dividends are paid to. Besides withholding taxes, other aspects, such as the geographical distance, the investment risk or the respective currency, might also influence a country's attractiveness as a holding location and are maybe even more obvious. The size effect of the individual influencing factors will be worked out later. In this descriptive section I already provide an insight into good holding locations given the location of the operating company. In other words, Table 1 above shows the preferred holding countries depending on the respective subsidiary's location – regardless of *why* they are the preferred countries. Table 2 below provides explanations and descriptive statistics of all the relevant variables used in this study.

Table 2: Variable Descriptions

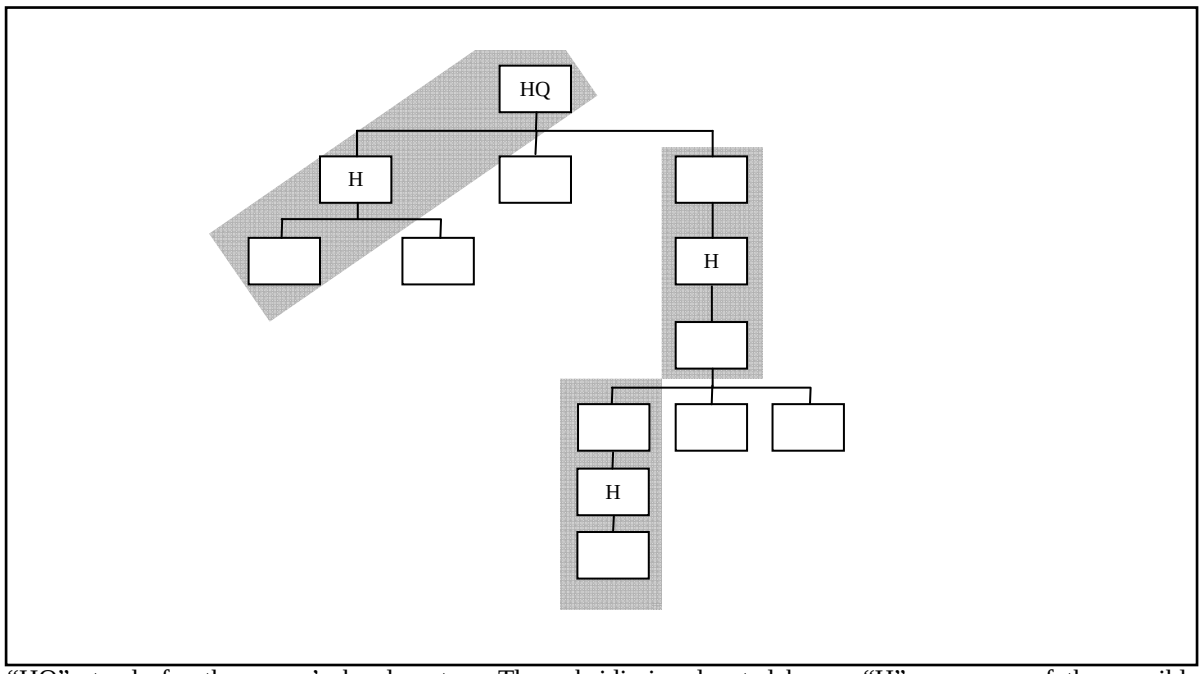
Variable	Description	Mean	Std. Dev.
Fixed Assets	Fixed and intangible assets in the financial statements; in EUR '000.	34,260	373,210
Group's Fixed Assets	Fixed and intangible assets of a group's subsidiaries; in EUR '000.	112,410	973,585
Holding	Binary variable distinguishing whether a subsidiary is a holding based on its NACE code (1) or not (0).	.086	.278
Superior	Dummy indicating if a subsidiary has a unit below it (1) or not (0).	314	464
Held Directly	Binary variable distinguishing whether the foreign subsidiary is held directly (1) or indirectly (0).	.686	.464
Affiliate Number	Number of a group's subsidiaries	26.26	43.12
Tax Rate	Statutory profit tax rate.	.331	.068
Withholding Tax	The statutory withholding tax on dividends repatriated from abroad to a qualifying superior firm unit. It is the smallest of the domestic rates and the rate of an effective tax treaty.	.009	.035
WHT to Germany	The statutory withholding tax on dividends repatriated from abroad to a qualifying firm in Germany.	.014	.031
Repatriation Tax	The additional tax that needs to be paid effectively on repatriation. Differs from *Withholding Tax* due to recognition of the credit system and the company tax.	.014	.046
Total Tax	The total tax to be paid additionally to the corporate income tax on the lowest level when repatriating dividends from one subsidiary via another subsidiary to a superior firm unit.	.019	.059
Counter Total Tax	The hypothetical equivalent to *Totaltax* if the intermediate subsidiary were non-existent.	.037	.052
Holding Advantage	The difference of *Totaltax* minus *Countertotaltax* with negative values showing that the holding reduces taxes.	-.020	.050
Thin Cap Rule	Binary variable if a country has a thin cap rule (1) or not (0).	.753	.432
Holding Regime	Binary variable distinguishing whether such a special regime is in place in that country (1) or not (0).	.377	.485
Group Taxation	Dummy distinguishing if a country has group taxation (1) or not (0).	.759	.427
Euro	Binary variable distinguishing whether the currency of the respective country is the euro (1) or not (0).	.485	.500
EU27	Binary variable distinguishing if a country belongs to the 27 EU member states (1) or not (0).	.631	.482
OECD	Binary variable if a country is an OECD member (1) or not (0).	.953	.211
Distance to Germany	The distance of the subsidiary to Germany in km '000.	4.677	4.726
Counterdistance	The distance between two subsidiaries km '000, disregarding the intermediate subsidiary between them.	2.799	3.659
GDP	Gross Domestic Product measured in billion USD.	2.218	3.615
GDP per Capita	GDP per home country; measured in current USD '000.	29.363	15.372
Inflation Rate	Inflation rate based on consumer prices.	2.53	7.33
Country Risk	OECD Country Risk Classification Method measures the country credit risk. Risk categories span from a low credit risk (0) to a high credit risk (7).	.189	.764

The values are generally based on the 134,630 observations used in testing Hypothesis H1. Regarding those variables only required for testing Hypothesis H4, they are based on the 46,368 observations used there. The firm-specific variables in the table's upper part are derived from the MiDi database of the German Central Bank. The tax variables in the middle of the table are derived from information taken from the IBFD Tax Handbooks, the Worldwide Corporate Tax Guides by Ernst & Young, and by the individual bilateral tax treaties. *GDP*, *GDP per Capita* and *Inflation Rate* stem from the World Development Indicators, edition 2009. *Country Risk* is based on information provided by the OECD.

3. Development of Hypotheses

I observe and analyze the group structures of multinationals. As pointed out in the section above, I have been able to fully identify those group structures. This information is required in order to calculate the total tax burden imposed on a dividend repatriated from a subsidiary on the lower levels of the group structure to the headquarters. For basic hypotheses, however, the information has to be brought to a feasible form. Whether or not the existence of a holding is beneficial from a tax point of view can already be determined by looking at parts of the total structure. Regardless of its complexity, the structure can be deconstructed into chains with three elements. I show this in the following example:

Table 3: Identification method by group structure split up



"HQ" stands for the group's headquarters. The subsidiaries denoted by an "H" are some of the possible holdings in this exemplary group structure. In the estimations and descriptives further below, each subsidiary with at least one company unit above and at least one below it is considered as an intermediary/holding subsidiary.

The example shows a group structure with the headquarters at the top and several subordinated subsidiaries. As I disregard country holdings in this first part of the paper, each subsidiary on a different horizontal level is located in a country different from the country of the subsidiary preceding or following it. Each subsidiary which has at least one unit above and one unit below it in the corporate structure can be regarded as a holding company. Nevertheless, the example only titles some of the conceivable holdings with an "H" to avoid confusion and shows some of the bundles which need to be analyzed in order to assess the tax value of a holding. The hypothetical situation of a holding company's non-existence needs to

be compared to the given situation. In the hypothetical situation, the subsidiary below the holding would distribute its profits directly to the unit above the holding. Neither the actual nor the hypothetical situation is affected by the other levels of the group structure. Therefore, by comparing the total tax burdens on a dividend distributed within the respective grey box in the factual vs. the fictitious case already reveals the tax benefit brought in by the holding.[14]

A multinational has two general means of repatriating profits from its foreign subsidiaries: either by demanding interest for previously granted loans or by calling for dividends. As outlined above, I focus on the latter channel in this paper. Withholding taxes can be an important aspect of multinationals' profit taxation. I provide an overview of their position and contribution in the international tax system. The headquarters and the subsidiaries are located in different countries. Furthermore, I assume profits. A tax rebate from the headquarter level to the subsidiary level is excluded. The following table shows the calculation of the tax burden at the level of the subsidiary and of the additional tax at the level of the superior company.

Table 4: Tax burden on the subsidiary level and additional tax burden on repatriation

HQ | | |	**1.** Exemption:	add = t_{HQ} * (1 – Tax $Burden_{SUB}$) * (1 – $Exemption_{in\ \%}$)
	2. Indirect credit:	add = t_{HQ} – Tax $Burden_{SUB}$
	3. Direct credit:	add = (t_{HQ} – WHT_{SUB}) * (1 – t_{SUB})
	4. Deduction:	add = t_{HQ} * (1 – t_{SUB} – WHT_{SUB})
	5. Double:	add = t_{HQ}
SUB	Tax $Burden_{SUB}$	= t_{SUB} + (WHT_{SUB} – t_{SUB} * WHT_{SUB})

The total tax burden depends on the corporate tax rates at the level of the subsidiary and at the level of the superior company unit, the withholding tax levied when profits are repatriated via dividends, and the method the country of the superior unit uses to recognize previously taxed profits. The superior unit can either be another subsidiary of the group or it can be the firm's headquarters.

The formulas are analogously applicable to the scenario when two subsidiaries of different host countries are vertically integrated into the group structure. As can be seen in Table 4, the impact of the withholding taxes depends not only on the size of the withholding tax (WHT) itself, but also on the corporate income tax rates (t) at the subsidiary and the mother company level, as well as on the method dividends are recognized through in the country of the

[14] For example, if the top unit is located in Germany and the lower unit is located in Japan, the introduction of a Dutch holding between these two units reduces the withholding tax due from 10% to 5% altogether. This is due to the fact that Japan levies a 10% withholding tax on dividends distributed to Germany, but only 5% on those dividends distributed to the Netherlands. The Netherlands do not claim a withholding tax on dividends distributed to Germany.

headquarters. I show the tax burden on an investment of a foreign subsidiary and the additional tax burden on repatriated dividends in the country of the headquarters. The formula on the level of the subsidiary shows that first the corporate income tax is applied and then the withholding tax is levied on the remaining net amount which shall be distributed as dividends. The formulas on the level of the headquarters show the five conceivable ways repatriated dividends might be handled. The possibilities range from the most generous treatment of a – possibly partly – exemption to the least advantageous double taxation. The direct and indirect credit systems differ insofar as the direct credit system only credits the withholding tax and deducts the corporate income tax paid on the subsidiary level, whereas the indirect credit system credits both of these previously paid taxes to the tax burden at the headquarter level. In the deduction case, both the withholding tax and the corporate income tax are deducted from the second level tax base.[15] Please refer to the Appendix for a more detailed description of methods to avoid double taxation and repatriation taxes.

Both the example on the corporate structure and the formulas for the tax burden show that the tax savings potential of a holding company stems mainly from its ability to reduce the applicable withholding taxes on distributed profits. The maximum savings potential of a holding structure is determined by the withholding tax which would be applicable if the holding was non-existent. Put differently, if there is only a low or even no withholding tax on distributions between two units in two different countries, there is only little or even no potential tax benefit of interposing a holding between these two units. Based on these considerations, I set up the following hypothesis:

H1: *A low withholding tax on dividends between the country of a subsidiary and the country of its superior foreign unit in the group structure reduces the probability that this subsidiary is held indirectly.*

In the first hypothesis, I focus on the general tax savings potential which can be realized by the establishment of a holding. Once I assume that the withholding tax levied on distributed dividends between two units is different from zero, the actual savings brought about by a holding is strongly influenced by the withholding tax rate applicable on dividends distributed from the holding country to the superior unit. If this rate is high, any savings made on the first

[15] For models on the country's rationale behind the chosen method of foreign capital income repatriation, see Janeba (1996), Mintz and Tulkens (1996) and Dickescheid (2004). Hines (1994) works out and provides empirical evidence that the credit system, as applied by the United States for example, provides incentives to finance foreign subsidiaries with considerable debt and to restrict the equity stakes in new foreign investments.

level are in vain. Therefore, especially those countries which have established treaties guaranteeing low withholding taxes on outgoing dividends are supposed to serve as the holding hubs. This consideration is the basis for my second hypotheses:

H2: *Operative subsidiaries are held via subsidiaries located in countries with low withholding taxes towards the country of the superior foreign-based company unit.*

The two hypotheses above aim at analyzing the intermediate subsidiaries which have been set up to enable tax-efficient profit repatriations by means of dividends. In my third hypothesis, I would like to take a closer look at such subsidiaries. A group can either use its established manufacturing subsidiaries to redirect dividends or it sets up new subsidiaries particularly fulfilling holding functions. Given that a group might not have operative active subsidiaries in the best conduit countries and orienting by the title of this paper, I set up the following hypothesis:

H3: *It is pure holding companies and not active subsidiaries which are used for group structuring.*

As pointed out above, I identified the whole group structure. The additional information available through this identification allows me to get a better insight into the tax savings which are actually realized by holding structures. My first three hypotheses shall provide initial evidence for groups using holdings in a tax-efficient way. Put more cautiously, the answers to these hypotheses shall show in general that holdings are at least not harmful from a tax point of view. The question about the size effect of the holding-induced tax savings, however, can only be answered by comparing the actual tax burden with the hypothetical tax burden if the intermediate holding was non-existent. Therefore, I set up the following hypothesis regarding the overall impact of holding structure applications:

H4: *Holding companies are applied as a way to lower the overall tax burden on dividends paid from a subsidiary to the group's headquarters or to another superior company unit.*

Although holdings are applied more or less in line with general tax considerations, as I will show in the results below, the size effect of the savings is disillusioning. Especially in light of the comprehensive theoretical and analytical literature on tax planning via holdings, the actual size of tax savings might have been expected to be higher. I mainly referred to the tax benefits

which could be realized in the case of full and immediate distribution of dividends. There are, however, tax effects which might be valued by the multinational, but rather materialize as options. A comprehensive setup of double taxation treaties, a location within the European Union, a holding regime or a stable currency might be appreciated by the multinational in view of plans for future expansion. Therefore, in my fifth hypothesis, I include both additional aspects related to taxation as well as non-tax effects such as proximity or a country's investment risk. The fifth hypothesis aims at answering the question about determinants of a good holding location. Given that the holding location depends on the location of the subordinated subsidiary, I apply a count data model inspired by Winkelmann (2008). For the inclusion of multiple influencing factors on the location decision, I formulate the following hypothesis:

H5: *Besides the withholding tax, other tax and non-tax effects contribute to determining a good holding location given the location of the operating subsidiary.*

The five hypotheses above deal with vertical group structuring. In addition, there are conceivable tax influences on the horizontal structuring of investments as well. Both country holdings and national sister subsidiaries are to be included when focusing on the horizontal group structure. If a country provides tax loss consolidation rules, a group could structure its investments by means of different separate legal entities. A multinational firm can split up its investments according to risks or business segments and, in doing so, benefit from limited liability. A well-structured group of several subsidiaries in a country is likely to be appreciated by providers of capital. Becker and Fuest (2007) analytically show that symmetric taxation alone might ensure only partial neutrality because aspects of limited liability have to be taken into account. In a group relief system, for example, losses can be offset for tax purposes while there is no need to effectively compensate the loss suffered by an affiliated company. Thus, the advantage of a possible tax loss offset comes free of any clearing requirements. In countries without a group taxation regime, however, the only way to ensure loss offsetting between different parts of the firm is by incorporating all business activities into one legal entity. Therefore, I set up the following hypothesis regarding the impact of a group taxation regime on the structuring of investments:

H6: *The number of subsidiaries per country established by a parent company is higher in those countries providing consolidation of taxable profits and losses of affiliated firms, i.e. those countries providing a group taxation regime.*

4. Estimation Approach and Regression Results

Withholding Taxes and Vertical Integration

Tracing H1 and H2, I analyze the probability that a subsidiary is indirectly held by a superior company unit. The superior company unit can be another subsidiary or the headquarters. Formally, the decision of the superior unit *j* to indirectly hold a subsidiary *i* located in country *c* in year *t* is modeled as a discrete choice decision problem and is captured in an econometric model using a standard latent variable framework. To keep it simple, when tracing H1 to H3, I focus on the three-unit holding chains with the German headquarters at the top and thus reduce the complexity by concentrating on the withholding tax to Germany. The observable decision to use either a holding h_{jt}, or to directly hold the subsidiary is related to the latent predisposition to use the holding, y_{jt}^*, according to $y_{jt} = 1[y_{jt}^* > 0]$ where $1[.]$ is the indicator function. The parent's predisposition towards using more than one subsidiary per host country is a function of the existence of the withholding tax between country c_1 and c_2 and a vector X of firm- and host country-specific characteristics, a common period-specific effect γ_t, an unobservable parent-specific effect p_j, and a residual $\varepsilon_{j,h,t}$. Choosing a linear specification for the latent variable provides us with

$$y_{jt}^* = \beta_1 Withholding\ Tax_{c1,c2,t} + X_{it}\beta_2 + \gamma_t + p_j + \varepsilon_{jht} \tag{1}$$

where β_1 and β_2 are the (vectors of) coefficients to be estimated. I apply a fixed-effects logit model (Chamberlain, 1980) for this estimation.[16] The fixed-effects model assumes that the error $\varepsilon_{j,h,t}$ is distributed symmetrically around zero, with accumulative distribution function *G*. The binary response model thus takes the form

$$\begin{aligned} P(y_{jt} = 1 | Withholding\ Tax_{c1,c2,t}, X_{jt}, c_j) &= P(y_{jt}^* | Withholding\ Tax_{c1,c2,t}, X_{jt}, c_j) \\ &= G(\beta_1 Withholding\ Tax_{c1,c2,t} + X_{it}\beta_2 + \gamma_t + c_j) \end{aligned} \tag{2}$$

When dealing with H4, the effective additional or reduced tax burden replaces the nominal withholding tax rate in equation (2). The effective burden is calculated as outlined in Table 4. Concerning H5, further variables are included in X_{jt} such as the investment risk in a country, the existence of special holding regime rules or the distance between the lower and the superior unit.

[16] A concise introduction to the logit model is provided by Winkelmann (2009).

Table 5: High WHTs to Germany increase the likelihood of a subsidiary to be held indirectly

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	OLS without group-fixed effects							
WHT to Germany	-.051	-.204***	-.250***	-.249***	-.278***	-.268***	-.159**	-.266***
	(.082)	(.076)	(.072)	(.072)	(.075)	(.073)	(.074)	(.073)
Group Tax Regime		-.105***	-.073***	-.072***	-.082***	-.078***		-.078***
		(.088)	(.010)	(.010)	(.011)	(.010)		(.010)
(ln)GDPperCapita			-.040	-.040***		-.035***	-.041***	-.035***
			(.006)	(.006)		(.008)	(.008)	(.008)
Inflation				-.001	-.006		-.028	.002
				(.018)	(.019)		(.023)	(.019)
OECD countryrisk					.020***	.002	.013***	.002
					(.004)	(.005)	(.004)	(.005)
Observations	134,630	134,630	134,630	134,573	134,217	134,274	134,217	134,217
Adjusted R^2	.0014	.012	.016	.016	.015	.016	.012	.016
F-test	.073	10.60	13.22	14.08	15.01	15.06	9.39	14.94
	(9)	**(10)**	**(11)**	**(12)**	**(13)**	**(14)**	**(15)**	**(16)**
	OLS with group-fixed effects							
WHT to Germany	.167***	-.005	-.017	-.019	-.038	-.036	.054	-037
	(.061)	(.061)	(.061)	(.062)	(.062)	(.062)	(.061)	(.062)
Group Tax Regime		-.082***	-.072***	-.072***	-.071***	-.070		-.071***
		(.007)	(.007)	(.007)	(.007)	(.007)		(.007)
(ln)GDPperCapita			-.013***	-.013***		-.004	-.009	-.004
			(.005)	(.005)		(.007)	(.007)	(.007)
Inflation				.023	.010		-.013	.000
				(.024)	(.017)		(.013)	(.000)
OECD countryrisk					.009***	.007**	.017***	.007*
					(.002)	(.004)	(.003)	(.004)
Observations	134,630	134,630	134,630	134,573	134,217	134,274	134,217	134,217
Adjusted R^2	.408	.412	.413	.385	.384	.384	.382	.384
F-test	1.89	12.12	11.41	10.91	11.95	13.56	7.84	12.83

The dependent variable is whether the foreign subsidiary is held directly (1) or indirectly (0) by its German mother. The standard errors shown in parentheses are robust and clustered on the country/year level. Year dummies for 1996-2008 are included but not reported. Estimations in columns (9) - (16) include group-fixed effects. *, **, and *** show significance at the level of 10%, 5%, and 1 %.

Confirming Hypothesis H1, the results in columns (2) to (8) of Table 5 show that a higher withholding tax of a subsidiary belonging to a group headquartered in Germany reduces the probability of direct participation. Put differently, holdings are generally established at positions of the group structure where they can at least potentially cause savings in withholding taxes. As stated above, this refers to the repatriation via dividends, which can be considered the most important as well as the most treaty-sensitive channel. The size effect of -.266 in column (8) of Table 5 means that a ten percent increase in the withholding tax towards Germany reduces the probability of direct participation by 2.66 percent. The results in columns (2) to (7) show that the effect is not driven by a particular combination of the

controls, but persists even if one or more of them are left out. As can be seen from the lower part of Table 5, however, the result that high withholding taxes to Germany increase the likelihood of a subsidiary to be held indirectly loses its significance once group-fixed effects are controlled for. In columns (10) to (14) and in column (16), which includes all the relevant control variables, despite a lack of significance, at least the expected negative sign persists. The change in results when including group-fixed effects compared to the upper part of Table 5 indicates that there are groups with and other without the motivation to indirectly hold subsidiaries, and that this basic distinction does not leave enough room for the individual withholding tax and its change over time to play a significant role.

The coefficients observable at the control variables are as expected. An existent *group tax regime* reduces the motivation to indirectly hold a subsidiary because some netting of profits and losses and profit reallocation can already be carried out on the national level. The negative effect of the *GDP per capita* indicates that well-established markets tend to be directly linked to the headquarters. This might rather be based on controlling considerations than on taxes. Regardless of the tax effect, those important subsidiaries producing in important established markets might want to maintain a direct link to the group's headquarters. While *inflation* is insignificant, the negative and significant coefficient of *OECD country risk* indicates that high risk countries tend to be directly tied to the headquarters rather than implementing them further down in a sophisticated group structure. Based on the need of close monitoring of such subsidiaries, this is highly plausible.

Hypothesis H2 takes the mirror view: the withholding taxes levied from the holding location when distributing profits to the superior company should be comparably low. The dependent variable in Table 6 is the withholding tax to Germany. The crucial independent variable *Superior* takes the value of one if a subsidiary has other subsidiaries below it in the group structure, and takes the value of zero if it does not. The negative coefficient of *Superior* in all columns (1) to (16) of Table 6 suggests that subsidiaries in locations levying high withholding taxes on dividend repatriation to Germany do not necessarily serve as conduit entities. Thus, as stated in Hypothesis H2, operative subsidiaries are held via subsidiaries located in countries with low withholding taxes towards the country of the superior foreign-based company unit. Hypothesis H2 is confirmed both in the estimations without group-fixed effects, shown in columns (1) to (8) and in those with group-fixed effects shown in columns (9) to (16).

Table 6: WHTs from superior subsidiaries to Germany are lower than from other subsidiaries

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	OLS without group-fixed effects							
Superior	-.006***	-.004***	-.004***	-.004***	-.004***	-.004***	-.005***	-.004***
	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)
Group Tax Regime		-.016***	-.014***	-.014***	-.012***	-.012***		-.012***
		(.003)	(.003)	(.003)	(.003)	(.003)		(.003)
(ln)GDPperCapita			-.002	-.001		.002	.001	.002
			(.002)	(.002)		(.003)	(.003)	(.003)
Inflation				.048*	.041*		.036*	.040*
				(.027)	(.024)		(.021)	(.024)
OECD countryrisk					.002*	.004**	.005***	.003*
					(.001)	(.002)	(.002)	(.002)
Observations	145,905	145,905	145,905	145,848	145,354	145,354	145,354	145,354
Adjusted R^2	.029	.062	.064	.072	.074	.070	.061	.075
F-test	4.47	5.90	5.53	5.59	6.05	5.68	5.71	5.81
	(9)	**(10)**	**(11)**	**(12)**	**(13)**	**(14)**	**(15)**	**(16)**
	OLS with group-fixed effects							
Superior	-.008***	-.006***	-.006***	-.007***	-.006***	-.006***	-.006***	-.006***
	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)
Group Tax Regime		-.014***	-.013***		-.012***	-.012***	-.013***	-.012***
		(.003)	(.003)		(.003)	(.003)	(.003)	(.003)
(ln)GDPperCapita			-.002	.001		.002	-.001	.002
			(.002)	(.003)		(.003)	(.002)	(.003)
Inflation				.029	.033		.037	.033
				(.019)	(.021)		(.023)	(.021)
OECD countryrisk				.004***	.002	.003		.002
				(.002)	(.001)	(.002)		(.002)
Observations	145,905	145,905	145,905	145,354	145,354	145,411	145,848	145,354
Adjusted R^2	.190	.211	.211	.207	.218	.215	.216	.212
F-test	5.56	6.40	5.99	5.73	6.07	5.79	5.94	5.80

The dependent variable is the withholding tax to Germany. The crucial binary independent variable *Superior* indicates whether the withholding tax is applied to a subsidiary which has at least one subordinated subsidiary (1) or not (0). The standard errors shown in parentheses are robust and clustered on the country/year level. Year dummies for 1996-2008 are included but not reported. Estimations in column (2) include group-fixed effects. *, **, and *** show significance at the level of 10%, 5%, and 1 %.

Just like the previous table, Table 7 uses the withholding tax to Germany as the dependent variable. The crucial independent variable *Holding*, however, is not based on the group structure like *Superior* in Table 6, but on the NACE code. Thus, *Holding* takes the value of one if a subsidiary exclusively carries out holding activities based on its industry code. The binary variable is zero if its NACE code does not label it as a holding but as some other function, such as a productive chemical plant. In this second case, the subsidiary might very well also carry out some holding functions, but it does not exclusively concentrate on them.

Table 7: Active subsidiaries, not pure holdings, are used for group structuring

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	OLS without group-fixed effects							
Holding	.003***	.004***	.003***	.003***	.004***	.003***	.003***	.003***
	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)
Group Tax Regime		-.004*	-.006**	-.006**	-.005**	-.005*		-.005**
		(.002)	(.002)	(.002)	(.003)	(.003)		(.002)
(ln)GDPperCapita			.002*	.003**		.003	.002	.003
			(.001)	(.001)		(.002)	(.002)	(.002)
Inflation				.030**	.029**		.026**	.029**
				(.014)	(.013)		(.012)	(.013)
OECD countryrisk					-.001*	.001	.001	.000
					(.062)	(.001)	(.093)	(.001)
Observations	53,587	53,587	53,587	53,582	53,180	53,185	53,180	53,180
Adjusted R^2	.050	.052	.054	.057	.054	.054	.053	.056
F-test	4.79	7.97	7.65	7.57	8.33	7.96	7.56	7.82
	(9)	**(10)**	**(11)**	**(12)**	**(13)**	**(14)**	**(15)**	**(16)**
	OLS with group-fixed effects							
Holding	.001	.001	.001	.001	.001	.001	.000	.001
	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)
Group Tax Regime		-.003**	-.005***	-.005***	-.006***	-.006***		-.006***
		(.001)	(.002)	(.002)	(.002)	(.002)		(.002)
(ln)GDPperCapita			.002	.002		.001	.001	.001
			(.001)	(.001)		(.002)	(.002)	(.002)
Inflation				.014	.016		.013	.016
				(.010)	(.011)		(.010)	(.011)
OECD countryrisk					-.001***	-.001	.000	-.001
					(.000)	(.001)	(.001)	(.001)
Observations	53,587	53,587	53,587	53,582	53,180	53,185	53,180	53,180
Adjusted R^2	.306	.309	.309	.310	.312	.311	.309	.312
F-test	3.96	4.92	4.55	4.47	4.53	4.31	3.52	4.24

The dependent variable is the withholding tax to Germany. The crucial independent variable *Holding* distinguishes between whether the foreign subsidiary is a pure holding company (1) or has other purposes as well (0). The standard errors shown in parentheses are robust and clustered on the country/year level. Year dummies for 1996-2008 are included but not reported. Estimations in columns (5) to (8) include group-fixed effects. *, **, and *** show significance at the level of 10%, 5%, and 1 %.

The positive and significant coefficients of *Holding* in columns (1) to (8) of Table 7 indicate that the withholding taxes for repatriating dividends to Germany are even higher if this is carried out by pure holding companies. This opposes Hypothesis H3. Based on Hypothesis H3, a negative and significant coefficient of *Holding* was expected, since it would convey that once a company is classified as a holding firm – by contrast to some other industry type – the withholding tax to Germany is lower in relation to non-holding subsidiaries. Once group-fixed effects are included in columns (9) to (16) of Table 7, the *Holding* coefficient turns insignificant. Given the parent/subsidiary directive within the EU and the many tax treaties applying zero-withholding tax rates for qualified dividends, the low average size effects are not surprising.

Based on the results from both the upper and the lower section of Table 7, Hypothesis H3 cannot be confirmed. There is no evidence pointing to the fact that it is especially pure holding companies which are used for group structuring. Based on Columns (1) to (8) of Table 7, it seems to be the *operative* subsidiaries which have lower withholding taxes to Germany than the pure holding companies. This carefully indicates that groups rather use their active operative subsidiaries for profit redistribution. Such a setup is plausible also from a tax law perspective. The German CFC-rules, grossing up passive income to the higher German tax level, might be one reason for this phenomenon. Active income is generally not grossed up.

Hypothesis H4 combines the elements of the first two hypotheses. The application of a holding should, when also taking into account the tax treatment method at the superior level, effectively lead to overall tax savings. Table 8 provides some insights into the influence of the intermediate subsidiary on the tax burden of repatriated profits. The corporate tax on the lowest level is not taken into account, as it is definite and remains unaffected by the group structure decision. All other taxes, i.e. the withholding taxes on dividends on each level and the corporate tax on the top level(s) are considered. The recognition of repatriated profits, i.e. exemption, credit, deduction or double taxation, is considered as well.

While Table 8 provides a detailed insight into the size effect of tax savings by intermediate holdings, the regressions of Tables 9 and 10 further below build on these new findings. They trace which kinds of firms actually use tax-efficient constructions. In order to be able to set up such regressions, one first has to know where tax savings prevail. This is shown in Table 8.

All in all, the results in Table 8 show that while many groups do have tax benefits from their intermediate subsidiaries, conversely some others even apply tax-harmful structures. The split up into sub samples reveals that the size and multitude of tax savings is higher in the structure directly below the German headquarters than further down in the group structure. As can be seen from column (1), the tax burden in the actual case is only 1.9% at the mean. This is the result of the dividend exemption in Germany and the parent-subsidiary directive within the EU, which sets withholding taxes stemming from qualified participations to zero.

Table 8: The tax burden on repatriated profits is often lower with than without a holding

	(1) All observations	(2) German Mother-Sub-Sub	(3) Sub-Sub-Sub
Tax Burden via Holding			
Mean	.019	.014	.034
Std. Deviation	(.059)	(.051)	(.080)
Min	0	0	0
Max	.712	.455	.712
HYPOTHETICAL Tax Burden without Holding			
Mean	.037	.038	.033
Std. Deviation	(.052)	(.042)	(.080)
Min	0	0	0
Max	.700	.370	.700
Holding's influence on the tax burden			
Mean	-.020	-.024	-.001
Std. Deviation	(.050)	(.050)	(.042)
Variance	.002	.003	.002
Skewness	2,306	2,178	4,633
Kurtosis	30,502	23,400	105,839
Tax Advantage (Percentiles)			
1%	-.170	-.170	-.15
5%	-.076	-.076	0
10%	-.070	-.070	0
25%	-.020	-.026	0
50%	-.020	-.020	0
75%	0	-.015	0
90%	0	0	0
95%	.001	.007	0
99%	.180	.185	.119
Observations	55,808	45,242	10,566

This table shows descriptive variables. Thus, there is no dependent variable. The samples reported in columns (2) and (3) are subsamples of the full set in column (1). Column (2) regards the triples of the German mother and two subordinated subsidiaries, while column (3) regards three subsidiaries. All of the subsidiaries are vertically embedded in the group structure. The *tax burden* includes all withholding taxes and corporate taxes, except for the corporate tax on the lowest considered level. In the HYPOTHETICAL case, the intermediate subsidiary is considered non-existent. The *holding's influence* is the actual tax burden minus the hypothetical tax burden.

In the hypothetical case that the intermediate subsidiary was non-existent, with a value of 3.7%, the average tax burden on repatriated profits would be almost twice as high as the actual case's 1.9%. Thus, at the mean, the intermediate subsidiaries reduce the tax burden. A look at the percentiles reveals that in about 50% of the cases, the existent group structure is beneficial, in about 45% of the cases it does not change the tax burden, and in about 5% the tax burden would be lower if the intermediate subsidiary was non-existent. This last 5% is surprising in light of a comprehensive analytical literature on tax-induced holding structures. Obviously, although group structures generally seem to be tax driven, there are non-tax influencing factors which sometimes prevail.

Table 9: Which companies insert holding companies into their structure save taxes

	(1)	(2)	(3)	(4)	(5)	(6)
	OLS without group-fixed effects					
ln(Fixed Assets)	.012***	.020***	.021***		.021***	.020***
	(.001)	(.002)	(.001)		(.002)	(.002)
Counterdist	.009***	.010***		.011***	.010***	.010***
	(.003)	(.003)		(.003)	(.003)	(.003)
Group Affiliate Number	-.003***		-.001***	-.001***	-.001	-.001***
	(.000)		(.000)	(.000)	(.001)	(.000)
(Group Affiliate Number)^2	.001***		.002***	.001*		.001***
	(.000)		(.000)	(.000)		(.000)
Group's Fixed Assets		-.065***	-.069***	-.060***	-.035***	-.063***
		(.007)	(.007)	(.006)	(.002)	(.007)
(Group's Fixed Assets)^2		.168***	.184***	.184***		.163***
		(.034)	(.033)	(.030)		(.031)
Observations	46,368	46,362	47,419	55,987	46,368	46,362
Adjusted R^2	.213	.230	.218	.204	.229	.230
F-test	59.46	90.90	87.35	36.43	88.06	84.01
	(7)	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**
	OLS with group-fixed effects					
ln(Fixed Assets)	.019***	.020***	.020***		.020***	.019***
	(.001)	(.001)	(.001)		(.001)	(.001)
Counterdist	.010***	.011***		.013***	.010***	.011***
	(.003)	(.003)		(.003)	(.003)	(.003)
Group Affiliate Number	-.001***		-.001**	-.001***	-.001	-.001**
	(.000)		(.000)	(.000)	(.000)	(.000)
(Group Affiliate Number)^2	.001***		.001**	-.001*		.001**
	(.000)		(.000)	(.000)		(.000)
Group's Fixed Assets		-.061***	-.058***	-.067***	-.036***	-.059***
		(.012)	(.013)	(.011)	(.004)	(.012)
(Group's Fixed Assets)^2		.129**	.108*	.195***		.122**
		(.053)	(.057)	(.042)		(.052)
Observations	46,368	46,362	47,419	55,987	46,368	46,362
Adjusted R^2	.303	.304	.300	.274	.304	.304
F-test	45.53	57.29	50.86	17.75	56.44	51.34

The binary dependent variable is one if the repatriation of profits in the form of dividends from a subsidiary to a company unit two levels above is from a tax point of view cheaper via the existing holding company than without it. Put differently, if the holding brings a tax saving, the dependent variable is one, otherwise it is zero. The standard errors shown in parentheses are robust and clustered on the country/year level. Year dummies for 1996-2008 are included but not reported. Estimations in column (7) to (12) include group-fixed effects. *, **, and *** show significance at the level of 10%, 5%, and 1 %.

The regressions of Tables 9 and 10 build on the information shown in Table 8. The binary dependent variable is one if the intermediate subsidiary brings a tax saving, otherwise it is zero. The independent variables aim at revealing which kinds of firms or groups apply such tax-efficient structures. As in the previous tables, the upper part of Tables 9 and 10 show results from regressions without group-fixed effects, whereas in the lower part, group-fixed effects are included. While Table 9 is based on ordinary least squares estimations, Table 10 shows the results of logit estimations.

Table 10: Which companies insert holding companies into their structure save taxes

	(1)	(2)	(3)	(4)	(5)	(6)
	Logit estimation					
ln(Fixed Assets)	.072***	.116***	.117***		.120***	.117***
	(.008)	(.007)	(.007)		(.007)	(.007)
Counterdist	.061***	.068***		.068***	.067***	.067***
	(.021)	(.022)		(.022)	(.022)	(.021)
Group Affiliate Number	-.016***		-.002**	-.004***	.001	-.002***
	(.001)		(.001)	(.001)	(.001)	(.001)
(Group Affiliate Number)^2	.001***		.001***	.001***		.001***
	(.000)		(.000)	(.000)		(.000)
Group's Fixed Assets		-.358***	-.367***	-.322***	-.227***	-.352***
		(.038)	(.035)	(.032)	(.013)	(.035)
(Group's Fixed Assets)^2		.786***	.844***	.877***		.783***
		(.182)	(.175)	(.159)		(.171)
Observations	46,368	46,362	47,419	55,987	46,368	46,362
Pseudo R^2	.167	.185	.174	.163	.185	.186
Wald chi^2	697.54	850.96	918.75	460.95	833.70	868.60
Probability > chi^2	.000	.000	.000	.000	.000	.000
	(7)	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**
	Panel logit estimation					
ln(Fixed Assets)	.147***	.254***	.240***		.261***	.253***
	(.021)	(.022)	(.019)		(.022)	(.022)
Counterdist	.466***	.474***		.496***	.473***	.474***
	(.021)	(.021)		(.017)	(.021)	(.021)
Group Affiliate Number	-.018***		-.003**	-.006***	-.001*	-.004**
	(.002)		(.002)	(.001)	(.001)	(.002)
(Group Affiliate Number)^2	.001***		.001**	.001***		.001**
	(.000)		(.000)	(.000)		(.000)
Group's Fixed Assets		-1.08***	-.924***	-1.09***	-.609***	-1.04***
		(.090)	(.080)	(.079)	(.026)	(.093)
(Group's Fixed Assets)^2		2.60***	2.10***	3.05***		2.48***
		(.483)	(.426)	(.411)		(.487)
Observations	46,368	46,362	47,419	55,987	46,368	46,362
Number of Groups	12,096	12,094	12,358	14,601	12,096	12,094
Wald chi^2	4,276.21	4,454.24	4,752.65	5,289.83	4,445.13	4,456.87
Probability > chi^2	.000	.000	.000	.000	.000	.000

The binary dependent variable is one if the repatriation of profits in the form of dividends from a subsidiary to a company unit two levels above is from a tax point of view favorable, i.e. cheaper, via the existing holding company than without it. Put differently, if the holding brings a tax saving, the dependent variable is one, otherwise it is zero. The standard errors shown in parentheses are robust and clustered on the country/year level. Year dummies for 1996-2008 are included but not reported. Estimations in column (7) to (12) consider the panel dimension. *, **, and *** show significance at the level of 10%, 5%, and 1 %.

First of all, given that *ln(Fixed Assets)* shows positive and significant coefficients in all estimations of Table 9 and Table 10, it is rather big subsidiaries which use holdings above them to redirect profits to upper levels in the group structure such as to the group's headquarters. This is not surprising, because the bigger subsidiaries can be expected to yield

higher profits than smaller entities, and therefore the benefit of tax efficiently redirecting their dividends is high as well.

The coefficient of *Counterdist* is positive and significant in all estimations as well. *Counterdist* is the distance in kilometers between the respective subsidiary and the company unit two levels above it. Therefore, the positive coefficient indicates that remotely located subsidiaries can and do benefit from inserting conduit entities for redirecting their profits. It is rather these remotely located subsidiaries than those in the close vicinity of the upper firm unit which benefit from being held indirectly.

The negative and significant coefficients of *Group Affiliate Number* and *Group's Fixed Assets* seem surprising at first sight because they indicate that efficient tax saving is rather found in smaller groups with little assets. The squared term of both of these variables is, however, positive and significant, which at least indicates that the effect gradually vanishes with growing sizes. Despite appearing counter-intuitive, even the basic effect can be explained: groups with only a few subsidiaries can focus their tax planning and might not need to consider other non-tax determinants such as a concise internal reporting structure. The variables covering the respective group's assets might interact by including the respective subsidiary's fixed assets as well. It has to be mentioned that, as can be seen from Table 2, in this dataset the average number of affiliates per group is only about four. This results from the MiDi dataset's observation of subgroups rather than the inclusion of undifferentiated conglomerates.

Based on the 5% of all firms in Table 8, which put up with higher taxes on repatriation by inserting an intermediate subsidiary, I concluded that although group structures generally seem to be tax driven, there are non-tax influencing factors which sometimes prevail. These other influence factors determining preferable holding locations are analyzed when tracing Hypothesis H5. In tracing this hypothesis in Table 11, the number of holding companies per country serves as the dependent variable and country characteristics are independent variables. In other words, I aim at working out which characteristics make a country a preferable holding location. The regression results of Table 11 suggest that the existence of a holding regime, the existence of a group taxation rule, and a country's GDP per capita positively influence the decision of where to establish a holding company, whereas a high country risk negatively influences such a decision.

Table 11: Besides WHTs there are other tax and non-tax factors determining a holding location

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Tax Rate	.200	.422	.280	.320	.348	.301	.324	.296	.304	-.123	.331	.299
	(.300)	(.290)	(.301)	(.301)	(.300)	(.300)	(.299)	(.301)	(.300)	(.296)	(.300)	(.301)
Existence of Holding Regime		.346***	.322***	.330***	.308***	.330***	.322***	.319***	.317***	.319***	.339***	.317***
		(.073)	(.076)	(.076)	(.075)	(.076)	(.076)	(.076)	(.076)	(.076)	(.076)	(.076)
Existence of Thin Cap Rule	-.099***		-.057	-.056	-.056	-.055	-.054	-.056	-.057	-.064*		-.057
	(.036)		(.037)	(.037)	(.036)	(.037)	(.037)	(.037)	(.037)	(.037)		(.037)
Existence of Group Tax Regime	.029**	.027*		.026*	.027*	.026*	.026*	.026*	.026*	.025*	.028*	.026*
	(.014)	(.015)		(.015)	(.015)	(.015)	(.015)	(.015)	(.015)	(.015)	(.015)	(.015)
Euro country	.973**	.707	.715			.495	.798*	.688	.720	.981	.797*	.721*
	(.463)	(.449)	(.449)			(.436)	(.439)	(.459)	(.450)	(.614)	(.461)	(.450)
EU 27 Member	-1.11*	-.767	-.773	-.507	-.844		-.733	-.359	-.793	-.384	-.842	-.795
	(.603)	(.578)	(.576)	(.587)	(.658)		(.549)	(.421)	(.578)	(.603)	(.604)	(.578)
OECD Member	.609	.386	.435	.611	.891*	.419		.722*	.435	-.581	.781*	.436
	(.474)	(.450)	(.449)	(.473)	(.493)	(.476)		(.411)	(.450)	(.501)	(.463)	(.451)
Distance to Germany	-.094	-.080	-.081	-.077	-.076	-.026	-.103*		-.082	-.139**	-.076	-.082
	(.067)	(.063)	(.063)	(.067)	(.079)	(.050)	(.053)		(.063)	(.056)	(.066)	(.063)
(ln)GDP	.101	.175*	.181*	.188*		.211**	.207**	.158		.886***	.148	.175*
	(.105)	(.102)	(.102)	(.103)		(.099)	(.099)	(.101)		(.069)	(.106)	(.103)
(ln)GDPperCapita	.941***	.934***	.924***	.923***	1.08***	.901***	.910***	.944***	.926***		1.02***	.928***
	(.116)	(.113)	(.113)	(.114)	(.071)	(.111)	(.114)	(.111)	(.113)		(.114)	(.113)
Inflation	.001	.053	.055	.054	.055	.051	.053	.055		.012	.021	.053
	(.001)	(.149)	(.147)	(.151)	(.147)	(.148)	(.148)	(.148)		(.017)	(.002)	(.148)
OECD countryrisk	-.175***	-.163***	-.167***	-.167***	-.164***	-.166***	-.171***	-.165***	-.165***	-.182***		-.166***
	(.033)	(.033)	(.033)	(.033)	(.033)	(.033)	(.033)	(.033)	(.033)	(.034)		(.033)
Observations	673	673	673	673	673	673	673	673	673	673	673	673
Number of groups	53	53	53	53	53	53	53	53	53	53	53	53
Wald $chi^2(23)$	1407.31	1431.40	1431.44	1429.40	1429.71	1431.28	1425.22	1434.98	1434.02	1320.76	1401.35	1434.14
Prob > chi2	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

The dependent variable is the number of holding companies in a country. The standard errors shown in parentheses are robust and clustered on the country/year level. Year dummies for 1996-2008 are included but not reported. Estimation in column (2) includes group fixed effects. *, ** and *** show significance at the level of 10%, 5% and 1 %.

Based on the positive and highly significant coefficients of *Existence of Holding* Regimes, following the results in column (12), the existence of a holding regime in a country increases the number of observed holdings per country and year by 0.317 on average. Table 13 in the Appendix shows which countries have prominent specific holding incentives in which years and how these incentives are specified.

The number of counted holdings is higher in countries where a group taxation rule exists. This can be seen from the positive and weakly significant coefficient of *Existence of Group Tax Regime*. Based on the column (12), on average I count .026 more holdings in countries with a group taxation rule compared to countries without it. Thus, the chance to net profits and losses on a national level seems to serve as an argument for establishing a holding in such a country. The effect is, admittedly, rather small in size and only significant at the 10% level.

The GDP per Capita has a positive and significant impact on the number of holdings per country. Additionally, in several regressions shown in Table 11, the GDP also shows a positive and significant coefficient. Both variables are applied in logs. The positive coefficients indicate that it is rather countries with well-established markets which serve as holding locations.

Not by surprise, the *OECD country risk variable*, measuring the general investment risk on a country/year basis, shows a strongly significant negative impact on the number of holdings per country. As shown in Table 2, the country risk can take values from 0 (low risk) to 7 (high risk). Based on the results in column (12), an increase in the country credit risk by 1 unit lowers the number of observable holdings in this country and year by about .166 on average.

Group Taxation Regimes and Horizontal Structure

Aiming at answering Hypothesis H6, I provide an analysis dealing with the impact of group taxation regimes on the structure of national subgroups of multinational firms. A national subgroup includes all incorporated and wholly-owned subsidiaries located in a certain host country and belonging to the same German parent company. I analyze whether the possibility of offsetting profits and losses between affiliated subsidiaries affects the legal structures of the activities in a host country.

First, I analyze the probability that there are several, instead of just one, subsidiaries established by a certain German parent firm in the respective country. As the dependent variable, I consider a binary variable indicating if a German parent company has organized its

activities in a country through more than one subsidiary. If all activities carried out by a group in that respective host country are pooled within one subsidiary, the variable is zero.[17]

Formally, the decision of parent company *j* to structure its activities in a host country *h* in year *t* across more than one subsidiary is modeled as a discrete choice decision problem and is captured in an econometric model using a standard latent variable framework. Suppose that the observable decision to either use more than one subsidiary, y_{jt}, or to use only one subsidiary is related to the latent predisposition to use more than one subsidiary, y_{jt}^*, according to $y_{jt} = 1[y_{jt}^* > 0]$ where $1[.]$ is the indicator function. Suppose, furthermore, that a parent's predisposition towards using more than one subsidiary per host country is a function of the existence of group taxation and a vector *X* of firm- and host country-specific characteristics, a common period-specific effect γ_t, an unobservable parent-specific effect c_j, and a residual $\varepsilon_{j,h,t}$. Choosing a linear specification for the latent variable provides me with

$$y_{jt}^* = \beta_1 Grouptaxation_{h,t} + \boldsymbol{X_{it}\beta_2} + \gamma_t + c_j + \varepsilon_{jht} \tag{3}$$

where β_1 and β_2 are the vectors of coefficients to be estimated. I apply a fixed-effects logit model (Chamberlain, 1980) for this estimation. The fixed-effects model assumes that the error $\varepsilon_{j,h,t}$ is distributed symmetrically around zero, with accumulative distribution function *G*. The binary response model thus takes the form

$$\begin{aligned} P\left(y_{jt} = 1 \middle| Grouptaxation_{ht}, \boldsymbol{X_{jt}}, c_j\right) &= P\left(y_{jt}^* \middle| Grouptaxation_{ht}, \boldsymbol{X_{jt}}, c_j\right) \\ &= G\left(\beta_1 Grouptaxation_{h,t} + \boldsymbol{X_{it}\beta_2} + \gamma_t + c_j\right) \end{aligned} \tag{4}$$

Secondly, the number of subsidiaries held by a German parent company in one country is supposed to be affected by the existence of a group taxation regime. I estimate a Poisson model to trace this hypothesis. I model the number of subsidiaries *n* held by a German parent company *j* in a foreign country *h*. I am interested in the expected value of n_{jh} conditional on some control variables X_{jh} , where X_{jh} contains, for instance, the country-specific variable indicating if a group taxation regime is applied. One way to express this is to use the exponential function as a functional form. In order to determine the probability of n_{jh} given X_{jh}, I further assume a Poisson distribution orienting by the following probability function:

$$f(n_{jh} \mid X_{jh}) = \frac{\exp(-\lambda_{jh})\lambda_{jh}^n}{n!}, \qquad n = 1,\ 2,\ 3,... \tag{5}$$

[17] Note that I only consider host countries where the respective parent company controls at least one subsidiary.

In order to obtain the Poisson regression model, I use the functional form denoted above for the intensity parameter to construct the loglikelihood function. Subsequently, I can estimate the vector using maximum likelihood methods.

In both the panel logit estimation and the panel Poisson estimation, robustness of the standard errors is achieved by bootstrapping standard errors as suggested by Cameron and Trivedi (2009).[18] I use a control variable which covers the number of industries the parent company operates in. It can be expected that a group which shows business activities in different industries will automatically split up its investments into more subsidiaries.

Regression Results Horizontal Integration

Concerning Hypothesis H6, all columns of Tables 12a to 12c show that the existence of a group taxation regime positively influences the number of subsidiaries observed per country, year, and group. While Table 12a shows the results for the OLS regression, Tables 12b and 12c report the regression results of the panel fixed-effects logit model and the fixed-effects Poisson model. The dependent variable in Tables 12a and 12b distinguishes whether the group is split up into two or more subsidiaries in a country (1) or not (0). In Table 12c, the dependent variable is the number of subsidiaries per country, group, and year. Based on the results of column (12) in Table 12c, the existence of a group taxation regime increases the number of observed subsidiaries by .089. The probability of a split up into at least two subsidiaries per country and year increases by 16.1% if a group taxation regime is in place, as can be seen from column (12) in Table 12b.

The control variables show the expected signs. The tax rate in the host country has a negative impact on the number of observed subsidiaries per group. A group having a higher variability of different industries establishes more subsidiaries per country. Based on column (12) in Table 12c, if a group operates in one more industry, this increases its number of subsidiaries per country by .086. The market size, approximated by the GDP of the host country, has a strong and positive effect on the number of subsidiaries founded there. GDP per capita, which serves as an indicator for both labor cost and the purchasing power in the host country, also shows a positive sign. The country risk control variable shows the expected negative sign and is significant. Since a higher value of this variable represents a higher country risk, the negative sign indicates that the foundation of several instead of just one subsidiary is less likely in riskier countries. This finding suggests that a centralized structure might be assumed to be superior for avoiding fraud and for monitoring business in riskier countries.

[18] Following the analysis of Andrews and Buchinsky (2002), I apply 100 repetitions.

Table 12a: Groups split up their operations to more subsidiaries if there is a grouptaxation regime

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	OLS with group fixed effects											
Group Tax Regime	.078***	.079***	.040***	.017**		.015**	.014**	.036***	.017***	.015**	.018***	.015*
	(.008)	(.008)	(.007)	(.007)		(.007)	(.008)	(.008)	(.006)	(.007)	(.007)	(.007)
Industries		.046***	.046***	.046***	.046***		.046***	.046***	.046***	.046***	.046***	.046***
		(.002)	(.002)	(.002)	(.002)		(.002)	(.002)	(.002)	(.002)	(.002)	(.002)
Tax Rate					-.206***	-.210***		.224***	-.225	-.207***	-.191***	-.212***
					(.040)	(.041)		(.053)	(.043)	(.041)	(.041)	(.041)
(ln)GDP			.041***	.038***	.045***	.044***	.038***		.044***	.044***	.044***	.044***
			(.002)	(.002)	(.002)	(.002)	(.002)		(.002)	(.002)	(.002)	(.002)
(ln)GDPperCapita				.034***	.024***	.023***	.025***	.028***		.022***	.033	.023***
				(.004)	(.005)	(.005)	(.006)	(.008)		(.005)	(.004)	(.005)
Inflation					-.001	-.001	-.007	-.020*	.003		-.012	-.000
					(.005)	(.006)	(.008)	(.012)	(.004)		(.012)	(.006)
OECD countryrisk					-.011***	-.009***	-.007***	-.010**	-.020***	-.010***		-.010***
					(.003)	(.003)	(.003)	(.004)	(.002)	(.003)		(.003)
Observations	152,125	152,125	152,125	152,125	152,125	152,125	152,125	152,125	152,125	152,125	152,125	152,125
Adjusted R^2	.278	.285	.300	.302	.302	.295	.302	.292	.302	.303	.302	0.303
F-test	8.41	32.53	63.96	66.86	73.36	63.52	65.53	34.55	73.62	75.67	68.86	73,58
Groups	10,417	10,417	10,417	10,417	10,417	10,417	10,417	10,417	10,417	10,417	10,417	10,417
Observations per Group	14.60	14.60	14.60	14.60	14.60	14.60	14.60	14.60	14.60	14.60	14.60	14.60

The dependent variable is the number of subsidiaries per group and country. The standard errors shown in parentheses are robust and clustered on the country/year level. Year dummies for 1996-2008 are included but not reported. All of the estimations include group fixed effects. *, ** and *** show significance at the level of 10%, 5% and 1 %.

Table 12b: Groups split up their operations to more subsidiaries if there is a grouptaxation regime

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	XTLOGIT estimation											
Group Tax Regime	.648***	.657***	.182***	.162***		.156***	.162***	.324***	.182***	.160***	.189***	.161***
	(.042)	(.046)	(.052)	(.052)		(.051)	(.051)	(.056)	(.047)	(.056)	(.051)	(.051)
Industries		.261***	.274***	.274***	.273***		.274***	.267***	.274***	.274***	.273***	.274***
		(.026)	(.029)	(.028)	(.026)		(.026)	(.029)	(.024)	(.028)	(.031)	(.028)
Tax Rate					-1.96***	-1.98***		1.88***	2.14***	-1.98***	-1.81***	-2.010***
					(.336)	(.342)		(.324)	(.399)	(.362)	(.345)	(.366)
(ln)GDP			.316***	.313***	.380***	.365***	.312***		.374***	.370***	.368***	.371***
			(.021)	(.023)	(.020)	(.018)	(.018)		(.024)	(.023)	(.024)	(.023)
(ln)GDPperCapita			.308***	.231***	.215***	.204***	.229***	.253***		.203***	.291***	.206***
			(.032)	(.037)	(.039)	(.040)	(.047)	(.046)		(.039)	(.031)	(.042)
Inflation				-.323	-.092***	-.001	-.003	-.005	-.056		-.005	-.002
				(.292)	(.024)	(.002)	(.003)	(.003)	(.137)		(.003)	(.003)
OECD countryrisk				-.056**	-.099***	-.079***	-.056**	-.072***	-.186***	-.085***		-.082***
				(.024)	(.024)	(.342)	(.027)	(.027)	(.021)	(.024)		(.025)
Observations	94,042	94,042	94,042	94,042	94,042	94,042	94,042	94,042	94,042	94,042	94,042	94,042
Groups	2,614	2,614	2,614	2,614	2,614	2,614	2,614	2,614	2,614	2,614	2,614	2,614
Observations per Group	35.9	35.9	35.9	35.9	35.9	35.9	35.9	35.9	35.9	35.9	35.9	35.9

The dependent variable is if a group has only one subsidiary per country (0) or at least two (1). The standard errors shown in parentheses are robust and clustered on the country/year level. Year dummies for 1996-2008 are included but not reported. *, ** and *** show significance at the level of 10%, 5% and 1 %.

Table 12c: Groups split up their operations to more subsidiaries if there is a grouptaxation regime

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	XTPOISSON estimation											
Group Tax Regime	.284***	.284***	.091***	.090***		.089***	.090***	.164***	.098***	.090***	.093***	.089***
	(.039)	(.037)	(.018)	(.019)		(.020)	(.020)	(.024)	(.020)	(.020)	(.012)	(.019)
Industries		.085***	.086***	.086***	.085***		.086***	.085***	.086***	.086***	.086***	.086***
		(.007)	(.008)	(.007)	(.008)		(.007)	(.007)	(.007)	(.007)	(.007)	(.007)
Tax Rate					-.553***	-.552***		1.17***	-.613***	-.534***	-.527***	-.548***
					(.123)	(.129)		(.205)	(.146)	(.140)	(.125)	(.138)
(ln)GDP			.146***	.146***	.168***	.161***	.146***		.164***	.161***	.161***	.162***
			(.018)	(.019)	(.021)	(.022)	-20		(.022)	(.023)	(.022)	(.023)
(ln)GDPperCapita			.090***	.088***	.088***	.081***	.088***	.107***		.082***	.092***	.081***
			(.012)	(.017)	(.016)	(.016)	(.016)	(.020)		(.016)	(.012)	(.017)
Inflation				.045***	.073***	.062***	.045**	-.013	.076***		.052***	.001***
				(.018)	(.022)	(.020)	(.020)	(.017)	(.021)		(.020)	(.000)
OECD countryrisk				-.004	-.019***	-.009	-.003	-.007	-.050***	-.007		-.009
				(.007)	(.007)	(.007)	(.007)	(.007)	(.007)	(.008)		(.007)
Observations	150,878	150,878	150,878	150,878	150,878	150,878	150,878	150,878	150,878	150,878	150,878	150,878
Groups	9,170	9,170	9,170	9,170	9,170	9,170	9,170	9,170	9,170	9,170	9,170	9,170
Observations per Group	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5

The dependent variable is if a group has only one subsidiary per country (0) or at least two (1). The standard errors shown in parentheses are robust and clustered on the country/year level. Year dummies for 1996-2008 are included but not reported. *, ** and *** show significance at the level of 10%, 5% and 1 %.

5. Concluding Remarks

I have provided evidence on the group structures of multinationals and I have analyzed to what extent these structures are tax-efficient. Based on the full identification of group structures, I have identified that while most indirectly held companies are held by only one holding level, several group structures are more sophisticated comprising up to seven layers. The presentation of holding countries in dependence of the subsidiaries' locations shows which countries serve as popular hosts.

My regression results carefully indicate that the establishment of holding structures is generally carried out in line with tax saving strategies. If the withholding tax on dividends between the country of a subsidiary and the country of its superior foreign unit is low, this subsidiary tends to be held directly instead of via a holding. Put differently, holdings are generally established at positions of the group structure where they can at least potentially cause savings in withholding taxes. Furthermore, operative subsidiaries tend to be held via subsidiaries located in countries with low withholding taxes towards the country of the superior foreign-based company unit. It is active operative subsidiaries also carrying out holding functions rather than pure holding subsidiaries which are applied for tax structuring. Despite this general evidence on tax-efficient group structuring, the actual tax savings by multinational holding structures appear rather small. On average they only lead to a total tax burden reduction of about 2 percentage points as compared to the burden if the holding was non-existent. This result is surprising in light of a comprehensive analytical literature on tax-induced holding structures. Therefore, I identified additional determinants of a preferable holding location given the location of a subsidiary, such as the existence of a specific holding regime. Concerning the tax impact on the horizontal group structure, I provide evidence that the existence of a group taxation regime leads to a wider spread of investments.

Taxes do matter for the company structure, but given other influencing factors and especially given the need for hierarchical clarity, the influence of taxes has limits. "Form follows function" holds, but my paper made it clear that the function goes beyond saving withholding taxes or netting profits and losses. Multinationals aim at saving taxes by holding structures, but in the setup of their business structure, they remain – maybe irrationally – sovereign. In weighing tax benefits and a clear and manageable group structure, the directors of multinationals might reconsider the credo of Sullivan (1906): "As you are, so are your buildings and as are your buildings, so are you."

Appendix

Methods to Avoid Double Taxation and Repatriation Taxes

If the exemption method is applied, repatriated intercompany dividends are tax-exempt at the level of the firm receiving the dividends. However, in a few countries like France, Germany or Belgium, a share α is still subject to tax, whereas in most countries applying the exemption method, $\alpha = 0$. Then, the tax m imposed on one euro of intercompany dividends amounts to:

$$(1) \qquad m = \alpha\, \tau^R + \omega^S$$

Where τ^R is the corporate tax rate of the residence country and ω^S is the withholding tax rate imposed on intercompany dividends by the source country.

In the case of a credit system, intercompany dividends are subject to tax but taxes paid abroad reduce the tax liability. If a direct credit is applied, the foreign tax credit includes the withholding taxes imposed on intercompany dividends. Then, the additional tax imposed on one dollar of intercompany dividend amounts to:

$$(2) \qquad m = \tau^R - \min\{\tau^R; \omega^S\} + \omega^S$$

An indirect credit also includes foreign corporate taxes τ^S paid by the subsidiary. The additional tax imposed on intercompany dividends is computed in accordance with the following expression:

$$(3) \qquad m = \frac{\tau^R}{(1-\tau^S)} - \min\left\{\frac{\tau^R}{(1-\tau^S)}; \frac{\tau^S}{(1-\tau^S)} + \omega^S\right\} + \omega^S$$

Expressions (2) and (3) show that the repatriation tax is determined by the tax rate of the residence country. It can be deducted from the formulas that there is a conceivable situation where a decrease in the withholding tax ω^S is just subsidized by a proportional increase in τ^R. This is the case if the tax rate of the residence country exceeds the tax credit. Then, a reduction of withholding tax, e.g. caused by a new tax treaty, has no material effect.

Table 13: Specific holding regimes and comparable tax incentives

Country	Years	Explanation
Austria	2005-2008	Pooling of the profits of companies is available through establishing companies as consolidated enterprises, i.e. through financial, economic or operational control. From 2005 on, this is also possible in cross-border cases.
Bermuda	All	Examples of exempted companies include investment holding companies, insurance companies, and foreign sales corporations. Applications that taxes introduced in Bermuda do not apply to such companies are possible until 28 March 2016 and are usually granted.
Bulgaria	All	Although repealed in 1993, the following incentives were still available to companies who had been granted them before the abolishment. Subsidiaries of foreign companies as well as companies with more than 49% foreign participation and capital investment of more than 100.000 USD are exempt from corporate income tax if investing in high technology or the agriculture and food industry.
	1996-2001	A company with foreign participation of at least 50% which was acquired before 2000 and shows invested capital of at least 5.000.000 USD can enjoy a tax holiday of 5 years given it invests 50% of what would have been taxes in fixed assets. This is granted till end of 2001.
Chile	2004-2008	Under the Chilean Holding Company (CHC) regime, a participation exemption is granted with respect to income earned, dividend distributions, and capital gains. In effect, foreign investors using the CHC to channel foreign investments into Chile are not subject to income tax in Chile with respect to investments held by the CHC outside of Chile (that is on income earned on their participations, on distributions of the income, and on capital gains earned on disposals of their investments).
Ireland	All	Extensive incentives for international financial services centers are granted. These are, among others, an exemption from local property tax for 10 years, an exemption from capital gains tax as well as generous depreciation allowances.
Liechtenstein	All	Holding companies are exempt from income tax. They are, however, subject to capital tax, but only at a reduced rate.
Luxembourg	All	Holding companies under the law of July 31, 1929 ("1929 holding companies") are not subject to corporate income tax. As the regime violates state aid rules, no new such holdings were granted after January 1, 2007. Those holdings which already had the status before that date, however, benefit from it through 31 December 2010.
Netherlands	All	Foreign losses can be used in financial holdings. Moreover, a tax free reserve of up to 80% of the financial service income can be accumulated in the financial holding.
Singapore	All	The "enhanced headquarters incentive package" enables headquarters of all types to be taxed at rates of only 5%, 10% or 15% instead of the regular rates.
Switzerland	All	A holding company is regularly almost completely exempt from the cantonal part (but not from the federal part) of the income tax. The normal profit tax only applies to immovable property located in Switzerland.

The source of this information is the IBFD European and Global Tax Handbooks as well as tax guides by BIG4 audit and tax companies. The reference "All" in the column "years" means, that the regime was in place throughout 1996-2008.

Table 14: Withholding Tax Rates on Dividends in 2008

Source Country	Code	AUS	AUT	BEL	BMU	BRA	BGR	CAN	CAY	CHL	CHN	COL	CRO	CYP	CZE	DNK	DOM	EST	FIN	FRA	GER	GRC	HKG	HUN	ISL	IND	IDN	IRL	ITA	JPN	KOR	LVA	LIE	LTU	LUX	MAL	MLT	MEX	NLD	NZL	NOR	PER	POL	PRT	ROM	RUS	SGP	SVK	SVN	ESP	SWE	CHE	TWN	THA	TUR	UAE	UKI	USA	URY
Australia	AUS		.15	.15	.3	.3	.3	.05	.3	.3	.15	.3	.3	.3	.15	.15	.3	.3	0	.15	.15	.3	.3	.15	.3	.15	.15	.15	.15	.15	.15	.3	.3	.3	.3	.15	.15	0	.15	.15	.05	.3	.15	.3	.05	.05	.15	.15	.3	.15	.15	.15	.15	.15	.3	.3	0	.05	.3
Austria	AUT	.15		0	.25	.15	0	.05	.25	.25	.07	.25	0	0	0	0	.25	0	0	0	0	0	.25	0	.25	.1	.1	0	0	.1	.05	0	.15	0	0	.05	0	.05	0	.15	0	.25	0	0	0	.05	0	0	0	0	0	0	.25	.1	.25	0	0	.05	.25
Belgium	BEL	.15	0		.25	.1	0	.05	.25	.25	.1	.25	.05	0	0	0	.25	0	0	0	0	0	.05	0	.05	.15	.1	0	0	.05	.15	0	.25	0	0	.15	0	.05	0	.15	0	.25	0	0	0	.1	.15	0	0	0	0	0	.1	.15	.05	.05	0	0	.25
Bermuda	BMU	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Brazil	BRA	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bulgaria	BGR	.05	0	0	.05	.05		.05	.05	.05	.05	.05	.05	0	0	0	.05	0	0	0	0	0	.05	0	0	.05	.05	0	0	.05	.05	0	.07	0	0	.05	0	.05	0	.05	0	.05	0	0	0	.05	.05	0	0	0	0	0	.05	.05	.05	.05	0	.05	.05
Canada	CAN	.05	.05	.05	.25	.15	.1		.25	.1	.1	.25	.05	.15	.05	.05	.18	.05	.05	.05	.05	.25	.25	.05	.05	.15	.1	.05	.15	.05	.05	.05	.25	.05	.1	.15	.15	.05	.05	.15	.05	.1	.15	.1	.05	.1	.15	.05	.05	.15	.05	.05	.25	.15	.25	.05	.05	.05	.25
Cayman Islands	CAY	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Chile	CHL	.35	.35	.35	.35	.1	.35	.1	.35		.35	.35	.05	.35	.35	.05	.35	.35	.35	.15	.35	.35	.35	.35	.35	.35	.35	.35	.35	.35	.05	.35	.35	.35	.35	.05	.35	.05	.35	.15	.05	.1	.05	.35	.35	.35	.35	.35	.35	.05	.05	.05	.35	.35	.35	.35	.05	.35	.35
China	CHN	.1	.07	.1	.1	.1	.1	.1	.1	.1		.1	.05	.1	.1	.15	.1	.05	.1	.1	.1	.05	.05	.15	.05	.1	.1	.05	.1	.1	.05	.05	.1	.05	.05	.1	.1	.05	.1	.1	.1	.1	.1	.1	.1	.1	.05	.1	.05	.1	.1	.1	.1	.1	.1	.07	.1	.1	.1
Columbia	COL	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Croatia	CRO	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	.05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cyprus	CYP	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Czech Republic	CZE	.05	0	0	.15	.15	0	.05	.15	.15	.1	.15	.05	0		0	.15	0	0	0	0	0	.15	0	0	.1	.1	0	0	.1	.05	0	.15	0	0	.1	0	.1	0	.15	0	.15	0	0	0	.1	.05	0	0	0	0	0	.15	.1	.1	.05	0	.05	.15
Denmark	DNK	0	0	0	.28	0	0	0	.28	.05	0	.28	0	0	0		.28	0	0	0	0	0	.28	0	0	0	0	0	0	0	0	0	.28	0	0	0	0	0	0	0	0	.28	0	0	0	0	0	0	0	0	0	0	.1	0	0	.28	0	0	.28
Dominican Republic	DOM	.25	.25	.25	.25	.25	.25	.18	.25	.25	.25	.25	.25	.25	.25	.25		.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25
Estonia	EST	.21	.21	.21	.21	.21	.21	.21	.21	.21	.21	.21	.21	.21	.21	.21	.21		.21	.21	.21	.21	.21	.21	.21	.21	.21	.21	.21	.21	.21	.21	.21	.21	.21	.21	.21	.21	.21	.21	.21	.21	.21	.21	.21	.21	.21	.21	.21	.21	.21	.21	.21	.21	.21	.21	.21	.21	.21
Finland	FIN	0	0	0	.28	.1	0	.05	.28	.28	.1	.28	.05	0	0	0	.28	0		0	0	0	.28	0	0	.15	.1	0	0	.1	.1	0	.28	0	0	.05	0	0	0	.15	0	.28	0	0	0	.05	.05	0	0	0	0	0	.28	.15	.15	.28	0	0	.28
France	FRA	.15	0	0	.25	.15	0	.05	.25	.15	.1	.25	0	0	0	0	.25	0	0		0	0	.25	0	.05	.15	.1	0	0	0	.1	0	.25	0	0	.05	0	0	0	.15	0	.25	0	0	0	.05	.1	0	0	0	0	0	.25	.15	.15	0	0	.05	.25
Germany	GER	.15	0	0	.211	.211	0	.05	.211	.211	.1	.211	.05	0	0	0	.211	0	0	0		0	.211	0	.05	.1	.1	0	0	.15	.05	0	.211	0	0	.05	0	.05	0	.15	0	.211	0	0	0	.05	.05	0	0	0	0	0	.211	.15	.15	.05	0	0	.15
Greece	GRC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hong Kong	HKG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hungary	HUN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.05	0	0	0	0	0	0	0	0	0	0	0	0
Iceland	ISL	.15	.15	.05	.15	.15	.15	.05	.15	.15	.05	.15	.15	.15	.05	0	.15	.05	0	.05	.05	.15	.15	.05		.1	.15	.05	.15	.15	.15	.05	.15	.05	.05	.15	.05	.15	0	.15	0	.15	.05	.1	.15	.05	.15	.05	.15	.05	0	0	.15	.15	.15	.15	.05	.05	.15
India	IND	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Indonesia	IDN	.15	.1	.1	.2	.2	.15	.1	.2	.2	.1	.2	.2	.2	.1	.1	.2	.2	.1	.1	.1	.2	.2	.15	.2	.1		.2	.1	.1	.1	.2	.2	.2	.1	.15	.2	.1	.1	.15	.15	.2	.1	.1	.125	.15	.1	.1	.2	.1	.1	.1	.1	.15	.1	.1	.1	.1	.2
Ireland	IRL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Italy	ITA	.15	0	0	.27	.15	0	.15	.27	.27	.1	.27	.1	0	0	0	.27	0	0	0	0	0	.27	0	.27	.15	.1	0		.1	.1	0	.27	0	0	.1	0	.15	0	.15	.15	.27	0	0	0	.05	.1	0	0	0	0	0	.27	.15	.15	.05	0	.05	.27
Japan	JPN	.15	.1	.1	.2	.125	.1	.05	.2	.2	.1	.2	.2	.2	.1	.1	.2	.2	.1	.05	.1	.2	.2	.1	.2	.1	.1	.1	.1		.05	.2	.2	.2	.05	.05	.2	.05	.05	.15	.05	.2	.1	.2	.1	.15	.05	.1	.2	.1	.05	.05	.2	.15	.1	.2	0	0	.2
Korea	KOR	.15	.05	.15	.25	.15	.05	.05	.25	.05	.05	.25	.05	.25	.05	.15	.25	.25	.1	.1	.05	.05	.25	.05	.25	.15	.1	.1	.1	.05		.25	.25	.05	.1	.1	.05	0	.1	.15	.15	.25	.05	.1	.07	.05	.1	.05	.05	.1	.1	.1	.25	.1	.15	.05	.05	.1	.25
Latvia	LVA	.1	0	0	.1	.1	0	.05	.1	.1	.05	.1	.05	0	0	0	.1	0	0	0	0	0	.1	0	0	.1	.1	0	0	.1	.1		.1	0	0	.1	0	.1	0	.1	0	.1	0	0	0	.1	.05	0	0	0	0	0	.1	.1	.1	.1	0	.05	.1
Liechtenstein	LIE	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04		.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04
Lithuania	LTU	0	0	0	.15	0	0	0	.15	0	0	0	0	0	0	0	.15	0	0	0	0	0	.15	0	0	0	0	0	0	0	0	0	.15		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.15
Luxembourg	LUX	.15	0	0	.15	.15	0	0	.15	.15	.05	.15	.15	0	0	0	.15	0	0	0	0	0	.15	0	.05	.15	.1	0	0	.05	.1	0	.15	0		.05	0	.05	0	.25	.05	.15	0	0	0	.1	.05	0	0	0	0	0	.15	.05	.05	.15	0	0	.15
Malaysia	MAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Malta	MLT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mexico	MEX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Netherlands	NLD	.15	0	0	.15	.15	0	.05	.15	.15	.1	.15	0	0	0	0	.15	0	0	0	0	0	.15	0	0	.1	.1	0	0	.05	.1	0	.15	0	0	0	0	0		.15	0	.15	0	0	0	.05	0	0	0	0	0	0	.1	.05	0	.15	0	0	.15
New Zealand	NZL	.15	.15	.15	.3	.3	.3	.15	.3	.15	.15	.3	.3	.3	.3	.15	.3	.3	.15	.15	.15	.3	.3	.3	.3	.15	.15	.15	.15	.15	.15	.3	.3	.3	.3	.15	.3	.15	.15		.15	.3	.15	.3	.3	.15	.15	.3	.3	.15	.15	.15	.15	.15	.3	.15	.15	.15	.3
Norway	NOR	0	0	0	.25	.25	0	.05	.25	.05	.15	.25	.15	0	0	0	.25	0	0	0	0	0	.25	0	0	.15	.15	0	0	.05	.15	0	0	0	0	0	0	0	0	.15		.25	0	0	0	.1	.05	0	0	0	0	0	.25	.1	.2	.25	.05	.15	.25
Peru	PER	.041	.041	.041	.041	.041	.041	.041	.041	.041	.041	.041	.041	.041	.041	.041	.041	.041	.041	.041	.041	.041	.041	.041	.041	.041	.041	.041	.041	.041	.041	.041	.041	.041	.041	.041	.041	.041	.041	.041	.041		.041	.041	.041	.041	.041	.041	.041	.041	.041	.041	.041	.041	.041	.041	.041	.041	.041
Poland	POL	.15	0	0	.19	.19	0	.15	.19	.05	.1	.19	.05	0	0	0	.19	0	0	0	0	0	.19	0	0	.15	.1	0	0	.1	.05	0	0	0	0	0	0	.05	0	.15	0	.19		0	0	.1	.1	0	0	0	0	0	.19	.19	.1	.05	0	.05	.19
Portugal	PRT	.2	0	0	.2	.1	0	.1	.2	.2	.1	.2	.2	0	0	0	.2	0	0	0	0	0	.2	0	.1	.1	.1	0	0	.2	.1	0	.2	0	0	.2	0	.1	0	.2	.1	.2	0		0	.1	.1	0	0	0	0	0	.2	.2	.05	.2	0	.1	.2
Romania	ROM	.05	0	0	.16	.16	0	.05	.16	.16	.1	.16	.05	0	0	0	.16	0	0	0	0	0	.16	0	0	.15	.125	0	0	.1	.07	0	.16	0	0	.1	0	.1	0	.16	0	.16	0	0		.15	.05	0	0	0	0	0	.16	.15	.15	.03	0	.1	.16
Russia	RUS	.05	.05	.1	.15	.15	.15	.1	.15	.15	.1	.15	.05	.05	.1	.1	.15	.15	.05	.05	.05	.05	.15	.1	.05	.1	.15	.1	.05	.15	.05	.15	.15	.05	.1	.15	.15	.15	.05	.15	.1	.15	.1	.1	.15		.15	.1	.1	.05	.05	.05	.15	.15	.1	.15	.1	.05	.15
Singapore	SGP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0
Slovak Republic	SVK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0
Slovenia	SVN	.15	0	0	.15	.15	0	.05	.15	.15	.05	.15	.05	0	0	0	.15	0	0	0	0	0	.15	0	.15	.05	.15	0	0	.15	.05	0	.15	0	0	.15	0	.15	0	.15	.15	.15	0	0	0	.1	.15	0		0	0	0	.15	.1	.1	.15	0	.05	.15
Spain	ESP	.15	0	0	.18	.15	0	.15	.18	.05	.1	.05	0	0	0	0	.18	0	0	0	0	0	.18	0	.05	.15	.1	0	0	.1	.1	0	.18	0	0	0	0	.05	0	.15	.1	.18	0	0	0	.1	.18	0	0		0	0	.18	.1	.05	.05	0	.1	.18
Sweden	SWE	.15	0	0	.3	.15	0	.05	.3	.05	.1	.3	.05	0	0	0	.3	0	0	0	0	0	.3	0	0	.1	.1	0	0	.05	.1	0	.3	0	0	0	0	0	0	.15	0	.3	0	0	0	.05	.1	0	0	0		0	.1	.15	.15	.3	0	0	.3
Switzerland	CHE	.15	0	0	.35	.35	0	.05	.35	.35	.1	.35	.05	0	0	0	.35	0	0	0	0	0	.35	0	.05	.1	.1	0	0	0	.1	0	.35	0	0	.05	0	.05	0	.15	0	.35	0	0	0	.05	.1	0	0	0	0		.35	.1	.35	.35	0	.05	.35
Taiwan	TWN	.1	.25	.1	.25	.25	.25	.25	.25	.25	.2	.25	.25	.25	.25	.1	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.1	.25	.25	.25	.25	.25	.25	.25	.25	.125	.25	.25	.1	.15	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.1	.1		.25	.25	.25	.1	.25	.25
Thailand	THA	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1		.1	.1	.1	.1	.1
Turkey	TUR	.15	.15	.15	.15	.15	.1	.15	.15	.15	.1	.15	.1	.15	.1	.15	.15	.1	.15	.15	.15	.15	.15	.1	.15	.15	.1	.15	.15	.1	.15	.1	.15	.1	.1	.1	.15	.15	.1	.15	.15	.15	.1	.05	.15	.1	.1	.05	.1	.05	.15	.15	.15	.1		.1	.15	.15	.15
United Arab Emirates	UAE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0
United Kingdom	UKI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0
United States	USA	0	.05	.05	.3	.3	.3	.05	.3	.3	.1	.3	.3	.05	.05	0	.3	.05	0	.05	0	.3	.3	.05	.05	.15	.1	.05	.05	0	.1	.05	.3	.05	.05	.3	.05	0	0	.15	.15	.3	.05	.05	.1	.05	.3	.05	.05	.1	0	.05	.3	.1	.15	.3	0		.3
Uruguay	URY	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.1	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	

The figures shown in the table are those of the dividend flowing from a company located in the country of the left column (="Source Country") to the owner company located in the country of the individual columns. For example, a dividend paid from a company in the Cayman Islands to its owner company in the United States is taxed at 0%, whereas a dividend flowing from the United States to the Cayman Islands is subject to 30% withholding tax in the United States.

Table 15: Methods of Dealing with Incoming Dividends in 2008

Source Country	Code	AUS	AUT	BEL	BMU	BRA	BGR	CAN	CAY	CHL	CHN	COL	CRO	CYP	CZE	DNK	DOM	EST	FIN	FRA	GER	GRC	HKG	HUN	ISL	IND	IDN	IRL	ITA	JPN	KOR	LVA	LIE	LTU	LUX	MAL	MLT	MEX	NLD	NZL	NOR	PER	POL	PRT	ROM	RUS	SGP	SVK	SVN	ESP	SWE	CHE	TWN	THA	TUR	UAE	UKI	USA	URY
Australia	AUS		EX	.95	DO	IC	DC	EX	DO	IC	IC	IC	IC	IC	EX	EX	DC	EX	EX	.95	.95	IC	EX	EX	DE	IC	DC	IC	IC	IC	IC	DC	EX	EX	EX	IC	IC	IC	EX	IC	IC	DC	IC	IC	IC	DC	IC	DC	EX	EX	EX	EX	DC	IC	IC	DO	IC	IC	DO
Austria	AUT	DC		.95	DO	IC	EX	EX	DO	IC	IC	IC	EX	EX	EX	EX	DC	EX	EX	.95	.95	EX	EX	EX	DE	IC	DC	IC	.95	IC	IC	EX	EX	EX	EX	IC	IC	IC	EX	IC	EX	DC	IC	EX	IC	DC	IC	DC	EX	EX	EX	EX	DC	IC	EX	EX	IC	IC	DO
Belgium	BEL	DC	EX		DO	IC	EX	EX	DO	IC	IC	IC	EX	EX	EX	EX	DC	EX	EX	.95	.95	EX	EX	EX	EX	IC	DC	IC	.95	IC	IC	EX	EX	EX	EX	IC	IC	IC	EX	IC	EX	DC	IC	EX	IC	DC	IC	DC	EX	EX	EX	EX	DC	IC	EX	EX	IC	IC	DO
Bermuda	BMU	DC	EX	.95		IC	DC	IC	DO	IC	IC	IC	IC	IC	DE	EX	DC	EX	DC	DE	.95	IC	EX	EX	DO	IC	DC	IC	IC	IC	IC	DC	EX	EX	EX	IC	IC	IC	EX	IC	IC	DC	IC	IC	IC	DC	IC	DO	IC	IC	EX	EX	DC	IC	IC	DO	IC	IC	DO
Brazil	BRA	DC	EX	.95	DO		DC	EX	DO	IC	IC	IC	IC	IC	EX	EX	DC	EX	EX	.95	.95	IC	EX	EX	DE	IC	DC	IC	IC	IC	IC	IC	DC	EX	EX	EX	IC	IC	IC	EX	IC	EX	DC	IC	IC	IC	DC	IC	DC	EX	EX	EX	EX	DC	IC	IC	DO	IC	IC	DO
Bulgaria	BGR	DC	EX	.95	DO	IC		EX	DO	IC	IC	IC	EX	EX	EX	EX	DC	EX	EX	.95	.95	EX	EX	EX	DE	IC	DC	IC	.95	IC	IC	EX	EX	EX	EX	IC	IC	IC	EX	IC	EX	DC	IC	EX	IC	DC	IC	DC	IC	EX	EX	EX	DC	IC	EX	DO	IC	IC	DO
Canada	CAN	DC	EX	.95	DO	IC	EX		DO	IC	IC	IC	EX	EX	EX	EX	DC	EX	EX	.95	.95	IC	EX	EX	EX	IC	DC	IC	IC	IC	EX	EX	EX	EX	IC	IC	IC	EX	IC	IC	DC	IC	IC	IC	DC	IC	DC	EX	EX	EX	EX	DC	IC	IC	EX	IC	IC	DO
Cayman Islands	CAY	DC	EX	.95	DO	IC	DC	IC		IC	IC	IC	IC	IC	DE	EX	DC	EX	DC	DE	.95	IC	EX	EX	DO	IC	DC	IC	IC	IC	IC	DC	EX	EX	EX	IC	IC	IC	EX	IC	IC	DC	IC	IC	IC	DC	IC	DO	IC	IC	EX	EX	DC	IC	IC	DO	IC	IC	DO
Chile	CHL	DC	EX	.95	DO	IC	DC	EX	DO		IC	IC	EX	IC	DE	EX	DC	EX	DC	.95	.95	IC	EX	EX	DE	IC	DC	IC	IC	IC	IC	DC	EX	EX	EX	IC	IC	IC	EX	IC	IC	DC	IC	IC	IC	DC	IC	DO	EX	EX	EX	EX	DC	IC	IC	DO	IC	IC	DO
China	CHN	DC	EX	.95	DO	IC	EX	EX	DO	IC		IC	EX	EX	EX	EX	DC	EX	EX	.95	.95	EX	EX	EX	EX	IC	DC	IC	IC	IC	IC	EX	EX	EX	IC	IC	IC	EX	IC	EX	DC	IC	IC	IC	DC	IC	DC	EX	EX	EX	EX	DC	IC	EX	EX	IC	IC	DO
Colombia	COL	DC	EX	.95	DO	IC	DC	IC	DO	IC	IC		IC	IC	DE	EX	DC	EX	DC	DE	.95	IC	EX	EX	DE	IC	DC	IC	IC	IC	IC	DC	EX	EX	EX	IC	IC	IC	EX	IC	IC	DC	IC	IC	IC	DC	IC	DO	EX	EX	EX	EX	DC	IC	IC	DO	IC	IC	DO
Croatia	CRO	DC	EX	.95	DO	IC	EX	EX	DO	IC	IC	IC		IC	EX	EX	DC	EX	EX	.95	.95	EX	EX	EX	DE	IC	DC	IC	IC	IC	IC	EX	EX	EX	IC	IC	IC	EX	IC	EX	DC	IC	IC	IC	DC	IC	DC	EX	EX	EX	EX	DC	IC	EX	DO	IC	IC	DO
Cyprus	CYP	DC	EX	.95	DO	IC	EX	EX	DO	IC	IC	IC	IC		EX	EX	DC	EX	EX	.95	.95	EX	EX	EX	DE	IC	DC	IC	.95	IC	IC	DC	EX	EX	EX	IC	IC	IC	EX	IC	EX	DC	IC	EX	IC	DC	IC	DC	IC	EX	EX	DC	IC	IC	DO	IC	IC	DO
Czech Republic	CZE	DC	EX	.95	DO	IC	EX	EX	DO	IC	IC	IC	EX	EX		EX	DC	EX	EX	.95	.95	EX	EX	EX	EX	IC	DC	IC	.95	IC	IC	EX	EX	EX	EX	IC	IC	IC	EX	IC	IC	DC	IC	EX	IC	DC	IC	DC	EX	EX	EX	EX	DC	IC	EX	EX	IC	IC	DO
Denmark	DNK	DC	EX	.95	DO	IC	EX	EX	DO	IC	IC	IC	EX	EX	EX		DC	EX	EX	.95	.95	EX	EX	EX	EX	IC	DC	IC	.95	IC	IC	EX	EX	EX	EX	IC	IC	IC	EX	IC	IC	DC	IC	EX	IC	DC	IC	DC	EX	EX	EX	EX	DC	IC	EX	DO	IC	IC	DO
Dominican Republic	DOM	DC	EX	.95	DO	IC	DC	EX	DO	IC	IC	IC	IC	IC	DE	EX		EX	DC	DE	.95	IC	EX	EX	DE	IC	DC	IC	IC	IC	IC	DC	EX	EX	EX	IC	IC	IC	EX	IC	IC	DC	IC	IC	IC	DC	IC	DO	IC	EX	EX	DC	IC	IC	DO	IC	IC	DO
Estonia	EST	DC	EX	.95	DO	IC	DC	EX	DO	IC	IC	IC	EX	IC	EX	EX	DC		EX	.95	.95	IC	EX	EX	EX	IC	DC	IC	.95	IC	IC	EX	EX	EX	EX	IC	IC	IC	EX	IC	IC	DC	IC	EX	IC	DC	IC	DC	EX	EX	EX	EX	DC	IC	EX	DO	IC	IC	DO
Finland	FIN	DC	EX	.95	DO	IC	EX	EX	DO	IC	IC	IC	IC	IC	EX	EX	DC	EX		.95	.95	EX	EX	EX	EX	IC	DC	IC	.95	IC	IC	EX	EX	EX	EX	IC	IC	IC	EX	IC	IC	DC	IC	EX	IC	DC	IC	DC	EX	EX	EX	EX	DC	IC	EX	EX	IC	IC	DO
France	FRA	DC	EX	.95	DO	IC	EX	EX	DO	IC	IC	IC	EX	EX	EX	EX	DC	EX	EX		.95	EX	EX	EX	EX	IC	DC	IC	.95	IC	IC	EX	EX	EX	EX	IC	IC	IC	EX	IC	EX	DC	IC	EX	IC	DC	IC	DC	EX	EX	EX	EX	DC	IC	EX	EX	IC	IC	DO
Germany	GER	DC	EX	.95	DO	IC	EX	EX	DO	IC	IC	IC	EX	EX	EX	EX	DC	EX	EX	.95		EX	EX	EX	EX	IC	DC	IC	.95	IC	IC	EX	EX	EX	EX	IC	IC	IC	EX	IC	EX	DC	IC	EX	IC	DC	IC	DC	EX	EX	EX	EX	DC	IC	EX	EX	IC	IC	DC
Greece	GRC	DC	EX	.95	DO	IC	EX	EX	DO	IC	IC	IC	EX	EX	EX	EX	DC	EX	EX	.95	.95		EX	EX	DE	IC	DC	IC	.95	IC	IC	EX	EX	EX	EX	IC	IC	IC	EX	IC	EX	DC	IC	EX	IC	DC	IC	DC	EX	EX	EX	EX	DC	IC	EX	DO	IC	IC	DO
Hong Kong	HKG	DC	EX	.95	DO	IC	DC	IC	DO	IC	IC	IC	IC	IC	DE	EX	DC	EX	DC	DE	.95	IC		EX	DO	IC	DC	IC	IC	IC	IC	DC	EX	EX	EX	IC	IC	IC	EX	IC	IC	DC	IC	IC	IC	DC	IC	DO	EX	IC	EX	EX	DC	IC	IC	DO	IC	IC	DO
Hungary	HUN	DC	EX	.95	DO	IC	EX	EX	DO	IC	IC	IC	EX	EX	EX	EX	DC	EX	EX	.95	.95	EX	EX		EX	IC	DC	IC	.95	IC	IC	EX	EX	EX	EX	IC	IC	IC	EX	IC	EX	DC	IC	EX	IC	DC	IC	DC	EX	EX	EX	EX	DC	IC	EX	DO	IC	IC	DC
Iceland	ISL	DC	EX	.95	DO	IC	DC	EX	DO	IC	IC	IC	IC	IC	EX	EX	DC	EX	EX	.95	.95	IC	EX	EX		IC	DC	IC	IC	IC	IC	EX	EX	EX	EX	IC	IC	IC	EX	IC	EX	DC	IC	IC	IC	DC	IC	DC	EX	EX	EX	EX	DC	IC	IC	DO	IC	IC	DO
India	IND	DC	EX	.95	DO	IC	EX	EX	DO	IC	IC	IC	IC	EX	EX	EX	DC	EX	EX	.95	.95	EX	EX	EX	DE		DC	IC	IC	IC	IC	DC	EX	EX	EX	IC	IC	IC	EX	IC	EX	DC	IC	IC	IC	DC	IC	DC	EX	EX	EX	EX	DC	IC	EX	EX	IC	IC	DO
Indonesia	IDN	DC	EX	.95	DO	IC	DC	EX	DO	IC	IC	IC	IC	IC	EX	EX	DC	EX	EX	.95	.95	IC	EX	EX	DE	IC		IC	IC	IC	IC	DC	EX	EX	EX	IC	IC	IC	EX	IC	EX	DC	IC	IC	IC	DC	IC	DC	EX	EX	EX	EX	DC	IC	EX	EX	IC	IC	DO
Ireland	IRL	DC	EX	.95	DO	IC	EX	EX	DO	IC	IC	IC	EX	EX	EX	EX	DC	EX	EX	.95	.95	EX	EX	EX	EX	IC	DC		.95	IC	IC	EX	EX	EX	EX	IC	IC	IC	EX	IC	EX	DC	IC	EX	IC	DC	IC	DC	EX	EX	EX	EX	DC	IC	EX	DO	IC	IC	DO
Italy	ITA	DC	EX	.95	DO	IC	EX	EX	DO	IC	IC	IC	IC	EX	EX	EX	DC	EX	EX	.95	.95	EX	EX	EX	EX	IC	DC	IC		IC	IC	DC	EX	EX	EX	IC	IC	IC	EX	IC	EX	DC	IC	EX	IC	DC	IC	DC	EX	EX	EX	EX	DC	IC	EX	EX	IC	IC	DO
Japan	JPN	DC	EX	.95	DO	IC	EX	EX	DO	IC	IC	IC	IC	IC	EX	EX	DC	EX	EX	.95	.95	IC	EX	EX	DE	IC	DC	IC	IC		IC	DC	EX	EX	EX	IC	IC	IC	EX	IC	IC	DC	IC	IC	IC	DC	IC	DC	EX	EX	EX	EX	DC	IC	EX	DO	IC	IC	DO
Korea	KOR	DC	EX	.95	DO	IC	EX	EX	DO	IC	IC	IC	EX	IC	EX	EX	DC	EX	EX	.95	.95	EX	EX	EX	DE	IC	DC	IC	IC	IC		DC	EX	EX	EX	IC	IC	IC	EX	IC	IC	DC	IC	IC	IC	DC	IC	DC	EX	EX	EX	EX	DC	IC	EX	EX	IC	IC	DO
Latvia	LVA	DC	EX	.95	DO	IC	EX	EX	DO	IC	IC	IC	EX	IC	EX	EX	DC	EX	EX	.95	.95	EX	EX	EX	EX	IC	DC	IC	.95	IC	IC		EX	EX	EX	IC	IC	IC	EX	IC	IC	DC	IC	EX	IC	DC	IC	DC	EX	EX	EX	EX	DC	IC	EX	DO	IC	IC	DO
Liechtenstein	LIE	DC	EX	.95	DO	IC	DC	IC	DO	IC	IC	IC	IC	IC	IC	EX	DC	EX	DC	DE	.95	IC	EX	EX	DO	IC	DC	IC	IC	IC	IC	DC		EX	EX	IC	IC	IC	EX	IC	IC	DC	IC	IC	IC	DC	IC	DO	IC	IC	EX	EX	DC	IC	IC	DO	IC	IC	DO
Lithuania	LTU	DC	EX	.95	DO	IC	EX	EX	DO	IC	IC	IC	EX	IC	EX	EX	DC	EX	EX	.95	.95	EX	EX	EX	EX	IC	DC	IC	.95	IC	IC	EX	EX		EX	IC	IC	IC	EX	IC	EX	DC	IC	EX	IC	DC	IC	DC	EX	EX	EX	EX	DC	IC	EX	DO	IC	IC	DO
Luxembourg	LUX	DC	EX	.95	DO	IC	EX	EX	DO	IC	IC	IC	IC	IC	EX	EX	DC	EX	EX	.95	.95	EX	EX	EX	EX	IC	DC	IC	IC	IC	IC	EX	EX	EX		IC	IC	IC	EX	IC	EX	DC	IC	EX	IC	DC	IC	DC	EX	IC	EX	EX	DC	IC	EX	DO	IC	IC	DO
Malaysia	MAL	DC	EX	.95	DO	IC	DC	EX	DO	IC	IC	IC	IC	IC	EX	EX	DC	EX	EX	.95	.95	IC	EX	EX	DE	IC	DC	IC	IC	IC	IC	DC	EX	EX	EX		IC	IC	EX	IC	IC	DC	IC	IC	IC	DC	IC	DO	EX	EX	EX	EX	DC	IC	EX	EX	IC	IC	DO
Malta	MLT	DC	EX	.95	DO	IC	EX	EX	DO	IC	IC	IC	EX	EX	EX	EX	DC	EX	EX	.95	.95	IC	EX	EX	EX	IC	DC	IC	.95	IC	IC	EX	EX	EX	EX	IC		IC	EX	IC	IC	DC	IC	EX	IC	DC	IC	DC	EX	EX	EX	EX	DC	IC	IC	DO	IC	IC	DO
Mexico	MEX	DC	EX	.95	DO	IC	DC	EX	DO	IC	IC	IC	IC	IC	EX	EX	DC	EX	EX	.95	.95	EX	EX	EX	DE	IC	DC	IC	IC	IC	IC	DC	EX	EX	EX	IC	IC		EX	IC	EX	DC	IC	IC	IC	DC	IC	DC	EX	EX	EX	EX	DC	IC	IC	DO	IC	IC	DO
Netherlands	NLD	DC	EX	.95	DO	IC	EX	EX	DO	IC	IC	IC	EX	IC	EX	EX	DC	EX	EX	.95	.95	EX	EX	EX	EX	IC	DC	IC	.95	IC	IC	EX	EX	EX	EX	IC	IC	IC		IC	EX	DC	IC	EX	IC	DC	IC	DC	EX	EX	EX	EX	DC	IC	EX	DO	IC	IC	DO
New Zealand	NZL	DC	EX	.95	DO	IC	DC	EX	DO	IC	IC	IC	IC	IC	DE	EX	DC	EX	EX	.95	.95	IC	EX	EX	DE	IC	DC	IC	IC	IC	IC	DC	EX	EX	EX	IC	IC	IC	EX		EX	DC	IC	IC	IC	DC	IC	DO	EX	EX	EX	EX	DC	IC	EX	IC	IC	DO
Norway	NOR	DC	EX	.95	DO	IC	EX	EX	DO	IC	IC	IC	IC	IC	EX	EX	DC	EX	EX	.95	.95	EX	EX	EX	EX	IC	DC	IC	.95	IC	IC	EX	EX	EX	EX	IC	IC	IC	EX	IC		DC	IC	IC	IC	DC	IC	DC	EX	EX	EX	EX	DC	IC	EX	DO	IC	IC	DO
Peru	PER	DC	EX	.95	DO	IC	DC	EX	DO	IC	IC	IC	IC	IC	DE	EX	DC	EX	DC	DE	.95	IC	EX	EX	DE	IC	DC	IC	IC	IC	IC	DC	EX	EX	EX	IC	IC	IC	EX	IC	IC		IC	IC	IC	DC	IC	DO	EX	EX	EX	EX	DC	IC	IC	DO	IC	IC	DO
Poland	POL	DC	EX	.95	DO	IC	EX	EX	DO	IC	IC	IC	EX	EX	EX	EX	DC	EX	EX	.95	.95	EX	EX	EX	EX	IC	DC	IC	.95	IC	IC	EX	EX	EX	EX	IC	IC	IC	EX	IC	EX	DC		EX	IC	DC	IC	DC	EX	EX	EX	EX	DC	IC	EX	EX	IC	IC	DO
Portugal	PRT	DC	EX	.95	DO	IC	EX	EX	DO	IC	IC	IC	IC	IC	EX	EX	DC	EX	EX	.95	.95	EX	EX	EX	EX	IC	DC	IC	.95	IC	IC	EX	EX	EX	EX	IC	IC	IC	EX	IC	EX	DC	IC		IC	DC	IC	DC	EX	EX	EX	EX	DC	IC	EX	DO	IC	IC	DO
Romania	ROM	DC	EX	.95	DO	IC	EX	EX	DO	IC	IC	IC	EX	EX	EX	EX	DC	EX	EX	.95	.95	EX	EX	EX	DE	IC	DC	IC	.95	IC	IC	EX	EX	EX	EX	IC	IC	IC	EX	IC	EX	DC	IC	EX		DC	IC	DC	EX	EX	EX	EX	DC	IC	EX	EX	IC	IC	DO
Russia	RUS	DC	EX	.95	DO	IC	EX	EX	DO	IC	IC	IC	IC	IC	EX	EX	DC	EX	EX	.95	.95	EX	EX	EX	EX	IC	DC	IC	IC	IC	IC	DC	EX	EX	EX	IC	IC	IC	EX	IC	EX	DC	IC	IC	IC		IC	DC	EX	EX	EX	EX	DC	IC	EX	DO	IC	IC	DO
Singapore	SGP	DC	EX	.95	DO	IC	EX	EX	DO	IC	IC	IC	IC	IC	EX	EX	DC	EX	EX	.95	.95	IC	EX	EX	DE	IC	DC	IC	IC	IC	IC	DC	EX	EX	EX	IC	IC	IC	EX	IC	IC	DC	IC	IC	IC	DC		DC	EX	IC	EX	EX	DC	IC	EX	EX	IC	IC	DO
Slovak Republic	SVK	DC	EX	.95	DO	IC	EX	EX	DO	IC	IC	IC	EX	EX	EX	EX	DC	EX	EX	.95	.95	EX	EX	EX	EX	IC	DC	IC	.95	IC	IC	EX	EX	EX	EX	IC	IC	IC	EX	IC	EX	DC	IC	EX	IC	DC	IC		EX	EX	EX	EX	DC	IC	EX	DO	IC	IC	DO
Slovenia	SVN	DC	EX	.95	DO	IC	EX	EX	DO	IC	IC	IC	EX	IC	EX	EX	DC	EX	EX	.95	.95	EX	EX	EX	DE	IC	DC	IC	.95	IC	IC	EX	EX	EX	EX	IC	IC	IC	EX	IC	EX	DC	IC	EX	IC	DC	IC	DC		EX	EX	EX	DC	IC	EX	DO	IC	IC	DO
Spain	ESP	DC	EX	.95	DO	IC	EX	EX	DO	IC	IC	IC	EX	IC	EX	EX	DC	EX	EX	.95	.95	EX	EX	EX	EX	IC	DC	IC	.95	IC	IC	EX	EX	EX	EX	IC	IC	IC	EX	IC	EX	DC	IC	EX	IC	DC	IC	DC	EX		EX	EX	DC	IC	EX	EX	IC	IC	DO
Sweden	SWE	DC	EX	.95	DO	IC	EX	EX	DO	IC	IC	IC	IC	EX	EX	EX	DC	EX	EX	.95	.95	EX	EX	EX	EX	IC	DC	IC	.95	IC	IC	EX	EX	EX	EX	IC	IC	IC	EX	IC	EX	DC	IC	EX	IC	DC	IC	DC	EX	EX		EX	DC	IC	EX	DO	IC	IC	DO
Switzerland	CHE	DC	EX	.95	DO	IC	EX	EX	DO	IC	IC	IC	EX	EX	EX	EX	DC	EX	EX	.95	.95	EX	EX	EX	EX	IC	DC	IC	IC	IC	IC	EX	EX	EX	EX	IC	IC	IC	EX	IC	EX	DC	IC	IC	IC	DC	IC	DC	EX	EX	EX		DC	IC	EX	DO	IC	IC	DO
Taiwan	TWN	DC	EX	.95	DO	IC	DC	IC	DO	IC	IC	IC	IC	IC	DE	EX	DC	EX	DC	DE	.95	IC	EX	EX	DE	IC	DC	IC	IC	IC	IC	DC	EX	EX	EX	IC	IC	IC	EX	IC	IC	DC	IC	IC	IC	DC	IC	DO	EX	EX	EX	EX		IC	IC	DO	IC	IC	DO
Thailand	THA	DC	EX	.95	DO	IC	EX	EX	DO	IC	IC	IC	IC	EX	EX	EX	DC	EX	EX	.95	.95	IC	EX	EX	DE	IC	DC	IC	IC	IC	IC	DC	EX	EX	EX	IC	IC	IC	EX	IC	IC	DC	IC	IC	IC	DC	IC	DO	EX	EX	EX	EX	DC		EX	EX	IC	IC	DO
Turkey	TUR	DC	EX	.95	DO	IC	EX	IC	DO	IC	IC	IC	IC	EX	EX	EX	DC	EX	EX	.95	.95	IC	EX	EX	DE	IC	DC	IC	IC	IC	IC	DC	EX	EX	EX	IC	IC	IC	EX	IC	IC	DC	IC	IC	IC	DC	IC	DC	EX	EX	EX	EX	DC	IC		EX	IC	IC	DO
United Arab Emirates	UAE	DC	EX	.95	DO	IC	DC	EX	DO	IC	IC	IC	IC	IC	EX	EX	DC	EX	EX	.95	.95	IC	EX	EX	DO	IC	DC	IC	IC	IC	IC	DC	EX	EX	EX	IC	IC	IC	EX	IC	IC	DC	IC	IC	IC	DC	IC	DO	EX	IC	EX	EX	DC	IC	EX		IC	IC	DO
United Kingdom	UKI	DC	EX	.95	DO	IC	EX	EX	DO	IC	IC	IC	IC	EX	EX	EX	DC	EX	EX	.95	.95	EX	EX	EX	EX	IC	DC	IC	.95	IC	IC	EX	EX	EX	EX	IC	IC	IC	EX	IC	EX	DC	IC	EX	IC	DC	IC	DC	EX	EX	EX	EX	DC	IC	EX	DO		IC	DO
United States	USA	DC	EX	.95	DO	IC	DC	EX	DO	IC	IC	IC	IC	IC	EX	EX	DC	EX	EX	.95	.95	EX	EX	EX	EX	IC	DC	IC	IC	IC	IC	DC	EX	EX	EX	IC	IC	IC	EX	IC	EX	DC	IC	IC	IC	DC	IC	DC	EX	EX	EX	EX	DC	IC	EX	DO	IC		DO
Uruguay	URY	DC	EX	.95	DO	IC	DC	IC	DO	IC	IC	IC	IC	IC	DE	EX	DC	EX	DC	DE	.95	IC	EX	EX	DE	IC	DC	IC	IC	IC	IC	DC	EX	EX	EX	IC	IC	IC	EX	IC	IC	DC	IC	IC	IC	DC	IC	DO	EX	EX	EX	EX	DC	IC	IC	DO	IC	IC	

The abbreviations used in the table are the following: EX = exemption, .95 = exemption by 95%, IC = indirect credit, DC = direct credit, DE = deduction, DO = double taxation. The methods refer to a dividend flowing from a company located in the country of the column to the left (="Source Country") to its owner company located in the country of the individual columns of the table. For example, France exempts a dividend from a Japanese company by 95% whereas Japan uses the indirect credit method for dividends flowing in from French companies.

Table 16: Method of Group Taxation

Country	1996	Method in 1996	Change	to	2008
Australia	yes	Group Contribution	2002	Consolidation	yes
Austria	yes	Fiscal Unity			yes
Belgium	no				no
Brazil	no				no
Bulgaria	no				no
Canada	no				no
China	no				no
Cyprus	no		2003	Group Relief	yes
Czech Republic	no				no
Denmark	yes	Consolidation			yes
Estonia	no				no
Finland	yes	Group Contribution			yes
France	yes	Fiscal Unity			yes
Greece	no				no
Hungary	no				no
Iceland	no		1999	Consolidation	yes
India	no				no
Ireland	yes	Group Relief			yes
Italy	yes	TaxCredit Exchange	2000	Group Contribution	
			2004	Consolidation	yes
Japan	no		2003	Consolidation	yes
Latvia	no		1998	Group Relief	yes
Lithuania	no		2004	Group Contribution	yes
Luxembourg	yes	Fiscal Unity			yes
Malta	yes	Group Relief			yes
Mexico	yes	Consolidation			yes
Netherlands	yes	Consolidation			yes
New Zealand	yes	Group Relief			yes
Norway	yes	Group Contribution			yes
Poland	no		1997	Fiscal Unity	yes
Portugal	yes	Consolidation			yes
Romania	no				no
Russian Federation	no				no
Slovak Republic	no				no
Slovenia	yes	Consolidation	2007	no	no
South Korea	no				no
Spain	yes	Consolidation			yes
Sweden	yes	Group Contribution			yes
Switzerland	no				no
Turkey	no				no
United Kingdom	yes	Group Relief			yes
USA	yes	Consolidation			yes

In a consolidation or fiscal unity system, the financial statements of companies belonging to the same group are either made up together or merged at the end of the fiscal year. When there is a system of group contribution, the profitable subsidiary is enabled to contribute a part or all of its profits to the subsidiary which suffered a loss. Correspondingly, losses are transferred among subsidiaries in a group relief system. In effect, all of these systems enable the netting of profits and losses of different tax subjects. Therefore, I apply a dummy variable indicating if some kind of group taxation is available or not.

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