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Silke Rünger

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Silke Rünger*

The Effect of Cross-Border Group Taxation on Ownership Chains **

Abstract

I examine the influence of cross-border group taxation on ownership chains for European multinational firms. I show that the tax advantages of cross-border group taxation regimes can only be exploited if a multinational firm has at least one intermediate subsidiary in the country allowing for cross-border group taxation. I use the introduction of the Austrian cross-border group taxation regime as a natural experiment to test my hypothesis. I find that the probability that a foreign parent company holds an Austrian intermediate subsidiary is significantly higher after the introduction of the group taxation regime. However, I am only able to observe this effect for parent companies already invested in Austria prior to the introduction of the cross-border group taxation regime. I am unable to provide evidence that this also holds for parent companies who are not invested in Austria prior to the introduction of the cross-border group taxation regime. My results contribute to a nascent literature that examines the influence of taxes on ownership chains, and a larger literature on (intermediate) subsidiary location decisions for multinationals. My findings provide empirical evidence that could be useful to governments in those countries attempting to reform their group taxation regimes, or who are implementing cross-border group taxation regimes for the first time.

Keywords: group taxation, ownership chains, intermediate subsidiaries, Austria

JEL classification: F23, H25, K34

* Silke Rünger, Assistant Professor, Institute of Accounting and Taxation, University of Graz, Universitätsstraße 15, 8010 Graz, Austria, e-mail: silke.ruenger@uni-graz.at.

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1 INTRODUCTION

Research on ownership structures of multinational firms has only recently begun to investigate the influence of taxes on ownership chains and on location decisions for holding companies. Many aspects of the tax system have already been found to affect the use of foreign equity holdings, i.e. statutory tax rates, influence of tax havens and tax treaties and dividend withholding taxes. Due to their use of the worldwide tax system, the issue of dividend withholding taxes is of high importance for US firms. European countries however, use a territorial tax system, and no dividend withholding taxes are imposed for dividend payments among EU-member states. One aspect of the tax system that has so far been widely ignored in research is group taxation. Most European countries offer group taxation regimes, i.e. tax consolidation regimes that treat a group of majority-owned companies as a single entity for tax purposes, and allow for intra-company loss-offset. In this study, I investigate whether the introduction of a cross-border group taxation regime influences ownership chains of multinational firms.

Several strategies aimed at minimizing taxes, such as setting transfer prices, structuring internal debt, or shifting provisions can take place between any member of an ownership chain. In order to exploit tax benefits resulting from group taxation regimes, ownership chains of multinational firms have to meet certain criteria, i.e. they need at least one intermediate subsidiary in the country offering cross-border group taxation. If parent companies do not meet those criteria at the time the group taxation regime is introduced, they must restructure their ownership chains by either shifting existing subsidiaries or creating new subsidiaries.

In 2005, Austria implemented a new group taxation system, which allows for foreign subsidiaries to be included into a tax group. Additionally, all current tax losses of foreign group members can be offset against profits of other tax group members. In order to benefit from Austrian group taxation, foreign companies have to establish an Austrian intermediate subsidiary. From an international perspective, Austria's group taxation system is unique within Europe. Only two other European countries offer a group taxation system that allows for current tax losses of foreign group members to be offset against tax profits of other group members. In 2004, however, Denmark and Italy introduced such a cross-border group taxation system. Both countries use an all in-all out system with respect to the integration of foreign subsidiaries into the tax group, whereas Austria offers a cherry-picking system. Additionally, tax groups have to be established for a minimum of 10 years (Denmark) or 5 years (Italy) compared to 3 years in Austria. From a legal perspective, the Austrian group taxation regime is currently the most attractive cross-

border group taxation system in Europe. For this reason, I expect foreign multinational firms to react to the introduction of the Austrian group taxation by restructuring their ownership chains and implementing Austrian intermediate subsidiaries in order to meet the requirements for Austrian cross-border group taxation.

Although it seems intuitive that multinational firms invested in Austria would structure their ownership chains in order to make use of the cross-border group taxation regime, several factors might prevent companies from doing so. Reorganizing subsidiaries is not free of cost, since subsidiaries have to be transferred among the ownership chain or new subsidiaries have to be established. Whereas the costs of shifting existing subsidiaries can be assumed to be rather small, establishing new subsidiaries in a country that the parent company has not previously been invested in definitely has costs associated. Not withstanding, tax benefits from group taxation rely heavily on having foreign loss-generating subsidiaries. If all subsidiaries in a tax group are profitable, however, tax payments of the group will correspond to the tax payments of the single entities and the cost of restructuring ownership chains will exceed the tax benefits stemming from group taxation.

My paper studies the effects of a specific tax law change on ownership chains. So far, studies have mainly exploited cross-sectional variance in tax rates, and changes in ownership structures as a reaction to the specific tax law change have not yet been analyzed. I believe that the introduction of the Austrian cross-border group taxation system has been well perceived by multinational European firms, given its unique attractiveness, especially from firms that have already previously invested in Austria. Contrary to other papers studying the influence of taxation on ownership chains, I use data on ownership over time, in order to directly determine when and how ownership chains of multinational firms were restructured.

My setting allows me to observe ownership structures both for several years before and after the introduction of the cross-border group taxation system. To investigate the effect of cross-border group taxation on ownership chains, I use two different samples of 2,347 (1,602) multinational European parent companies, for which I can observe all subsidiaries within the first two layers of the ownership chain. I use a logistic model to estimate whether changes in ownership chains of multinational parent companies can be attributed to the introduction of the cross-border group taxation system in Austria. Since my analysis is based on a single country only, I have to apply a difference-in-difference (DD) approach to separate tax induced effects of group taxation, from simple time effects of multinationals increasing their number of subsidiaries over time.

My first analysis focuses on European parent companies that have already invested in

Austria prior to the tax reform. In order to meet the requirement for group taxation, these parent companies only have to shift subsidiaries along their ownership chain, and do not have to establish new subsidiaries in or outside Austria. To separate tax effects from time effects, I use two different control groups in my first analysis. My first control group consists of Austrian multinational parent companies; for these companies to benefit from cross-border group taxation, there is no need to establish an Austrian intermediate subsidiary, since the parent company itself can opt for group taxation. Using a DD approach, I compare ownership chains of non-Austrian and Austrian parent companies. I expect to observe changes in ownership chains only after the introduction of the cross-border group taxation regime, and only for non-Austrian parent companies. First results show an average relative increase of Austrian parent companies with at least one Austrian intermediate subsidiary accounts for 6.86%, compared to 51.73% for non-Austrian parent companies. My DD results also show evidence of a significant difference with respect to the probability of having at least one Austrian intermediate subsidiary. Calculations of the average marginal effect of the full model show that the probability of a non-Austrian multinational parent company holding an Austrian intermediate subsidiary is about 2.94 percentage points higher after the tax reform than the probability of an Austrian multinational parent company holding an Austrian intermediate subsidiary after the tax reform. My second control group consists of foreign intermediate subsidiaries held by non-Austrian parent companies. I assume non-tax considerations related to implementing intermediate subsidiaries in a foreign country to be the same for Austria and all other countries in Europe, whereas tax considerations with respect to group taxation are only relevant for Austrian intermediate subsidiaries. My results show that the number of parent companies holding at least one Austrian intermediate subsidiary has been constantly increasing over time, especially in the years after the introduction of the tax reform, whereas it remains unchanged for foreign intermediate subsidiaries. All in all I can show that non-Austrian parent companies, that have already been invested in Austria prior to the tax reform, have reacted to the introduction of the cross-border group taxation system by shifting subsidiaries among their ownership chains in order to meet the requirements of group taxation.

My second analysis focuses on European parent companies that have not been invested in Austria prior to the tax reform. In order to meet the requirement for group taxation, these parent companies have to establish a new intermediate subsidiary in Austria and shift subsidiaries to the Austrian intermediate subsidiary. Again, I use a DD approach with Austrian multinational parent companies as my control group. Contrary to my first analysis, I fail to detect a significant difference in ownership chains of Austrian and

non-Austrian parent companies after the introduction of the group-taxation regime. I therefore assume that the costs of establishing a new intermediate subsidiary in Austria are higher for most multinational firms than the benefits resulting from the possibility to set off foreign losses among the members of a tax group.

My findings are useful for both, scholars and policymakers, because they provide insights into the effect of group taxation regimes on ownership chains. Additionally, they help in understanding why some firms react to the introduction of group taxation regimes and others do not. Research on the impact of taxes on location decisions of multinational firms has gained ongoing attention in empirical tax research (see Hines (1997) and Devereux (2006) for an overview of literature, and Feld and Heckemeyer (2011) for a meta-study), but has always been focused upon the influence of corporate tax rates or corporate effective tax rates, not on the influence of group taxation regimes. The effect of taxes on ownership structures of US multinational firms has been recently investigated by Lewellen and Robinson (2013) and Dyreng et al. (2015). Similar to Dyreng et al. (2015) my paper focuses on the use and purpose of intermediate subsidiaries within ownership chains. Contrary to the setting of Dyreng et al. (2015), I can observe ownership structures over time, which allows me to test for changes in ownership chains due to tax law changes. Also my tax focus is on cross-border group taxation in Europe, rather than dividend withholding taxes. Among the few studies considering the influence of group taxation on corporate group structure, Oestreicher and Poppe (2007), Weichenrieder and Mintz (2008) and Dreßler and Overesch (2010) are related to my paper. They all analyze the link between group taxation systems and the probability of setting up a holding company in a country but unlike my study, they only consider one point in time. My study is not focusing on location decisions of holding companies. In fact, in order to make use of the intra-company loss-offset provided by group taxation, the Austrian group parent has to be an operating company, preferably generating profits. In addition, my focus is on changes in ownership chains due to changes in tax law with respect to group taxation. The most comprehensive recent analysis of the ownership structure of European multinational corporate groups is given by Koch and Oestreicher (2012). In line with my results, they too show that the existence of a group taxation regime has a positive influence on the decision to implement intermediate subsidiaries. Again, the study is only using cross-sectional data, and is based on domestic subgroups. I am not focusing on domestic subgroups, but on changes in ownership chains for multinational firms.

Although I use the introduction of the Austrian group taxation regime for my analysis, my results and implications from the results are not limited to an Austrian context. Since its introduction in 2005, the Austrian cross-border group taxation system has been

mentioned as a landmark model for group taxation regimes in other countries (Schneider (2006)), especially Germany. My results show that multinational firms, already invested in a given country, react to the implementation of a cross-border group taxation system by shifting subsidiaries to that given country. Allowing for cross-border group taxation systems can therefore be seen as a location advantage for countries. My findings provide empirical evidence that could be useful to governments in countries which are attempting to reform their group taxation regimes, or are implementing cross-border group taxation regimes for the first time.

The remainder of this paper is organized as follows: The next section shows how multinational firms have to restructure ownership chains in order to benefit from cross-border group taxation, and develops my research hypothesis. Section 3 presents the research design, and details the data. Section 4 details descriptive statistics and the results from the tests of my hypothesis, section 5 concludes.

2 TAX EFFICIENT STRUCTURE OF OWNERSHIP CHAINS AND HYPOTHESIS DEVELOPMENT

Corporate taxation within a group taxation regime differs from the standard model of taxation. This is because entities participating in a tax group are no longer taxed separately, rather their profits and losses are pooled at the level of the parent company for tax purposes. Domestic group taxation regimes allow for an offset of profits and losses of domestic subsidiaries at the parent company level, whereas cross-border (international) group taxation regimes allow not only for an offset of profits and losses of domestic subsidiaries, but also for an offset of (final and/or current) losses of foreign subsidiaries. This results in an immediate recognition of foreign losses that lowers the tax burden of the parent company as well as the tax group. Typically, losses are subject to recapture taxation once they are used by the foreign group member or if the foreign group member leaves the group, which results in a timing effect resulting from cross-border group taxation rather than a net effect on taxes.

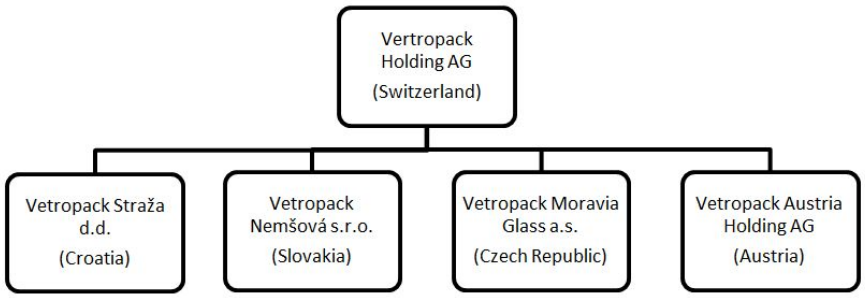
In order to benefit from cross-border group taxation, a parent company must meet requirements with respect to its ownership chain. In this chapter, I describe how multinational parent companies have to change, or design their ownership chains in order meet the requirement for cross-border group taxation. The two examples presented in this chapter are taken directly from my sample.

The first example of restructuring refers to a parent company located in a country outside Austria that had at least one Austrian subsidiary prior to the introduction of the group

taxation regime. The first figure shows the observed ownership structure of a Swiss parent company from my sample in the year 2004:

Figure 1: Ownership structure before group taxation.

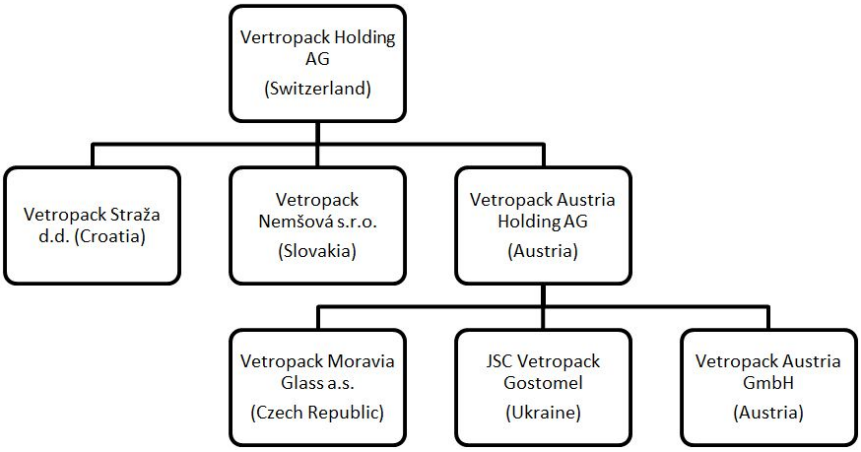
This figure shows the observed ownership structure of a Swiss parent company prior to the introduction of cross-border group taxation in Austria in 2005.



In the current state, the Swiss parent company cannot make use of the cross-border group taxation regime, since only Austrian parent companies can act as a tax group parent and it is not possible for sister companies controlled by a common foreign parent to form a tax group. Therefore, it has to restructure its ownership chain such as the Austrian subsidiary becomes an intermediate subsidiary. The second figure shows the observed ownership chain of the Swiss parent company in the year 2007:

Figure 2: Ownership structure under group taxation (shifting subsidiary).

This figure shows the observed ownership structure of a Swiss parent company after to the introduction of cross-border group taxation in Austria in 2005.



By shifting subsidiaries along the ownership chain, it is now possible for the Swiss parent company to opt for cross-border group taxation. Within the newly established tax

group, *Vetropack Austria Holding AG*, the Austrian intermediate subsidiary acts as the tax group parent, and pooling of profit and losses is available for three tax group members (*Vetropack Moravia Glass a.s., JSC Vetropack Gostomel* and *Vetropack Austria GmbH*). *Vetropack Moravia Glass a.s.*, the Czech subsidiary, that was directly held by the Swiss parent prior to 2005, is now indirectly held by the Swiss parent company via the Austrian intermediate subsidiary. Two new subsidiaries, one in Austria and one in Ukraine, have been established.

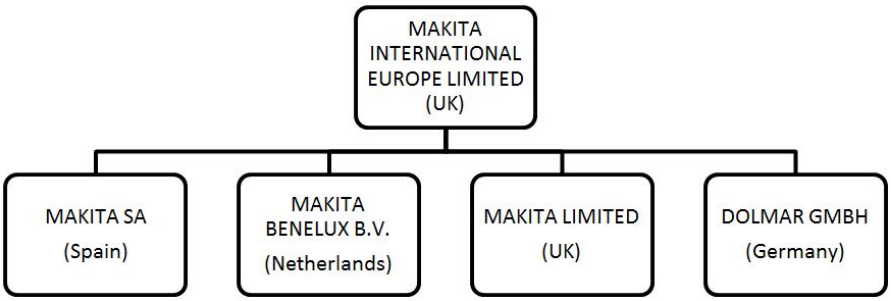
Restructuring ownership chains as shown in figure 1 and 2 is not cost free. Therefore the costs of the restructuring have to be weighted against the benefits of cross-border group taxation. As already mentioned, cross-border group taxation allows for an immediate offset of current tax losses of foreign group members. This benefit has to be weighted against the cost of restructuring. In the case shown in figure 1 and 2, restructuring costs can be assumed to be relatively small, since they are limited to the transfer of the Czech subsidiary.

Recall that the restructuring process shown in figures 1 and 2 is tax-neutral, despite effects resulting from group taxation. Typically, dividend withholding taxes, levied on dividend payments from the subsidiary to the parent company have been found to play an important role in research on determinants of ownership chains (Koch and Oestreicher (2012), Lewellen and Robinson (2013) and Dyreng et al. (2015)). In my European setting the overall dividend withholding tax burden of the parent company is zero in 2004 and also 2007, since no withholding taxes on dividends are levied according to the EU parent-subsidiary directive (including EU-member states and Switzerland).

My second example of restructuring refers to a parent company located in a country outside Austria that had no Austrian subsidiary prior to the introduction of the group taxation regime. The first figure shows the observed ownership structure of a UK parent company from my sample in the year 2004.

Figure 3: Ownership structure before group taxation.

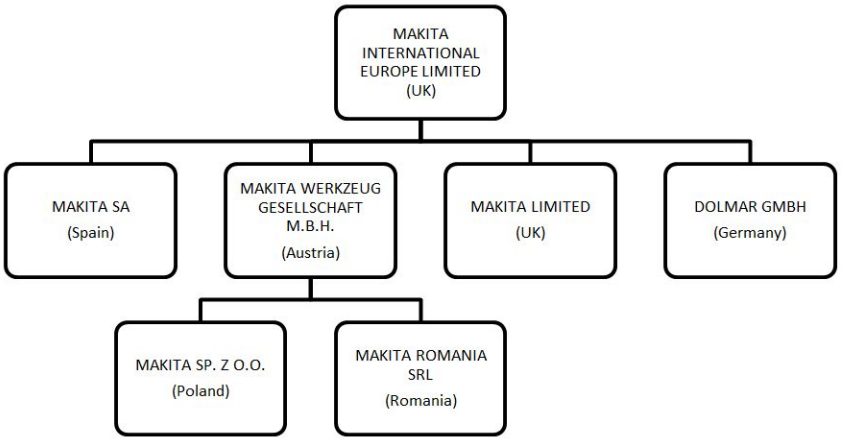
This figure shows the observed ownership structure of a UK parent company prior to the introduction of cross-border group taxation in Austria in 2005.



Again, in the current state, the UK parent company cannot make use of the cross-border group taxation regime, since only Austrian parent companies can act as a tax group parent and here the parent company is not invested in Austria. It therefore has to establish a new intermediate subsidiary in Austria. The second figure shows the observed ownership chain of the UK parent company in the year 2007:

Figure 4: Ownership structure under group taxation (new subsidiary).

This figure shows the observed ownership structure of a UK parent company after to the introduction of cross-border group taxation in Austria in 2005.



Given the new structure of the ownership chain, the UK parent can now make use of cross-border group taxation. The newly established Austrian intermediate subsidiary, *Makita Werkzeug Gesellschaft m.b.H.*, acts as the tax group parent. Instead of directly linking the newly established Polish and Romanian subsidiary to the UK parent company, they are indirectly held via the Austrian intermediate subsidiary, allowing their current losses to be offset in Austria.

Again, the restructuring process shown in figures 3 and 4 is tax-neutral with respect to dividend withholding taxes. Whether the UK parent decides to directly hold the newly established Polish and Romanian subsidiaries, or to indirectly hold them via the Austrian intermediate subsidiary does not influence the amount of withholding taxes on dividends to be paid. In both cases dividends can be repatriated net of dividend withholding taxes due to the EU parent-subsidiary directive.

If a new intermediate subsidiary has to be established in Austria in order to benefit from group taxation, restructuring comes at higher cost than in the case where parent companies only have to shift existing subsidiaries along the ownership chain. I therefore expect Austrian intermediate subsidiaries to be used more frequently by companies that have already invested in Austria prior to 2005.

My two examples show that the foreign parent company can only make use of cross-border group taxation if it extends its ownership chain by at least one additional layer. Along the tax efficient ownership chain, the Austrian tax group parent has to be located in the first layer and all tax group members in the second layer. Thus, if multinational companies design their ownership chains in a tax efficient manner as a response to the introduction of the cross-border group taxation regime, an increase in Austrian intermediate subsidiaries held by foreign parent companies shall be observed. My hypothesis therefore reads:

Hypothesis: The probability that a foreign multinational parent company holds an Austrian intermediate subsidiary increases after the introduction of the cross-border group taxation regime.

3 RESEARCH DESIGN AND SAMPLE

3.1 RESEARCH DESIGN

To test my hypothesis, I use a logistic regression that models the probability that a multinational European parent company holds at least one Austrian intermediate subsidiary after the introduction of the cross-border group taxation system in Austria.

I expect parent companies to employ one of the two restructuring processes described in chapter 2, depending on whether the parent company has already been invested in Austria before the introduction or not. In order to make sure that my results are not driven by time effects, I apply a difference-in-difference (DD) approach using two different control groups.

My first regression model deals with parent companies already invested in Austria before the introduction of the cross-border group taxation regime (shifting subsidiary strategy). In the first specification, I use ownership chains of Austrian multinational parent companies as the control group. Contrary to non-Austrian parent companies, there is no need for an Austrian parent to change its ownership chain due to the introduction of cross-border group taxation, since the parent company itself can act as the tax group parent. I therefore assume changes in the ownership chains of Austrian parent companies not to be driven by group taxation. Specification 1 reads as follows:

$$\begin{aligned} ProbAInter_{it} = \alpha_0 + \beta_1 \cdot Treatment_i + \beta_2 \cdot Treatment_i \cdot Reform_t + \beta_3 \cdot Size_{it} \\ + \beta_4 \cdot Profit_{it} + \beta_5 \cdot Subsidiaries_{it} + \alpha_t + \varepsilon_{it} \end{aligned} \tag{1}$$

$ProbAInter_{it}$ is an indicator variable taking the value 1, if the parent company i holds at least one Austrian intermediate subsidiary in year t.[3] $Treatment_i$ takes the value 1, if the parent company is located in a European country that is not Austria and 0, if the parent company is located in Austria. $Reform_t$ takes the value 0 for sample years before the introduction of the group taxation regime in 2005 and 1 for years after the introduction. My DD estimator is represented by $Treatment_i \cdot Reform_t$. I expect the probability, that a foreign multinational parent company holds an Austrian intermediate subsidiary after the tax reform to be significantly higher for foreign parent companies than for Austrian parent companies and therefore expect a positive coefficient for the DD estimator β_2.

Parent-level control variables include $Size_{it}$, the natural logarithm of the parent company's total assets, $Profit_{it}$, a dummy variable for the parent company's profit/loss status, that takes the value 0 if the parent company has negative EBIT in year t and $Subsidiaries$, the total number of subsidiaries directly and indirectly held by the parent company. In line with the argumentation of DeAngelo / Masulis (1980) I expect loss generating parent companies to use tax losses as a corporate tax shield that substitutes tax benefits from group taxation. Additionally, I include time-fixed effects, industry-fixed effects and parent company country-fixed effects. The main effect of $Reform$ is not included in the regression, as it is captured by the year-fixed effects.

[3] Alternatively, I could use the number of Austrian intermediate subsidiaries as my dependent variable. Statistics show, that 97.43% of my non-Austrian parent companies with an Austrian intermediate subsidiary hold only one Austrian intermediate subsidiary and no non-Austrian parent company holds more than two Austrian intermediate subsidiaries. I therefore do not run separate regressions on the number of Austrian intermediate subsidiaries.

In the second specification, I use foreign intermediate subsidiaries held by the parent companies in my sample as the control group. The choice to have foreign intermediate subsidiaries along the ownership chain is also driven by non-tax factors such as operative advantages (e.g. synergy effect within lines of business), transparency or flexibility (Koch and Oestreicher (2012)). Cross-border group taxation influences the decision to implement intermediate subsidiaries only in the case of Austrian intermediate subsidiaries. By using data on foreign intermediate subsidiaries as a control group, I am able to separate the influence of non-tax determinants of ownership chains from tax determinants. Specification 2 reads as follows:

$$\begin{aligned} ProbInter_{it} = \alpha_0 + \beta_1 \cdot Treatment_i + \beta_2 \cdot Treatment_i \cdot Reform_t + \beta_3 \cdot Size_{it} \\ + \beta_4 \cdot Profit_{it} + \beta_5 \cdot Subsidiaries_{it} + \alpha_t + \varepsilon_{it} \end{aligned} \tag{2}$$

Since I compare the probability that a parent company holds at least one Austrian intermediate subsidiary to the probability that the same parent company holds at least one foreign intermediate subsidiary, every parent company enters my sample twice.

Therefore $ProbInter_{it}$ is created out of two sub-variables: $ProbAInter_{it}$ is an indicator variable taking the value 1, if the parent company i holds at least one Austrian intermediate subsidiary and $ProbFInter$ an indicator variable taking the value 1, if the parent company i holds at least one foreign intermediate subsidiary. $Treatment_i$ takes the value 1 if $ProbInter_{it}$ refers to Austrian intermediate subsidiaries ($ProbAInter_{it}$) and 0 if $ProbInter_{it}$ refers to foreign intermediate subsidiaries ($ProbFInter_{it}$). My DD estimator is again represented by $Treatment_i \cdot Reform_t$. I expect the probability that a multinational parent company holds at least one Austrian intermediate subsidiary after the tax reform to be significantly higher than the probability that a multinational parent company holds at least one foreign intermediate subsidiary after the tax reform and therefore a positive coefficient for the DD estimator β_2. All control variables used are the same as described in equation 1.

My second regression model deals with parent companies who are not invested in Austria prior to the introduction of the cross-border group taxation regime (new subsidiary strategy). It reads as follows:

$$ProbAInter_{it} = \alpha_0 + \beta_1 \cdot Treatment_i + \beta_2 \cdot Size_{it} + \beta_3 \cdot Profit_{it} + \beta_4 \cdot Subsidiaries_{it} + \alpha_t + \varepsilon_{it} \quad (3)$$

In this model, $ProbAInter_{it}$ again takes the value 1, if the parent company i holds at least one Austrian intermediate subsidiary in year t. My only control group is now defined by ownership chains of Austrian multinational parent companies. Contrary to equation 1, I am not able to split my sample into pre- and post-reform periods, since all my sample companies have not been invested in Austria prior to the tax reform, and therefore $ProbInter_{it}$ is always 0 for years before 2005. Still, I can compare $ProbAInter_{it}$ for years after the introduction of the cross-border group taxation regime and see whether non-Austrian parent companies have reacted to the introduction by establishing intermediate subsidiaries in Austria. Again, I do not expect Austrian parent companies to change their ownership chains as a reaction to the introduction of the group taxation regime, and therefore expect a positive coefficient for $Treatment_i$. All control variables used are the same as described in equation 1.

3.2 SAMPLE OF OWNERSHIP CHAINS

In order to test my hypothesis, I use ownership data from the Amadeus database (Bureau van Dijk), versions 2002 to 2007, to construct a sample of ownership chains for European multinational parent companies. Data for the parent company as well as for the first two layers of the ownership chain allow me to identify all intermediate subsidiaries, as well as (terminal) subsidiaries held by the parent company.

The first part of my analysis covers foreign parent companies already invested in Austria, where I expect a tax efficient restructuring of the ownership chain as shown in figure 1 and 2 in chapter 2 (shifting investment strategy). I therefore restrict my sample to all European parent companies with at least one foreign and one Austrian subsidiary that are directly held by the parent company in at least one year prior to the introduction of the cross-border group taxation (2002-2004). I require parent companies to have at least one foreign subsidiary in order to study the choice of multinationals with enough international scope. For each parent company, I obtain data on the ownership structure on an annual basis over the time period 2002-2007 (3 years prior and 3 years after the introduction). I identify 2,347 parent companies that fulfill my search criteria, resulting in a total of 13,606 firm-year observations (sample 1). Sample 1 includes data on Austrian and non-Austrian parent companies, and is therefore suitable to test equation 1 (shifting

subsidiaries with Austrian parent companies as the control group). In order to test equation 2 (shifting subsidiaries with foreign intermediate subsidiaries as the control group), I exclude Austrian parent companies from sample 1, resulting in 1,994 non-Austrian parent companies and 11,536 firm-year observations.

The second part of my analysis covers parent companies that are not invested in Austria prior to 2005. For these companies I expect a tax efficient restructuring of the ownership chain as shown in figure 3 and 4 in chapter 2 (new investment strategy). I restrict my sample to all European parent companies without an Austrian subsidiary directly or indirectly held by the parent company in any of the years 2002-2004, but at least one foreign and one Austrian subsidiary directly held by the parent company in at least one of the years after the introduction of the cross-border group taxation (2005-2007). I identify 1,602 parent companies that fulfill my search criteria, resulting in a total of 4,806 firm-year observations (sample 2).

Table 1 shows the number of firms and firm-year observations for all sample countries in sample 1 (shifting subsidiaries) and 2 (new subsidiaries).

{Insert table 1 about here.}

4 RESULTS

4.1 DESCRIPTIVE STATISTICS FOR SAMPLE 1 - SHIFTING SUBSIDIARIES

In table 2, I present the number of parent companies with at least one Austrian intermediate subsidiary per parent company country over the sample years 2002-2007.

{Insert table 2 about here.}

Over the six sample years, a total of 1,414 observations of parent companies holding at least one Austrian intermediate subsidiaries is identified. 855 observations (60.46%) refer to non-Austrian parent companies and 559 observations (39.54%) refer to Austrian parent companies. The countries with the highest number of parent companies with at least one Austrian intermediate subsidiary are Germany, The Netherlands and Switzerland. These three countries alone account for 72.16% of all foreign parent companies with at least one Austrian intermediate subsidiary. For four countries, (Czech Republic, Ireland, Poland and Portugal), I identify parent companies with at least one Austrian subsidiary directly

held by the parent company in at least one year prior to the introduction of the cross-border group taxation, but no intermediate Austrian subsidiary held in any of my sample years.

Comparing the number of firms with at least one Austrian intermediate subsidiary over time, I observe a constant increase in both the number of Austrian parent companies with at least one Austrian intermediate subsidiary as well as the number of foreign parent companies with at least one Austrian intermediate subsidiary. Still, the absolute increase from the year 2004 to the year 2007 is much higher for foreign parent companies (118) than for Austrian companies (16). Since my sample companies are not equally distributed among the treatment group (non-Austrian parent companies) and control group (Austrian parent companies), I calculate the relative number of parent companies with at least one Austrian intermediate subsidiary, and the relative average increase in the number of parent companies with at least one Austrian intermediate subsidiary for Austrian and foreign parent companies. Results are shown in table 3.

{Insert table 3 about here.}

Over the three years prior to the tax reform (2002-2004), an average of 26.25% of all Austrian parent companies are found to hold at least one Austrian intermediate subsidiary. This number rises to 28.34% for the three years after the tax reform (2005-2007), resulting in an average increase of 6.86%. Among the foreign parent companies, only an average of 5.85% is found to hold at least one Austrian intermediate subsidiary during the three years prior to the tax reform (2002-2004), rising to 8.87% for the three years after the tax reform (2005-2007). Although the average number of foreign parent companies with at least one Austrian intermediate subsidiary is lower than the number of Austrian companies with at least one Austrian intermediate subsidiary before and after the tax reform, the average increase of foreign parent companies with at least one Austrian intermediate subsidiary is higher and accounts for 51.73%. This is a first indicator, that foreign parent companies have an increased probability of having at least one Austrian intermediate subsidiary after the tax reform compared to Austrian parent companies.

In table 4, I present the total number of parent companies with at least one foreign intermediate subsidiary per parent company country over the sample years 2002-2007.

{Insert table 4 about here.}

Compared to table 2, the number of observations of parent companies holding at least one foreign intermediate subsidiary (3,021) is about 4-times higher than the number of observations of parent companies holding at least one Austrian intermediate subsidiary (855). There is a clear difference in the time trend: the number of parent companies holding at least one foreign intermediate subsidiary has been pretty much unchanged since 2004. Additionally, I can observe a reduction in the number of parent companies holding at least one foreign intermediate subsidiary from the year 2006 to 2007. Conversely, the number of parent companies holding at least one Austrian intermediate subsidiary has been constantly increasing over time, especially in the years after the introduction of the tax reform (2005-2007). Parent companies appear to have Austrian intermediate subsidiaries more frequently than foreign intermediate subsidiaries after the introduction of the tax reform.

In table 5, I present descriptive statistics for sample 1 used in the logistic models described by equations 1 and 2, where I examine factors that determine whether multinational parent companies hold at least one Austrian intermediate subsidiary.

{Insert table 5 about here.}

The first half of table 5 refers to equation 1 (shifting subsidiaries with Austrian parent companies as control group). As noted above, I observe at least one Austrian intermediate subsidiary in 1,414 of all 13,606 parent company's firm-year observations ($ProbAInter_{it}$). Nearly 84.8% of the observations in my sample refer to non-Austrian parent companies ($Treatment$) and observations are equally distributed among the three years before and after the introduction of the cross-border group taxation, the mean for $Reform$ accounting for 51.16%. Parent companies differ hugely in size. The mean (median) for total assets of the parent companies accounts for 1,775,604 (158,518.5) thd Euros and the mean (median) amount of subsidiaries directly and indirectly held by the parent company $Subsidiaries$ is 15.26 (5). $Profit$ takes the value 1 in 88.06% of all observations, showing that the vast majority of firms are profitable.

Although I require parent companies to have at least one Austrian and foreign subsidiary in at least one of the years before the introduction of the cross-border group taxation regime, I observe a minimum amount of subsidiaries held of 0. This is due to the fact that some parent companies do not own subsidiaries in some of the years before the introduction of the cross-border group taxation regime.

The second half of table 5 refers to equation 2 (shifting subsidiaries with foreign intermediate subsidiaries as control group). To test equation 2, I restrict sample 1 to non-Austrian

parent companies, resulting in 11,536 firm-year observations of 1,994 parent companies. For every parent company I observe both, the probability that it holds at least one Austrian intermediate subsidiary $ProbAInter_{it}$ and the probability that it holds at least one foreign intermediate subsidiary $ProbFInter_{it}$, that combined create my dependent variable $ProbInter_{it}$. Since every parent company enters my sample twice, the final number of firm-year observations is 23,076. Over the sample period, the mean for $ProfAInter_{it}$ is lower (7.41%) than the mean for $ProfFInter_{it}$ (26.21%). Again, observations are fairly equally distributed throughout the three years before and after the introduction of the cross-border group taxation, the mean for $Reform$ accounting for 51.25%. The mean (median) values for my parent-level control variables differ only slightly from those of sample 1. This is due to the fact that Austrian parent companies are excluded in this analysis.

4.2 REGRESSION RESULTS FOR EQUATIONS (1) AND (2) - SHIFTING SUBSIDIARIES

Table 6 reports the estimated regression coefficients for equation 1 for 13,606 firm-year observations for sample 1. Recall that in equation 1, the dependent variable $ProbAInter$ is an indicator variable equal to 1 if the parent company has at least one Austrian intermediate subsidiary and that the control group used for the DD-estimation consists of Austrian parent companies. In equation 2, the dependent variable $ProbInter$ is an indicator variable equal to 1 if the parent company has at least one intermediate subsidiary (Austrian/foreign), and the control group used for the DD-estimation consists of foreign intermediate subsidiaries.

{Insert table 6 about here.}

The primary result from table 6 is that a significant shifting of subsidiaries as a response to the introduction of the cross-border group taxation regime can be observed. My results show a positive and significant coefficient for the DD estimator for all specifications. This is in line with my hypothesis.

With respect to equation 1, non-Austrian parent companies are found to have a significantly higher probability of owning at least one Austrian intermediate subsidiary after the introduction of the tax reform. Calculations of the average marginal effect of the full model show that the probability that a non-Austrian parent company holds at least one Austrian intermediate subsidiary is about 2.94 percentage points higher than the

probability that an Austrian multinational parent company holds at least one Austrian intermediate subsidiary after the tax reform. In addition, my results for estimating equation 2 show that the probability that non-Austrian parent companies have at least one Austrian intermediate subsidiary is significantly higher than the probability that non-Austrian parent companies have at least one foreign intermediate subsidiary after the tax reform. This result shows that the observed increase in non-Austrian parent companies having at least one Austrian intermediate subsidiary can be attributed to cross-border group taxation rather than non-tax determinants.

My parent level control variables are all significant and have the expected sign. The positive coefficients for $Size$ and $Subsidiary$ show that the larger the firm (in terms of assets as well as in terms of number of subsidiaries), the higher the probability that it has at least one Austrian intermediate subsidiary. Loss-making firms cannot access tax benefits arising from cross-border group taxation, which is why I observe the expected negative and significant coefficient for $Profit$.

4.3 DESCRIPTIVE STATISTICS FOR SAMPLE 2 - NEW SUBSIDIARIES

Parent companies that have not been invested in Austria prior to 2005 have to establish an Austrian intermediate subsidiary in order to benefit from cross-border group taxation. In table 7, I present the number of parent companies with at least one Austrian intermediate subsidiary per parent company country over the sample years 2005-2007 for parent companies without Austrian subsidiaries prior to 2005.

{Insert table 7 about here.}

Over the six sample years, a total of 233 observations of parent companies holding at least one Austrian intermediate subsidiary is identified. 173 observations (74.24%) refer to non-Austrian parent companies and 60 observations (25.76%) refer to Austrian parent companies. The number of observations with at least one Austrian intermediate subsidiary is very low, compared to the results for sample 1 in chapter 4.1. This is due to the fact that I require parent companies that have not been invested in Austria before, to respond to the introduction of cross-border group taxation within a short time period of only 3 years and establish an Austrian intermediate subsidiary after the introduction.

The foreign countries with the highest number of parent companies with at least one Austrian intermediate subsidiary are Germany, the Netherlands and Switzerland. These three countries alone account for 64.73% of all foreign parent companies with at least one

Austrian intermediate subsidiary. For five countries (Czech Republic, Ireland, Norway, Portugal and Russia) I identify parent companies with at least one Austrian subsidiary directly held by the parent company in at least one year after the introduction of the cross-border group taxation, but no intermediate Austrian subsidiary held in any of my sample years.

Comparing the number of firms with at least one Austrian intermediate subsidiary, I observe a constant increase in both, the number of Austrian parent companies with at least one Austrian intermediate subsidiary, as well as the number of foreign parent companies with at least one Austrian intermediate subsidiary. The increase from the year 2004 (where none of the sample companies were holding an Austrian subsidiary), to 2007 in absolute numbers is much higher for foreign parent companies (144) than for Austrian companies (50). One has to keep in mind, however, that my sample companies are not equally distributed among the treatment group (non-Austrian parent companies), and control group (Austrian parent companies). I therefore additionally calculate the relative number of parent companies with at least one Austrian intermediate subsidiary, and the relative average number of parent companies with at least one Austrian intermediate subsidiary for Austrian and foreign parent companies. Results are shown in table 8.

{Insert table 8 about here.}

The average relative number of Austrian parent companies with at least one Austrian intermediate subsidiary (8.40%) is about twice that of the relative number of non-Austrian parent companies (4.23%). This is initial evidence that parent companies not invested in Austria prior to 2005 did not restructure their ownership chains as a response to the introduction of cross-border group taxation.

In table 9, I present descriptive statistics for sample 2 used in the logistic models described by equation 3, where I examine factors that determine whether multinational parent companies hold at least one Austrian intermediate subsidiary.

{Insert table 9 about here.}

As noted above, I observe at least one Austrian intermediate subsidiary in 233 of all 4,806 parent company's firm-year observations ($ProbAInter$). 85.14% of the observations in my sample refer to non-Austrian parent companies ($Treatment$). Parent companies differ widely in terms of assets and group size: The mean (median) for total assets of the

parent companies accounts for 1,253,712 (57,021) thd Euro, the mean (median) amount of subsidiaries directly and indirectly held by the parent company *Subsidiaries* is 8.71 (2). 91.55% of all parent companies in my sample are profitable firms. Parent level control variables show that on average parent companies not invested in Austria are smaller in terms of assets and group size, and more profitable than parent companies that were already invested in Austria prior to 2005.

4.4 REGRESSION RESULTS FOR EQUATION (3) - NEW SUBSIDIARIES

Table 10 reports the estimated regression coefficients for equation 3 for 4,806 firm-year observations for sample 1. Recall that in equation 3, the dependent variable $ProbAInter_{it}$ is an indicator variable equal to 1 if the parent company has at least one Austrian intermediate subsidiary, and that the control group used for the DD-estimation consists of Austrian parent companies.

{Insert table 10 about here.}

The primary result in table 10 is that I can not observe a significantly higher probability of holding at least one Austrian intermediate subsidiary for non-Austrian parent companies. In two of the three specifications of equation 3 the coefficient has the right sign, but it is always insignificant. This shows that although there is a large number of parent companies setting up intermediate subsidiaries in Austria after 2004, I cannot attribute this process to the tax benefits of cross-border group taxation.

5 CONCLUSION

This papers aims to shed light on whether and how ownership chains of multinational parent companies are restructured as a result of the introduction of a cross-border group taxation system. Prior research has shown that many factors of a tax system, i.e. corporate income tax rates, dividend withholding taxes and special tax treatment of holding companies influences the location decision of subsidiaries. Tax benefits resulting from cross-border group taxation have so far been widely ignored in literature. My analysis closes this research gap by using the introduction of a cross-border group taxation regime in Austria in 2005 as a natural experiment.

In order to meet the requirements for cross-border group taxation regimes, multinational firms need at least one intermediate subsidiary in the country offering a cross-border group taxation regime. If parent companies do not meet those requirements at the time

the group taxation regime is introduced, they have to restructure their ownership chains by either shifting existing subsidiaries, or by creating new subsidiaries.

Using a logistic model, I model the probability that a multinational European parent company holds at least one Austrian intermediate subsidiary after the introduction of the cross-border group taxation system in Austria. In order to separate time effects from tax effects, I use two different control groups: Austrian intermediate subsidiaries of Austrian parent companies, and foreign intermediate subsidiaries of non-Austrian parent companies.

Results of my first analysis show that non-Austrian parent companies that have already been invested in Austria before the introduction of the cross-border group taxation regime, show a significantly higher probability of holding at least one Austrian intermediate company starting in 2005. Contrary, I fail to find significant changes in ownership chains that can be attributed to group taxation for parent companies that have not been invested in Austria before the introduction of the cross-border group taxation regime. I therefore assume that the costs of establishing a new intermediate subsidiary in Austria are higher for multinational parent companies not invested in Austria before the introduction of the cross-border group taxation regime than the tax benefits arising from group taxation.

All in all, this paper provides evidence that cross-border group taxation regimes shall be considered as relevant tax factors for location decisions of multinational firms. One aspect that might be interesting for further research is whether or not multinational companies choose among the group taxation regimes of different countries in Europe and locate their intermediate subsidiaries in countries with the most attractive system of group taxation.

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APPENDIX

Table 1: Sample overview

This table shows the number of firms and firm-year observations for all sample countries in sample 1 and 2. Sample 1 consists of 2,347 firms and 13,606 firm-year observations and sample 2 of 1,602 firms and 9,612 firm-year observations.

Sample overview				
	Sample 1		Sample 2	
Country	**N (firms)**	**N (observations)**	**N (firms)**	**N (observations)**
Austria	353	2,070	238	714
Belgium	62	335	35	105
Czech Rep.	5	30	7	21
Denmark	73	430	44	132
Finland	14	84	6	18
France	142	838	62	186
Germany	915	5,331	694	2,082
Hungary	3	18	4	12
Ireland	1	4	4	12
Italy	75	426	67	201
Lithuania	2	12	6	18
Netherlands	286	1,614	151	453
Norway	7	42	7	21
Poland	3	18	3	9
Portugal	1	6	2	6
Russia	-	-	1	3
Slovenia	7	39	4	12
Spain	19	113	16	48
Sweden	88	517	48	144
Switzerland	210	1,224	137	411
UK	81	455	66	198
Total Foreign	1,994	11,536	1,364	4,092
Total	**2,347**	**13,606**	**1,602**	**4,806**

Table 2: Number of parent companies, invested in Austria before 2005, with at least one Austrian intermediate subsidiary per country, 2000-2009

This table shows the number of parent companies with at least one Austrian intermediate subsidiary ($ProbAInter = 1$) per sample year and country. The last two lines give the total number of foreign, that is non-Austrian, parent companies with at least one Austrian intermediate subsidiary as well as the total number of all sample parent companies with at least one Austrian intermediate subsidiary per sample year.

	ProbAInter=1						
	2002	**2003**	**2004**	**2005**	**2006**	**2007**	**total**
Austria	90	79	93	95	96	106	559
Belgium	4	3	5	5	6	5	28
Czech Rep.	0	0	0	0	0	0	0
Denmark	0	3	4	3	9	7	26
Finland	2	2	3	3	1	3	14
France	9	11	14	13	11	14	72
Germany	48	42	62	70	83	110	415
Hungary	0	0	0	1	1	1	3
Ireland	0	0	0	0	0	0	0
Italy	2	1	1	2	3	5	14
Lithuania	0	0	0	0	1	1	2
Netherlands	13	19	19	21	15	22	109
Norway	1	1	1	1	1	0	5
Poland	0	0	0	0	0	0	0
Portugal	0	0	0	0	0	0	0
Slovenia	0	0	0	0	1	1	2
Spain	0	0	1	1	3	3	8
Sweden	2	4	7	8	5	11	37
Switzerland	11	15	12	14	18	23	93
UK	2	3	3	7	6	6	27
Total Foreign	94	104	132	149	164	212	855
Total	184	183	225	244	260	318	1414

Table 3: Average increase in relative number of parent companies, invested in Austria before 2005, with at least one Austrian intermediate subsidiary, 2002-2007

This table shows the average increase in the number of parent companies with at least one Austrian intermediate subsidiary ($ProbInter = 1$) over the sample period 2002-2007 for Austrian and foreign parent companies. $N(firms)$ is the observed number of parent companies for every sample year 2002-2007 for Austrian as well as foreign (non-Austrian) parent companies. $N(firms)ProbAInter = 1$ gives the total number of parent companies with at least one Austrian intermediate subsidiary for every sample year 2002-2007 for Austrian as well as foreign (non-Austrian) parent companies as shown in table 2. $rel.ProbAInter = 1$ is the relative value of parent companies with at least one Austrian intermediate subsidiary for every sample year 2002-2007 for Austrian as well as foreign (non-Austrian) firms. $3yearsavg.rel.ProbAInter = 1$ gives the average relative value of parent companies with at least one Austrian intermediate subsidiary for the three years prior to the reform (2002-2004) and the three years after the reform (2005-2007) for Austrian as well as foreign (non-Austrian) firms. $\Delta 3yearsavg.rel.ProbAInter = 1$ is the average increase in the number of firms with at least one Austrian intermediate subsidiary comparing, comparing the three years prior to the reform (2002-2004) and the three years after the reform (2005-2007)).

	Probinter=1					
	2002	**2003**	**2004**	**2005**	**2006**	**2007**
N (firms) Austria	333	336	353	351	348	349
N (firms) ProbAInter=1	90	88	93	95	96	106
rel. ProbAInter=1	27.03%	26.19%	26.35%	27.07%	27.59%	30.37%
3 years avg. rel. ProbAInter=1		26.52%			28.34%	
Δ 3 years avg. rel. ProbAInter=1			**6.86%**			
N (firms) Foreign	1,794	1,885	1,944	1,960	1,975	1,978
N (firms) ProbAInter=1	94	104	132	149	164	212
rel. ProbAInter=1	5.24%	5.52%	6.79%	7.60%	8.30%	10.72%
3 years avg. rel. ProbAInter=1		5.85%			8.87%	
Δ 3 years avg. rel. ProbAInter=1			**51.73%**			

Table 4: Number of parent companies with at least one foreign intermediate subsidiary per country, 2002-2007

This table shows the number of parent companies with at least one foreign intermediate subsidiary ($ProbFInter = 1$) per sample year and country. The last line gives the total number of parent companies with at least one foreign intermediate subsidiary per sample year.

	ProbFInter=1						
	2002	**2003**	**2004**	**2005**	**2006**	**2007**	**total**
Belgium	13	21	25	26	24	24	133
Czech Rep.	1	1	1	1	1	1	6
Denmark	17	20	30	34	34	30	165
Finland	5	5	8	9	10	10	47
France	52	53	68	61	68	73	375
Germany	78	86	112	130	148	136	690
Hungary	0	0	0	0	1	1	2
Ireland	0	0	0	0	0	0	0
Italy	17	17	19	20	23	24	120
Lithuania	1	1	1	0	1	1	5
Netherlands	82	93	123	119	115	118	650
Norway	2	2	3	3	4	4	18
Poland	0	0	0	0	0	0	0
Portugal	0	0	0	0	0	0	0
Slovenia	0	1	1	1	0	0	3
Spain	2	5	7	8	9	8	39
Sweden	28	25	41	42	43	41	220
Switzerland	45	53	65	71	76	76	386
UK	14	21	26	31	35	35	162
Total	357	404	530	556	592	582	3,021

Table 5: Descriptive Statistics for sample 1, 2002-2007

This table reports descriptive statistics for sample 1 used in the regression analysis. The dependent variable is *ProbAInter*, the probability that a multinational parent company holds at least one Austrian intermediate subsidiary, which takes the value 1 if the multinational parent company holds at least one Austrian intermediate subsidiary and 0 otherwise. *Reform* is an indicator variable taking the value 1 for years after the introduction of the Austrian group taxation system (2005-2007) and 0 otherwise (2002-2004). *Treatment* is an indicator variable taking the value 1 for foreign (that is, non-Austrian) parent companies and 0 for Austrian parent companies. *Size* is the natural logarithm of the parent company's total assets, *Profit* is the parent company's earnings before interest and tax (EBIT) and *Subsidiaries* the total number of subsidiaries directly and indirectly held by the parent company.

Variable	Obs.	Mean	Std.Dev.	Min	Max
			Equation 1		
ProbAInter	13,606	0.1039	0.3051	0	1
Treatment	13,606	0.8478	0.3591	0	1
Reform	13,606	0.5116	0.4998	0	1
Size	6,636	158,518.5	9,299,189	2	217,634,000
Profit	6,636	0.8806	0.3242	0	1
Subsidiary	13,606	15.2613	38.8685	0	913
			Equation 2		
	Obs.	Mean	Std.Dev.	Min.	Max.
ProbAInter	11,536	0.0741	0.2619	0	1
ProbFInter	11,536	0.2621	0.4398	0	1
ProbInter	23,076	0.1681	0.3739	0	1
Treatment	23,076	0.5000	0.5000	0	1
Reform	23,076	0.5125	0.4998	0	1
Size	11,360	2,019,199	10,022,990	2	217,634,000
Profit	11,360	0.8815	0.3231	0	1
Subsidiary	23,076	16.7682	41.7458	0	913

Table 6: Probability of holding an Austrian intermediate subsidiary, 2002-2007

This table presents the regression results on the probability of holding an Austrian intermediate subsidiary estimated over the sample period 2002-2007 for parent companies already invested in Austria before 2005. The dependent and independent variables are defined in Table 5. Standard errors are presented in parentheses and allow for heteroskedasticity and are clustered at the parent company level. The superscripts ***, **, and * indicate the statistical significance at the 1%, 5%, and 10% levels, respectively.

		Equ. (1) *ProbAInter*			Equ. (2) *ProbInter*		
Treatment		-2.088**	-2.3068**	-1.828*	-1.8375***	-2.3426***	-2.3830***
		(0.9765)	(1.0268)	(0.9913)	(0.1123)	(0.1372)	(0.1388)
Reform·	+	0.3173***	0.4016**	0.3288*	0.1621*	0.5922***	0.5913***
Treatment		(0.1159)	(0.1866)	(0.1929)	(0.964)	(0.1351)	(0.1360)
Size	+		0.3868***	0.3543***		0.3786***	0.3788***
			(0.0356)	(0.0372)		(0.03180)	(0.0329)
Profit	-		-0.2437**	-0.1985		-0.1937**	-0.1863**
			(0.1248)	(0.1279)		(0.0792)	(0.0808)
Subsidiary	+	0.0101***	0.0028	0.0037**	0.0219***	0.0098***	0.0101***
		(0.0025)	(0.0017)	(0.0019)	(0.0031)	(0.0028)	(0.0027)
Year FE		yes	yes	yes	yes	yes	yes
Country FE		yes	yes	yes	yes	yes	yes
Industry FE		no	no	yes	no	no	yes
Observations		13,548	6,581	6,392	23,016	11,316	11,234
Pseudo R^2		0.1004	0.1595	0.1882	0.1890	0.2520	0.2700

Table 7: Number of parent companies, not invested in Austria before 2005, with at least one Austrian intermediate subsidiary per country, 2005-2007

This table shows the number of parent companies with at least one Austrian intermediate subsidiary ($ProbAInter = 1$) per sample year and country. The last two lines give the total number of foreign, that is non-Austrian, parent companies with at least one Austrian intermediate subsidiary as well as the total number of all sample parent companies with at least one Austrian intermediate subsidiary per sample year.

	ProbAInter=1			
	2005	**2006**	**2007**	**total**
Austria	7	17	36	60
Belgium	0	1	1	2
Czech Rep.	0	0	0	0
Denmark	2	5	5	12
Finland	0	0	1	1
France	0	0	2	2
Germany	5	21	45	71
Hungary	1	2	2	5
Ireland	0	0	0	0
Italy	1	1	5	7
Lithuania	0	1	1	2
Netherlands	5	7	11	23
Norway	0	0	0	0
Poland	0	0	0	0
Portugal	0	0	0	0
Russia	0	0	0	0
Slovenia	0	1	1	2
Spain	0	1	1	2
Sweden	3	2	8	13
Switzerland	5	6	7	18
UK	1	5	7	13
Total Foreign	23	53	97	173
Total	30	70	133	233

Table 8: Average increase in relative number of parent companies, not invested in Austria before 2005, with at least one Austrian intermediate subsidiary, 2005-2007

This table shows the average increase in the number of parent companies with at least one Austrian intermediate subsidiary ($ProbAInter = 1$) over the sample period 2005-2007 for Austrian and foreign parent companies. $N(firms)$ is the observed number of parent companies for every sample year 2005-2007 for Austrian as well as foreign (non-Austrian) parent companies. $N(firms)ProbAInter = 1$ gives the total number of parent companies with at least one Austrian intermediate subsidiary for every sample year 2005-2007 for Austrian as well as foreign (non-Austrian) parent companies as shown in table 2. $rel.ProbAInter = 1$ is the relative value of parent companies with at least one Austrian intermediate subsidiary for every sample year 2005-2007 for Austrian as well as foreign (non-Austrian) firms. $3yearsavg.rel.ProbAInter = 1$ gives the average relative value of parent companies with at least one Austrian intermediate subsidiary for the three years 2005-2007 for Austrian as well as foreign (non-Austrian) firms.

	Probinter=1		
	2005	**2006**	**2007**
N (firms) Austria	238	238	238
N (firms) ProbAInter=1	7	17	36
rel. ProbAInter=1	2.94%	7.14%	15.13%
3 years avg. rel. ProbAInter=1		**8.40%**	
N (firms) Austria	1364	1364	1364
N (firms) ProbAInter=1	23	53	97
rel. ProbAInter=1	1.69%	3.89%	7.11%
3 years avg. rel. ProbAInter=1		**4.23%**	

Table 9: Descriptive Statistics for sample 2, 2005-2007

This table reports descriptive statistics for sample 2 for all variables used in the regression analysis. The dependent variable is $ProbAInter$, the probability that a multinational parent company holds at least one Austrian intermediate subsidiary, which takes the value 1 if the multinational parent company holds at least one Austrian intermediate subsidiary and 0 otherwise. $Treatment$ is an indicator variable taking the value 1 for foreign (that is, non-Austrian) parent companies and 0 for Austrian parent companies. $Size$ is the natural logarithm of the parent company's total assets, $Profit$ is the parent company's earnings before interest and tax (EBIT) and $Subsidiaries$ is the total number of subsidiaries directly and indirectly held by the parent company.

Variable	Obs.	Mean	Std.Dev.	Min	Max
			Equation 3		
ProbAInter	4,806	0.0484	0.2148	0	1
Treatment	4,806	0.8514	0.3556	0	1
Size	1,887	1,253,712	1,024,242	16	235,466,000
Profit	1,887	0.9155	0.2798	0	1
Subsidiary	4,806	8.7103	26.1642	0	771

Table 10: Probability of holding an Austrian intermediate subsidiary, 2005-2007

This table presents the regression results on the probability of holding an Austrian intermediate subsidiary estimated over the sample period 2005-2007 for parent companies not invested in Austria before 2005. The dependent and independent variables are defined in Table 9. Standard errors are presented in parentheses and allow for heteroskedasticity and are clustered at the parent company level. The superscripts ***, **, and * indicate the statistical significance at the 1%, 5%, and 10% levels, respectively.

		Equ. (3) *ProbAInter*		
Treatment	+	0.8119	0.9108	-0.2468
		(1.0923)	(1.0444)	(1.1080)
Size	+		0.2213***	0.1932***
			(0.0507)	(0.0564)
Profit	-		-0.5268**	-0.6277
			(0.2707)	(0.3142)
Subsidiary	+	0.0091***	0.0008	0.0027
		(0.0037)	(0.0019)	(0.0021)
Year FE		yes	yes	yes
Country FE		yes	yes	yes
Industry FE		no	no	yes
Observations		4,734	1,784	1,421
Pseudo R^2		0.0897	0.1077	0.1580

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Kontaktadresse:
Prof. Dr. Caren Sureth-Sloane, Universität Paderborn,
Fakultät für Wirtschaftswissenschaften,
Warburger Str. 100, 33098 Paderborn,
www.arqus.info, Email: info@arqus.info

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