Headquarter Relocations and International Taxation

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1 Executive Summary

Some countries, such as the UK and the US, tax their multinational companies on their worldwide income. If the multinational earns profits in countries with low corporate taxes, the multinational's home country also taxes those foreign profits when they are repatriated as dividends to the home country, typically giving a credit for taxes already paid abroad.

This additional tax creates an incentive for relocate a multinational's headquarters to a country that exempts foreign profits from tax. The incentive to relocate is greater the higher the tax that would be due in the home country. In turn, this depends on the difference between the home country tax rate and the average tax rate paid abroad by foreign subsidiaries – this difference measures the additional tax due in the home country. Where repatriated dividends are exempt from tax, this is, of course, zero.

This paper presents empirical evidence on the role of tax in relocation decisions. It considers a sample of 213 multinationals that relocated their headquarters over the last decade, and compares them to a control group of 3395 multinationals that have not done so. It finds that the additional tax due in the home country has a significant effect on the relocation decision. The empirical results suggest that if this additional tax increased by 10 percentage points, then an additional 2% of multinationals would be induced to relocate to an exemption country.

2 Introduction

On 11 march 2007, the oil services company Halliburton announced moving its headquarter from Houston in the U.S. to Dubai in the United Arab Emirates. Most people and governments disapprove of such a move because they fear a loss of jobs, a loss of control, and a loss of tax revenue. Already in 2002, the U.S. legislation became worried by the increasing numbers of firms that were relocating their headquarters abroad to lower their tax burden. Following a report by the Department of the Treasury (2002) and several House and Senate hearings , the U.S. has tried repeatedly to inhibit these corporate inversions by introducing new anti-inversion legislation with limited success.[1] Desai and Hines (2002) have analyzed the causes of U.S. corporate inversions and find that reducing the tax burden on foreign profits is a major motivation for relocating headquarters from the U.S. However, headquarter relocations may not be a phenomenon restricted to the U.S. In this paper, I analyze the extent of international headquarter relocations worldwide and if the observed relocations exhibit a tax avoidance motive. For this end, I compare the multinationals that have internationally moved headquarters between 1997 and 2007 as they were taken over by a foreign entity to the stock of multinationals which remained in place. I find that about 6 percent of all multinationals relocate their headquarter to another country in that period. The empirical test for a tax avoidance motive resembles a difference-in-differences approach: Comparing the immobile and the relocating headquarters for the group of multinationals originally based in countries exempting dividend repatriations from taxation, no difference emerges. However, comparing the immobile and the relocating headquarters for the group of multinationals originally based in countries providing foreign tax credits as double taxation relief, it appears that the foreign subsidiaries of relocating multinationals pay less taxes than the foreign subsidiaries of the control group. Hence, the likelihood of relocating headquarters increases in the difference between the home corporate income tax rate and the average foreign subsidiaries' corporate income tax rates if a multinational resides in a country that provides tax credits for double

[1] See the Corporate Patriot Enforcement Act of 2002, H.R. 3884, 107th Cong.; the Save America's Jobs Act of 2002, H.R. 3922, 107th Cong.; the Uncle Sam Wants You Act of 2002, H.R. 4756, 107th Cong.; and the No Tax Breaks for Corporations Renouncing America Act of 2002, H.R. 4993, 107th Cong.; and the American Jobs Creation Act of 2004 (Harvard Law Review, 2005).

tax relief on repatriated dividends. For these firms headquarter relocation represents a way to avoid international taxes at the parent firm level.

3 Previous literature

Two recent studies analyze the impact of taxation on a multinational's headquarter location: First, Desai and Hines (2002) examine the role of taxation in 26 cases of so-called inversions of U.S. multinationals in the 1982–2002 period. In these transactions, the international corporate structure is inverted in the sense that the U.S. parent becomes a subsidiary, and the earlier foreign subsidiary becomes the parent firm. These inversions serve to eliminate U.S. worldwide income taxation of all previous foreign subsidiaries. In fact, international double taxation is avoided (except for U.S. dividend withholding taxes) if the new parent resides in a country with an exemption system. Desai and Hines (2002) show that the foreign subsidiaries of inverting firms typically face low tax rates to confirm that inversions yield tax benefits. Furthermore, they find larger firms and highly leveraged firms more likely to expatriate. The latter may be explained by U.S. firms having to partly allocate domestic expenses like interest charges against foreign income.

Huizinga and Voget (2006) examine the role of international taxation on the direction and volume of cross-border mergers and acquisitions. They find that international taxation has a strong impact on the parent-subsidiary structure of merging firms. More specifically, a country's likelihood of hosting the headquarter following a merger between a domestic firm and a foreign firm decreases if the country imposes high double taxation on foreign source income. This firm-level observation is reflected in aggregate cross-border M&A numbers: Acquirers are less active in those foreign countries from which dividend repatriations would incur relatively high double taxes.

Another study by Strauss-Kahn and Vives (2005) focuses on headquarter — including subsidiary headquarter — relocations within the U.S. They find that relocating headquarters are larger, younger, foreign-owned, merger-related and that they are attracted to well-connected

metropolitan areas with low local corporate taxes, low average wages, high level of business services and agglomeration of headquarters in the same sector of activity.

4 Survey of headquarter relocations and data description

For the purpose of my analysis a group's headquarter is defined as the residence of a firm whose majority of shares are owned by individuals (and not by corporate entities). This is the place where firm profits leave the corporate sphere and are transformed into personal income by being paid out as dividends. A multinational's profits must be eventually repatriated to the headquarter company if they are meant to be paid out as dividends to individual shareholders. Furthermore, I define a multinational headquarter as a headquarter firm that controls at least one foreign subsidiary. Table 1 reports the number of multinational headquarter firms per country that were registered in the ORBIS database in the year 2005.[2] ORBIS is a database containing extensive financial and ownership data for firms in countries worldwide. Using the ownership data, one can determine which firms in the ORBIS dataset actually represent a headquarter and which firms represent a multinational's headquarter. Table 1 reports the total number of firms and the total number of independent firms in the year 2005 to give an impression of ORBIS' data coverage and to put the number of independent multinationals into perspective.

Headquarters relocate to another country either if a headquarter firm sells its assets to a foreign company or alternatively if the firm's shareholders sell their shares to a foreign company in exchange for shares or in exchange for cash.[3] Such cross-border M&A transactions are covered by the ZEPHYR database, which allows tracking down the multinationals whose headquarter relocated to another country. Column 4 in Table 1 reports the number of relocating multinational headquarters in the period between 1997 and 2007 that were registered

[2]Only countries that eventually contribute observations to the estimation sample are listed.

[3]In principal, firms in the European Union have a freedom of establishment as constituted by articles 43 and 48 in the EC treaty. They should be able to change headquarters from one EU country to another by a simple change of address without any asset or share transaction. However, most countries have kept considerable barriers to such an exit in place, so only a handful of firms have chosen to sue their headquarter to another country. See the following cases at the European Court of Justice: Uberseering(2003), Inspire Art(2003), Centros(1999), and Daily Mail(1988).

by the M&A database ZEPHYR and that could be linked to financial information in the ORBIS database. Again, to put these numbers into perspective, column 5 in Table 1 reports all acquired firms which could be linked to the ORBIS database. A more detailed impression of the ZEPHYR database is given by Table 2 which reports the total number of target and acquiring firms involved in cross-border M&As between 1997 and 2007. Last, Table 3 shows a cross table linking the country of origin and the country of destination for multinational headquarter relocations for the most relevant countries. Comparing the number of relocating multinational headquarters to the stock of multinationals (column 3 and 4 in Table 1) shows that from 1997 until 2007 about six percent of all multinationals relocate their headquarter to another country.[4]

Due to missing regressors, the number of relocating and non-relocating multinationals mentioned in table 1 is eventually reduced to an estimation sample size of 3608 multinationals of which 213 relocate their headquarter to another country. The financial data for relocating firms is drawn from the financial report one year prior to the headquarter relocation or from the year 2005, whichever is earlier. For the control group of non-relocating firms, financial data is taken from a financial report drawn at random from the years 1996 – 2005.

Of course, the headquarter relocations registered by the ZEPHYR database normally also include some change in the shareholder structure. This distinguishes my data from the corporate inversions considered by Desai and Hines (2002) which are a special case of headquarter relocations because the acquiring foreign firm has in the end the same shareholders as the previous headquarter firm. Even if headquarter relocations are also caused by other determinants than tax incentives, it is reasonable to assume that the tax incentives can be observed at least at the margin. A few case studies serve to illustrate this argument.

The merger of Daimler in Germany with Chrysler in the U.S. in 1998 — which is generally not perceived as being caused by tax incentives — resulted in a multinational firm with a parent firm (Daimler) located in Germany and a subsidiary (Chrysler) located in the U.S. According

[4]Unfortunately, I have no data on the growth of stock of multinational firms. A growing number of observations in the ORBIS database over time may be attributed to a better data coverage or to a genuine growth in the stock of firms.

to testimony given by Daimler-Chrysler's chief tax counsel before the U.S. Ways and Means Committee on 30 June 1999, the exemption from taxation by Germany of dividend income from abroad in contrast to the U.S. system of worldwide taxation was one of the main reasons for locating the parent firm of Daimler-Chrysler in Germany (Bogenschütz and Wright, 2000). Another interesting case is the formal merger of British Shell with Dutch Koninklijke Olie in 2005. Shell and Koninklijke Olie already joined forces in 1903, but had retained separate stock listings and separate headquarters in the U.K. and the Netherlands. After the formal merger in 2005 following criticism of its previous corporate structure, the new company became solely headquartered in the Netherlands, even though the firm took the legal form of a British public limited company. Based on that decision, the Dutch exemption system applies to the firm's overall income rather than British worldwide taxation.

5 Headquarter location and international taxation

Suppose a multinational has its headquarter firm in home country h and a subsidiary firm in country f. As a main principle, the home country has the right to tax the multinational's overall income on a worldwide basis.[5] In practice, however, some countries only tax a multinational's domestically generated income on a territorial basis. The selection of the headquarter location thus affects whether the multinational's income generated outside the home country is potentially subject to additional taxation by the home country.

Income generated in subsidiary country f is first taxed in that country at a corporate tax rate τ^f, leaving a share $1 - \tau^f$ of this income to be reinvested or repatriated to the parent firm in the form of dividends. Due to depreciation rules and exemptions with respect to the corporate income tax base, the statutory tax rate may not be an appropriate measure for τ^f. Instead, I will impute the taxes paid in subsidiary countries from balance sheet data, such that the foreign tax rate τ_i^f becomes firm-specific. This should be a better proxy for the

[5]Strictly speaking, the home country only has the right to tax the headquarter and national subsidiaries. However, by means of controlled foreign corporation rules, the home country can tax the headquarter directly for profits accumulated in foreign subsidiaries which are deemed to be under the control of the headquarter.

multinational's actual tax burden abroad.[6]

Home country h potentially taxes the foreign dividend income at a corporate tax rate τ^h. Generally, countries apply the statutory corporate income tax rate to dividend repatriations.[7] Table 4 provides information on statutory corporate tax rates for the countries that eventually enter the sample. Let $Dtax_i$ be the resulting rate of double taxation defined as the tax rate to be paid by the multinational firm on income from country f in excess of the multinational's effective tax rate τ_i^f in subsidiary country f. This double tax rate depends on whether the multinational firm can defer parent country taxation until repatriation and on whether, at the time of taxation, the parent country provides any double tax relief from taxes paid in the subsidiary country. In the absence of any deferral and double tax relief, the double tax rate $Dtax_i$ equals τ^h.

In practice, most countries provide some form of international double tax relief. Some countries operate a territorial or source-based tax system, and effectively exempt foreign-source income from taxation. In this instance, the double tax rate $Dtax_i$ equals zero. Alternatively, the parent country operates a worldwide or residence-based system. In this instance, the parent country taxes the worldwide income of its resident multinationals, but it may provide double tax relief in the form of a foreign tax credit for taxes already paid in subsidiary country f. The OECD model tax convention, which summarizes recommended practice, gives countries the option between an exemption and a foreign tax credit as the only two ways to relieve double taxation.[8]

The foreign tax credit reduces domestic taxes on foreign source income one-for-one with the taxes already paid abroad. Foreign tax credits in practice are limited to prevent the domestic tax liability on foreign source income from becoming negative. With a foreign tax credit

[6]The subsidiary country f, in addition, may apply a non-resident dividend withholding tax to dividends repatriated to country h at a rate ω^{hf}. There are too many bilateral relationships in the current dataset to take withholding taxes into account. This should have only minor effects on the empirical results as most relationships are covered by double tax treaties which provide for very low or zero withholding tax rates for substantial shareholdings. See Huizinga and Voget (2006) for the applicable withholding taxes between 30 countries including the U.S., Japan and most European countries.

[7]As always, exceptions apply. For example, the U.S. recently introduced a tax vacation for repatriated dividends in the American Jobs Creation Act 2004, which provided for lower tax rates until the end of 2005.

[8]See OECD (2005) for the most recent version of the model tax convention.

provided, the multinational pays no tax in the home country if $\tau_i^f \geq \tau^h$. Otherwise, the double tax is $Dtax_i = \tau^h - \tau_i^f$. Hence, the double tax rate for the case of tax credit provision can be summarized as $Dtax_i = \max[0, \tau^h - \tau_i^f]$.

Table 4 reports which double tax relief method home countries apply to dividend repatriations from countries with which a tax treaty has been concluded. Normally, countries do not vary the method of relief across countries with established tax treaties.[9] As a rough guide, smaller countries tend to exempt dividend repatriations whereas larger countries tend to provide foreign tax credits as double taxation relief. Furthermore, most European continental countries tend to exempt dividend repatriations.[10]

Focusing on double taxation of dividend repatriations may seem to neglect other forms of profit repatriation like profit shifting through transfer pricing, interest stripping, license and royalty payments, possibly involving third intermediary countries. However, double taxation of dividends represents a lower bound to the costs that may be linked with profit repatriations unless the home country handles favorable corporate income tax rates with respect to domestic income or foreign source income in the form of interest or royalty payments. Stated differently, if there are costs to profit repatriations, then dividend repatriations are at least as cost-efficient as any other repatriation method. Suppose, for example, that a firm shifts profits from the foreign subsidiary in country f to the headquarter in country h through transfer pricing. If $t^f \leq t^h$, the corresponding loss is proportional to $t^f - t^h$, which is greater or equal to the loss incurred if the same profits were repatriated in the form of dividends. The logic of this argument is robust to introducing third countries. (However, it should be noted, that double taxation of dividends gives only the lower bound of costs that are linked to profit repatriations. Nothing comparable can be said, if profit repatriation may result in gains. For example, if $t^f > t^h$, then there are gains to profit shifting via transfer pricing from the subsidiary to the headquarter. There is no gain, if the profits are instead repatriated via dividends. Focusing exclusively on dividend repatriations is hence only a viable approach because traditionally

[9]Note that the method of double tax relief for dividends is not solely determined by the tax treaty itself. The domestic tax code may provide more generous double tax relief, although the domestic rules may be conditional on the existence of a double tax treaty.

[10]Russia just switched from providing foreign tax credits to exempting dividend repatriations in 2007.

most multinationals tend to be headquartered in countries with relatively high corporate income taxes.)[11]

6 Empirical specification

The previous discussion of international taxation implies that a multinational has an incentive to relocate its headquarter, if two conditions are satisfied: its headquarter is located in a country that provides foreign tax credits as double taxation relief and its foreign subsidiaries are subject to low taxes relative to the home country tax level. This hypothesis can be tested by an empirical approach that resembles a difference-in-differences estimation. There should be no difference between relocating and immobile multinationals from exemption countries, but for multinationals from tax credit providing countries, the relocating multinationals should have foreign subsidiaries subject to lower taxes than the subsidiaries of non-relocating multinationals.

The dependent variable y_i takes the value one if multinational i relocates its headquarter to another country between 1997 and 2007. Otherwise the value is zero. The summary statistics in Table 5 show that about 6 percent of the observations relocate headquarters. The skewed dependent variable is taken into account by using a binary regression model based on an extreme value distribution, such that the conditional probability of not relocating is given by

$$\Pr(y_i = 0 \mid x_i) = 1 - \exp^{-\exp(x_i\beta)} \tag{1}$$

where x_i is a vector of explanatory variables described in the following and β is the corresponding vector of coefficients, which is estimated by maximum likelihood. The difference between the multinationals from exemption countries on the one hand and tax credit provid-

[11] It should also be kept in mind that withholding taxes on interest or royalty payments tend to be higher than withholding taxes on dividends because interest and royalty payments are tax deductible in most countries. For the same reason, regulation limits the amount to which profits can be shifted via transfer pricing or interest stripping. All these factors make it more likely that focusing on dividend repatriations is a viable empirical approach because it is the most cost-efficient repatriation method in many cases.

ing countries on the other hand is then introduced by allowing for different coefficients with respect to the foreign subsidiaries' tax burden.

Of course, multinationals differ with respect to the geographical spread of their subsidiaries and the subsidiaries' relative size. And even for multinationals with the same organizational structure and geographic distribution, taxes paid on subsidiaries' profits in a certain country will differ strongly with respect to firm-specific characteristics as, for example, capital intensity or the possibility to cover profit shifting between different subsidiaries. For these reasons, I take the sum of foreign subsidiaries' tax payments divided by the sum of foreign subsidiaries' earnings before interest and taxes (EBIT) as the variable of interest, $\bar{t}_i^f$. This represents multinational i's imputed average effective corporate income tax rate on its foreign subsidiaries' profits, In regression 1, this variable of interest is interacted with the dummy variables E_i and C_i, which indicate if a multinational's home country exempts dividend repatriations from taxation or if it provides tax credits for taxes already paid abroad. In the latter case E_i takes the value zero and C_i takes the value one and vice versa in the former case.

Calculating the imputed tax rate $\bar{t}_i^f$ becomes infeasible if the numerator of the tax rate is negative, or the denominator of the tax rate is non-positive, or if the implied tax rate is above 100 percent. In these cases, I set $\bar{t}_i^f$ to zero and introduce three dummy variables to distinguish the cause of the problem. The variable $Ntax_i$ takes the value one if the sum of the foreign subsidiaries' tax payments is negative. The variable $Nebit_i$ takes the value one if the sum of the foreign subsidiaries' earnings before interest and taxes is negative. The variable $Xrate_i$ equals one if the implied tax rate is above 100 percent.

According to the previous section, the effect of the variable $\bar{t}_i^f$ on the likelihood to relocate the headquarter should be nonlinear. More specifically, the effect should be weaker or even disappear for multinationals headquartered in countries with corporate income tax rates that are relatively low in comparison to the subsidiaries' tax rates. The dummy variable CL_i indicates if multinational i is headquartered in a country that provides foreign tax credits as a tax relief for dividend repatriations and whose statutory corporate income tax rate t^h is lower than the average effective tax rate of its foreign subsidiaries, $\bar{t}_i^f$. These multinationals

are in an excess tax credit position and have to pay no further taxes in the home country when repatriating dividends, certainly if the home country allows averaging of dividend income streams across subsidiaries.[12] The complementary dummy variable CH_i equals one if multinational i is headquartered in a country that provides foreign tax credits as a tax relief for dividend repatriations, but whose statutory corporate income tax rate t^h is higher than the average effective tax rate of its foreign subsidiaries, $\bar{t}_i^f$. The statutory tax rate is the appropriate home tax rate because tax authorities apply this rate for determining the tax burden with respect to dividend repatriations.[13] To find the difference in effect, the variable of interest, $\bar{t}_i^f$, is interacted with the dummy variables CH_i, CL_i, and E_i in regression 3. It should be noted that two multinationals from the same home country may be categorized differently due to differences in their subsidiaries' average effective tax rate.

In order to quantify the effect of double taxation on the likelihood to relocate headquarters, I construct a measure of double taxation:

$$Dtax_i = \begin{cases} 0 & \text{if} \quad E_i = 1 \quad \text{and} \quad C_i = 0 \\ \max[t^h - \bar{t}_i^f, 0] & \text{if} \quad E_i = 0 \quad \text{and} \quad C_i = 1 \end{cases} \tag{2}$$

The measure is necessarily non-negative because excess tax credits are not paid out to the multinationals.

Furthermore, all specifications include the usual control variables. $Size_i$ is the logarithm of the multinational's total assets and controls for firm size. In the study by Desai and Hines (2002) firm size had a positive effect on the likelihood to relocate headquarters. $Leverage_i$ is the ratio of long term debt to total assets. In Desai and Hines' study, high leverage had a positive effect on relocations which they attributed to U.S. multinationals having to allocate their interest costs partly against foreign source profits. Finally, EoA_i represents earnings

[12] The basket system that the U.S. had been using until recently left dividends from low tax subsidiaries subject to double tax even if dividends from high tax subsidiaries were repatriated at the same time.

[13] Different rates may apply if the home country introduces tax vacations like the American Jobs Creation Act 2004 in the U.S. which provided lower tax rates until the end of 2005 for dividend repatriations that were earmarked for U.S. located investment. The consequent six-fold increase in dividend repatriations by U.S. multinationals from 34 billion U.S. dollars in 2004 to 217 billion U.S. dollars in 2005 shows that worldwide taxation does represent a real burden to U.S. multinationals.

over total assets and controls for a multinational's profitability. Including this variable ensures that the imputed tax rates do not accidently proxy for profitability as profitable firms tend to exhibit higher imputed tax rates. Table 5 contains the summary statistics for the whole sample, Table 6 splits the summary statistics with respect to relocating and non-relocating multinationals. The description of the variables and data sources can be found in Table 7.

7 Empirical results

Regression (1) in Table 8 shows that foreign subsidiaries subject to low taxes increase the likelihood of headquarter relocation for multinationals from countries that provide foreign tax credit relief for double taxation of dividend repatriations. The coefficient with respect to the average effective foreign tax rate ($C_i \times \bar{t}_i^f$) has a value of -0.49 significant at the one percent level. That corresponds to a marginal effect of -0.08 such that a one percentage point decrease in effective foreign subsidiary tax rates increases the likelihood of headquarter relocation by 0.08 percentage points.[14] Given that the average chance for relocating headquarters within a decade is about 6 percent, this is an economically significant effect. For multinationals headquartered in countries exempting dividend repatriations from taxation ($E_i \times \bar{t}_i^f$), the coefficient is insignificant and has the opposite sign. The three dummy variables that signal an infeasible effective tax rate and the other control variables are insignificant.

Regression (2) does not distinguish between credit and exemption countries. As expected, the coefficient for the foreign subsidiaries' average effective tax $\bar{t}_i^f$ is then insignificant. Regression (3) further distinguishes between multinationals headquartered in tax credit providing countries that have relatively low and relatively high foreign subsidiaries' effective average tax rates $\bar{t}_i^f$ relative to their home country tax rate t^h. The coefficient for multinationals from credit countries with lower foreign subsidiaries' average effective tax rates ($CH_i \times \bar{t}_i^f$) is -1.44 and significant at the one percent level. The implied marginal effect is -0.23, so a one percent decrease in the foreign subsidiaries average effective tax rate increases the likeli-

[14] The regression model is non-linear, so marginal effects vary across observations. I report the marginal effect at the sample average of the control variables.

hood of headquarter relocation by 0.23 percentage points. For the multinationals with higher foreign subsidiaries' tax rates ($CL_i \times \bar{t}_i^f$), the effect is much weaker and insignificant. For multinationals from countries exempting dividend repatriations from taxation ($E_i \times \bar{t}_i^f$), the sign of the coefficient is still the opposite and insignificant.

Regression (4) includes instead the direct measure of potential double taxation, $Dtax_i$. The corresponding coefficient is -1.14 and significant at the one percent level. The implied marginal effect is -0.19, so a one percentage point decrease in the foreign subsidiaries average effective tax rate increases the likelihood of a headquarter relocation by 0.19 percentage points if the home country tax rate is higher than the foreign subsidiaries' average tax rate.

8 Conclusion

Within a decade, six percent of multinationals relocate their headquarter to another country. With such a turnover, countries have an incentive to present themselves as attractive headquarter locations given that hosting headquarters has certain positive externalities like an increased demand for skilled labor or a larger tax base. Imposing double taxation on repatriated profits, however, makes a country less attractive as a headquarter location. The empirical results in this paper show that multinationals residing in countries that relieve double taxation on dividend repatriations by foreign tax credits are more likely to relocate their headquarter to the extent that they derive profits from lowly taxed foreign subsidiaries. A one percentage point decrease in foreign effective tax rates increases the likelihood of relocation by 0.19 percentage points if the average foreign effective tax rate is lower than the home tax rate to begin with. For example, the U.S. federal corporate income tax rate has been at 35 percent since 1986, whereas other countries have reduced their tax rates considerably in the meantime.[15] Supposing that the tax burden of a U.S. multinational's foreign subsidiaries has decreased by 10 percentage points implies that the likelihood of the multinational relocating its headquarter abroad has increased by 1.9 percentage points. Compared to an average like-

[15]The Nordic countries, the Netherlands, the U.K. and Ireland have all decreased their statutory corporate income tax rates to less than 30 percent or even down to 12 percent for the Irish rate. Furthermore, effective tax rates tend to be even lower than statutory rates.

lihood of 6 percent, that is an increase by nearly one third. The headquarter relocation may not come about in the obvious form of a corporate inversion, which leaves the tax incentive very visible to the outsider because effectively only the multinational's headquarter location changes. Instead, the relocation may come about in connection with an international merger or acquisition. Although international M&As may be driven mainly by other determinants than taxes, the tax incentives of double taxation work at the margin: They inhibit some acquisitions which might have gone through otherwise and vice versa.

The policy implication is clear: more and more countries will move to an exemption system in international taxation or, alternatively, they lower their corporate tax rates to such an extent that multinationals are always in an excess tax credit situation which has a similar effect to exempting dividend repatriations. In that respect, it is not surprising that the U.K. is pondering to exempt foreign dividends from taxation altogether and that the U.S. has repeatedly initiated tax vacations for dividend repatriations like the American Jobs Creation Act 2004, for example. Furthermore, the U.S. has recently abolished its "basket system" for providing foreign tax credits. In essence, that means that U.S. multinationals can now average dividend streams from several high and low tax countries to reduce their excess tax credits. Probably, these are only the first steps towards completely exempting foreign dividends from taxation. The President's Advisory Panel on Federal Tax Reform (2005) has already put the proposals on the table.

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Table 1: Multinationals and headquarter relocations

Country	Firms	Inde-pendent firms	Multi-nationals	Head-quarter relocations	Firms bought by foreign entities
	(1)	(2)	(3)	(4)	(5)
Australia	2374	1251	76	7	62
Austria	3305	593	52	2	45
Belgium	30433	4483	294	21	279
Bermuda	657	387	63	6	47
Brazil	778	114	6	2	50
Canada	1630	866	100	10	63
Chile	481	88	2	1	19
Cyprus	184	18	3	1	6
Czech Republic	8176	312	3	4	164
Denmark	22729	6309	213	18	208
Estonia	1651	255	6	1	63
Finland	8283	933	99	9	140
France	90783	11427	367	24	698
Germany	25396	4773	322	30	326
Hong Kong	346	172	26	2	17
India	5140	588	47	5	54
Ireland	16505	3577	84	10	127
Israel	184	113	28	2	11
Italy	121006	9390	300	16	306
Japan	95379	3073	446	3	27
Lithuania	1243	363	2	2	45
Luxembourg	1271	171	21	2	25
Netherlands	52007	1299	290	30	331
Norway	18778	5193	94	17	181
Poland	10724	1469	10	1	190
Russia	36686	14669	10	1	137
Singapore	2594	609	37	1	31
South Africa	336	146	27	2	16
Spain	92611	17729	197	10	342
Sweden	21975	4834	413	20	297
Switzerland	1607	449	117	11	26
United Kingdom	139132	31974	508	43	1438
United States	21023	5506	1158	33	156
Total	835407	133133	5421	347	5927

Notes: The first column reports the total number registered in the ORBIS database in 2005. The second column reports the number of independent firms which are mainly owned by individuals. The third column reports the number of independent multinationals (firms that have at least one foreign subsidiary). The fourth column reports the number of multinationals whose headquarter relocated to another country as it was acquired by a foreign entity between 1997 and 2007, where the multinational was registered in the ZEPHYR database as well as in the ORBIS database. The fifth column reports all firms which were acquired by a foreign entity between 1997 and 2007 and which were registered in the ZEPHYR database as well as in the ORBIS database.

Table 2: Target and acquiring firms in Zephyr

Country	Target firms	Acquiring firms
	(1)	(2)
Australia	906	720
Austria	449	770
Belgium	998	1079
Bermuda	144	440
Brazil	530	82
Canada	1628	2354
Chile	213	44
Cyprus	55	138
Czech Republic	550	67
Denmark	666	881
Estonia	222	79
Finland	513	830
France	2574	2620
Germany	2991	2753
Hong Kong	435	340
India	456	368
Ireland	495	694
Israel	198	242
Italy	1142	907
Japan	268	466
Lithuania	203	44
Luxembourg	142	281
Netherlands	1431	2171
Norway	587	612
Poland	704	91
Russia	500	353
Singapore	310	430
South Africa	337	228
Spain	1106	912
Sweden	1092	1426
Switzerland	935	1195
United Kingdom	4337	5627
United States	5724	8193
Total	32841	37437

Notes: The first column reports the number of target firms per country taken over by a foreign firm in a cross-border M&A transaction between 1997 and 2007. The second column reports the number of acquiring firms per country that took over a foreign firm between 1997 and 2007. Source: Zephyr database.

Table 3: Cross-country headquarter relocations

Relocating from	Code	Relocating to AU	AT	BE	CA	DK	FI	FR	DE	IE	IT	JP	LU	NL	NO	ES	SE	CH	GB	US	Total
Australia	AU	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	1	2	5
Austria	AT	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	2
Belgium	BE	1	0	0	0	0	0	3	3	1	0	0	0	4	0	0	0	1	2	5	20
Canada	CA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	7
Denmark	DK	0	0	0	0	0	1	1	1	0	1	0	0	1	1	0	1	0	3	6	16
Finland	FI	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	4	1	0	2	9
France	FR	0	1	0	2	0	1	0	3	0	2	0	0	4	0	2	0	1	4	3	23
Germany	DE	0	2	1	1	2	1	4	0	1	3	0	2	0	1	1	1	1	3	6	30
Ireland	IE	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	4	4	9
Italy	IT	0	0	1	0	0	0	2	3	0	0	0	0	0	0	0	0	1	4	1	12
Japan	JP	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	2
Luxembourg	LU	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Netherlands	NL	0	2	1	0	1	0	6	4	0	1	0	0	0	0	2	0	0	1	10	28
Norway	NO	0	0	1	0	2	3	1	0	0	0	1	0	1	0	0	1	0	4	1	15
Spain	ES	0	0	0	0	0	0	5	0	0	0	0	0	1	0	0	0	0	1	1	8
Sweden	SE	0	0	0	1	2	0	0	1	1	0	0	0	2	2	0	0	1	4	5	19
Switzerland	CH	0	0	0	0	0	1	2	1	0	0	0	0	0	0	0	1	0	0	2	7
United Kingdom	GB	1	0	1	0	0	0	5	5	2	1	1	0	1	0	2	1	1	0	16	37
United States	US	1	0	0	4	1	1	5	4	0	0	0	0	3	0	0	0	2	6	0	27
Total		3	5	7	8	9	8	35	26	5	12	2	2	17	5	7	9	10	37	71	278

Notes: The table reports the number of multinationals registered in the ZEPHYR as well as in the ORBIS database which relocated their headquarter from the country listed on the left to the country listed on the top between 1997 and 2007. Only the most relevant countries are mentioned in this table.

Table 4: Multinationals and international taxation

Country	Multi-nationals (1)	Headquarter relocations (2)	Double tax relief (3)	Corporate income tax (4)
Australia	76	7	Exemption	30.0
Austria	52	2	Exemption	25.0
Belgium	294	21	Exemption	34.0
Bermuda	63	6	Exemption	0.0
Brazil	6	2	Credit	34.0
Canada	100	10	Credit	34.1
Chile	2	1	Credit	17.0
Cyprus	3	1	Exemption	10.0
Czech Republic	3	4	Exemption	26.0
Denmark	213	18	Exemption	28.0
Estonia	6	1	Credit	24.0
Finland	99	9	Exemption	26.0
France	367	24	Exemption	33.8
Germany	322	30	Exemption	36.4
Hong Kong	26	2	Exemption	17.5
India	47	5	Credit	36.6
Ireland	84	10	Credit	12.5
Israel	28	2	Credit	34.0
Italy	300	16	Exemption	37.3
Japan	446	3	Credit	42.1
Lithuania	2	2	Exemption	15.0
Luxembourg	21	2	Exemption	30.4
Netherlands	290	30	Exemption	31.5
Norway	94	17	Exemption	28.0
Poland	10	1	Credit	19.0
Russia	10	1	Credit	24.0
Singapore	37	1	Exemption	20.0
South Africa	27	2	Exemption	29.0
Spain	197	10	Exemption	35.3
Sweden	413	20	Exemption	28.0
Switzerland	117	11	Exemption	30.0
United Kingdom	508	43	Credit	30.0
United States	1158	33	Credit	39.4

Notes: The first column reports the number of firms with at least one foreign subsidiary registered in the ORBIS database in 2005. The second column reports the number of multinationals whose headquarter relocates to another country as it is acquired by a foreign firm between 1997 and 2007 and which is registered in the ZEPHYR database and could be linked to a corresponding entry in the ORBIS database. The third column reports the standard method of double tax relief for dividends from significant participations in presence of a tax treaty. "Credit" indicates that the country provides an ordinary indirect tax credit. Hence, underlying foreign corporate income taxes are taken into account and excess credits are not paid out. "Exemption" indicates that the country exempts at least 95 percent of dividend repatriations from taxation.

Table 5: Summary statistics

Variable	Obs	Mean	Std. dev.	Min	Max
y_i	3608	0.059	0.236	0.000	1.000
$C_i \times \bar{t}_i^f$	3608	0.087	0.168	0.000	1.000
$E_i \times \bar{t}_i^f$	3608	0.117	0.180	0.000	1.000
$\bar{t}_i^f$	3608	0.204	0.201	0.000	1.000
$CH_i \times \bar{t}_i^f$	3608	0.046	0.105	0.000	0.602
$CL_i \times \bar{t}_i^f$	3608	0.041	0.145	0.000	1.000
$Dtax_i$	3608	0.035	0.088	0.000	0.514
$Ntax_i$	3608	0.096	0.294	0.000	1.000
$Nebit_i$	3608	0.226	0.418	0.000	1.000
$Xrate_i$	3608	0.028	0.166	0.000	1.000
$Size_i$	3608	12.903	2.318	3.714	21.695
$Leverage_i$	3608	0.119	0.162	0.000	2.792
EoA_i	3608	0.047	0.167	-5.727	1.661

Notes: For detailed variable descriptions and data sources, see Table 7.

Table 6: Relocation versus control group summary statistics

Variable	Control	Relo-cating	Total sample
$C_i \times \bar{t}_i^f$	0.09	0.05	0.09
$E_i \times \bar{t}_i^f$	0.11	0.15	0.12
$\bar{t}_i^f$	0.20	0.19	0.20
$CH_i \times \bar{t}_i^f$	0.05	0.02	0.05
$CL_i \times \bar{t}_i^f$	0.04	0.03	0.04
$Dtax_i$	0.04	0.02	0.04
$Ntax_i$	0.09	0.13	0.10
$Nebit_i$	0.23	0.21	0.23
$Xrate_i$	0.03	0.04	0.03
$Size_i$	12.91	12.81	12.90
$Leverage_i$	0.12	0.10	0.12
EoA_i	0.05	0.04	0.05
Sample size	3395	213	3608

Notes: For detailed variable descriptions and data sources, see Table 7.

Table 7: Description of variables

Variable	Description and data source
y_i	The dependent variable takes the value one if multinational i relocates its headquarter to another country between 1997 and 2007. Otherwise the value is zero. Entering the sample is conditional on availability of financial data. Source of financial data: Orbis database. Source of relocation data: Zephyr database.
$C_i \times \overline{t}_i^f$	Variable $\overline{t}_i^f$ interacted with the dummy variable C_i which takes the value one if multinational i's home country generally provides foreign tax credits for dividend repatriations. Otherwise the value is zero. Source: IBFD (2005a, 2005b, 2005c, 2005d).
$E_i \times \overline{t}_i^f$	Variable $\overline{t}_i^f$ interacted with the dummy variable E_i which takes the value one if multinational i's home country generally exempts at least 95 percent of dividend repatriations from taxation. Otherwise the value is zero. Source: IBFD (2005a, 2005b, 2005c, 2005d).
$\overline{t}_i^f$	Sum of multinational i's foreign subsidiaries' tax payments divided by the sum of its foreign subsidiaries' earnings before interest and taxes (EBIT). Value is set to zero if numerator or denominator are negative or if the implied tax rate is above 100 percent. Source: Orbis database.
$CH_i \times \overline{t}_i^f$	Variable $\overline{t}_i^f$ interacted with the dummy variable CH_i which takes the value one if multinational i's home country generally provides foreign tax credits for dividend repatriations and the home country's statutory tax rate t^h is higher than the average foreign subsidiaries' tax rate $\overline{t}_i^f$. Otherwise the value is zero. Source: IBFD (2005a, 2005b, 2005c, 2005d).
$CL_i \times \overline{t}_i^f$	Variable $\overline{t}_i^f$ interacted with the dummy variable CL_i which takes the value one if multinational i's home country generally provides foreign tax credits for dividend repatriations and the home country's statutory tax rate t^h is lower than (or equal to) the average foreign subsidiaries' tax rate $\overline{t}_i^f$. Otherwise the value is zero. Source: IBFD (2005a, 2005b, 2005c, 2005d).
$Dtax_i$	Measure for double tax burden on dividend repatriations: For multinationals from countries exempting dividend repatriations from taxation the value is zero. Otherwise it is the difference between the multinational i's home country statutory tax rate t^h and the average foreign subsidiaries' tax rate $\overline{t}_i^f$. Negative values are set to zero. Source: IBFD (2005a, 2005b, 2005c, 2005d)
$Ntax_i$	Dummy variable which takes the value one if the sum of multinational i's foreign subsidiaries' tax payments are negative. Otherwise zero. Source: Orbis database.
$Nebit_i$	Dummy variable which takes the value one if the sum of multinational i's foreign subsidiaries' earnings before interest and taxes (EBIT) are negative. Otherwise zero. Source: Orbis database.
$Xrate_i$	Dummy variable which takes the value one if the implied average effective tax rate of multinational i's foreign subsidiaries' is above 100 percent. Source: Orbis database.
$Size_i$	Logarithm of multinational i's total assets in thousands of U.S. dollar. Based on the sum of unconsolidated parent firm's and all available subsidiaries' total assets. If unconsolidated parent firm data is not available, consolidated data is used. Source: Orbis database.
$Leverage_i$	Ratio of long term debt over total assets. Based on the sum of unconsolidated parent firm's and all available subsidiaries' debt figures and total assets. If unconsolidated parent firm data is not available, consolidated data is used. Source: Orbis database.
EoA_i	Profitability measure: Ratio of earnings before interest and taxes over total assets. Based on the sum of unconsolidated parent firm's and all available subsidiaries' earning figures and total assets. If unconsolidated parent firm data is not available, consolidated data is used. Source: Orbis database.

Table 8: Estimation results

	(1) Bench-mark	(2) No split	(3) High/ low tax	(4) Double tax
$C_i \times \bar{t}_i^f$	-0.490**			
	(0.189)			
$E_i \times \bar{t}_i^f$	0.155		0.015	
	(0.167)		(0.171)	
$\bar{t}_i^f$		-0.101		
		(0.150)		
$CH_i \times \bar{t}_i^f$			-1.438**	
			(0.341)	
$CL_i \times \bar{t}_i^f$			-0.278	
			(0.193)	
$Dtax_i$				-1.144**
				(0.332)
$Ntax_i$	0.140	0.140	0.115	0.129
	(0.084)	(0.084)	(0.084)	(0.082)
$Nebit_i$	-0.085	-0.093	-0.131	-0.108
	(0.071)	(0.071)	(0.072)	(0.062)
$Xrate_i$	0.136	0.131	0.082	0.112
	(0.141)	(0.141)	(0.141)	(0.135)
$Size_i$	0.002	-0.003	0.005	-0.002
	(0.011)	(0.010)	(0.011)	(0.011)
$Leverage_i$	-0.181	-0.257	-0.181	-0.152
	(0.160)	(0.159)	(0.162)	(0.156)
EoA_i	-0.100	-0.111	-0.073	-0.152
	(0.145)	(0.144)	(0.147)	(0.143)
Intercept	-1.025**	-0.945**	-1.005**	-0.954**
	(0.142)	(0.139)	(0.143)	(0.137)
N	3608	3608	3608	3608
Log-likelihood	-798.3	-804.9	-792.0	-798.7
χ^2	21.90	8.74	34.56	21.13

Notes: The dependent variable y_i takes the value one if multinational i has relocated its headquarter to another country between 1997 and 2007. Otherwise y_i equals zero. The results are derived from a binary regression model based on an extreme value distribution and estimated by maximum likelihood. For detailed variable descriptions and data sources, see Table 7. The χ^2 statistic is related to testing for all coefficients being equal to zero. The corresponding degrees of freedom are equal to the number of regressors in the specification. Significance levels: $*$: 5%, $**$: 1%.