As Uncertain as Taxes

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Abstract

Does uncertainty about the correct interpretation of the tax law affect corporate financial decisions? To be widely applicable, tax law has to leave room for interpretation, which creates 'legal uncertainty'. Companies can use this 'legal uncertainty' for tax planning, or use debt as a relatively certain tax planning tool. I construct a measure of 'legal uncertainty' and show that this uncertainty leads to a substitution between debt-based and other tax planning strategies. I find that both financing and subsidiary location decisions are affected. The strength and direction of this effect depends on the intensity of the enforcement by the tax authority.

Keywords: Corporate Taxation, Capital Structure, Policy Uncertainty

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1 Introduction

"in this world nothing can be said to be certain, except death and taxes."

Benjamin Franklin, in a letter to Jean-Baptiste Leroy 1789

Franklin was right: corporations will always face some tax obligations over their lifetime. However, the extent of those obligations can be surprisingly uncertain. Companies face tax laws which are complex and cannot cover all possible actions of the company. This creates uncertainty about what will be an acceptable interpretation of the law according to courts. Companies can use this 'legal uncertainty' in their tax planning strategy, or choose a more conservative tax planning strategy to avoid the uncertainty.

It can be profitable for firms to use corporate policies to reduce their tax bill (tax planning). For instance the corporate inversions of the 1990s, which allowed multinational companies to avoid US taxes on foreign profits, saved companies billions (New York State Bar Association, 2002). This is not an isolated example, as total world-wide corporate tax planning benefits are estimated at over 500 billion dollars a year (Cobham and Janský, 2017), suggesting that benefits can be substantial. However, recent cases like the European Commission forcing Apple to pay 13 billion of Irish taxes suggests that the risks are substantial too (European Committee, 2016).

In this paper I investigate how 'legal uncertainty' affects capital structure through its effect on tax planning opportunities. Theory suggests that an increase in tax planning opportunities can decrease the use of debt-tax shields (DeAngelo and Masulis, 1980; Graham and Tucker, 2006). I argue that legal uncertainty increases the amount of tax planning opportunities available to the company, thereby affecting the use of debt tax shields. I show that this is indeed the case and that as a result, 'legal uncertainty' significantly affects financing and subsidiary location decisions.

Law can be seen as an incomplete contract (Hart and Moore, 1988) between the government and the companies in the country. The law cannot cover all possible corporate actions and must therefore leave room for interpretation to ensure it can be widely applied. This creates uncertainty about how to interpret and apply the law. Courts ultimately decide which interpretations of the law are acceptable and which ones are not.

Despite its practical relevance, legal uncertainty in tax law has not been widely investigated (Zangari, Caiumi, and Hemmelgarn, 2017). To the best of my knowledge, this is the first paper empirically looking at the effects of this legal uncertainty on capital structure and tax planning decisions.

The law literature has highlighted the importance of legal uncertainty (Givati, 2009; Pistor and Xu, 2002, 2003). However, due to the lack of an accurate measure for legal uncertainty, it has been challenging to empirically investigate its effect on corporate decisions, due to the lack of an accurate measure for legal uncertainty. I construct such a measure, which allows me to give substance to the notion of legal uncertainty and estimate its effect on corporate decisions.

I construct a measure for legal uncertainty based on the legal literature about complexity and legal uncertainty (Pistor and Xu, 2002, 2003; Kaplow, 1995, 1999; Dari-Mattiacci and Deffains, 2007). Based on the legal insights from these authors, I classify law articles as either limitative or suggestive. Limitative articles provide clearly defined rules, while suggestive articles set forth broadly applicable, but vague general principles. Especially these suggestive articles contribute to the incompleteness of the law, which creates the legal uncertainty. I construct a dataset mapping this structure of the tax law for ten countries over seven years, by separately classifying every article in the (corporate) income tax law for each country and year.

In addition to this legislative component I also take into account outcomes of previous court cases. Previous court cases provide information on how courts will interpret the law in future cases, resolving some of the legal uncertainty. I collect the total number of court cases ruled on by the highest court in each country and combine this judicial component with the legislative component to construct my measure for legal uncertainty. I find that a one standard deviation increase in legal uncertainty is associated with a 1.3 percentage point decrease in leverage and a 3.7 percentage point increase in the probability of establishing a first subsidiary in countries with a low corporate tax rate. Furthermore, I find evidence that multinationals shift income from high-tax countries towards low-tax countries, increasing the tax base of low-taxed subsidiaries by 40% on average. These results suggest that legal uncertainty has a significant real economic impact, meaningfully

affecting financing and subsidiary location decisions of companies.

Becker (1968); Polinsky and Shavell (1979), and Calfee and Craswell (1984) show that when legal uncertainty is introduced in a model on optimal tax auditing and sanctions companies will either under- or over-comply with the law. This suggests that my analysis should take into account the institutional framework in which companies operate. To capture this effect I construct a proxy for the audit probability and investigate how it interacts with legal uncertainty. The proxy is based on the percentage of companies audited in the prior year. I indeed find that when the probability of being audited by the tax authority is high the effect of legal uncertainty is reversed.

The proxies for legal uncertainty and the audit probability capture the roles of all three branches of government in creating, alleviating, and augmenting the effects of legal uncertainty. The executive branch enforces the law and has a strong impact on how companies respond to legal uncertainty, while the judicial branch can alleviate legal uncertainty with its rulings. Considering the sizable impact of legal uncertainty on companies the legislative branch should take into account whether the institutions of the country are equipped to efficiently enforce and interpret new legislation. Moreover, they need to ensure that these institutions and legal uncertainty do not interfere with the goals of new legislation.

To extend the analysis and to ensure robustness I perform several additional tests. I use a shock to legal uncertainty, caused by a ruling from the European Court of Justice (2006), to show that companies do indeed substitute between debt-based and other tax planning strategies. The shock led to a change to anti-tax-avoidance rules in some European countries, but not in others. Before the change, (part of the) profits from a subsidiary located in a country with a low corporate tax rate would face an additional tax in the parent country. After the shock, the application of the additional tax was no longer certain, as it had to be evaluated on a case-by-case basis. If the subsidiary served an economic purpose beyond tax planning the profits could not be additionally taxed, making it more beneficial to have a subsidiary in EU countries with a low corporate tax rate. If the subsidiary mostly served a tax avoidance purpose the additional tax would be imposed. When a subsidiary is deemed to serve a tax avoidance or economic purpose is not clearly defined, this is what increased legal uncertainty. I compare the leverage of parent

companies of low-taxed subsidiaries from affected countries (treated), to the leverage of parent companies of low-taxed subsidiaries from non-affected countries (control). Moreover, I observe that parent companies in treated countries experienced higher probability of establishing a first subsidiary in countries with a low corporate tax rate, compared to parent companies in control countries. These results confirm the results found in the main regressions.

Furthermore, I ensure that companies with the most to gain from tax planning do indeed see the biggest increase in tax planning. Similarly, those companies which likely cannot benefit from using both debt-based and other tax planning strategies at the same time show stronger substitution. To ensure the effect of the shock is due to an increase in legal uncertainty I compare companies with different types of ownership. Companies with non-diversified owners are less likely to take risks (Faccio et al., 2011) and therefore react less to the shock. Furthermore, I ensure that the effects are not driven by changes to legislation specifically targeting debt based tax planning (Panier et al., 2012; Buettner et al., 2012), by excluding companies from countries that introduced such rules. A different concern could be that companies lobby for more legal uncertainty. Based on insights from Hill et al. (2013); Neretina (2018) I exclude companies most prone to lobbying. Lastly, I make sure that endogeneous incorporation of new subsidiaries does not drive the effect on leverage or income shifting.

This paper contributes to the several strands of literature. First, the literature on taxes and capital structure has focused on the effects of tax rate changes (Graham, 2000; Heider and Ljungqvist, 2015; Huizinga et al., 2008) and the introduction of rules specifically targeting the use of debt for tax planning (Panier et al., 2012; Buettner et al., 2012). Recent papers have investigated the benefits multinationals can obtain (Huizinga et al., 2008; Brok, 2018) by using differences in tax codes across countries. Graham and Tucker (2006) show for a sample of 44 companies punished for tax-sheltering that these tax-sheltering companies have lower average debt than comparable companies. In line with this paper, I show that the capital structure is not just affected by factors that affect the benefit of debt-based tax planning, but also by the factors affecting other tax planning strategies. My contribution compared to Graham and Tucker (2006) is that I show that

legal uncertainty is an important determinant of this substitution between tax planning strategies. Not only does this increase our understanding of this substitution, but it also shows how legal uncertainty affects corporate decisions and provides relevant policy implications.

Secondly, the literature on uncertainty in law has focused on the future of legislation and how it affects optimal corporate decisions (Baker et al., 2016; Gulen and Ion, 2016). I argue that even when we know what the law will look like in the future, today's legal uncertainty still affects corporate decisions through its effect on tax planning strategies. This effect is not just different in its timing, but also in its nature. Where uncertainty about changes to future law is resolved when new legislation is passed, this is not necessarily the case with legal uncertainty. The legal literature has extensively debated legal uncertainty and its importance (Givati, 2009; Pistor and Xu, 2002; d'Amato, 1983). My main contribution to this literature is that by creating my proxy for legal uncertainty I can actually estimate the effect and show its economic importance.

Lastly, I also contribute to the literature on the determinants of capital structure (Rajan and Zingales, 1995). While the importance of taxes for capital structure has been known since Modigliani and Miller (1963) and Kraus and Litzenberger (1973), research on the impact of non-debt based tax planning strategies has only recently started to gain traction (Desai and Dharmapala, 2009; Graham et al., 2014; Dyreng et al., 2008, 2010). This paper shows the importance of further investigating the determinants of tax planning and its effects on capital structure and other corporate financial decisions.

The structure of this paper is as follows: I describe the institutions involved in the tax process in section 2.1. Section 2.2 discusses measurement of the relevant parameters. I formalize my hypotheses in section 2.3. Section 3 describes the estimation strategy. Section 4 describes the data. Section 5 presents the results and Section 6 shows the results for the shock. In section 7 robustness tests are presented. Section 8 concludes.

2 Framework

2.1 Institutional framework

In this section I describe how the taxation process works and which institutions are involved in this process. Details differ from country to country, but the general concept is similar.

The legislative branch writes tax laws. A law will set forth the tax rate and how to calculate the profit for tax purposes (the taxable base). The law cannot cover all possible contingencies that occur in everyday business and it can be thought of as an incomplete contract as described in Hart and Moore (1988). This incompleteness can give rise to legal uncertainty for the companies.

An increase in legal uncertainty means that there are more situations in which it is not certain what the legal results of an action will be (Pistor and Xu, 2002, 2003). This can be the result of either a change to the business environment the law is being applied to, or of the understanding of the law itself (d'Amato, 1983). I focus on the latter.

Companies file a tax return each year, but as a result of the incompleteness of law it can be ex-ante unclear what the tax treatment of some actions taken during the year will be. Moreover, companies can structure their actions in a way that will influence the tax treatment ('tax planning'). For instance, a company sets up a foreign subsidiary in a low tax country, which sells the right to use intellectual property to the rest of the company. This results in a tax deductible cost for the parent company and a lower-taxed revenue for the new subsidiary. Such structuring must occur before the actual moment of taxation.[1]

The tax authority (executive branch) verifies the company's tax filing and collects the taxes. Due to the large amount of tax filings they can only audit a fraction of the companies that file each year. A company does not ex-ante know whether it will be audited. If an audit shows that a tax planning strategy was not adhering to the law, fines can be charged. In most countries fines are only imposed when a strategy is not defensible. Defensibility suggests a strategy uses an interpretation of the law which is ex-ante reasonable, based on

[1] Tax planning is not necessarily seen as something negative in this paper. In many cases tax planning is both within the spirit and letter of the law. However, Desai and Dharmapala (2009) show that some tax planning investments are not value enhancing.

the law and previous court cases. Tax authorities or a court ex-post disagreeing with the strategy does not necessarily imply it was ex-ante unreasonable.

The parties can go to court (judicial branch) when they disagree about audit outcomes. After a court ruling the tax is collected or returned and in most countries interest is added. Parties can appeal the ruling at a higher court. Both the lowest and the appeal courts deal with the interpretation of the facts and how to apply the law to these facts. For instance, when evaluating in which country a company has to pay tax, the court establishes where the company is incorporated and where the company's management is or where it performs its main activities (facts). Next it rules on how the law should be interpreted and applied to these facts (interpretation).

Even if the tax planning strategy of a company follows the 'letter of the law' the court can rule that an action lacks economic substance and serves only a tax avoidance purpose, thereby violating the 'spirit of the law'. This would result in the company losing the case, even though it technically complied with the law as written. A famous example are so called letterbox companies. A company legally incorporates in a low tax country, but its main activity in that country is the use of a letterbox in that country. This raises the question: when is a company located in a country? What matters, being legally incorporated (letter of the law[2]) or having substantial economic activities in the country (spirit of the law)?[3]

Note that the legal literature distinguishes three types of so called non-compliant actions. Tax evasion, which is an-after-the fact action in which a company hides (part of) the information relevant to determine the tax base. Tax planning, which is the before-the-fact structuring of actions to minimize taxes paid within the limits of the law. Tax avoidance, which is tax planning which has been ruled to violate the spirit of the law, or lacks economic substance (Öner, 2018). So any defensible use of the law is a tax planning strategy until the legal uncertainty about the strategy is resolved. Once resolved it will become tax avoidance if ruled unfavorably, or remain tax planning if ruled favorably. Since

[2]Most countries by now have updated their laws to move away from this being the legal definition.

[3]Countering tax planning which uses letterbox companies has proven difficult in reality (Cremers, 2017). Several countries have already included economic activity as part of the letter of the law. However, the meaning of economic activity is still uncertain in many cases.

I look at the effect of legal uncertainty, I will refer to the strategies of the company as tax planning strategies throughout this paper. The company is uncertain about whether its strategy is a tax avoidance or a tax planning strategy. Tax evasion is ignored in this paper as tax evasion deals with a company which specifically hides relevant information from authorities. This makes it impossible to detect without performing an audit, a luxury that is not afforded to the econometrician. Due to the possibility of jail sentences and high fines the incentive structure of tax evasion is different from that of tax planning.

As a last resort in conflicts, parties can appeal at the highest court of the country. Generally, the highest court can only rule on the interpretation of the law and not on the interpretation of the facts of a case. For instance, the court can rule on whether economic substance requires a foreign subsidiary to have local management, but does not investigate who was in fact managing the subsidiary. Such a court is typically referred to as a court of cassation. It will rule on the interpretation of the law, which will be applied by the lower court in this case and to future cases with a similar setting. So even in civil law countries case law carries significant weight.

2.2 Measurement of legal uncertainty

As discussed in section 2.1 legal uncertainty arises as a result of possible different interpretations of law. The degree of uncertainty can derive from two sources. Firstly, the company can use more uncertain tax planning strategies.[4] In this case the uncertainty is created by the behavior of the company and cannot be considered exogeneous to corporate policies, as the company chooses to take these actions. Secondly, the legal uncertainty is inherent in the law itself. In this case the legal uncertainty is created by the government. This creates problems and opportunities for companies as they cannot avoid this second type of uncertainty. However, they can use it to their advantage.

My measure of legal uncertainty focuses on this legal uncertainty inherent in the law. This can be measured by looking at the structure of the law (Pistor and Xu, 2002, 2003; Dari-Mattiacci and Deffains, 2007). The literature on the structure of law suggests that law articles can be classified as suggestive or limitative.

[4]See for instance: Frank, Lynch, and Rego (2009) and Graham (2006)

Suggestive articles tend to be more dynamic and broadly usable, but lack a clear definition. These articles most represent the incomplete contracts as in Hart and Moore (1988) and create legal uncertainty as a result of using undefined general principles. On the other hand, imitative articles state clearly defined rules, creating little legal uncertainty.

An example of a limitative article is Article 22 of the Dutch corporate tax code (Wet op de Vennootschapsbelasting 1969, 2005)[5] states: *The tax due is 31.5% of the taxable base, or the Dutch taxable base, with the caveat that the tax due is 27% on the first 22 689 euros.*

Since the taxable base is defined in the rest of the law, this article is limitative. It defines the clear rule of what the tax rate is. The articles defining how to calculate the taxable base are all individually analyzed and classified as suggestive where necessary. For instance article 3.20 of the Dutch income tax code (Wet op de inkomstenbelasting 2001, 2005) defines profit as: *The profit attributable to a year has to be determined according to good merchant practice, with a consistent application which is independent of the expected outcome. The consistent application can only be changed if good merchant practice justifies it.*

Without further explanation it is unclear what good merchant practice actually means. The interpretation of the suggestive rules has to become clear from case law. Years of case law has taught us that it is related, but not equivalent, to accounting practices.

This highlights the importance of rulings made by the highest courts, which will be used by lower courts to interpret the law in future court cases. Legal uncertainty can be reduced by looking at previous court cases. Both the tax authority and the company can call on this case law as a justification for their interpretation of the law. A suggestive rule which has been discussed in case law is not as uncertain as one without any case law.

I limit the case law I use to the cases from the courts of cassation of each country. This ensures that the cases taken into account only deal with uncertainty about the interpretation of the law, as the court of cassation generally only rules on the interpretation of the law. It also ensures that my measure does not capture the general propensity to

[5]Dutch laws are referred to by the year they became active. Subsequent changes to the law don't change this designation. Hence the corporate income tax law is called Corporate Income Tax Law 1969. The version I am citing from here is the text as last updated on 1-1-2005.

litigate in a country.

I define legal uncertainty using a legislative and judicial component. The legislative component is the ratio of suggestive articles to total articles in a given country and year. The judicial component is the summed amount of case law rulings in a country from the start of my sample up to the end of the year. There are hundreds of case law rulings each year. To ensure this part of the measure does not completely overpower the suggestiveness ratio (which is defined on the [0,1] interval) I scale the judicial component by its mean across countries and years.

$$\text{Legal uncertainty}_{ct} = \frac{\text{Suggestive articles}_{ct}}{\text{Total articles}_{ct}} - \frac{\sum_1^t \text{Case law rulings}_{ct}}{(C*T)^{-1} * \sum_1^T \sum_1^C \text{Case law rulings}_{ct}} \tag{1}$$

Where c indicates the country and t the year. Their capitalized versions indicate the total number of countries and years respectively.

The more suggestive articles there are in the law, the more uncertain the law is and the higher my measure for legal uncertainty is. Similarly, case law rulings decrease legal uncertainty and my measure. Section 4.2 describes the quantitative details of the legal uncertainty measure.

Information about the size, number of articles and structure of the law are obtained by reading the laws of the countries involved. This means that for each country in the sample I obtain the tax law as it existed in 2005. I use the corporate tax code and where necessary the general income tax code. In cases where the 2005 law text is not available, I start from the 2017 text. I then backwards engineer the changes to the law by going through the bills that passed parliament and contain changes to the tax code. I verify that I capture all changes by looking at the complete text of the tax law in earlier years, when available.

When an article refers to other laws I ensure that these other laws do not give a limitative explanation of the article. Similarly, I track down decrees issued by the government when these are explicitly mentioned in the law and verify that these don't clarify suggestive phrasing.

Law texts were obtained from the International Bureau for Fiscal Documentation (IBFD) in Amsterdam or directly downloaded from government websites. For several countries the law texts are only available in hard-copy or the original language. Furthermore, many articles have explicit exceptions, refer to other articles, or only work on request. Therefore, a word recognition program will not be able to (accurately) process all the data. Instead, I have to read every article and apply the rules I describe in Appendix A to classify the articles as suggestive or limitative. After completing this for each country, I re-read all laws to ensure consistent application of the classification rules.

The most common suggestive phrases refer to general principles, a tax avoidance motive, or an undefined 'real' or 'economic' value of non-traded assets. This is in line with survey evidence from Hoppe et al. (2017), who show that the setting of transfer prices, and anti-avoidance rules cause the most problems with interpretation.

Information on the rulings by courts of cassation are obtained from the websites of the courts of cassation. These courts publish annual reports on their caseload. To ensure the numbers are comparable across countries I also download the full texts of all published rulings of these courts when available. These are processed using a word search program to find which ones deal with corporate income taxes. This is then compared with the total amount of cases, to ensure that the ratio of published cases about taxes to published cases about other topics is similar across years. I use this to adjust the information from published reports, when the level of aggregation differs from other countries. For instance, some countries aggregate the amount of court cases by type of tax, others only report total administrative cases.

To validate my measure I look at how often the court of cassation overturns cases of lower courts. This indicates that even courts don't agree on the legal interpretation. The correlation between my metric and this ex-post measure is 87%. Unfortunately the ex-post measure is not available for most countries and can therefore not be used as a measure for legal uncertainty.

I do not investigate uncertainty about what the law will look like in the future, as this is a topic investigated in Gulen and Ion (2016). However, it is important to rule out that my measure captures the same or a related effect. Gulen and Ion (2016) use a

measure from Baker et al. (2016), which has also been constructed for several European countries. The Baker et al. (2016) measure is based on political and macro uncertainty using newspaper mentions of uncertainty. I correlate it with my measure and find the correlation between my measure and this macro uncertainty is less than 5%.

2.3 Theoretical framework

To show how legal uncertainty can affect leverage I look at the comparative statics of a simplified theoretical framework in the tradition of DeAngelo and Masulis (1980). However, whereas these authors look at non-debt tax shields in general I will adjust the framework towards tax planning and legal uncertainty. Since I look at the actions from an ex-ante perspective any action is a tax planning strategy, but there is a risk that a court rules it to be a tax avoidance strategy. This is the legal uncertainty the company faces.

DeAngelo and Masulis (1980) distinguish companies with different non-debt tax shields. Instead company's in my framework choose their use of (W_c), which faces no legal uncertainty, and $(W_u(u))$, which does face legal uncertainty. In reality there could be a continuum of strategies with various degrees of legal uncertainty for the company to choose between. The strategy used here can be thought of as the optimum portfolio of uncertain tax planning strategies for the company.

The company determines its tax planning strategy at the beginning of the fiscal year. At this time it does not know its profit for the year, but it has a belief about the possible states of the world. There is no benefit of tax planning when taxable profit is negative, as tax losses are not credited. In reality losses can be carried over to future years, this is costly due to discounting. The company optimizes the following objective function:

$$\begin{aligned} &\max_{\alpha,\beta} \quad \mathbb{E}\,\pi_{aftertax} = \mathbb{E}\,\pi_{operating} - (\mathbb{E}\,\pi_{operating} - \mathbb{E}(\alpha W_c + \beta W_u(u))) * \tau \\ &\text{s.t. } \mathbb{E}\,\pi_{operating} - \mathbb{E}(\alpha W_c + \beta W_u(u)) \geq 0 \\ &\alpha \geq 0 \\ &\beta \geq 0 \end{aligned} \tag{2}$$

Since it is not clear what the profit of the company will be at the start of the year,

even a profitable company expects not to benefit from using both tax planning strategies in some states of the world. In low profit states of the world profit can be too low to deduct the full tax planning benefit.

The company will use β of the uncertain strategy and α of the certain strategy. Since there is no benefit to tax planning in some states, but always a cost to using tax planning, an increase in β should ceteris paribus lead to a decrease in α.

Hypothesis 1: A relative increase in the use of the uncertain tax planning strategy is associated with a decrease in the use of the certain tax planning strategy.

The consequences of the certain tax planning strategy are known.[6] Equation 3 shows the payoff of the certain strategy. There is a benefit consisting of a factor x which is tax deductible and a cost c which is a function of x. This can be thought of in terms of the trade-off theory as set forth by Kraus and Litzenberger (1973), where x is the debt and c is the bankruptcy cost function, which is increasing in debt. The expected bankruptcy cost directly affects the expected operating profit. Since Equation 2 multiplies the payoffs of the tax planning strategies with the tax rate I have to multiply this real cost with $\frac{1-\tau}{\tau}$ to compensate for the direct effect on profit. Note that in states of the world where profit minus tax planning is below zero the benefit (x) will be zero, while the cost remains. The payoff of the certain strategy is given by:

$$W_c = x - c(x) * \frac{1-\tau}{\tau} \tag{3}$$

The uncertain tax planning strategy faces some uncertainty about whether or not it will hold up in court. The payoff of the uncertain strategy can be seen in Equation 4. There are three different possible outcomes. Firstly, the company might not be audited and receives the full benefit of the tax planning strategy.

Secondly, the company is audited (with probability P_a), but wins the case. In this case the company will face some opportunity cost R. For instance, Hanlon et al. (2017)

[6] While in reality such a tax planning strategy is unlikely to exist this case is used for tractability and can be seen as the most certain strategy possible.

find that companies with larger unrecognized tax benefits hold more cash. Holding cash will carry an opportunity cost. Another example of opportunity cost is that the company might have to pay the disputed tax to the tax authorities before legal proceedings are started. This capital cannot be invested until it is returned after a positive ruling by the court.

Thirdly, the company is audited and loses the case. In this case it has to repay the benefit, pay a sanction r, and bear the opportunity cost R.

In all cases the company has to pay a cost $z(u)$ of setting up and searching for the tax planning strategy and creating the necessary compliance documentation. For example, the costs of setting up a subsidiary in a low tax country. The benefit is not obtained if the profit is negative, but the cost remains.

An increase in legal uncertainty means there are more situations in which it is uncertain what the correct interpretation of the law is. When such an increase occurs, the most beneficial strategy for the company can stay the same or be more beneficial. The benefit is therefore weakly increasing in legal uncertainty. However, since sanctions are proportional to the benefit, this more beneficial strategy is also going to attract higher sanctions. In states of the world in which profit exceeds total tax planning benefits the payoff of the uncertain strategy is:

$$W_u(u) = \underbrace{y(u)}_{\text{Benefit}} - P_a[\underbrace{P_e y(u)(\overbrace{1+r}^{\text{Penalty}} + (R))}_{\text{Cost when losing}} + \underbrace{(1-P_e)y(u)(R)}_{\text{Cost when winning}}] - z(u)\frac{1-\tau}{\tau} \tag{4}$$

The probability of losing in court is captured by P_e. The costs $z(u)$ can either be thought of as search and compliance cost, or as costs in the form of reduced accounting profits (Graham et al., 2014). For the company to use the uncertain strategy the benefits have to exceed these costs.[7]

Again, $\frac{1-\tau}{\tau}$ captures the fact that these are real costs to the company that affect $\pi_{operating}$. These costs press on operating profit, but are also tax deductible. Erickson et al. (2004) finds that managers of public companies have incentives to pay for higher

[7]In reality these costs can include a substantial fixed cost and only a limited variable cost. For instance setting up a foreign subsidiary can be costly, once it is running the costs of maintaining it will be limited.

accounting earnings, as these determine their income. It is unclear if this holds for smaller or private companies, but $z(u)$) can include these cost as well.

The solution to the optimization problem will be an extreme solution. Whenever W_c is bigger than $W_u(u)$ the company takes the certain strategy. If $W_u(u)$ is bigger than W_c it takes the uncertain strategy. The amount of the strategy used depends on the constraint and the amount of states of the world in which taxable profit drops below zero by using the strategies (DeAngelo and Masulis, 1980). While this may be an oversimplification of the actual decision process the comparative statics are of interest.

W_c is not directly affected by u, it is only affected through hypothesis 1. Any factor increasing the payoff of $W_u(u)$, negatively affects the use of the certain strategy. Therefore, I discuss the comparative statics for the most important parameters in Equation 4 below.

Firstly, there is the effect of a change in the probability of being audited. Since an audit is costly to the company, an increase in this probability will lead to a decrease in the payoff of the uncertain strategy.

$$P_a \uparrow \quad \Rightarrow \quad W_u(u) \downarrow \tag{5}$$

Hypothesis 2: A higher probability of an audit leads to higher leverage.

Next I turn to legal uncertainty. Looking at Equation 4 we can see that u has an ambiguous effect on the payoff function. While the benefit in case of no audit increases, the cost in case of an audit also increases.[8] The intuitive interpretation is that for low probabilities of an audit the legal uncertainty increases the payoff of the uncertain strategy. However, if audit probabilities are high enough the opposite occurs, due to the increase in the probability of receiving a sanction which is proportional to the benefit. Similarly, if the marginal costs of the uncertain strategy are low compared to the marginal benefits

[8]Note that Slemrod and Kopczuk (2002) and Kopczuk (2005) predict that the legal environment a company operates in can change the effect of tax rate changes on financial policy. I argue that legal uncertainty can create such an effect as well.

I am more likely to use the uncertain strategy.

$$\begin{aligned} u\uparrow \quad &\Rightarrow \quad W_u(u)\uparrow \quad \text{if } 1-P_aP_e(1+r)-P_aR > \frac{z'(u)}{y'(u)} \\ u\uparrow \quad &\Rightarrow \quad W_u(u)\downarrow \quad \text{if } 1-P_aP_e(1+r)-P_aR < \frac{z'(u)}{y'(u)} \end{aligned} \tag{6}$$

Hypothesis 3: Higher legal uncertainty leads to lower leverage.

Hypothesis 4: Higher audit probabilities reduce or possibly reverse the effect of legal uncertainty on leverage.

3 Methodology and measurement

3.1 Identification

In this section I describe my identification strategy. I discuss how I identify the effect of legal uncertainty and audit probabilities in a country, before discussing several hurdles and how I overcome them.

3.1.1 Legal uncertainty and audit probability

I construct a proxy for legal uncertainty (u) and audit probability (P_a) in a country. Hypothesis 4 suggests that the interaction of the two is relevant, as higher audit probabilities increase the probability a company will suffer a sanction, which is proportional to the benefit of the tax planning strategy.

Hypotheses 2-4 suggest the following regression equation:

$$\begin{aligned} Leverage_{ict} = \beta_1 * \text{Legal uncertainty}_{ct} + \beta_2 * \text{Audit probability}_{ct} + \beta_3 * Interaction_{ct} \\ +\beta_4 * \mathbf{X}_{ict} + \beta_5 * \mathbf{Z}_{ct} + \gamma_{ic} + \zeta_t + \epsilon_{ict} \end{aligned} \tag{7}$$

Where c indicates the country, t time and i the multinational. β_1 captures the effect predicted in hypothesis 3 and β_2 captures the effect predicted in hypothesis 2. Interaction is

the interaction term between legal uncertainty and the audit probability and its coefficient β_3 captures the effect predicted in hypothesis 4. **X** is a vector of company level control variables which includes tangibility, profitability, sales and depreciation. These are based on findings in Rajan and Zingales (1995) and are standard in the literature. **Z** is a vector of country level controls, which includes corporate tax rates, GDP growth and interest rates.

3.1.2 Endogeneity

A possible problem in identification is the fact that the use of tax planning strategies is a choice of the company. Some companies may elect to use uncertain strategies, while others elect to use more conservative strategies. This means that the company chooses its tax planning strategy and as a result the amount of uncertainty it faces, thereby creating an endogeneity problem. I account for this by creating a measure that only captures the uncertainty inherent in the law. This inherent legal uncertainty is exogeneously imposed on the company by the government.

Measuring legal uncertainty at the country level also has downsides. As not all companies are necessarily equally affected, due to some companies being in a better position to use legal uncertainty. This makes the measure noisier, making it less likely to find a result. Furthermore, by measuring at the country-level it is harder to rule out alternative explanations, as the measure does not change across companies in the same country and year. This means that it could be correlated with other country level variables.

This is why I use multinational companies for my research. For multinational companies I can identify actions which indicate more uncertain tax planning strategies. I can test for the prevalence of these strategies. Any alternative explanation for the change in leverage will also have to explain the increase in the use of more uncertain tax planning.

I include a multinational-country fixed effect to control for time invariant effects like a company's aversion to uncertainty in tax planning. This implicitly assumes a multinational's preference for uncertain tax planning is non-time-varying. I also include company level fundamentals as controls as they may affect tax planning choices.

A last issue is that of reverse causality. Companies could lobby for more legal uncer-

tainty or enter in countries which have higher legal uncertainty to make use of the gaps in legislation this might create. Similarly, the legislator may create legal uncertainty to make use of the risk aversion of companies to keep them from using gaps. For this to be a problem, companies on average have to act in a way that would cause a response by the government in their favor. The measure for legal uncertainty I define in Section 2.2 is based on both a legislative and judicial component. This means that companies will have to capture both branches of government to create this reverse effect. Or the judicial branch needs to take an active interest in creating legal uncertainty, contrary to their mandate. In Section 7 I explicitly test for lobbying using insights from Hill et al. (2013). I also test for endogeneous entry, by excluding any companies that incorporated during the sample period.

4 Data and summary statistics

4.1 Data

I use accounting and ownership information from Bureau van Dijk's Orbis database. I use a different sample for the quasi-natural experiment and for the effect of my legal uncertainty measure. This is necessary as the availability of data to construct the legal uncertainty measure and audit probability is limited. The two different methodologies also require a different set up to make it possible to observe behavior indicative of tax planning.

For the quasi-natural experiment the alternative tax planning strategy is known and can be observed by looking at a parent company and its direct subsidiaries. For the legal uncertainty measure the alternative tax planning strategy is not well defined, looking at the whole structure of the multinational makes it easier to detect activities indicative of tax planning. The details of the different data sets are discussed in their respective subsections below.

I obtain corporate tax rate data from the Ernst & Young's "World Wide Corporate Tax Guides". Ernst & Young is a large accounting and advisory company that summarizes

the tax systems around the world on a yearly basis. Changes in tax rates are available in these guides. Data on the macro-economic environment is obtained from Datastream and the World Bank. All variables are defined in Table 1.

4.1.1 Quasi-natural experiment

For the quasi-natural experiment I use data from Bureau van Dijk's Orbis database on the years 2004-2008. This ensures I have data for two years before the shock, the year of the shock, and two years after it. The Orbis database includes information about ownership of companies. I use parent companies which directly own (part of) at least one foreign subsidiary. For each of these companies I determine whether it is located in a country with CFC-rules and whether or not it has a subsidiary in a low-tax country. If a parent has both subsidiaries in low-tax countries and non-low-tax countries it is classified as having a low-tax subsidiary. After all, the parent company obtains the new opportunities for tax planning regardless of where the other subsidiaries are located. This means that the example in Figure 1 (a) is a treated company, despite also having a subsidiary in a country with a tax rate that does not incur an additional tax under the CFC rule.

I do not impose a restriction on the ownership percentage of the parent as missing data would restrict the sample too much. If a parent does not own a substantial part of the subsidiary it would not benefit from the change in CFC-rules, since the benefits of tax planning would have to be shared with outside shareholders. Therefore, I would not expect to observe an effect for these cases, likely biasing against finding a result.

Information about the details of the CFC rules are obtained from national laws. Differences in the rules across countries mostly entail what qualifies as a low-tax country. Some countries like Finland exclude all countries with which they have a tax treaty. Others like Germany include all countries with a corporate tax rate below 25%. Panel A of Table 7 details which countries had CFC rules and what tax rate is considered low under that countries rule. Panel B details the tax rates in the year prior to the shock (2005) for all countries in my sample. Finland is excluded from the sample as it did not apply the CFC rule to countries it had a treaty with, which would exclude all EU countries. Italy is excluded as it used a blacklist of countries which are low-tax. The only EU country on

this list was Slovakia. France and Spain are excluded as they changed their CFC rules during the pre-period.

4.1.2 Legal uncertainty and audit probabilities

For the expectation of being audited I use the actual amount of audits conducted in a country as a fraction of companies active in the country. While this is admittedly a rough proxy, as some companies are by their nature more likely to be audited than others, it does ensure that the behavior of the company does not affect my proxy. This makes it exogeneous to the choices of any one company located in the country as it cannot affect the countrywide level of audits.

Information about audit probabilities are directly obtained from the tax authority's annual reports. Countries don't all specify exactly the same information. However, all countries in my sample publish information on the total number of thorough audits of companies (audits where the tax inspector went on site, or conducted a full audit of the books). I divide this number by the total amount of corporations in the country, which I obtain from the central statistics agencies of the countries. Ideally, I would use the audits with respect to corporate income taxes only. However, I cannot obtain this for all countries, due to the fact that audits often cover multiple taxes and data is limited. Therefore, I use total corporate audits. After collecting the information for a specific country, I revisit the annual reports of the other countries to ensure the definition of an audit is comparable across countries.

I construct this audit probability and my legal uncertainty measure for 10 countries: Austria, Belgium, Czech Republic, Germany, Spain, Finland, France, Netherlands, Poland, and Sweden. Reporting on auditing and court cases is more extensive in Northern Europe. Furthermore, some of the legal information is only available in the language of the country itself. The availability of English texts, language proficiency, or availability of proficient translators limits the extent to which I can retrieve information.

I merge this data with company data from Bureau van Dijk's Orbis database over the years 2005-2011. The sample starts later than the sample used for the quasi-natural experiment because the annual reports and law texts are not consistently available before

this time. For this part of the paper I look at the entire multinational structure, instead of just parents with foreign subsidiaries. It is harder to directly pinpoint the possible new tax planning strategy that companies will use when legal uncertainty changes. The dataset with the entire multinational structure will make it easier to detect these strategies, as various strategies are known. The dataset used is the same as used in Brok (2018) and includes information on a large subset of multinationals in Europe. This dataset aggregates the information of a multinational at the country-year level. The unit of observation is a multinational-country-year. A multinational with three companies in the Netherlands and two in Belgium will show up in the data as one observation in the Netherlands and one in Belgium. This ensures that multinationals with many subsidiaries don't get over represented in the data.

4.2 Summary statistics

In Table 2 I show the summary statistics of the sample for which I constructed the legal uncertainty measure. Variables are defined in Table 1. The suggestiveness ratio shows the ratio of suggestive articles to total articles in a law. The amount of these articles is limited, with the most uncertain law containing almost 13% suggestive articles. Considering the large amount of articles in a law this is a considerable percentage. The total amount of articles can be as many as 790 in Sweden or as few as a 100 in Finland. Larger laws don't necessarily have the lowest suggestiveness ratio. In 2005 Sweden has a corporate tax law consisting of 790 articles and a suggestiveness ratio of 6.6%. Germany has a suggestiveness ratio of 5.7%, using only 250 articles of law. Austria uses 197 articles, but has a suggestiveness ratio of 10.15%. This shows that there is no clear relation between the size of the law and the suggestiveness of the law. While a bigger law can legislate for more specific cases, it does not necessarily resolve legal uncertainty by doing so. The most common topics for suggestive articles are related to transfer pricing, valuation in general, and M&A's.

The suggestiveness ratio has a substantial cross-country variance, however the variance across time is considerably smaller. The fact that the variance across time is limited is not surprising, as most changes to the tax law are small. The most consistent country is

Finland, which added no suggestive articles and only expanded its corporate tax code by 2.1%. Belgium on the other hand increased the amount of articles in its tax code by 47% and the amount of suggestive articles by 51%. The biggest change in the suggestiveness ratio is observed in the Czech Republic, which despite only increasing total articles by 19%, doubled the amount of suggestive articles. Spain is the only country to reduce its tax code over the sample period, reducing the total size of the code by a net amount of 1 article. Increasing tax codes don't necessarily carry more legal uncertainty. The Dutch tax code expanded by 2.1%, but reduced the amount of suggestive articles by 25%. It is important to note that the above numbers are based on the net amount of changes. Countries can simultaneously drop and introduce new articles of law.

The average amount of court cases is 1909. It is important to point out that this is based on the summed total for the country. On average courts of cassation produce around 300 rulings a year. The amount of rulings is not dependent on the size of the country. For instance, France produces an average of a 125 cases a year, while the Netherlands produces almost 200. These rulings maintain relevant over time, even if the article a case relates to does not exist anymore, the principle can still apply similarly in different cases.

The court cases measure is on average bigger than the suggestiveness ratio, leading to negative mean legal uncertainty of -1.056. This has no real meaning as the measure can only be interpreted in relation to other countries and years. Scaling the suggestiveness ratio by its own average, to make it similar in size to the court case count, does not qualitatively change the results obtained in this paper.

The legal uncertainty measure changes substantially over time (standard deviation of 0.54) and across countries (standard deviation of 0.96). The time variance is mostly, though not exclusively, due to case law. The variance across countries is strongly affected by both the suggestiveness ratio and case law. This suggests that the legislative branch writes the law and only adjusts were necessary, or when a specific new goal needs to be obtained, creating limited variance across time. The judicial branch is then left to its role of interpreting the law, creating substantial variance over time. The laws that countries write are unique, creating the cross-country variance. Courts of different countries also function differently, adding to this variance. Given this interpretation it is unsurprising

that the difference in variation holds true both when I scale the suggestiveness ratio by its own average and when I don't.

The audit probability is fairly small, this is due to the fact that this is the probability of being audited for any company in a country. Bigger companies are more likely to be audited. However, audit probabilities by size class are only available in three countries. I verify that for these countries the relative ranking is the same for the total audit probability and the size-adjusted audit probability. To compensate for different audit rates at different size buckets I will use a dummy indicating above or below median audit probabilities throughout the paper. Since I control for size in all regressions, this captures the effect of a relatively high audit probability for a given size.

Despite using the same data-sample leverage is lower than in Brok (2018). This is due to the fact that in that paper bankruptcy costs played a large role and therefore the leverage definition included non-interest bearing debt. Non-interest bearing debt is excluded here, as it provides no tax benefit and the research question is only related to tax benefits.

Figures 2 and 3 show the correlations between the suggestiveness ratio, court cases, and leverage. Figure 2 shows the relation when audit probabilities are high. For higher audit probabilities legal uncertainty and leverage are positively correlated according to Hypothesis 4. Since court cases reduce legal uncertainty we would expect a negative correlation between court cases and leverage. On the other hand we would expect a positive correlation between the suggestiveness ratio and leverage. This is exactly what the figure shows. Figure 3 shows the same relation, but for all companies. Hypothesis 3 suggests the opposite relation should be observed. While the correlations are not as clear the court cases and leverage trend upwards, while the suggestiveness ratio has no such upward trend.

5 Results

5.1 Legal uncertainty and audit probability

The results of this section will shed light on the roles of the different branches of government in creating, augmenting and relieving the effects of legal uncertainty. The legislative branch designs the law which caused the legal uncertainty, the judicial branch reduces the amount of legal uncertainty. The audit probability captures the role of the executive branch. Testing hypotheses 2-4 will show how legal uncertainty and the audit probability affect corporate policies and thereby how the different branches of government impact company decisions through legal uncertainty.

5.1.1 Effect on leverage

Hypothesis 2 suggests that a higher audit probability should lead to more use of leverage, as it increases the probability of incurring a sanction. Hypothesis 3 suggests that legal uncertainty should have a negative effect as it increases the possibilities for tax planning. The interaction between the two should positively affect leverage according to hypothesis 4. This is exactly what I find in Table 3. At low audit probabilities a one standard deviation increase in legal uncertainty is associated with a 0.013 decrease in leverage. The effect of being in a country with an above median audit probability is 0.113. However, the audit probability has an additional effect via uncertainty as can be seen by looking at Interaction. It is important to note that the average high-audit probability is 3x higher than the average low-audit probability. So the effect of an audit represented here is equivalent to a 2 standard deviation jump.

In column 4 we can see that the legal uncertainty faced by other companies in the same multinational group have the same effect on domestic leverage as domestic legal uncertainty does. This suggests that the multinational as a whole sets its tax planning strategy, based on the combined options and risks.

In column 5 I investigate whether the effect is stronger for companies with top quartile profits. These companies have a higher incentive to use uncertain tax planning strategies as they can benefit from them more and therefore more easily bare the costs of setting up

these strategies. At the same time these companies are more likely to be able to use both uncertain tax planning strategies and debt-based tax planning without hitting the lower bound (zero profit). The fact that I observe a stronger effect for profitable companies suggests that the first effect is stronger.

5.1.2 Effect on uncertain tax planning

In Table 4 I look at a possible uncertain tax planning strategy. While it is hard to pin down actual strategies due to their complexity, there are some actions that can suggest tax planning. One of these is the entry in to low-tax countries. I define low-tax countries as any country with a statutory tax rate of more than one standard deviation below the average tax rate for the whole multinational company.

Column 1 and 2 show the effect on incorporation in low-tax countries. We expect the opposite signs to those on leverage, as hypothesis 1 suggests that uncertain tax planning is substituted with leverage based tax planning. This is what I find. The effect found suggests that a one standard deviation (1.28) increase in legal uncertainty is associated with a 3.71 percentage point higher probability of a first time entry in to any low-tax country. This is only slightly weaker than the effect of a standard deviation (4%) increase in the tax rate itself, which leads to a 4.3 percentage point increase in the probability of entering in to a low-tax country. This evidence is in line with survey evidence from Devereux (2016), which suggests that legal uncertainty is important for location choices of companies.

The interaction with profitability is also stronger in this case. This suggests that companies indeed benefit more when they are profitable. The effect is statistically more pronounced than the effect observed for leverage, suggesting that in some cases profits are sufficiently high to use both debt-based and uncertain tax planning strategies.

In columns 3 and 4 I verify that companies from high legal uncertainty countries are not generally more likely to expand. No effect of legal uncertainty on incorporation into non-low-tax countries is found. If anything the result is reversed, suggesting companies might forgo setting up subsidiaries into other countries in favor of setting up subsidiaries in low-tax countries. However, the effect is not significant.

Following Schenkelberg (2018) I also test whether there are indications of profit shifting as a result of my measures. When legal uncertainty increases companies have more options for tax planning. One such option is shifting profits to low-tax countries. Higher legal uncertainty in the high-tax countries can allow companies to shift more profits to low-tax countries. I test this by looking at how the exposure to legal uncertainty in high tax countries affects the natural log of EBIT in both low and high tax countries. In the low-tax countries we would expect an increase in EBIT as the company tries to shift income towards these countries. In the high tax countries the opposite should occur, as we expect income to be shifted out. As always, I expect this effect to be larger for more profitable companies, as these benefit more from tax planning.

Control variables are as in Schenkelberg (2018); Huizinga and Laeven (2008), they include the Cobb-Douglas production factors, GDP growth, and foreign and domestic tax rates. I include a company fixed effect, contrary to earlier literature were only an industry fixed effect was used. However, it is important to control for multinational specific effects. To ensure that the time period used does not affect the estimation, I also add a year fixed effect to control for any year specific effects on profit.

Table 5 shows the results. We can clearly see that the signs for the low-tax countries take the expected values. While for the high tax countries the opposite is observed. Again, this is suggestive of profit shifting behavior. The effect of a standard deviation change in exposure to legal uncertainty in high tax countries is about a 33% increase in EBIT in the low-tax country. This is comparable to the effect Schenkelberg (2018) finds for high tax companies affected by the Cadbury Schweppes shock. It is important to note that EBIT in low-tax countries is substantially lower than it is in high-tax countries. So while there is substantial profit shifting, the majority of profit remains in the high-tax countries.

It is important to note that the r-squared is very high. This is driven by the control variables. Huizinga and Laeven (2008); Schenkelberg (2018) already displayed high r-squared as the Cobb-Douglas like controls explain most of the profit of a company. Adding the company and year fixed effects further drives up the r-squared. Without my explanatory variables the r-squared is already 90%. The two production factors have combined coefficients of 0.922, suggesting that they together almost fully explain changes in

the profitability of a company. Company fixed effects, like quality of management and relative technological superiority, as well as time fixed effects such as the overall stance of the economy seem to explain much of the remaining variation. Tax effects, like the effect of the tax rate itself, as shown in Huizinga and Laeven (2008), and my legal uncertainty measure explain the rest of the variation.

In table 6 I show the effects for both leverage, subsidiary location choice and profit shifting for companies with diversified and undiversified ownership. Faccio et al. (2011) suggest that companies with undiversified ownership are less willing to take risks. This suggests that these companies should be less willing to use legal uncertainty to their advantage, as there is risk involved. The results show that the effect is concentrated in the diversified companies.

6 Quasi-natural experiment

6.1 Institutional setting

In the European Union courts can ask the European Court of Justice (ECJ) for a ruling on any aspects of a case that deal with European treaties and regulations. Judgments from the ECJ are applicable to the entire EU.

One case of particular interest is the so called Cadbury Schweppes case (European Court of Justice, 2006). In this case a law in the United Kingdom was under contention. The UK applied a Controlled Foreign Company rule (CFC). Several countries used CFC rules and while the details differ from country to country, they all work in a similar fashion. A company which has a subsidiary in a country with a tax rate below a specified percentage is subject to additional tax on (parts of) the profit of that subsidiary for the difference between the foreign and domestic tax rate. Figure 1 shows an example. Company A is located in a CFC country and has a subsidiary in a country with a low corporate tax rate like Ireland and a subsidiary in Austria, which is not a low tax country. Company B is located in a non-CFC country, but also has a subsidiary in a low tax country and in another country, which is not a low tax country. Company A pays 17.5% additional tax on

(part of) the profit from the Irish subsidiary, but no additional tax on the Austrian profit. Company B pays no additional tax on either of the subsidiaries, as the parent company is not located in a CFC-country.

In the Cadbury Schweppes case the ECJ judged that the indiscriminate application of CFC rules to all companies with a low tax subsidiary is a violation of EU basic freedoms. The application of the rules to the profits of EU subsidiaries was deemed a limitation on a company's freedom to establish anywhere in the EU. Such a limitation to the freedom of establishment is allowed under EU-law if it serves an important function like curbing tax avoidance. The CFC rules did not test the actual intention of tax avoidance, but presumed tax avoidance on the basis of the location of the subsidiary, which the ECJ deemed a non-proportional response to possible tax avoidance. The ruling meant that national tax authorities have to prove that a company's main motivation for establishing in the low-tax EU country is a reduction of the taxable base. This increased legal uncertainty, as the application of CFC rules now required that the company lacked economic substance reasons beyond tax avoidance for establishing the subsidiary. What economic substance is, was not clearly defined.

6.2 Identification

My identification strategy uses the fact that for instance a UK company (30% corporate tax rate) with a subsidiary in a low-tax country like Ireland (12.5% corporate tax rate) is affected by the shock. However, a Belgian company (34% corporate tax rate) with a subsidiary in Ireland is not affected, as Belgium did not have CFC rules. Using non-CFC-country companies with subsidiaries in the same country as the CFC-country company mitigates concerns about endogeneous location choice. The identifying assumption is that the control group was exposed to the same economic and regulatory environment with one major exception, the Cadbury Schweppes ruling. Looking at Figure 1, I compare Company A with Company B, controlling for tax rates, country and company characteristics.

It is important to point out a characteristic of the CFC rules. Without CFC rules it is beneficial for a low-tax subsidiary to provide a loan to the high tax parent. The parent can deduct the interest at a higher rate than the rate charged on the interest received

by the subsidiary. With CFC rules the interest received would be additionally taxed for the difference between the low and high tax countries' tax rate, eliminating the benefit of lending to the high tax parent. The change in CFC rules could therefore lead to an increase in the parent's leverage. However, my legal uncertainty hypothesis suggests that there should be a reduction in leverage, as there are more profitable ways of reducing the tax bill. The result I find is therefore likely to be a lower bound.

6.3 Data

I use a different data sample for this quasi-natural experiment than for the main results. This is necessary as the availability of data to construct the legal uncertainty measure and audit probability was limited to 2005 and beyond, but the shock requires me to use data from 2004. The data sample ends in 2008, ensuring two years before the shock, the year of the shock, and two years after it. The Orbis database includes information about ownership of companies. I use parent companies which directly own (part of) at least one foreign subsidiary. For each of these companies I determine whether it is located in a country with CFC-rules and whether or not it has a subsidiary in a low-tax country. If a parent has both subsidiaries in low-tax countries and non-low-tax countries it is classified as having a low-tax subsidiary. After all, the parent company obtains the new opportunities for tax planning regardless of where the other subsidiaries are located. This means that the example in Figure 1 (a) is a treated company, despite also having a subsidiary in a country with a tax rate that does not incur an additional tax under the CFC rule.

I do not impose a restriction on the ownership percentage of the parent as missing data would restrict the sample too much. If a parent does not own a substantial part of the subsidiary it would not benefit from the change in CFC-rules, since the benefits of tax planning would have to be shared with outside shareholders. Therefore, I would not expect to observe an effect for these cases, likely biasing against finding a result.

Denmark, Germany, Hungary, Luxembourg, Norway, Portugal and Sweden had CFC rules in effect at the time of the ruling. Each country used its own definition of what a low-tax country is. Depending on the specific country there were between 3 and 10

countries in Europe marked as low-tax countries.[9]

Information about the details of the CFC rules are obtained from national laws. Differences in the rules across countries mostly entail what qualifies as a low-tax country. Some countries like Finland exclude all countries with which they have a tax treaty. Others like Germany include all countries with a corporate tax rate below 25%. Panel A of Table 7 details which countries had CFC rules and what tax rate is considered low under that countries rule. Panel B details the tax rates in the year prior to the shock (2005) for all countries in my sample. Finland is excluded from the sample as it did not apply the CFC rule to countries it had a treaty with, which would exclude all EU countries. Italy is excluded as it used a blacklist of countries which are low-tax. The only EU country on this list was Slovakia. France and Spain are excluded as they changed their CFC rules during the pre-period.

6.4 Effect on leverage

I first investigate how the shock affected financial leverage. The treated companies are companies located in a CFC country, with a subsidiary in a low-tax country. The control group are companies in non-CFC country with a subsidiary in a low-tax country. In Figure 4, I investigate whether there were different trends in leverage before the shock. I use a regression based approach (Angrist and Pischke, 2013), where I include an interaction between year dummies and the assignment to the treated group.

$$Leverage_{ict} = \sum_{t=-2, t\neq 0}^{2} Treatment_{it}\beta_t + X_{it}\beta_1 + Z_{ct}\beta_2 + \epsilon_{ict}$$

I use the year before the shock as a baseline, 2005 is therefore omitted. The coefficients can be interpreted as a difference compared to this baseline. Figure 4 shows that in 2006, the year of the shock, the leverage of the treated companies dropped compared to that of non-treated companies. More importantly, the 2004 coefficient is zero, meaning there is no difference with the baseline. This shows there was a common trend before the shock.

[9]Note that the application of CFC rules on profits from non-EU subsidiaries is not in violation of EU law.

In Table 8 I show the effects of the Cadbury Schweppes ruling on leverage. The difference between the domestic and foreign tax rate is significant and positive, this is in line with Huizinga et al. (2008) and suggests that debt is shifted to the country where it can be deducted against the highest interest rate. The coefficient on the domestic tax rate is in line with trade-off theory (Kraus and Litzenberger, 1973). A one standard deviation increase in the tax rate leads to a 0.017 increase in leverage. This is in line with findings in Huizinga et al. (2008), which use a similar sample.

Hypothesis 1 and 3 suggest that the treatment should have a negative effect on leverage. This is due to the increase in legal uncertainty caused by the Cadbury Schweppes ruling. This increases other tax planning opportunities and therefore reduces leverage based tax planning. Table 8 shows that the treatment has the expected negative effect on leverage. The coefficient implies that being part of the treatment group has the same effect on leverage as a tax rate decrease of 3.5 percentage points.

In column 2, I use a different control group. This group includes companies from CFC countries which did not have low-tax subsidiaries before the shock. This is an intention to treat analysis, as I use the initial treatment assignment, even though some of the companies might select in to treatment. Dropping companies who self select into treatment could bias in favor of finding a result. Therefore, I include these companies in the control group here. As one would expect, the coefficient is slightly smaller for this adjusted control group.

In column 3 I make sure that the effect is indeed related to uncertainty and not just an overall increase in potential benefits. I interact the treatment effect with a dummy for an ultimate owner being a non-diversified shareholder. Since the information is on ultimate ownership is not available for a large fraction of the companies I use the larger control group used in column 2. A shareholder is classified as non-diversified if the company is held by a large family or management. These types of owners have been shown to be less risk seeking Faccio et al. (2011). If the effect of the treatment is indeed due to firms using the increased legal uncertainty, then we would expect that these companies would react less. This is exactly what I observe.

Cross-sectional differences should arise as a result of the CFC rules themselves. These rules mostly targeted passive income like dividends, interest and royalties. This means

that companies in high-tech industries could particularly benefit from the change in the CFC rules. This is investigated in column 4. High-tech industries are those industries which are among the top 20% patent producing industries. The effect is indeed stronger for companies in these industries.

I use further tests to examine the effect is strongest for companies we expect to be more affected. As mentioned in Section 2.3 less profitable companies have no incentive for tax planning and should be less affected. Column 5 of Table 8, shows the effect is indeed stronger for companies with above average profits.

As mentioned in Section 2.3 the substitution of leverage for other tax planning strategies is dependent on the amount of states of the world in which a company expects to earn profits lower than the combined tax planning benefits of both strategies. Companies with more possible states of low profit have more incentive to reduce leverage when other tax planning strategies are used. Therefore companies with higher variance in their profitability are more likely to be affected. Columns 6 tests this and show that indeed the effect is stronger for companies with above average variance in their profit before the shock.

6.4.1 Effect on uncertain tax planning

Hypothesis 1 suggests that the decrease in leverage found above is only half of the story. The other half is an increase in the use of more uncertain tax planning strategies. The Cadbury Schweppes case made it beneficial for companies to use low-tax EU countries to reduce taxes. Schenkelberg (2018) investigates the effect of the Cadbury Schweppes ruling on income shifting and finds that companies with low-tax EU subsidiaries who were affected by the shock shifted their income to these low-taxed subsidiaries. This results in company's tax base decreasing in the parent country and increasing in the low-tax country. This means more of the companies income is taxed at a lower tax rate leading to an overall lower tax bill. The author found that this was especially true for high tech companies (in line with my findings above). While this provides some evidence for the substitution suggested in hypothesis 1, I will further test the increase in the use of non-debt tax planning strategies.

I test whether companies were also more likely to expand to low-tax EU countries. I

define low-tax countries as those that would qualify as such if the parent had been located in a country with a CFC rule. Since different countries use different definitions of what a low-tax country is, I use the definition of the second most strict of the treated countries. The reason for using the second most strict is that the strictest rule is not applicable to any European countries. The treated companies in this case are all companies in a CFC country, whereas the control companies are those in non-CFC countries.

Figure 5 shows the common trend for entry into low-tax EU countries. It can clearly be seen that in 2006 the entry rate jumped up for the treated companies. In Table 9 I show the results of the shock in a regression. Column 1 shows that the treatment increased the probability of a first time entry into a low-tax country by 3.5 percentage points for treated companies. This is about one and a half times the unconditional mean probability of first time entry into a low-tax country (2.42%). Column 2 shows that incorporation in other countries was negatively affected by the shock. This suggests that it was not the case that treated companies generally expanded more during this time, if anything they were more likely to forgo other expansions.

Unfortunately, the amount of first time entries is limited, this creates collinearity problems for subsample analysis as in Section 6.4.

7 Robustness and alternative explanations

7.1 Thin-capitalization rules

A popular anti-tax planning tool used by governments are Thin-capitalization rules. These rules put a hard cap on the deductibility of interest when a company has a leverage ratio beyond a given cap. This could drive the effect on leverage if a change in thin-capitalization rules coincides with the change in legal uncertainty or the quasi-natural experiment.

Therefore, I formally test if omitting observations after the change of a thin-capitalization rule changes my results. By excluding observations after a change I ensure that the effect before the change will be captured by the fixed effects. The excluded countries are France after their changes to the thin-capitalization rules in 2007; Belgium after their introduc-

tion of the Notional Interest Deduction in 2006; and Germany after the change to their thin-capitalization rules in 2008.

The results are presented in column 3 of Table 10 and are slightly stronger than before.

7.2 Endogeneous entry

A possible problem with investigating the effect of legal uncertainty on company leverage and income shifting is that companies can enter in to high or low uncertainty environments to use the benefits associated with them. This would bias the results. The results in Tables 9 and 4 suggest that this concern is justified.

In the shock based sample this problem is already taken into account by using a control group which only contains companies which already had a presence in both the parent and the subsidiary country before the shock.

The problem remains for the legal uncertainty and audit probability regressions. I tackle this problem by dropping companies incorporated after the sample start. This ensures that an increase in operations in a country does not endogeneously affect exposure to the legal uncertainty of specific countries. The results of these tests are shown in Table 10 columns 4 and 5, the results are qualitatively unaffected.

7.3 Lobbying

A further concern is that companies lobbied for an increase in legal uncertainty. These companies selected into an environment with more legal uncertainty by affecting legal uncertainty directly. These companies might not be reacting to the legal uncertainty, as much as legal uncertainty is reacting to these companies. This reverse causality concern is mitigated by the fact that my measure would require these companies to also capture the judicial branch.

To formally test for this concern I use insight from the literature on the determinants of lobbying. Hill et al. (2013) shows that the main determinant for lobbying is the size of the company. Neretina (2018) shows that only a small subset of companies can effectively lobby for policy changes and that trade associations are not effective at representing smaller

companies in the lobbying process.

Detailed data on which companies lobbied on specific laws is not available in most European countries. To ensure my results are not driven by lobbying I omit the 10% largest companies from my sample and rerun the regressions. Columns 1 and 2 of Table 10 shows the results. The results are qualitatively unchanged and are economically similar to the ones obtained in Tables 5 and 3.

7.4 Control group

The control group for the quasi-natural experiment contains many of the most recent entrants in to European Union. These countries might be economically different from the CFC countries. This would lead to a violation of the identifying assumption that companies face a similar legal and economic environment. Therefore, I re-estimate the effect using a control group which only includes the older members (Austria, Belgium, Greece , Ireland and The Netherlands) to ensure that the effect is not driven by this. The results are qualitatively unchanged.

8 Conclusion

In this paper I investigated the effect of legal uncertainty on leverage and tax planning. I hypothesized that uncertain tax planning and debt-based tax planning are substitutes and that legal uncertainty and audit probabilities are a key driver of this trade off.

Using a shock created by the ECJ I showed that this substitution does indeed happen. I then showed that legal uncertainty does indeed lead to this same substitution. My measure of legal uncertainty captures the roles of both the judicial and legislative branch of the government. I show that the judicial branch on average alleviates legal uncertainty, while the legislative branch writes the law that creates the legal uncertainty. The executive branch can mitigate the effects of uncertainty on leverage, as higher audit probabilities lead to less substitution.

The results of this paper suggest that governments should keep the strength of their enforcement agency in mind when writing the tax law, as they can greatly affect the

eventual outcome.

Lastly, the results suggest that companies will utilize tax planning, one way or another. No single policy can eliminate tax planning fully. This is interesting in light of recent policy developments. The OECD has recently proposed new regulation to limit the deductibility of interest on debt (OECD, 2014). These new regulations can curb debt based tax planning. The results in this paper suggest that a law with considerable legal uncertainty accompanied by a high auditing intensity drives companies away from using uncertain tax planning strategies. With the alternative of debt based tax planning cut of by the new regulations it will be interesting to see whether companies find a new avenue for relatively certain tax planning, adjust their preferences for exposure to legal uncertainty, or reduce overall tax planning.

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A Construction of the legal uncertainty measure

For the measure of uncertainty I will look at the phrasing of law articles. I will make a simple count of suggestive and limitatively phrased articles. Suggestiveness implies that an article sets forth a general rule or guideline using words that do not have a consistent or known meaning in either common language or law itself. For this purpose the meaning attributed to the words in case law is ignored. The reason for ignoring case law is that the suggestive phrasing only becomes clear as case law develops and therefore case law will be separately taken into account after determining whether articles are suggestive or limitative. Taking it into account beforehand would ignore the time series development of the measure and would give me the discretion to choose when a phrase or article is no longer suggestive.

Limitative articles will be those that enumerate a specific set of cases in which it is applicable, or specific deductions that are applicable. Sometimes articles refer to decrees or an other article of law outside of the income tax. When this happens I also read this article or decree to ensure it does not limitatively explain a suggestive article.

The following types of phrases and their variations are qualified as suggestive:

Economic/real/fair value (unless referring to exchange traded assets)
Any principles (most common, arm's length)
Normal use or duration
Mostly business like
Aimed at avoidance
(Non-)excessive
Reasonable

I have to escape cases in which:
The rule only applies on request
Clearly explained in an earlier or later article
Clearly defined in a decree

Clearly defined in another law (most often the accounting law) If it refers to a previous choice (e.g. if valuation by economic value was used, do ...)

The case law is a simple count of cases ruled on by the Court of Cassation. Cases that were dismissed for any reason are not included in the count. Only cases on the (corporate) income tax are included.

Tables and figures

Figure 1: Multinational corporate structures

Figure (a) displays a company in a CFC-country with a low-tax subsidiary and another subsidiary. Figure (b) displays a company in a non-CFC-country with a low-tax subsidiary and another subsidiary. Company A will pay an additional tax of 17.5% on (some of) the Irish profit. It will pay no additional tax on the Austrian profit. Company B does not pay an additional tax on profits from either of its subsidiaries.

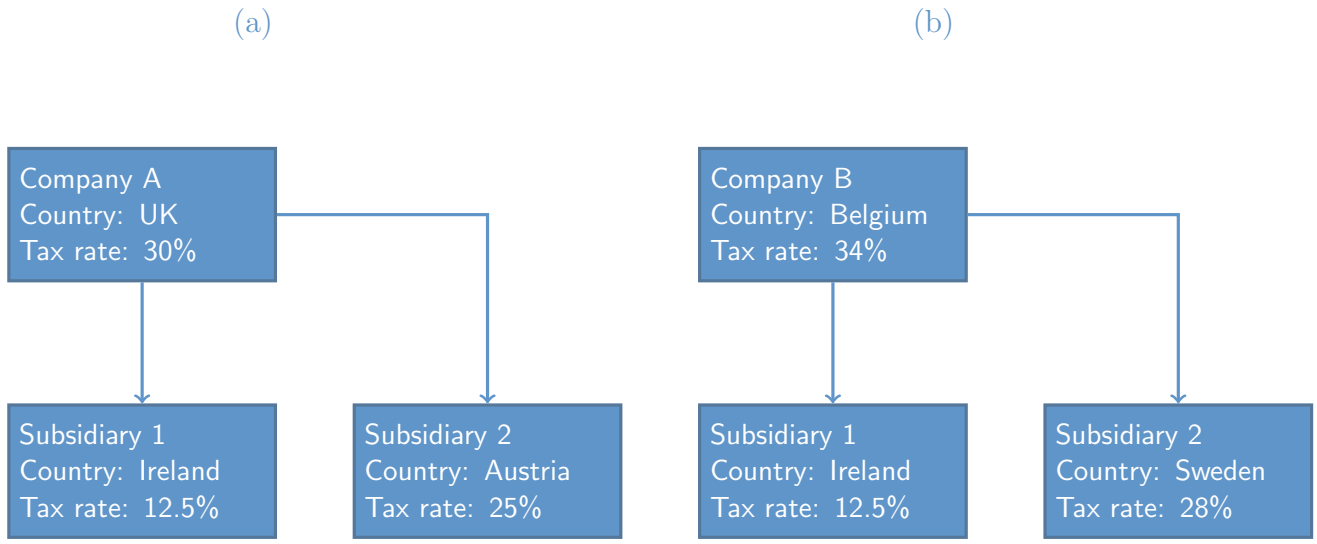

Figure 2: Suggestiveness and court cases: High audit

This graph shows the average the suggestiveness-ratio and the average scaled court cases for countries with high audit probabilities. Leverage has been added to show the correlation. Leverage has been adjusted for the effect of GDP-growth and interest differences across countries.

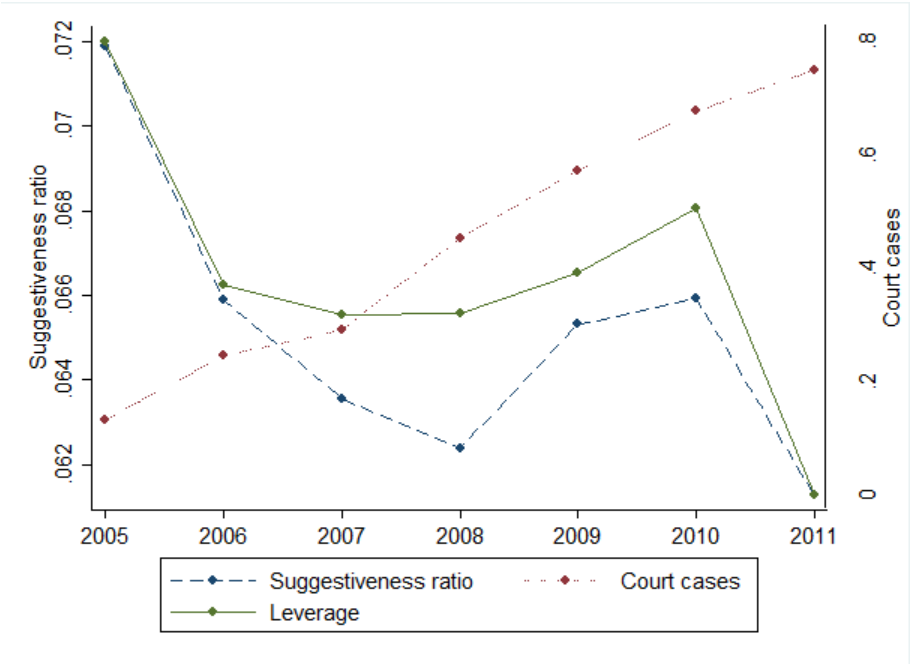

Figure 3: Suggestiveness and court cases

This graph shows the average the suggestiveness-ratio and the average scaled court cases for all countries. Leverage has been added to show the correlation. Leverage has been adjusted for the effect of GDP-growth and interest differences across countries.

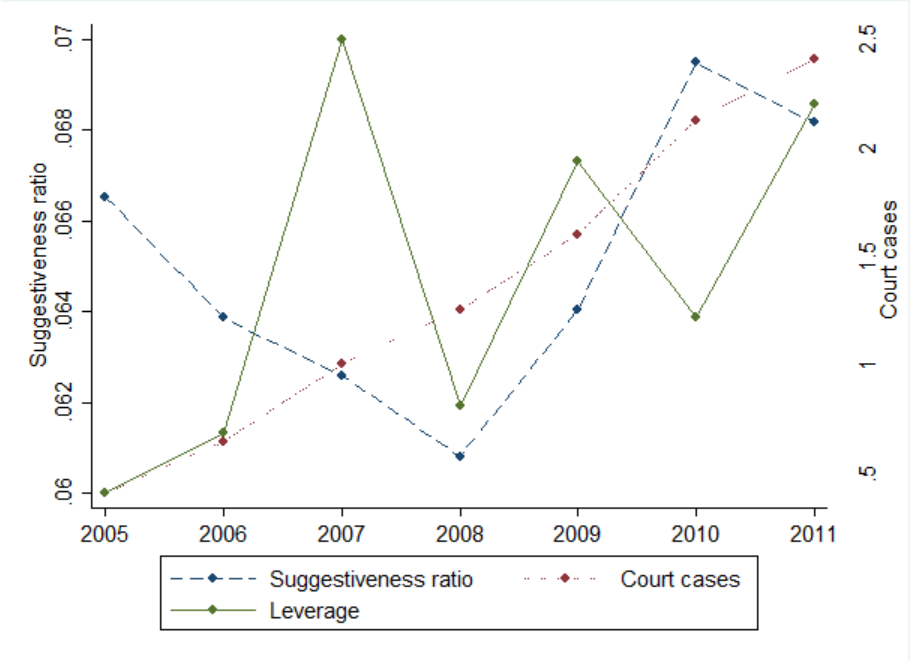

Figure 4: Common trend: leverage

This graph shows the effect of being in the treated group for each year. 2005 is used as a baseline. For each estimate the 95% confidence interval is indicated. 2004 and 2005 are the years before the treatment, 2006-2008 are the treated years.

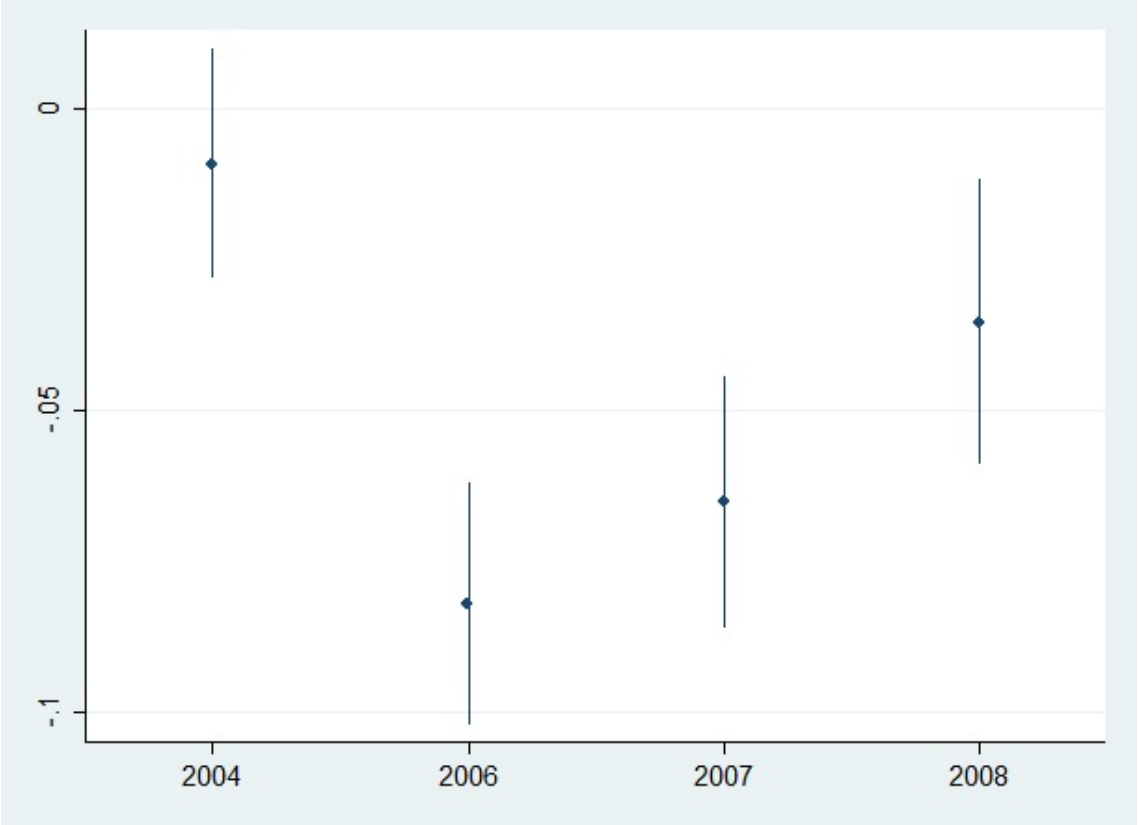

Figure 5: Common trend: uncertain tax planning

This graph shows the effect of being in the treated group for each year. 2005 is used as a baseline. For each estimate the 95% confidence interval is indicated. 2004 and 2005 are the years before the treatment, 2006-2008 are the treated years.

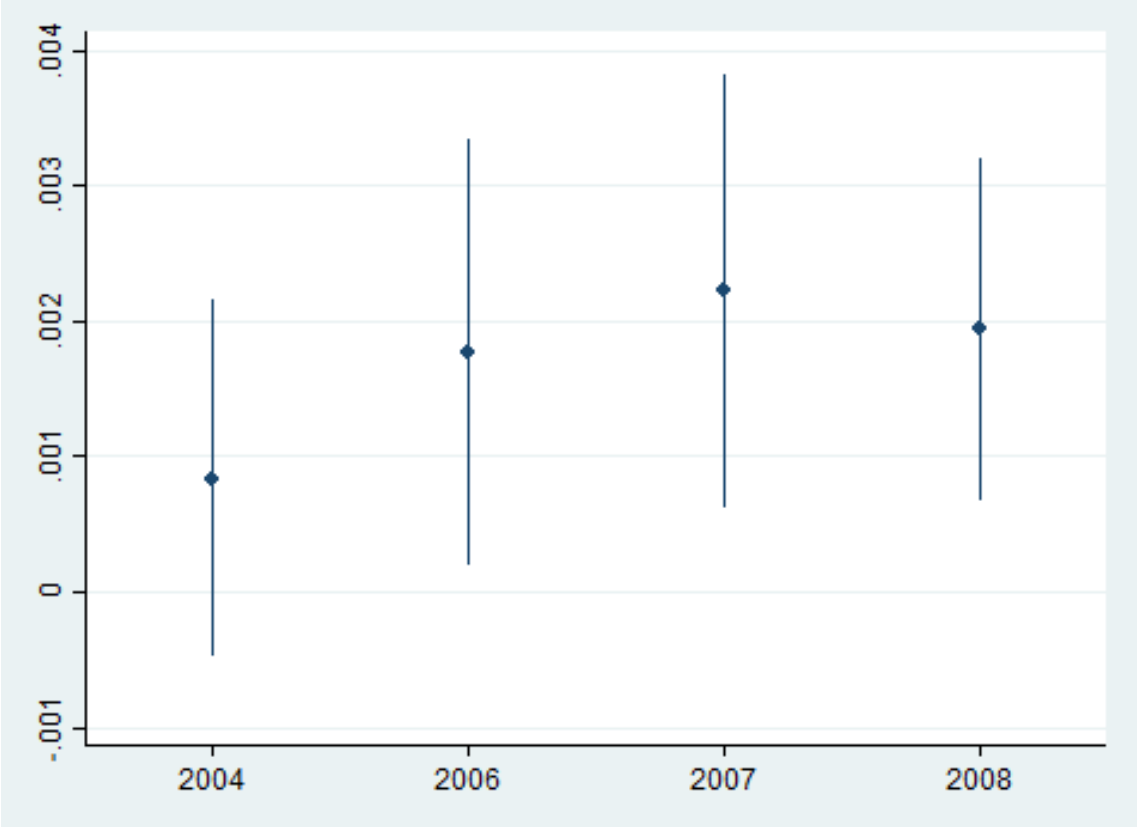

Table 1: Variable definitions

This table provides an overview of the variables used throughout this paper. Accounting data is obtained from the Orbis database, tax information is obtained from Ernst & Young World Wide Corporate Tax Guides. The country level variables are obtained from World Bank Data and Datastream. i indicates the multinational company, c indicates the country and t indicates time.

Variable	Description	Source
$Leverage_{ict}$	Measures the liabilities compared to total assets of the entity. $\frac{\text{interest carrying debt}_{ict}}{\text{interest carrying debt}_{ict}+\text{equity}_{ict}}$	Bureau van Dijk's Orbis Database
Total leverage$_{it}$	$\sum_{c=1}^{N} \frac{\text{non-equity liabilities}_{ict}}{\text{total assets}_{ict}}$	Bureau van Dijk's Orbis Database
$Tangibility_{ict}$	Measures the tangible assets of an entity. Proxies for collateral and financing needs. $\frac{\text{tangible fixed assets}_{ict}}{\text{total assets}_{ict}}$	Bureau van Dijk's Orbis Database
$Depreciation_{ict}$	Measures a companies depreciation normalized by sales. It proxies the size of non-debt tax-shields. $\frac{\text{depreciation}_{ict}}{\text{sales}_{ict}}$	Bureau van Dijk's Orbis Database
Sales$_{ict}$	The log of sales. Proxies for the size of companies. $\ln \text{sales}_{ict}$	Bureau van Dijk's Orbis Database
$Profitability_{ict}$	Measures entity profitability, defined as return on assets. $\frac{\text{EBIT}_{ict}}{\text{total assets}_{ict}}$	Bureau van Dijk's Orbis Database
Interest rate$_{ct}$	Country level risk free interest rate.	Thomson Reuters Datastream
$GDPgrowth_{ct}$	Annual GDP growth.	World Bank Data
Tax_{ct}	Marginal corporate tax rate.	E&Y Worldwide Corporate Tax Guide
Tax difference$_{ict}$	Weighted domestic tax minus weighted foreign tax. $\text{Tax}_{ct} * \frac{1}{\text{total sales}_{it}} - \sum_{k=1,k\neq c}^{N} \frac{\text{sales}_{ikt}}{\text{total sales}_{it}} * \text{tax}_{kt}$	E&Y Worldwide Corporate Tax Guide

Table 2: Summary statistics

This table presents the summary statistics for all variables. The suggestiveness ratio is the ratio of suggestive to total articles in a law. Court cases are the total amount of court cases up to and including the current year. The other variables are defined as in Table 1.

	Mean	St.Dev	25th Perc.	Median	75th Perc
Leverage	0.485	0.268	0.266	0.506	0.687
Uncertainty	-1.056	1.356	-1.431	-0.490	-0.147
Suggestiveness ratio	0.065	0.025	0.049	0.064	0.069
Court cases	1,909	2,317	347	892	2,547
Audit probability	0.033	0.032	0.011	0.017	0.049
Tangibility	0.173	0.216	0.017	0.081	0.257
Profitability	0.049	0.149	-0.002	0.034	0.100
Depreciation	0.065	0.397	0.000	0.006	0.039
Sales	9.633	3.742	7.026	9.054	11.266
Tax rate	0.303	0.057	0.260	0.300	0.344

Table 3: Legal uncertainty and audit probability: leverage

This table presents the results from an OLS-regression of leverage on the proxy for uncertainty, a dummy for above median audit probability, and their interaction. Column 1 shows the baseline result. Column 2 adds the audit probability and the interaction. In column 3, I add additional controls. In column 4, I investigate the effect of the uncertainty faced by the other companies in the multinational group. In column 5, I interact the variables of interest with a dummy for companies in the top quartile of profit. Control variables are profitability, tangibility, depreciation, sales, GDP growth, interest, tax rate, and tax difference. These variables are defined as in Table 1. Standard errors are clustered at the multinational level. ***, **, and * indicate statistical significance at 1%, 5%, and 10% statistical significance levels, respectively.

	(1)	(2)	(3)	(4)	(5)
	Leverage	Leverage	Leverage	Leverage	Leverage
Legal uncertainty	-0.010**	-0.010**	-0.010**	-0.008*	-0.011**
	(0.004)	(0.004)	(0.004)	(0.005)	(0.004)
Interaction		0.096***	0.102***	0.107***	0.089***
		(0.026)	(0.026)	(0.026)	(0.026)
Audit probability		0.113***	0.117***	0.120***	0.109***
		(0.018)	(0.018)	(0.018)	(0.018)
Foreign legal uncertainty				-0.020***	
				(0.007)	
Foreign interact				0.048***	
				(0.017)	
Foreign audit probability				0.011	
				(0.010)	
Uncertainty * high-profit					-0.005*
					(0.003)
Interaction * high-profit					0.052***
					(0.019)
Audit * high-profit					0.165
					(0.189)
Company controls	Yes	Yes	Yes	Yes	Yes
Country controls	Yes	Yes	Yes	Yes	Yes
Foreign Tax control	No	No	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Company FE	Yes	Yes	Yes	Yes	Yes
Observations	24,940	24,940	24,940	24,940	24,940
R-squared	0.791	0.792	0.793	0.794	0.794

Table 4: Legal uncertainty and audit probability: uncertain tax planning

This table presents the results from an OLS-regression of incorporation by multinationals on the proxy for uncertainty, a dummy for above median audit probability, and their interaction. Column 1 and 2 show the effect on first time incorporation in low-tax countries, column 3 and 4 show the effect on incorporation in non-low-tax countries. Column 1 and 3 are the baseline results for each group, while columns 2 and 4 use a interaction of the variables of interest with a dummy for companies in the top quartile of profit. Control variables are profitability, sales, GDP growth, interest, tax rate, and tax difference. These variables are defined as in Table 1. Standard errors are clustered at the multinational level. ***, **, and * indicate statistical significance at 1%, 5%, and 10% statistical significance levels, respectively.

	(1) Incorp. rate low-tax	(2) Incorp. rate low-tax	(3) Incorp. rate other	(4) Incorp. rate other
Uncertainty	0.029**	0.025**	-0.016	-0.015
	(0.011)	(0.012)	(0.016)	(0.017)
Interaction	-0.121***	-0.064	0.048	0.083
	(0.042)	(0.044)	(0.052)	(0.052)
Audit probability	-0.138***	-0.099***	-0.110**	-0.110**
	(0.030)	(0.031)	(0.044)	(0.045)
Uncertainty * high-profit		0.048***		0.001
		(0.014)		(0.017)
Interaction * high-profit		-0.169***		-0.128*
		(0.060)		(0.068)
Audit probability * high-profit		-0.244***		-0.028
		(0.055)		(0.053)
Company controls	Yes	Yes	Yes	Yes
Country controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Company FE	Yes	Yes	Yes	Yes
Observations	5,060	5,060	5,060	5,060
R-squared	0.584	0.596	0.575	0.576

Table 5: Legal uncertainty and audit probability: uncertain tax planning

This table presents the results from an OLS-regression of log EBIT on the weighted legal uncertainty, above median audit probability dummy, and their interaction. These are interacted with a dummy for high and low-tax countries. Column 1 shows the effect on the whole sample. Column 2 and 3 show the results for above and below top quartile profitability respectively. Control variables are log of tangible assets, log of employment expenditures, sales, GDP growth, interest, tax rate, and tax difference. These variables are defined as in Table 1. Standard errors are clustered at the multinational level. ***, **, and * indicate statistical significance at 1%, 5%, and 10% statistical significance levels, respectively.

	(1) Profit shifting	(2) Profit shifting $\geq 50\%$ profit	(3) Profit shifting $\leq 50\%$ profit
Legal uncertainty * low-tax	0.477***	0.186**	0.015
	(0.075)	(0.076)	(0.086)
Interaction * low-tax	-0.518***	-0.426**	-0.145
	(0.155)	(0.166)	(0.274)
Audit probability * low-tax	-1.945***	-0.429**	-0.316
	(0.211)	(0.188)	(0.410)
Legal uncertainty	-0.113**	-0.182***	-0.005
	(0.050)	(0.053)	(0.072)
Interaction	0.122	0.406***	-0.332*
	(0.099)	(0.101)	(0.181)
Audit probability	0.892***	0.231**	0.506***
	(0.121)	(0.112)	(0.189)
Domestic company controls	Yes	Yes	Yes
Foreign company controls	Yes	Yes	Yes
Domestic country controls	Yes	Yes	Yes
Foreign country controls	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Company FE	Yes	Yes	Yes
Observations	12,070	4,572	4,337
R-squared	0.961	0.990	0.967

Table 6: Shareholder diversification

This table shows results of the regressions of Tables 3, 4 and 4 split by diversified and undiversified shareholders. Column 1 and 2 show the effect for leverage. Column 3 and 4 show the effect for incorporation. Control variables are as in the original regressions. Standard errors are clustered at the multinational level. ***, **, and * indicate statistical significance at 1%, 5%, and 10% statistical significance levels, respectively.

	(1) Leverage undiversified	(2) Leverage diversified	(3) Incorp. rate undiversified	(4) Incorp. rate diversified	(5) Profit Shifting undiversified	(6) Profit Shifting diversified
Legal uncertainty	-0.015	-0.016***	-0.019	0.025*		
	(0.029)	(0.005)	(0.033)	(0.013)		
Interaction	0.148	0.058*	-0.532***	-0.093*		
	(0.145)	(0.031)	(0.199)	(0.056)		
Audit probability	0.514**	0.091***	-0.450*	-0.066**		
	(0.228)	(0.019)	(0.264)	(0.032)		
Legal uncertainty * low-tax					-0.296	0.605***
					(0.504)	(0.101)
Interaction * low-tax					0.362	-0.817***
					(1.496)	(0.210)
Audit probability * low-tax					-1.783	-2.079***
					(2.073)	(0.257)
Legal uncertainty					0.649**	-0.108*
					(0.250)	(0.060)
Interaction					0.794	0.020
					(0.886)	(0.122)
Audit probability					-0.464	0.684***
					(0.995)	(0.137)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Domestic company controls	Yes	Yes	Yes	Yes	Yes	Yes
Foreign company controls	Yes	Yes	No	No	Yes	Yes
Domestic country controls	Yes	Yes	Yes	Yes	Yes	Yes
Foreign country controls	Yes	Yes	No	No	Yes	Yes
Observations	820	17,796	190	3,738	415	9,238
R-squared	0.909	0.803	0.607	0.572	0.960	0.959

Table 7: Treated companies

Panel A provides an overview of the countries which had CFC rules in place at the time of the shock and what tax rates qualified as low-tax. Panel B provides the corporate tax rates in the year before the shock.

Panel A: CFC rules

Country with CFC rule	Low tax definition
Denmark	$\leq 23\%$
Germany	$\leq 27\%$
Norway	$\leq 19\%$
Portugal	$\leq 21\%$
Sweden	$\leq 15\%$
United Kingdom	$\leq 23\%$
Hungary	$\leq 10.67\%$

Panel B: Corporate Tax Rates

Country	Tax rate 2005
Austria	25%
Belgium	34%
Czech Republic	26%
Germany	41%
Denmark	30%
Estonia	24%
United Kingdom	30%
Greece	35%
Hungary	16%
Ireland	12.5%
Lithuania	15%
Luxembourg	30.7%
Latvia	15%
Netherlands	31.5%
Norway	28%
Poland	19%
Portugal	35%
Sweden	28%
Slovenia	25%
Slovakia	19%

Table 8: Quasi-natural experiment: leverage

This table presents the results from a difference-in-difference regression using the Cadbury Schweppes case as treatment. Columns 1, 3, 4 and 5 use non-CFC country companies with subsidiaries in low-tax countries as a control. Column 2 additionally uses CFC country companies without subsidiaries in low-tax countries as a control. In column 3 the treatment is interacted with a dummy for having a non-diversified ultimate owner. In column 4 the treatment is interacted with a dummy for the companies industry being among the top 20% of industries with the most patents. In column 5 the treatment is interacted with a dummy for above average variance in pre-shock profitability. In column 6 the treatment is interacted with a dummy for above average profitability. The control variables are defined as in Table 1. Standard errors are clustered at the company level. ***, **, and * indicate statistical significance at 1%, 5%, and 10% statistical significance levels, respectively.

	(1) Leverage	(2) Leverage	(3) Leverage	(4) Leverage	(5) Leverage	(6) Leverage
Treatment	-0.062***	-0.057***	-0.070***	-0.018*	-0.046***	-0.042***
	(0.008)	(0.008)	(0.012)	(0.011)	(0.011)	(0.012)
Treatment * high-tech				-0.073***		
				(0.019)		
Treatment * profit variance					-0.056**	
					(0.023)	
Treatment * high-profit						-0.043**
						(0.017)
Treatment * non-diversified			0.049**			
			(0.024)			
Profitability	-0.246***	-0.262***	-0.226***	-0.264***	-0.310***	-0.198***
	(0.024)	(0.018)	(0.023)	(0.027)	(0.031)	(0.029)
Depreciation	-0.086***	-0.056***	-0.038***	-0.062***	-0.086***	-0.089***
	(0.017)	(0.012)	(0.013)	(0.020)	(0.022)	(0.017)
Tangibility	0.088***	0.081***	-0.002	0.126***	0.081**	0.089***
	(0.031)	(0.023)	(0.032)	(0.034)	(0.033)	(0.031)
Sales	0.010**	0.015***	0.017***	0.014***	0.015***	0.009**
	(0.004)	(0.003)	(0.004)	(0.005)	(0.005)	(0.004)
Tax difference	0.230***	0.135**	0.052	0.241***	0.283***	0.218***
	(0.081)	(0.062)	(0.081)	(0.078)	(0.092)	(0.081)
Domestic tax	0.320***	0.743***	0.792***	0.250***	0.286***	0.348***
	(0.089)	(0.066)	(0.081)	(0.095)	(0.110)	(0.089)
GDP growth	-0.002**	-0.004***	-0.003**	-0.001	-0.002	-0.003**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Interest rate	-0.023***	-0.040***	-0.055***	-0.010**	-0.020***	-0.020***
	(0.005)	(0.005)	(0.008)	(0.005)	(0.006)	(0.005)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Company FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	26,014	45,486	27,940	19,879	18,702	26,014
R-squared	0.728	0.720	0.741	0.757	0.733	0.730

Table 9: Quasi-natural experiment: uncertain tax planning

This table presents the results from a difference-in-difference regression using the Cadbury Schweppes case as treatment and first time entry into a low-tax country as a dependent variable. Column 1 shows the effect for low-tax countries, column 2 for other countries. The control variables are defined as in Table 1. Standard errors are clustered at the company level. ***, **, and * indicate statistical significance at 1%, 5%, and 10% statistical significance levels, respectively.

	(1) Incorporation rate low-tax countries	(2) Incorporation rate other countries
Treatment	0.035***	-0.002***
	(0.013)	(0.001)
Tax	0.114**	-0.015**
	(0.047)	(0.007)
Profitability	0.037***	-0.000
	(0.012)	(0.002)
Sales	-0.006**	0.000
	(0.002)	(0.000)
GDP growth	0.005***	-0.000
	(0.002)	(0.000)
Interest rate	-0.009	0.002**
	(0.005)	(0.001)
Year FE	Yes	Yes
Company FE	Yes	Yes
Observations	26,359	26,359
R-squared	0.375	0.446

Table 10: Legal uncertainty and audit probability: Robustness

This table presents the results from robustness tests. Column 1 and 2 show the effects when omitting the largest multinationals. Column 1 shows the result for leverage, column 2 shows the result for profit shifting. Column 3 shows the effect when countries with a change in thin-capitalization rules are omitted. Columns 4 and 5 show the effects on leverage and profit shifting when I exclude all companies that incorporated after the start of the sample. Control variables are as in the original regressions. These variables are defined as in Table 1. Standard errors are clustered at the multinational level. ***, **, and * indicate statistical significance at 1%, 5%, and 10% statistical significance levels, respectively.

	(1) Lobbying Leverage	(2) Lobbying Profit shifting	(3) Thin-cap. Leverage	(4) End. Entry Leverage	(5) End. Entry Profit shifting
Legal uncertainty * low-tax		0.380***			0.343***
		(0.058)			(0.077)
Interaction * low-tax		-0.561***			-0.343**
		(0.132)			(0.151)
Audit probability * low-tax		-1.236***			-0.900***
		(0.169)			(0.203)
Uncertainty	-0.013***	-0.096**	-0.016***	-0.011**	-0.100**
	(0.005)	(0.041)	(0.004)	(0.004)	(0.046)
Interaction	0.100***	0.266***	0.158***	0.097***	0.093
	(0.030)	(0.086)	(0.024)	(0.027)	(0.095)
Audit probability	0.150***	0.602***	0.085***	0.096***	0.409***
	(0.026)	(0.103)	(0.023)	(0.023)	(0.112)
Company controls	Yes	Yes	Yes	Yes	Yes
Country controls	Yes	Yes	Yes	Yes	Yes
Foreign Tax control	No	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Company FE	Yes	Yes	Yes	Yes	Yes
Observations	23,295	14,647	18,436	21,842	13,720
R-squared	0.796	0.965	0.694	0.812	0.967