



Corporate tax avoidance behaviour

A study on changes in corporate effective tax rates over time between multinationals and purely domestic organizations.

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Abstract

By assessing the common believe whether solely multinational organizations are increasingly able to avoid taxes, I find that the effective tax rates of both Dutch multinational organizations and Dutch purely domestic organizations decreased significantly over the period 2007-2016. This indicates that the ability to lower the effective tax rate is not concentrated on multinational organizations only. Moreover, I find that purely domestic organizations on a consolidated level report effective tax rates lower than multinational organizations, which is also contrary to conventional wisdom. This finding is not confirmed on an unconsolidated level; using unconsolidated financial information of subsidiaries I find that Dutch subsidiaries part of a multinational report a lower effective tax rate compared to their purely domestic counterparts. However, the results from the tests on subsidiaries should be considered with some caution, as the availability of financial informational for subsidiaries is limit. Finally, I conclude that both multinational and purely domestic groups report decreasing effective tax rates over the years, but these rates are still substantially above the effective statutory rate. However, this does not mean these groups avoid no taxes - as no real proxy for the level of tax avoidance exists.

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Chapter 1: Introduction

Corporate taxation and the topic of corporate tax avoidance have recently received substantial attention by academic literature, policy makers and public press. Especially controversial cases as “the Panama papers” or examples of Starbucks, Apple and Amazon have made it clear that some organizations are (increasingly) able to organize their tax planning strategies in such a way corporate tax burdens can be decreased significantly. As a consequence, the general impression is that only large, multinational orientated companies use tax planning strategies to avoid taxes, for example via cross-country shifting of income. But is this specific group of companies the only one to blame? This thesis aims to test this common belief. I assess the level of tax avoidance behaviour of firms in a specific market: the Netherlands. The Dutch jurisdiction often plays a key role in tax avoidance strategies. The country’s attractive corporate tax system and tax opportunities have made it a very advantageous country of residence for many organizations. This “attractiveness” is a much-debated issue in the Netherlands. Minister of Finance Jeroen Dijsselbloem recently argued to stop helping multinationals to settle their company in the Netherlands: “Where normal Dutch companies properly pay taxes, these large multinationals pay taxes nowhere” he argued (Algemeen Dagblad, 2017). But do Dutch headquartered multinational organizations really have a significantly lower effective tax rate compared to purely domestic organizations? Recent research in the United States finds that U.S. domestic firms - having no income shifting opportunities - still find ways to significantly reduce their tax burden domestically and in the end show even lower effective taxes than U.S. multinationals (Dyreng et al, 2016). The same research finds that both types of organizations are increasingly able to lower their effective corporate tax rate, during the 25-year period between 1988 and 2012. Indications for this negative time trend to also be true in the Dutch situation are provided (Borger, 2008; Tweede Kamer, 2015), however no academic research is found for most recent years. Therefore, the purpose of this thesis is to investigate the development of the level of corporate taxation for Dutch companies. By doing so, this thesis will test whether international established organizations are advantaged above Dutch domestic organizations in such a way they are able to increasingly lower their tax burden. This thesis aims to answer the following research question:

RQ: *Are Dutch organizations increasingly able to avoid corporate taxation over time and does this trend differ for multinational firms compared to purely domestic firms?*

To measure the level of tax avoidance the effective tax rate (ETR) is calculated for a sample of Dutch organizations with 9,066 firm-year observations on a consolidated level, and 20,343 firm-year observations on an unconsolidated level of individual subsidiaries. The association between tax avoidance behaviour and international operations over time will be empirically investigated using OLS regressions on panel data. In this research two levels of firm-data are used: first on a group-level the consolidated financial data of the organizations is used and second on a subsidiary-data level the unconsolidated, unconsolidated data of individual firms is used. Because the individual firms in the second dataset are subsidiaries of the groups in the first dataset I might find a possible correlation between the results found in the tests on the two datasets. All to identify and better understand possible divergence in tax avoidance behaviour between multinational and domestic-only firms over time.

The results of the multiple OLS regressions find evidence for a negative time-trend in reported effective tax rates for the full sample of both the organization-level and the subsidiary-level. This suggests that the organizations as a whole are increasingly able to avoid taxes. However, no significant differences are found in this trend between the groups. Regarding the difference in the level of tax avoidance between multinational groups and purely domestic groups the results surprisingly show that multinational organizations report an ETR that is higher than that reported by domestic groups – indicating a higher level of tax avoidance for purely-domestic organizations. Interesting enough, the results of the subsidiary-sample show different results. In this sample firms that are part of multinational organizations report an ETR that is lower than that of firms part of purely domestic organizations. But – as will be further explained in the chapters 4 and 6 – the regression results from the tests on the subsidiary-level must be handled with care. Therefore, this thesis concludes that Dutch organizations in total are increasing able to decrease their corporate income taxes – where “decrease” is a better way of saying than “avoid”, because organizations report effective tax rates fairly above statutory rate. Further this thesis concludes that purely domestic groups are able to keep their effective corporate tax burden significantly below that of multinationals. This implicates that multinationals are not advantaged by their international operationalization.

This study adds to the literature in 4 ways. First, this research aims at a specific market – Dutch organizations with Dutch subsidiaries – that makes all firms in the sample subject to

the same laws and regulations, especially to the same statutory tax system. This way tax regulations and statutory tax rates are not globalized as would happen for a sample existing of companies from different European countries. Further, this thesis adds to the literature a study using unconsolidated data. Because this thesis uses ownership data from the Orbis database makes it possible to identify subsidiaries of organizations and use this to create a sample of both organizations using consolidated information and subsidiaries with unconsolidated financial information. To the best of my knowledge, only one study relating to tax avoidance makes use of this “unconsolidated” approach but this research uses another approach. Third, this thesis adds to the tax avoidance literature that – also in a non-U.S. sample – purely domestic organizations can achieve an effective tax rate that is below the reported effective tax rate of multinational organizations. This implicates that the singular focus of academic research, policy makers and the public opinion on multinationals when discussing tax avoidance might be unjustified. Lastly the results of this paper could provide evidence to all interested users that might question the efficiency of the Dutch tax system.

The remainder of this thesis is organized as follows. Chapter 2 provides a literature review in which the different subjects covered in this research discussed to provide a theoretical background throughout this thesis. Chapter 3 contains the hypotheses development. In chapter 4 consists of the methodology, in which the research design, variable description and sample selection process are presented. Chapter 5 contains the descriptive statistics, the results of the main regressions and the sensitivity tests. Chapter 6 covers the concluding remarks.

Chapter 2: Literature review

The first chapter of this thesis will discuss the different subjects covered in this research to provide a theoretical background throughout this thesis. Further, this chapter will provide a summary of relevant prior research regarding the topic of tax avoidance, the possible effect of international operations on tax avoidance and possible time-trends on the tax avoidance level. Lastly the highlights of the Dutch corporate tax system will be discussed.

2.1 Tax Avoidance

2.1.1 Definition

This thesis is related to different strings of literature. First of all the overall topic of tax-avoidance, a subject that recently has been covered and discussed excessively by popular press, politicians and policy makers. Also in academic research tax avoidance received substantial attention. Prior research shows that the effective corporate tax rates differ significantly over firms and over time (among others: Dyreng et al., 2008). Although some company characteristics are known to have an effect on firm's tax behaviour, most causes of this behaviour remain spurious and also the extend of aggressive tax behaviour of firms differs across the various studies regarding tax avoidance. Partly, this is caused by the different definitions prior studies use for the subject "tax avoidance", which are a result of the lack of a specific definition (Hanlon & Heitzman, 2010). Further, domestic tax systems differ significantly among each other (OECD, 2017). For example American companies are taxed on their world income, where Dutch companies effectively are only taxed on the corporate income generated in the Netherlands. These differences implicate that a tax-related company characteristic measured on a sample of United States companies does not have to imply the same effect will be measured on a sample of Dutch firms. Regulatory differences between domestic tax systems implicate a low external validation of prior research related to tax related subjects, which means we have to be careful generalizing the outcome of a tax-related study outside the borders of its own sample jurisdiction.

Because of the inexistence of a universally accepted definition of tax avoidance or tax aggressiveness, a conceptual definition of tax avoidance must first be constructed. Tax avoidance can be viewed as "desirable" from a shareholder point-of-view because decreasing the current year tax expense increases companies' cash flow. However, tax avoidance is seen illegal or at least "unethical" when companies report effective tax rates, which are

significantly below general statutory rate. Following among others Dyreng et al (2008) and Hanlon & Heitzman (2010) I define tax avoidance broadly as: the reduction of explicit taxes. This reflects all transactions that have any effect on a firm's explicit tax liability. We intentionally stay away of labelling tax avoidance strategies as "good" (lowering costs of the corporation) or "bad" (paying less taxes than required by the statutory tax rate). We rather follow Hanlon & Heitzman (2010), which represents tax avoidance as a continuum of tax planning strategies. A setting where for example municipal bond investments (lower explicit tax, but perfectly legal) are at the left side, and activities (both legal and not legal) as sheltering or terms as "noncompliance", "evasion" or "aggressiveness" would be closer to the right side. A company's tax planning strategy could then be everywhere along the continuum depending on the aggressiveness of the firm in reducing its taxes.

2.1.2 Company Characteristics

This part of the chapter will briefly summarize relevant prior tax avoidance literature. In prior research, a firm's tax avoidance behaviour has been modelled as a function of various company characteristics. As a result, most research has been focused on specific company characteristics. This chapter will summarize most important or most relevant company characteristics, which are expected to affect the level of corporate tax avoidance. Of these characteristics previous studies on the effect of company size has resulted in the most substantial but also the most mixed evidence. The study of Siegfried (1972) hypothesizes that larger companies can report a lower ETR compared to smaller companies. He argues that because larger companies have greater resources, which make it able to (i) influence the political process; (ii) develop knowledge and experience in tax planning; and (iii) organize operational and finance activities in such a way it can reduce taxation costs to a minimum. The arguments of Siegfried are known as the "effective tax planning" arguments and are result of the concept that a firm's effective tax rate can be considered as a measure of efficient tax planning. These arguments predict a negative relation between firm size and the ETR; evidence for this association is found in different studies (Siegfried 1974; Porcano, 1986). Similar to this hypothesis lies the impact of "economies of scale" on firm's tax planning behaviour. Larger firms are generally engaged in a higher number of business activities and financial transactions compared to smaller firms, which provides more opportunities to avoid corporate income taxation. Also, the costs of tax planning decrease relative to firm size; evidence for this is found in a study of Mills et al (1998). When these arguments are implemented into the sample and international established organizations are generalized to be

larger organizations with larger resources, I expect these firms to report a lower ETR compared to domestic-only organizations. Especially when concerning the effective tax planning arguments of Siegfried, multinational organizations will have more opportunities to efficiently organize its activities to further reduce its level of tax expense on an organizational level and among subsidiaries.

Because of the focus on the effective tax rate as main measurement of firm's tax avoidance behaviour, the study of Gupta and Newberry (1997) tests whether profitability acts as an omitted variable when testing the relation between ETR and size. They implement return on total assets (ROA) in their research and find that the profitability of a firm has a positive relation on firm's ETR, so a negative effect on firm's ability to avoid taxes. When controlling for profit Gupta and Newberry no longer find a significant effect of company size. The study of Rego (2003) - following the Mills et al (1998) - also investigates the effect of economies of scale on firm's effective tax rate. But after controlling for profitability results of this study show that larger corporations report higher effective tax rates, which differs from the prior research of both Mills (1998) (negative relation) and Gupta and Newberry (1997) (no relation). The study of Rego (2003) also lays the connection between economies of scale and international operations; this connection will be further discussed in chapter 2.2. The positive relation between effective tax rate and company size indicates that larger organizations face certain costs that smaller firms do not have to deal with. This is consistent with "the political costs hypothesis" first stated in a research by Zimmerman (1983). The idea behind this hypothesis is that larger firms are receiving greater attention by governments, which translates into fewer tax incentives opportunities available and higher corporate tax burdens compared to smaller companies. An example is the recent attention for the tax cases of Starbucks, Google and Apple¹. When implicating the political cost hypothesis could then be that multinational organizations in the sample face costs domestic firms do not face and as a result report higher a higher effective tax rate.

A study investigating other firm specific factors on tax avoidance behaviour is the study of Chen (2010). This study focuses on ownership, making a difference between companies owned and run by founding family members and their non-family counterparts. The authors

¹ The process of these cases can be followed through most quality newspapers. See <https://www.theguardian.com/technology/2012/nov/12/google-amazon-starbucks-tax-avoidance>, or <http://www.bbc.com/news/magazine-20560359> for extensive summaries.

argue that - when determining the level of tax aggressiveness - firms trade off the marginal benefits and costs of managing taxes. The marginal benefits obviously are a lower tax expense, whereas the marginal costs include potential penalties from regulators, potential price discounts from non-family shareholders or potential damage to the firm's reputation. These potential "non-tax costs" that accompany tax aggressiveness are often overlooked, and might be the reason why a firm's management or its shareholders do not always desire aggressive taxation strategies. The results show a significant lower exhibition of tax aggressiveness for family owned businesses compared to publicly owned business. This indicates that these businesses are willing to forgo tax benefits to avoid the potential non-tax costs of their tax strategies. Chen et al (2010) used ETR and book-tax-differences as measures of tax aggressiveness; firms that are tax aggressive are expected to have lower ETR and higher book-tax-differences than their competitors. Regarding the impact of ownership structure on firms' tax reporting, the study of Beuselinck (2015) adds the effect of public listing status. This study is conducted in a European setting, focusing only on private and public listed multinationals. Because Beuselinck (2015) uses a European database (Amadeus from BvD) it has the ability to use ownership data, and focus on subsidiaries. To be more precise, this study focuses on the relation between low-taxed and high-taxed subsidiaries and the effect this has on the tax planning strategies inside the organization. Beuselinck (2015) finds - extending Chen et al (2010) - that public-listed multinationals restrain in the level of their tax avoidance behaviour due to the higher level of potential nontax costs for listed firms compared to non-listed organizations. However, of more interest for this thesis is the second finding of Beuselinck (2015). The authors find evidence that European multinationals shift income for tax reasons and that results are the strongest for income shifting from high-taxed subsidiaries (c.q. parents) to lower taxed subsidiaries, this relation is even stronger when tax enforcements are weak. Extending the result to the research question of this thesis this might indicate evidence for a lower effective tax rate of Dutch multinationals compared to domestic firms. Because these organizations have accessibility to shift income to lower taxed countries - assuming the Dutch corporate tax system is seen as high-taxed. However, notable in this study is its approach of measuring tax avoidance. Beuselinck focuses in his empirical study solely on income shifting of multinational organizations, using the pre-tax income in the low-taxed subsidiaries as a proxy of tax avoidance behaviour inside the organization. Therefore, this implicates that the result of this study shouldn't be generalized to the fact that European multinationals have a lower ETR compared to domestic-only operating firms. This forms more of a confirmation of the fact that multinationals have (and will make use of) the

opportunity to strategically shift income inside their organization to lower their corporate tax burden.

Next to ownership structure, also a firm's business structure affects its tax avoidance behaviour. Higgins et al (2015) tests - based on Mike and Snow (1973) classic theoretical framework - whether firms competing on basis of innovation ("prospectors") engage in similar levels of tax avoidance behaviour as firms following a cost-minimization strategy ("defenders"). On a sample of U.S. firms the authors find a significant association between companies' business strategy and the aggressiveness of their tax behaviour. Moreover, "prospectors" appear to have more tax-planning opportunities because they aggressively pursue new products and new geographical markets. "Defenders" on the other hand are limited in their set of tax-planning opportunities due to their aversion to risk. Lastly, Higgins et al (2015) find that innovative companies have a less sustainable tax-position than their defending counterparts, which is measured as a higher volatility in the yearly effective tax rate.

As an addition to the effect of innovation, the study of Gao et al (2015) assesses the relation between tax avoidance behaviour and research and development expenditures of a firm. When we would follow the prior research of Higgins (2015) we will expect that "innovative" firms that are willing to take the risk of investing substantially in research and development, are also prepared to act more aggressively in tax planning strategies. Gao et al (2015) study patent data for U.S. firms from 1987 to 2010 and the effective tax rate of these firms. The evidence shows that firm's innovation productivity (the use of patent counts) and innovation quality (using patent citations) are significantly positive related with the level of tax avoidance. Which confirms the results from the study of Higgins et al (2015) and suggests that more innovative firms are willing to partake more aggressively in tax avoidance behaviour compared to their more conservative counterparts. But nonetheless the significance of the result, these findings must be seen in perspective. First the study of Gao et al (2015) does not find a significant relation between innovation and tax avoidance when innovation is measured as the profit of R&D investment (in terms of patent output per R&D dollar). Furthermore a lower ETR for firms with a higher level of R&D investments might not only be the result of more actions to avoid the statutory taxes, but could also be the result of the tax system itself.

Most countries - including the Netherlands² - fiscally stimulate R&D investments by making this kind of investment tax-deductible, this automatically result in a lower ETR.

Another company characteristic clearly related to tax avoidance is the size of a firm's intangible assets. It can be expected that firms with large intangible assets have more opportunity and less costs to shift these assets across borders to lower-taxed regions, than firms that exist mostly of material, fixed assets. As a result intangible assets are expected to result in a higher level of tax avoidance. The study of Markle and Shackelford (2012) confirms this expectation and finds that firms with a substantial amount of intangible assets report a 2.0 percentage lower ETR compared to firms with a low amount of intangible assets, which is a difference that is highly significant.

Other firm-level factors are tested in the study of Graham and Tucker (2006). This study investigates the corporate debt policy of 43 publicly traded U.S. corporations, which have been accused of making use of tax shelters during the periods 1975 to 2000. The authors find that firms that use tax shelters (as a proxy of participating in tax avoidance strategies) use on average less debt for their corporate activities than non-shelter firms. Which indicates that firms that actively try to avoid taxes have a lower leverage; calculated as debt to equity ratio. These results align with prior research of De Angelo (1980), to show that the advantage of using tax shelters as non-debt tax shields substitutes for interest tax deductions. This can be explained by the same outcome of both tax avoidance activities and tax-deductible debt structures, namely: lowering a firm's (effective) taxes payable. Making use of tax shelters means that less interest deductions are needed - so corporate debt can be decreased - to arrive at the same level of effective corporate tax burden.

Different studies in prior research have studied the effect of a firm's compensation structure on tax avoidance behaviour. Theoretically tax avoidance can be seen as a risky activity that - as pointed out by Chen et al (2010) - imposes benefits but also costs for a firm's managers and the shareholders. As a result, managers must be incentivized to engage in (a higher level of) tax avoidance, because this involves significant risk and uncertainty. This will only be valuable when more risky tax planning is expected to generate net benefits for the organization and their shareholders. This theoretical argument is tested in the study of Rego &

² The "innovation box" or "patent box" lowers taxable income of profits from intellectual ownership to 5%, to encourage research and development (Art. 12b Wet Vpb 1969).

Wilson (2012). The study of Rego & Wilson (2012) extends prior research, which finds evidence that equity risk incentives drive managers to undertake more risky projects. By studying the compensation practices of CEO's and CFO's of S&P 500 firm during the period 2007 en 2009 the result show a significant positive relation between equity risk incentives and higher tax risk, which is in line with prior research.

2.1.3 International Operations

Academic research regarding firm characteristics comprehensively covers the effect of company characteristics on the level of companies' ability to shift income across countries to report a lower ETR. In contrast, less is known about the tax planning strategies of firms without business activities across countries, firms that do not have the possibility to shift income to lower taxed jurisdictions. The scale of international operations has been subject of some prior research. A study that focuses on tax behaviour of international operating firms compared to domestic-only firms is the study of Collins & Shackelford (2003), which uses a U.S.-based sample. The authors complement the research of Collins & Shackelford (1995) and perform a cross-sectional regression in sample period covering 1992 until 1997. The results show that multinationals face higher tax burdens compared to U.S. domestic-only firms. Which indicates that internationally active organizations face heavier tax burdens compared to their domestic counterparts because they are globally positioned. Conversely, when using a sample of Canadian companies Collins & Shackelford (2003) find no significant effect of international operation on the effective tax rate. This means that Canadian multinationals do not defer in their corporate tax burden compared to Canadian domestic-only companies. This inconsistency could be the result of the fact that Canada uses a territorial tax system and taxes only on local ("Canadian") corporate income, where the United States operates a worldwide tax system. Because US-firms are taxed on their worldwide income, international operating US firms will presumably be the victims of double taxation.

The earlier discussed research of Rego (2003) adds the effect of company size and profitability. Here, the authors perform an OLS regression to test the effect of company size and income from foreign operations on a firm's worldwide effective tax rate. Using a sample of US firms in the period of 1990 – 1997, Rego (2003) finds that larger organizations report higher ETR's on worldwide basis. This implicates that larger firms face more (political) costs that increase their ETR, which is consistent with the political costs hypothesis. This is also in line with the result from the U.S.-sample of the research of Collins & Shackelford (2003).

However the study of Rego (2003) adds that foreign operating firms in his sample - after controlling for size and profitability - report a lower worldwide ETR and U.S. ETR, which is contrary to the result of Collins & Shackelford (1995) and Collins & Shackelford (2003). This result would implicate that multinational organizations report a lower ETR than domestic-only organizations in our sample after controlling for firm size and profitability.

More recent evidence regarding the effect of international operations on companies' effective tax burden is provided in the study of Dyreng (2016), which combines the effect of international operations with the development of tax avoidance over time. As variable for tax avoidance the authors use the cash ETR; calculated as the ratio of current-year cash taxes paid to current year pre-tax income. The sample exists of 54.028 U.S. firm-year observations from 4.643 unique firms during the period 1988-2012. By implementing a dummy variable which values 1 for international operating firms, and values 0 for domestic-only operating firms, the results show an average effective tax rate for U.S. international operating firms that is significantly below statutory tax rate. But more surprisingly, domestic-only firms (so firms only operating in the U.S. and not have the ability to shift income on cross-country basis) generate an equal or an even lower effective tax rate when compared to multinational firms. This result suggests that both multinational and domestic-only companies participate in tax avoidance activities. Whether this also the case in the country of the Netherlands is unknown. Prior research on a selection of Dutch firms shows only a relatively small difference between statutory tax rate and effective tax rate (Janssen, 2005), suggesting no significant decrease in the effective tax burden for Dutch firms. Furthermore the United States exist out of 50 states, each with their own corporate tax system. The use of these different systems among states gives room for U.S. companies to lower their tax burden domestically, as shown by Dyreng (2011) in their study of the state of Delaware. Because of the use of so-called "Passive Investment Companies" using the state of Delaware as tax shelter, U.S. firms can lower their effective tax rate significantly, inside the borders of their own country. The results of this thesis will show whether the results of Dyreng (2016) also hold in a Dutch setting.

2.1.4 Time-trends

A slightly overlooked topic in academic literature on tax avoidance might be the effect of time and the effect of regulatory developments in this time period. The identification of possible time trends in firm's effective tax rates in prior years can be valuable for both researchers as policymakers. The minor attention of academic research on this topic is fairly

odd; regarding the significant amount of attention tax avoidance has received from popular press and policy makers. Further, because of the considerable reforms in the last 3 decades to corporate income taxes in major industrialized countries (Devereux, 2002), previous measured changes in firm's effective tax rate could also be the result of regulatory changes in tax system rather than solely due to specific company characteristics.

Especially the European Union is suffering from large regulatory changes. In 1992, a committee was appointed by the European Committee to evaluate whether differences in business taxation among Member States cause major distortions in the functioning of the internal market. The committee suggested a minimum statutory corporation tax rate of 30% to maintain capital export neutrality and not (further) distort domestic economies of European States. However, 10 years later one third of all EU members have reduced their corporate tax rate below this level. Nowadays only Belgium, France and Malta hold a corporate tax above 30% (OECD, 2016). This development has often been called a "race to the bottom", in which countries due to increased capital mobility compete which each other to attract capital. This increase in capital mobility could also mean lower costs for cross-sectional income shifting for multinational firms making it easier for multinational firms to lower their tax burden. The study of Devereux (2002) tests the development of corporate income taxes for EU and G7 countries over the 1980s and 1990s. Devereux (2002) is one of the first to separately test tax base and tax rate, by measuring base as the rate of allowance available for investment in PPE. The results regarding the development of corporate taxes over the 80s and 90s period are stated in the form of 6 stylized facts: (i) The statutory tax rates fell during the period, (ii) where the tax base broadened for most countries (including the UK, Germany and France. (iii) The effective marginal tax rate of companies in the various countries has remained stable during the sample period. Contrary to the "race to the bottom"-effect, this indicated that European companies do not take that much advantage from the increased capital mobility and/or the changes in European regulatory tax systems perform correctly. (iv) The effective average tax rates for projects with higher level of profitability have decreased more. This can be explained by the competition between countries: highly profitable projects are likely to generate more employment and taxable revenue, so countries might be willing to provide tax deductions to attract these projects. (v) Tax revenues as a proportion of GDP have remained broadly stable. This is aligned with the third point, and affirms that countries tax revenue did not decrease. (vi) Tax revenues as a proportion of total tax revenues have declined; this may seem inconsistent with the other presented stylized facts. The authors however explain this as

governments relying less on revenue from corporate income taxes, and taxes from other sources than the corporate income have increased. In the end, Devereux (2002) shows a positive conclusion. Somewhat in contrast to the warnings of the European Commission, Devereux (2002) finds that European Countries adapted their corporate income tax regime quite successfully, generally by lowering the statutory tax rate and expanding the tax base. Nonetheless the decrease in the statutory tax rates of most EU and G7 countries, the effective marginal tax rate in most countries has remained stable over the 1980s and 1990s according to Devereux (2002). This might suggest that the results of the tests performed in this thesis will find no significant differences between statutory tax rates and effective tax rates for both multinational and domestic-only organizations in our sample.

In a review of the evolution of corporate tax collection in the United States for non-financial companies, Auerbach (2007) finds that the corporate tax revenue as a share of the GDP and of federal revenues follow each other closely, which is in contrast to stylized facts (v) and (vi) of Devereux (2002). By studying the trends in US federal corporate income tax revenue between 1962 and 2006 he finds that revenue on corporate income tax fell significantly. Corporate taxes accounted for 4 percentage of GDP and one-fifth of revenues in 1962, but by 1983 corporate taxes accounted for just 1% of GDP and 6% of federal revenues (Auerbach, 2007). After this year tax revenue shows a slightly positive trend - possibly procreated by the Tax Reform Act of 1966 - until it decreased steeply again at the start of the new millennium with 2003 as local trough. The latter development has drawn significant attention to the role of corporate tax shelters and their potential role in eroding the corporate tax base (Dyregang, 2012; Desai, 2003). After 2003, revenue strongly increased until tax revenue both compared to revenue as GDP achieved its highest point since the 1970s. Auerbach questions this recent development and argues that this recent upward spike in relative tax revenue is actually to a large extent attributable to tax losses due to asymmetric treatment of gains and losses under the corporate income tax. Because firms can deduct losses only to the extent they can be carried back, prior losses that do not result in a tax refund increase the average tax rate. Auerbach (2007) concludes that tax losses increase the average tax rate and therefore increase the U.S. revenue on corporate taxation compared to GDP and government revenue. Although Auerbach (2007) seems to find contradicting results compared to the study of Devereux (2002), it should be treated as more of an addition. First the focus of Devereux lies on a European sample, where Auerbach focuses on the U.S. market. Second, Devereux (2002) results show for the 1980s until 1990s a stable trend regarding tax revenue, something

Auerbach (2007) also shows for the U.S. in specific during this period. The disruption Auerbach (2007) finds starts around the change of millennium, which is outside the sample-period of Devereux (2002).

The earlier discussed study of Dyreng (2016) combines the effect of time on tax avoidance and the effect of international operations. In the first part of the study the authors investigate the trend in corporate effective tax rates, and the possible disparity between the statutory rate and effective tax rates. The paper investigates the existence and potential explanations of a trend in the effective tax rate over time. The study of Dyreng (2016) first plots the mean annual cash effective tax rate of the U.S. firms over the sample period. In this plot the effective tax rate on average shows a decrease, with a negative peak around 2003 and a positive peak the years thereafter. The trend of the ETR in the sample fairly follows the trend of the corporate tax revenue of Auerbach (2007). The trend is not in line with the third stylized fact of Devereux (2002) that claims the effective tax rate to be fairly stable. The plot of average effective tax rates by Dyreng (2016) confirms the common belief that firms are increasingly able to reduce their effective tax rates. The results show that on average, the cash effective tax rates of firms from the U.S. have decreased with 0.4% per year, which adds up to a cumulative decline of 10 percentage points between 1988 and 2012. Because the statutory tax rate in the U.S. remained fairly stable during the sample period, the results of Dyreng (2016) show an increasing gap between statutory tax rate and effective tax rate in the U.S. This confirms the overtime-increased disconnection between the amounts of tax costs firms should pay (statutory rate) and the amount firms actually pay (effective rate).

Although Dyreng (2016) provides clear evidence of negative trend of the effective tax rate over time, it is unknown whether this is also the case in the Dutch situation. Dyreng (2016) - just as Auerbach (2007) - concludes with the call for a tax reform: lowering the effective tax rate and broadening the tax base could partly solve the arisen taxation gap. Because the Dutch tax system pass through significant reforms in recent shows it cannot easily be expected to shows an equal increasing tax gap over time.

2.2 Regulatory Background

2.2.1 Wet Vennootschapsbelasting 1969

Sufficient empirical results can be found in prior research to formulate an indicating answer regarding the hypothesis of this thesis. Especially the paper of Dyreng (2016) gives a clear answer regarding the effects of time and international operations on firm's tax avoidance behaviour. However, Dyreng (2016) and most other papers are empirically tested with sample data inside the U.S. jurisdiction. We must realize that, because of the uniqueness of every domestic tax system these results cannot easily be replicated onto a sample located in another jurisdiction. To further understand the system of corporate taxation in which this research takes place, this chapter will briefly discuss the Dutch tax system regarding corporate income, recent developments of corporate taxation for the European tax system and the for the Dutch regime in specific.

To start the Dutch corporate tax system ("Wet Vennootschapsbelasting 1969") is a worldwide tax-system, which means it primarily taxes the worldwide profits of Dutch companies, but also taxes all income received by foreign companies inside Dutch territory. However, any income received by Dutch organizations from a foreign establishment is excluded from Dutch corporate taxation to prevent double taxation. This exclusion does only apply when the excluded corporate income is attributable to a foreign business enterprise, or permanent establishment. Further, the dividend (or: participation income³) for Dutch firms received from qualifying subsidiaries⁴ is fully excluded from corporate taxation in the Netherlands (article 13 Wet VPB 1969). This is called the "de deelnemingsvrijstelling", which is also implemented to avoid double taxation of the corporate income, at the subsidiary-level and at the parent/participation level. The Dutch corporate income tax has two statutory tax rates. In 2007 (first year of the sample-period) the statutory rate is 20% for taxable income up to and including EUR 275.000, for taxable amounts exceeding EUR 275.000 statutory corporate tax rate is 25,5%. From 2008 on wards statutory rate has been 20% up to EUR 200.00 and 25% when exceeding this amount.

³ Participation income includes capital gains, dividends and profit participation loan interest.

⁴ Subsidiaries qualify when: subsidiary is an active company and the Dutch parent hold at least 5% interest in the subsidiary (article 15 Wet VPB 1969)

2.2.2 Changes in Corporate Taxation

During the period between 2000 and 2011 the aggregated yearly net profit of Dutch corporations increased with 16%, however the revenue of corporate taxation of the Dutch government decreased with 26% (Borger, 2008). This undesirable development raised questions in the Dutch House of Representatives, for which Secretary of State Erik Wiebes started further investigation. The results show that the negative effect on tax revenue is caused by 3 factors: (i) decrease of statutory rate, (ii) changes in corporate tax base and (iii) the cash-effect. As discussed in chapter 2.2.4, the statutory tax rate on corporate taxation for G7 and European countries has fell significantly between 1982 and 2001 (Devereux, 2002). In the period of 2000-2011 the statutory tax rate decreased from 35% to 25% for general rate, and 30% to 20% for lower rate. Also, the turning point from low to general rate has increased. Both developments have had a negative effect on corporate tax revenue. These developments are the result of “the rat race” between European countries. Secretary of State Wiebes argues that to hold an attractive business climate to attract international companies and to prevent a further decrease of the corporate tax base, this decrease of the statutory tax rate is necessary (Tweede Kamer, 2015).

Another cause of the increased gap between corporate profit and corporate tax revenue are policy-oriented developments that decreased the corporate tax base (Tweede Kamer, 2015). The negative effect is mainly caused, by the ruling of temporary arbitrary depreciation (“regeling tijdelijke willekeurige afschrijving”). Because of the recent economic breakdown Dutch corporations were allowed in the years of 2009, 2010 and 2011 to decrease the amortization period to two years. This gave firms the possibility to amortize a higher amount, resulting in a lower taxable income. This ruling had an alleged negative effect of 10.3 billion on corporate tax revenue for 2011. Because of the temporary base, firms that incorporated the ruling will report lower depreciations in the following years, so a positive effect on tax revenue is expected for the years following 2011. Another effect on the corporate tax base are Non-regular income and expenses, such as revaluation of stocks and other assets (Tweede Kamer, 2015). During a recession, organizations often devalue their company assets because the value decreased below historical cost price. When the economy slips out of the recession companies’ assets will increase in value, which will result in revaluation and book profits. This development is expected to take place, because large depreciations took place until 2011 book profits (non-regular income) are expected for the years following the sample.

Third, the investigation of the House of Representatives provides two cash-effects on the change in tax revenue in 2000-2011. One effect is the decrease in the provisional deduction of tax on dividends, due to a decrease in statutory rate in 2007 from 25% to 15%. More significant is the effect of the actual acceptance of the paid taxes. In the year 2000 relatively more corporate tax revenue was received on cash basis because of the overflow from other fiscal years. In 2011, as a result of the economic recession, the opposite applied. These effects explain for the fact that revenue on corporate taxation did not increase as a result of the increase of aggregated net income with 2.4 billion, but decreased during the 2001-2011 period with 4.3 billion.

In addition to the results of this investigation, a study commissioned by the FNV regarding the tax behaviour of large Dutch multinationals finds that during the period 2001-2013, revenue on corporate tax as a share of total tax revenue decreased from 16% to 9% but revenue of tax on labour increased from 23% to 32% (FNV, 2016). So - although net income of Dutch organizations increased in the recent years – the corporate tax burden of Dutch organizations decreased. However this has a positive effect on the cash flow of the organizations, economically it has a negative effect domestically. Because organizations are taxed less on their taxable income, potential corporate tax revenue leaks out. This means that that this “leaked potential” cannot be reinvested in the Dutch economy. For this thesis these investigations could be a first indication for a negative time-trend in effective tax rates of the Dutch organizations in the sample.

2.2.3 Tax Opportunities

In chapter 2.1.4 I discussed the competition between European countries to attract large multinationals and the resulting race to the bottom in which competing nations continuously lower their domestic statutory tax rate. Due to its participation in this competition the Dutch government can possibly attract more international companies, increase the national economy and generate more taxable income following the arguments of Secretary of State Wiebes. However, others argue that the race to the bottom results in a “destructive erosion of the tax base” (Christensen, 2016). Next to lowering the statutory rate, also other opportunities are provided to corporations to further decrease its corporate tax burden. For example, the Dutch government developed a patent box (“de innovatiebox”) which lowers taxable income of profits from intellectual ownership to 5%, to encourage research and development (FNV, 2016) (art. 15 Wet Vpb 1969). However, the OESO doubts its legitimacy, stating that the

Dutch patent box is more concentrated on tax incentives as opposed to direct funding, compared to most other OECD countries with similar regulations (OESO (2016)).

As already mentioned in Chapter 2.3.1 the income received from qualifying subsidiaries is exempted from corporate taxation in the Netherlands under the “Deelnemingsvrijstelling” (Art. 13 Wet Vpb 1969). This way the profits and losses from the subsidiary are not (again) taken into account for the calculation of the corporate taxation expense for the parent company. Although it’s implemented to prevent double taxation, the exemption on subsidiary income is also known to be used as way to avoid corporate taxes by foreign subsidiaries (van Geest, 2013).

Another measure used to attract multinational companies - and one that received substantial public attention - is the possibility for special “rulings” between individual organizations and the Dutch government. These rulings can come in the form of Advanced Pricing Agreements or Advanced Tax Ruling and provide firms with an advanced guarantee of the application of corporate taxation on their specific situation (Rijksoverheid, 2015). Because the content of the rulings are not made visible to the public not much is known these agreements, however it is known that the Netherlands has more rulings than any other EU-member (Eurodad, 2015). Recently the European Commission judged the ruling between the Dutch government and Starbucks as illegal support by the state, which further pressurized the ruling-arrangements of the Dutch government and the lack of transparency provided by the Dutch government (FNV, 2016). In recent agreements the Netherlands did agree to the adoption of a proposal on the automatic exchange of rulings between EU member states in October 2015, this is expected to have effect, starting 2017.

Concluding, this chapter introduces the topic of tax avoidance and company characteristics which are most known to affect firms’ level of tax avoidance. Further, possible time-trends in the level of tax avoidance are discussed. Next this chapter forms a brief summary of the Dutch jurisdiction and the notable factors of its taxation system on corporate income. Plus it explains the role of the country in the tax-competition with other countries to provide the most attractive location for large multinational organizations. Together, this shows the uniqueness of the Dutch tax system and the inability to replicate studies made in other countries onto this sample. Overall this confirms the relevance of a study of tax avoidance in a Dutch-only sample.

Chapter 3: Hypothesis development

How the effective corporate tax rate for Dutch firms has recently developed is questionable based on prior literature, also the effect of international operationalization is unknown for a Dutch sample. In this chapter the hypotheses will be stated. These hypotheses will be backed up by argumentation and expectations based on prior research as discussed in chapter 2.

3.1 Effective Tax Rates over Time

As described in the prior chapter, substantial variation exists in corporate effective tax rate across companies. Prior studies show that the level of tax avoidance - or the aggressiveness of organization's tax planning strategies - can be (partly) explained by various company characteristics. For example regarding ownership structure, as non-listed or non-family owned businesses are willing to participate in a higher level of tax avoidance because of a lower emphasizes on non-tax costs of these strategies (Chen et al (2010) & Beuselinck (2015)). For business structure and R&D expense, in which more innovative firms are expected to engage in higher levels of tax avoidance (Higgins (2015) & Gao et al (2015)). The presence of intangible assets, because this gives more opportunity to shift income (Markle and Shackelford (2012)). Also firm's debt policy, because higher level of tax avoidance strategies substitutes for tax-deductible interest resulting in lower leverage (Graham and Tucker (2006)).

These company characteristics are known to have an effect on the level of applied tax avoidance of organizations. But has the aggressiveness of companies' tax strategies also evolved over time? So is "time" also a variable in the equation calculating the level of tax avoidance? Because of the increased capital mobility, the cost of lowering the tax burden due to income shifting has decreased. Further, because of the diminishing importance of borders inside the European Union, European governments must increasingly compete with each other to generate constant corporate tax revenues. This competition has resulted in various warnings by the European Commission (among others: Ruding Committee (1992)). This suggests the results to show a decreasing trend in reported ETR for the sample. However, the study of Devereux (2002) shows a less negative picture and finds that during the 1980s and 1990s most European and G7 countries successfully adapted their corporate taxation regime. By lowering the statutory rate and broadening the tax base Devereux (2002) concludes that these countries were able to hold their effective corporate tax rate fairly stable. Corporate tax revenue in the United States follows this trend during this period, but the revenue decreased

the years after (Auerbach, 2007). The study of Dyreng (2016) confirms this, during the period 1988-2012 the effective tax rate of U.S. firms in the sample decreased on average 10 percentage-point.

Whether these results mean that the effective corporate tax rates has also decreased for Dutch firms cannot easily be said. To start, the Netherlands successfully adapted its tax regime as a result of the “race to the bottom” with other European countries (Devereux, 2002). Unlike the United States, which kept its statutory tax rate essentially constant since 1986 (Dyreng, 2016). This suggests that for a Dutch multinational firm, the incentive to shift income decreased compared to multinationals located in the U.S. The effectiveness and efficiency of the Dutch corporate tax regime result is also found in the paper of Janssen (2005) for the period of 1995-1999. However, whether this is still the case is at least questionable. During the period 2000-2011 corporate tax revenue decreased, when in the same period the aggregated net profit of corporations had increased (Borger, 2008). Further investigations show that this development is caused by: lowering the statutory tax rate due to the “tax competition” with other European countries, hollowing the corporate tax base by policy-oriented developments following the recession and cash-effects (Tweede Kamer, 2015).

Overall the increased capital mobility for Dutch organizations, the lower statutory tax rate as a result of the “rat race” for countries in the European Union and the policy-oriented decisions of the government following the recession I expect the results to show a negative time trend on reported ETR over time. Regarding the Dutch corporate tax system the statutory rate has been kept fairly stable⁵. Therefore to operationalize the difference between reported ETR and statutory tax rate I expect the Dutch statutory tax rate to be constant during the entire sample period. The prior has resulted in the first hypothesis (all hypotheses are stated in the alternative):

H1: The effective tax rate of Dutch organizations compared to the statutory corporate tax rate has decreased over time.

⁵ Statutory tax rate was 25,5% in sample-years 2007-2008 and 25% in the years after. The lower rate has remained constant (20%), however the turning point-amount has increased during the sample period.

3.2 Multinational vs. Domestic – on an Organization Level

Multinational corporations are expected to effectively lower their tax burden as mentioned frequently by popular press⁶. Multinationals are able to lower their tax burden as a result of using transfer pricing, cost-sharing agreements or other tax related tactics to shift income from high tax countries to low tax countries (Dharmapala, 2012; Beuselinck, 2015). Further, because capital mobility has increased and the economy has become more globalized, the cost of shifting cross-borders has decreased. This could indicate that multinational organizations overtime have been able to increasingly avoid taxes, which would result in a decreasing ETR for these international orientated organizations compared to the organizations in our sample without international opportunities. These “purely domestic” companies - so organizations not located outside of the Netherlands - are expected to not have the possibility to avoid taxes by shifting income across borders. But does this concludes that domestic-only firms are not able to lower effective tax rates and report an ETR that is equal to statutory corporate rate? Or are these firms able to decrease their tax burden domestically - as is done by domestic-only firms in the U.S. using the Delaware-route (Dyreg, 2012)?

The effect of international operations on firm’s tax avoidance behaviour is mixed in prior research. In a U.S.-based sample multinational companies report a significant higher effective tax rate than their domestic counterparts, however different results are reported for samples in other countries (Collings & Shackelford, 2003). The study of Rego (2003) adds to this when controlling for size and profitability, multinational organizations report a lower effective tax rate than domestic-only organizations. Lastly Dyreg (2016) uses a sample of U.S. firms during the period 1988-2012 in a study that combines the effect of international operations with the effect of time. The results show that both multinationals and domestic-only firms report a decreasing effective tax rate, but do not significantly differ. This indicates that also purely domestic firms participate in tax avoidance activities. Even without the possibility to shift income cross-country these U.S. firms are able to successfully lower their tax burden equally to their multinational counterparts. The Dutch jurisdiction does not have tax sheltering opportunities as the Delaware-route (Dyreg, 2012). However, as described in chapter 2.2.3 the Dutch corporate tax system has its own opportunities for firms to decrease the corporate tax base and report an effective tax rate that is below statutory rate. Nonetheless, because multinational organizations have opportunities that purely domestic firms do not have

⁶ Some examples written in Dutch newspapers: <http://www.volkskrant.nl/buitenland/plan-om-belastingontduiking-multinationals-tegen-te-gaan~a4156907/> & <http://www.ad.nl/nieuws/dijsselbloem-wil-hogere-belasting-voor-bedrijven~ae594ea1/>

at their disposal, I expect international operationalized firms to provide a lower ETR, resulting in a higher level of tax avoidance. This leads to the second hypothesis:

***H2:** The effective tax rates of Dutch multinational organizations are lower than those of Dutch domestic organizations over time.*

3.3 Multinational vs. Domestic – on a Subsidiary Level

Notwithstanding the prognosis of lower effective tax rates for Dutch multinationals as stated in the second hypothesis, the effective tax rate of subsidiaries can potentially defer when comparing multinational and domestic-only organizations. Or will there be no difference between the effective tax rate of organizations and their subsidiaries individually? One could argue that no significant difference will occur when comparing subsidiaries of multinational and purely-domestic groups because the tested subject in essence is the same: a subsidiary located in the Netherlands. This would mean that Dutch subsidiaries of both multinational and national groups report equal ETRs.

But when considering the level of effective corporate tax rate as a measure of effective tax planning (Rego, 2003; following Siegfried, 1972), tested subjects are no longer equal. This is because multinational organizations have opportunities available that purely domestic organizations do not have. In that case, multinational organizations can shift their corporate income over their subsidiaries in such an efficient way this will result in the lowest corporate tax burden. Domestic-only organizations have less tax planning possibilities at their disposal; so can “less efficiently” organize their corporate profit. This could possibly result in a higher effective tax rate for domestic-only subsidiaries compared to subsidiaries part of a multinational organization. On the other hand, because multinationals have subsidiaries located across borders, these could miss the possibilities given to subsidiaries in the Dutch jurisdiction. Examples of possibilities are the division of losses among subsidiaries (“Verlies verekening”, Art. 21 Wet Vpb 1969), or the exemption from corporate taxation for income received from subsidiaries (“Deelnemingsvrijstelling”, Art. 15 Wet Vpb 1969). However I expect the effect of these “tax opportunities” to be minimal. As a result, this leads to the third hypothesis:

***H3:** The effective tax rates of Dutch multinational subsidiaries are lower than those for subsidiaries of purely domestic organizations over time.*

Chapter 4: Methodology

This chapter covers the methodology used for the empirical research of this thesis. This chapter consists of a variable description (also described in Appendix A), the research design and the sample selection procedure and the data preparation.

4.1 Variable description

4.1.1 Dependent variable

The dependent variable and the primary topic of interest is the level of tax avoidance, on a corporate- and a subsidiary-level. Because firms report their taxable income on their tax return and these tax returns are not publicly available tax behaviour of corporations or their subsidiaries cannot be directly observed. Tax behaviour can be observed indirectly, from firm's reported tax expense and income tax assets and liabilities, which are publicly available on their financial statements. Therefore most studies use tax avoidance measures that are obtained from financial statement data, yet this estimation contains some shortcomings. For example, tax income and expense in the financial statement does not provide full disclosure (Hanlon & Heitzman (2010)). This because FASB's financial accounting standards concern for taxable information to the extent that information affects GAAP earnings and the GAAP balance sheet, so the FASB will not demand full disclosure in her regulation. Also, corporations will be reluctant in voluntarily disclosing their tax information to avoid exposing valuable private information to outsiders (Hanlon, 2003). Errors in the estimation of taxable income from financial statement data can arise from different consolidation rules between GAAP regulation and actual corporate tax regulation. In addition, tax returns are always reported on a national level following domestic corporate taxation rules, where most firm's reporting standards apply on a global level (Hanlon & Heitzman (2010)). In the end it is valuable - and unavoidable - to use financial statement data as estimation for tax undisclosed tax information, therefore it will be also used in this study. However it is valuable to consider differences between the estimated and real information.

To operationalize firm's tax avoidance I will use GAAP ETR; calculated as total income tax expense divided by pre-tax accounting income (following among others: Chen et al (2010), Dyreng et al. (2012) and Armstrong et al. (2015)). The benefit of using the effective tax rate is the simplicity of its calculation and the fact the ETR is most often used in prior research to measure tax avoidance. The simple calculation gives the measurement a higher comparability

than other more complex measures that need more specific company information. In this study the GAAP ETR is used above other effective tax rate measurements such as cash ETR (Dyreng 2016), current ETR (Markle & Shackelford (2012)) or long-run cash ETR (Dyreng 2008) because our data-set does not provide information to compose a cash-based ETR measure. It's meaningful however, to consider the implications of this measurement of tax avoidance. Because of the non-cash base the GAAP ETR, it uses the sum of current tax expense and deferred tax expense to compose the denominator. Therefore this measure is not affected by tax strategies that defer taxes. This means that the GAAP ETR controls for the mismatch that could arise in cash ETR if cash taxes paid include taxes paid on earnings in a different period, which would create a mismatch between numerator and denominator. Further, GAAP ETR is less volatile than cash ETR (Dyreng, 2008), which makes it a more convenient measurement to identify possible time-trends in the regressions performed in this study. However, the GAAP ETR is affected by changes in the tax accounting accruals (Hanlon & Heitzman (2010)). Further the GAAP ETR is – as any other ETR measurement – affected by regulatory changes to financial accounting rules. The ETR can also be affected by the actions of managers; for example by the incentive to report high earnings to shareholders (Dyreng, 2016). Lastly GAAP ETR also does not capture tax avoidance strategies in which both the nominator and denominator (tax expense and pre-tax income) are reduced, for example when using external debt financial to make use of interest deductions.

4.1.2 Independent variables

The independent variable of interest is the scale of international operations of an organization, whether an organization is established across borders or is only organized domestically. This variable is operationalized using the dummy variable MNE. We classify an organization and its subsidiaries as multinational (MNE=1), if at least one subsidiary inside the organization is settled outside of the Netherlands. Following that organizations having no international establishment are labelled “purely domestic”, given MNE=0. This distinction in our data set makes room to test whether tax avoidance behaviour defers between international organized firms that have the possibility of cross-border income shifting and domestic-only organized firms without this opportunity. Also a variable will be created to identify possible time trends throughout the sample period. This time-variable (TIME) will be given the lowest value (TIME=0) for an observation in the first sample year (2007) and the highest value (TIME=9) for an observation in the last year of the sample (2016). In addition, interaction term

MNE_TIME is introduced to test whether a difference exists in the slope of the time-trend between the multinational and purely domestic group.

4.1.3 Control variables

Control variables will be used to control for possible endogeneity concerns regarding the tested relation between corporate tax avoidance and the scale of international operations. By adding control variables into our main regressions, less omitted variables remain to alternatively explain for the relation between our dependent and independent variable. Following prior research, we employ a set of company characteristics that are identified as important drivers of tax avoidance and that can be operationalized from our dataset.

The first company characteristics that has proven to influence the level of tax avoidance in prior research - and that will be implemented as control variable - is profitability. Profitability is operationalized as return on assets (ROA) and calculated as pre-tax income divided by total assets measured. Profitability is expected to have a positive effect on firms ETR as found in the studies of Gupta and Newberry (1997) and Rego et al (2003). Therefore profitability is implemented as control variable. Income is used before taxation to let the variable run in line with primary variable GAAP ETR which used pre-tax income in its numerator. I also implement leverage (LEV), which is operationalized as total debt divided by total equity. Prior research finds that leverage has a positive effect on tax avoidance (Graham and Tucker (2006); Dyreng et al, 2008; Atwood; 2012). So a firm's leverage is expected to have a negative effect on the GAAP ETR. This can be explained as; more leveraged firms are willing to (or obliged to) take more risks and therefore be willing to partake in more rigorous tax avoidance strategies. We further control for company size (ASSETS), operationalized as the natural logarithm of the amount of total assets. The exact impact of size on ETRs in previous studies is distinct. The study of Mils (1998) finds a negative relation; consistent with "economies of scale" larger companies report a lower effective tax rate in this study. Conversely, Armstrong et al (2010) and Gupta and Newberry (1997) find no relation. And after controlling for profitability, Rego (2003) finds a positive relation after controlling for profitability. Although the results are mixed, it might be valuable to implement the effect of company size in our study. Lastly we control for the size of intangible assets (ITAR), as prior research proves that the presence of intangible assets provides firms with more opportunity to report a lower ETR (Markle & Shackelford; 2012). The level of intangible assets is computed

as the yearly amount of intangible assets scaled by the amount of total assets. All variables are also described in Appendix A.

4.2 Research design

This chapter explains the operationalization of the conceptual relation between organizations' international operations and tax behaviour over time as examined in this thesis. First the trend of the effective tax rate over the sample period will be visualized by plotting the sample mean for each year from 2007 to 2016, following the research of Dyreng (2016). To test this trend more formally, I estimate the following OLS regression:

$$ETR_{it} = \alpha_0 + \alpha_1 TIME_t + \epsilon_{it} \quad (1)$$

In the regression, ETR is the dependent variable consisting of the GAAP ETR and the independent variable is TIME, which is an ordinal variable. To form an answer on the first hypotheses, OLS regression will be performed to test whether time-trend variable TIME has a significant effect on tax avoidance measure ETR.

When turning to the second hypotheses, I test whether the effective tax rates of Dutch headquartered multinational firms have decreased compared to those of Dutch domestic firms. Following Dyreng (2016) I plot the average ETR over time, this time separating purely domestic organizations (MNE = 0) and multinational organizations (MNE = 1). To test this hypothesis more formally, I add to regression (1) the independent dummy-variable MNE, interaction term MNE_TIME and the control variables $\sum CONTROL$. The interaction term is added to test whether dummy-variable MNE has an additional effect on time-variable, to test whether multinational groups have a different slope (time trend) compared to domestic groups. Additionally, control variables are added (ROA, ASSETS, LEV, ITAR) which are known in prior literature to have an effect on tax avoidance behaviour – this to avoid confounding effects. The regression of hypothesis 2 is stated as follows:

$$ETR_{it} = \alpha_0 + \alpha_1 TIME_t + \alpha_2 MNE_i + \alpha_3 MNE_TIME + \alpha_4 \sum CONTROL + \epsilon_{it} \quad (2)$$

To answer the third hypothesis of this thesis I let go of the research design as implemented by Dyreng (2016) and transition from an organization-level perspective to a subsidiary-level perspective. Using the subsidiary-level sample dataset I test whether the reported effective tax

rate of a subsidiary owned by a multinational organization differs from the reported ETR of a subsidiary owned by a purely domestic organization. In addition, I also test whether this relation changed over time. For hypotheses 3 the following regression is tested:

$$ETR_{it} = \alpha_0 + \alpha_1 TIME_t + \alpha_2 MNE_i + \alpha_3 MNE_TIME + \alpha_4 \sum CONTROL + \epsilon_{it} \quad (3)$$

In this final regression, dependent variable *ETR* is defined as the effective tax rate of a subsidiary and dummy variable *MNE* explains whether a subsidiary is part of a multinational or a purely domestic organization. Recall the fact that variable *TIME* is an explaining variable in this regression. Again interaction term *MNE_TIME* is added to test the interaction effect between *TIME* and *MNE* on the subsidiary-level. Lastly $\sum CONTROL$ sums up all control variables that could affect subsidiaries' tax behaviour as explained in previous chapter 4.1.3.

4.3 Sample selection

An overview of the sample selection process is given in table 1. All data for this research is derived from the Orbis database. Orbis is chosen above other databases because of its large database of non-US companies, but primarily because of the possibility to identify subsidiaries using ownership data, which is an essential part of this study. A drawback of using Orbis is the rather limited availability of variables from which output can be derived; this also restricts the possibility of choosing (control) variables. Because hypothesis 1 and 2 are tested on the organization-level (dataset A) and hypothesis 3 on the subsidiary-level (dataset B), two datasets are created.

The sample selection process is initiated by a search in Orbis for Dutch organizations with (i) consolidated financial information available (C1 & C2/U2), (ii) a subsidiary located in the Netherlands with a minimum ownership of 51%⁷, and (iii) tax information available for any year in sample period 2007-2016. 13,000 organizations meet this initial requirement, which is referred to in table 1 as step 1 (#1). By using ownership data, organizations' owned subsidiaries could be identified. Using this data dummy-variable *MNE* is created, which values *MNE*=0 when all recorded subsidiaries of a group are located in the Netherlands and is valued *MNE*=1 vice versa. Next BvD identifiers of all recorded subsidiaries are re-implemented in Orbis. 53,101 subsidiaries are identified in the database of which 11,441

⁷ Majority ownership (>51%) in subsidiaries is required in this research, because only then organization can truly affect subsidiary's tax behavior.

subsidiaries have tax information available (#2). Next I exclude subsidiaries not located in the Netherlands from the dataset because these lay outside of my scope of interest. I also drop all subsidiaries with global ultimate ownership (GUO) not located in the Netherlands⁸. Merging the financial data of these subsidiaries with the created MNE dummy-variable creates Dataset B containing subsidiary-level information. Following prior research of Dyreng (2016), Robinson et al. (2013) and Hoopes et al. (2012) all observations are excluded with an ETR value outside the range of 0 and 1. Also all firm-year observations are excluded that do not have information for all control variables available. This leads to Dataset B containing 20,343 firm-year observations for 3,796 unique subsidiaries, for an average of 5,4 years of sample data per subsidiary.

Lastly, the global ultimate ownership data (GUO) of the subsidiaries in Dataset B is used to identify the Dutch located “parent” companies (#3). Excluding all firms with global ownership not located in the Netherlands is an essential step to be able to prevent multinational organizations with only Dutch identified subsidiaries to be labelled “domestic-only” in this research. By merging the consolidated financial information of the identified parent companies with the earlier created MNE dummy-variable, Dataset A is created containing group-level information. Also for this dataset all firm-year observations ETR value outside the [0,1] range are excluded from our sample, plus all observations are excluded that do not have all information available for control variables. The resulting sample in dataset A consists of 9,066 firm-year observations for 1,715 individual groups for an average of 5,3 years of data per group.

To conclude the sample selection-process a large caveat must be mentioned. Although the sample size is large enough to perform statistically relevant regressions to test the hypotheses, the sample in both datasets could have been significantly larger. When performing the search of the first step in my sample selection process, Orbis initially identified 210,043 Dutch located organizations with a subsidiary located in the Netherlands. These groups aggregately own multiple millions of recorded subsidiaries. However, because taxation information on both consolidated and unconsolidated level is very limited available only a small part of this group (only 1,715 unique organizations, which is less than 1%) remains in the dataset. In addition, also the groups that have tax information available do not provide this for all of their subsidiaries individually. As a result, the subsidiary/group ratio in the initial selection is 6.0

⁸ This step is necessary to allow Dutch located lines of multinationals be labeled as “domestic-only”.

and the ratio over the final samples is 2.2. The sample selection-process is further presented in table 1.

Table 1

Sample Selection Process Dutch Organizations & Subsidiaries (2007 - 2016)

		No. of Firms	No. of Firm-Years
(#1)	Initial selection in Orbis: <i>(Dutch organizations + C1 or U2/C2 code + Subsidiaries located in NL + tax info available)</i>	13,000	-
(#2)	Identified subsidiaries with tax information available:	11,441	70,190
	<u>Exclude subsidiaries that:</u>		
	Do not have Dutch general ownership:	(3,871)	(24,534)
	Are not located in the Netherlands (Country ISO code):	(3,246)	(21,293)
	Do not have an ETR within [0,1] region:	(430)	(1,942)
	Do not have information available for control variables:	(98)	(2,078)
	FINAL SAMPLE (DATASET B)	3,796	20,343
(#3)	Identified organizations that have Dutch GU:	2,568	10,559
	<u>Exclude organizations that:</u>		
	Do not have an NL Country ISO code:	(2)	(20)
	Do not have an ETR within [0,1] region:	(851)	(1,471)
	Do not have information available for control variables:	(0)	(2)
	FINAL SAMPLE (DATASET A)	1,715	9,066

4.4 Data preparation

The calculations with respect to the creation of the variables are described in chapter 4.1. Therefore, this section will only provide insight in how the dataset is prepared for the further analysis. Summary statistics and regression estimates can be highly influenced by a small number of extreme observations, also explained as “outliers” (Veenman, 2013). To control for outliers most (in)dependent variables in this research are based on ratios (ETR, ROA, LEV, ITAR). To further reduce the effect of extreme observations in our regression all continuous variables (ROA, ASSETS, LEV, ITAR) are winsorized at the 1st and 99th level, excluding ETR, which is already trimmed for values outside [0,1] range. Because this research makes use of time series data it is very likely that the residuals in our model are subject to serial correlation. This is harmful for or regression, for instance in the case of positive serial correlation in the error terms our regression could inflate the reported coefficient for our independent variables. Therefore it can be possible that the null hypothesis will be rejected as a result of cross-observation correlation in the variables (Veenman, 2003). Related to this lies the problem of heteroscedasticity, which can be explained as inequality in the variance of the error terms that could affect the ability of our regression model to predict the value of ETR consistently across all values of the dependent variable. To correct for heteroscedasticity the standard errors and regression results are based on “robust” standard errors.

Chapter 5: Empirical analysis

This chapter will describe the empirical analysis made on the data sets formed in the previous chapter. The variables used in the analyses are defined in Appendix A. Further details on the variable measurement and data sources are provided in chapter 4. I conduct an OLS regression on panel data to evaluate the level of corporate tax avoidance over time and the effect of international operations on two datasets consisting of 9,066 unique firm-year observations on an organizational level and 20,343 unique firm-year observations on a subsidiary level.

5.1 Descriptive statistics

Table 2 presents descriptive statistics for the samples, with Panel A for the dataset A regarding data on the organizational-level and Panel B for dataset B on subsidiary-level. Observing the statistics for the dependent sample, the effective tax rate (ETR) has mean (median) 0.25 (0.24) for dataset A and a value of 0.20 (0.24) for dataset B. For Dataset A the values are not far below the regular Dutch corporate statutory tax rate of 25%, however standard deviation and interquartile range show significant variation among the firms in our sample, which suggests the occurrence of reported ETR's further below statutory rate. Further, mean value in both datasets is below reported mean value in prior research of Janssen (2005), which measured a mean GAAP ETR of 0.279 on a Dutch sample. Because the research of Janssen was executed for the period of 1995-1999, this provides a first indication of a negative time-trend in effective tax rates for Dutch firms. Lastly, the means of both datasets are significantly below the mean of prior research using GAAP ETR in other countries (Cheng, 2010; Higgins, 2015), emphasizing the advantageous position of Dutch companies regarding tax expense when compared to similar companies taxed in other countries. When differentiating multinational organizations (MNE=1) from purely domestic organizations (MNE=0) a slightly lower mean is reported for organizations without international subsidiaries (0.25 compared to 0.26). On the subsidiary level, we report a minor difference the other way around (0.20 compared to 0.21).

The variable MNE has a mean (median) of 0.25 (0) for dataset A and 0.26 for dataset B (0). On the organization level, the sample consists of more corporations without international activities (1,324 compared to 391). For dataset B - on the subsidiary-level – also the largest part of the dataset consists of subsidiaries that are part of purely domestic operative

organizations (2,799 compared to 997). The “number of subsidiaries per group”-ratio is an average 2,1 for both domestic groups and an average of 2,5 for international established groups, indicating a minor difference in distribution of subsidiaries. However it’s important to realize that these are not all subsidiaries per organization but only the subsidiaries that are part of our dataset B because they have (unconsolidated) taxation information available in database Orbis. Further research to the total number of recorded subsidiaries owned by identified parent companies of dataset A finds that the average multinational group in dataset A owns 47.9 subsidiaries, compared to 15.3 subsidiaries for purely-domestic groups.

Variable ASSETS is the natural log of total assets, to control for the effect of firm size on the level of corporate tax avoidance. The mean (median) firm-year observation is 10.18 (9.82), corresponding to approximately 25,084 EUR average asset value for dataset A. For dataset B the mean (median) is 9.21 (9.17), corresponding to an average asset value of 12,088 EUR. When separating international and domestic groups in dataset A, average group’s asset value is significantly higher for multinationals groups: 57,526 EUR compared to 18,958 EUR. Together with the larger number of subsidiaries owned by international groups this signifies that multinational groups in our sample are larger than domestic-only groups. Control variable ROA controls for profitability and reports a mean (median) of 0.08 (0.06) for both datasets A and B. The intangible asset-ratio (ITAR) is calculated as the value of firm’s intangible assets scaled by the total asset size. This control variable has an average firm-year observation of 0.06 and a median value of 0.00, the latter indicates that most organizations report no intangible asset value or a value of 0 in dataset A. For dataset B the mean (median) intangible asset value is 0.02 (0). Lastly firm’s leverage (LEV) calculated as debt divided by equity has mean (median) 3.24 (1.54) for dataset A and 3.00 (0.54) for dataset B.

Table 2
Descriptive Statistics

Panel A - Descriptive Statistics Dataset A

	<i>N</i>	<i>MEAN</i>	<i>S.D.</i>	<i>P25</i>	<i>MEDIAN</i>	<i>P75</i>
<i>ETR</i>	9066	0.25	0.15	0.19	0.24	0.27
<i>MNE</i>	9066	0.25	0.43	0.00	0.00	1.00
<i>TIME</i>	9066	4.86	2.48	3.00	5.00	7.00
<i>MNE_TIME</i>	9066	1.16	2.39	0.00	0.00	9.00
<i>ROA</i>	9066	0.08	0.10	0.02	0.06	0.12
<i>ASSETS</i>	9066	10.18	1.64	9.19	9.82	10.78
<i>LEV</i>	9066	3.24	9.02	0.67	1.54	3.10
<i>ITAR</i>	9066	0.06	0.13	0.00	0.00	0.03

Panel B - Descriptive Statistics Dataset B

	<i>N</i>	<i>MEAN</i>	<i>S.D.</i>	<i>P25</i>	<i>MEDIAN</i>	<i>P75</i>
<i>ETR</i>	20343	0.20	0.13	0.16	0.24	0.25
<i>MNE</i>	20343	0.26	0.44	0.00	0.00	1.00
<i>TIME</i>	20343	4.90	2.41	3.00	5.00	7.00
<i>MNE_TIME</i>	20343	1.24	2.45	0.00	0.00	9.00
<i>ROA</i>	20343	0.08	0.21	0.01	0.06	0.15
<i>ASSETS</i>	20343	9.21	1.68	8.60	9.17	9.93
<i>LEV</i>	20343	3.00	15.52	-0.11	0.45	1.64
<i>ITAR</i>	20343	0.02	0.06	0.00	0.00	0.44

Table 3, Panel A shows the Pearson correlations in dataset A for dependent variable corporate tax avoidance (ETR), independent variables TIME and MNE, interaction term MNE_TIME and control variables ROA, ASSETS, LEV and ITAR. These correlation tables describe the linear relation between the different variables. Corporate tax avoidance measurement ETR is significantly positively correlated with MNE, TIME, LEV and ITAR. The positive correlation with dummy-variable MNE gives a first indication of a possible higher reported ETR for multinational organizations. A negative correlation is found between ETR and TIME. The negative correlation with independent variable TIME relates to a negative trend of organizations reported ETR over the sample period. Apart from the correlation between MNE and its interaction term, the strongest correlation is found between variables ASSETS and MNE, with a positive correlation value of 0.281. This provides us with further evidence for the statement that multinational organizations in this sample are significantly larger than their domestic counterparts. Tests on Pearson correlation in dataset B find positive significant correlation between ETR and variables ROA, ASSETS, LEV and ITAR plus negative correlation with TIME and MNE_TIME. Overall, ETR and TIME are found significant and negative in both datasets, which provides first evidence of a negative trend of corporate tax avoidance over time, supporting hypothesis 1. Further evidence will be obtained from the regressions performed in the following chapter.

Table 3

Panel B: Pearson Correlation table - dataset A

	<i>ETR</i>	<i>MNE</i>	<i>TIME</i>	<i>MNE_TIME</i>	<i>ROA</i>	<i>ASSETS</i>	<i>LEV</i>	<i>ITAR</i>
<i>ETR</i>	1							
<i>MNE</i>	0.053*** (0.000)	1						
<i>TIME</i>	-0.031*** (0.003)	-0.049*** (0.000)	1					
<i>MNE_TIME</i>	0.039*** (0.000)	0.842*** (0.000)	0.240*** (0.000)	1				
<i>ROA</i>	0.014 (0.197)	0.013 (0.216)	-0.005 (0.656)	0.008 (0.456)	1			
<i>ASSETS</i>	0.016 (0.126)	0.330*** (0.000)	-0.032*** (0.003)	0.286*** (0.000)	-0.084*** (0.000)	1		
<i>LEV</i>	0.073*** (0.000)	-0.050*** (0.000)	-0.027*** (0.009)	-0.040*** (0.000)	-0.087*** (0.000)	-0.011 (0.289)	1	
<i>ITAR</i>	0.189*** (0.000)	0.114*** (0.000)	0.049*** (0.000)	0.121*** (0.000)	-0.092** (0.000)	0.130*** (0.000)	0.046*** (0.000)	1

Panel B: Pearson Correlation table - dataset B

	<i>ETR</i>	<i>MNE</i>	<i>TIME</i>	<i>MNE TIME</i>	<i>ROA</i>	<i>ASSETS</i>	<i>LEV</i>	<i>ITAR</i>
<i>ETR</i>	1							
<i>MNE</i>	-0.002 (0.753)	1						
<i>TIME</i>	-0.100*** (0.000)	-0.022*** (0.001)	1					
<i>MNE TIME</i>	-0.033*** (0.000)	0.860*** (0.000)	0.245*** (0.000)	1				
<i>ROA</i>	0.143*** (0.000)	-0.006 (0.478)	-0.058*** (0.000)	-0.019*** (0.008)	1			
<i>ASSETS</i>	0.189*** (0.000)	0.186*** (0.000)	0.063*** (0.000)	0.147*** (0.000)	0.113*** (0.000)	1		
<i>LEV</i>	0.036*** (0.000)	-0.001 (0.883)	-0.036*** (0.000)	-0.008 (0.258)	0.008 (0.229)	0.052*** (0.000)	1	
<i>ITAR</i>	0.087*** (0.000)	0.048*** (0.000)	0.004 (0.563)	0.042*** (0.000)	-0.047*** (0.000)	0.137*** (0.000)	0.016** (0.026)	1

5.2 Regression results

5.2.1 Testing Hypothesis 1

In this section the hypothesis will be tested. I begin by testing the first hypothesis, which states that the effective tax rate compared to the statutory tax rate for Dutch organizations has decreased over time. I test this hypothesis by first plotting the sample mean of dependent variable ETR, to visualize the trend of companies' effective tax expenses during the period 2007-2016.

Figure 1

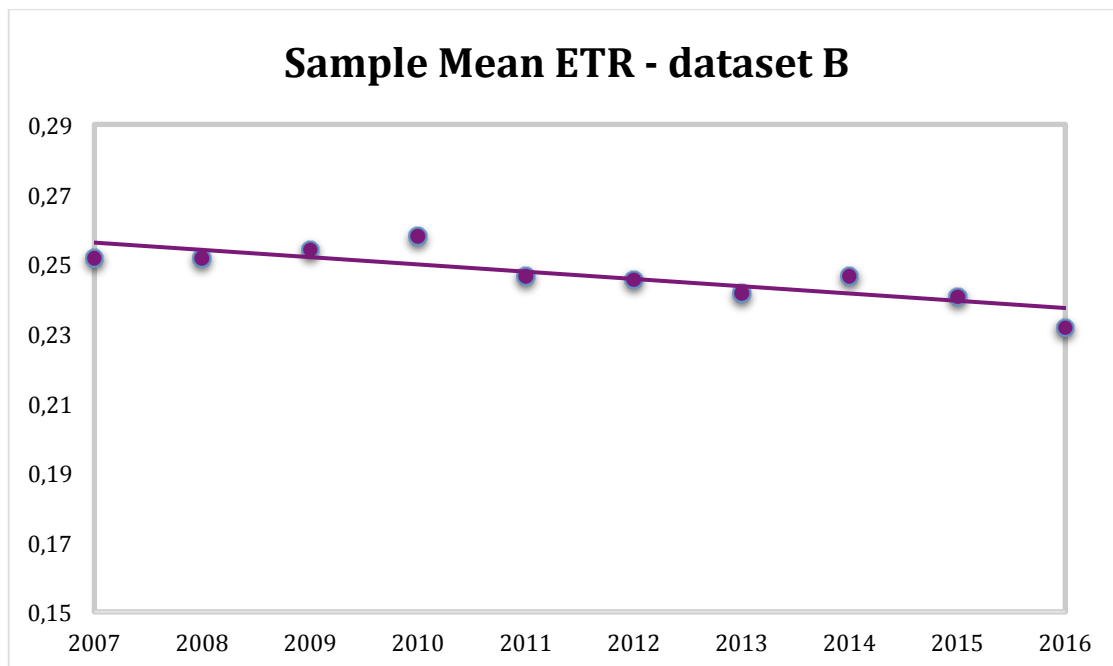


Figure 1 provides this graph. The graph shows a downward trend in ETR during the sample period. Effective tax rate decreased from an average 25.1% in 2007 to 23.1% in 2016, which equals a decrease of 8,0 percentage during the sample period. The trend figure further reveals some periods of increased and decreased steepness, indicating increases and decreases in average ETR – for example during periods 2010-2011 and 2014-2016 ETR decreased firmly, where in period 2008-2010 and 2013-2014 an increase is realized. But even with the increase in average ETR in some years during the sample period the overall time-trend of ETR for the full sample period is negative. To test the statistical significance of this downward trend of the ETR in the sample, an OLS regression is performed of ETR on linear time trend TIME, of which the results are presented in Table 4, Model 1.

Table 4
OLS Regression Results (Hypothesis 1)

	Model 1 (All Firms)	Model 2 (Multinationals)	Model 3 (Domestics)
	<i>ETR</i>	<i>ETR</i>	<i>ETR</i>
<i>INTERCEPT</i>	0.256 (0.000)	0.267 (0.000)	0.252 (0.000)
<i>TIME</i>	-0.002*** (0.002)	-0.001 (0.310)	-0.002*** (0.009)
<i>R-squared</i>	0.001	0.000	0.001
<i>F-test value</i>	9.11 (0.003)	1.03 (0.310)	6.92 (0.009)
<i>Observations</i>	9,066	2,267	6,799

In this table the results of estimation eq. (1) are reported, which is an OLS regression of ETR on a linear time trend (TIME). All variables are as described in appendix A. For all regression models robust error terms are used. T-statistics are reported in parentheses below the coefficient estimates. Probability (p.) is reported in the parentheses below the coefficient estimates. Statistical significance is represented at the ten (p. < 0.1 = *), five (p. < 0.05 = **) and one (p. < 0.01 = ***) percentage levels, respectively.

The regression on the full sample of dataset A (Model 1) shows that dependent variable TIME has a negative coefficient of -0.002 (p. = 0.002), which confirms the significance of the negative trend already presented in figure 1. The results suggest that Dutch organizations are increasingly able to lower their tax burden, although statutory corporate tax rate has remained fairly stable since 2007. The findings from Model 1 indicate that “the average” organization in the full sample reports a significantly decreasing effective tax rate over time⁹. These empirical results confirm hypothesis 1, which states that the ETR of Dutch organizations has decreased over time. Moreover, Table 2 Model 2 and Table 2 Model 3 provide further information for respectively the multinational and domestic-only groups in our sample. Model 2 shows that multinational firms do not significantly decrease their ETR over time, reporting

⁹ This is consistent with Auerbach (2007) and Dyreng (2016), which both document a negative time-trend in reported ETR for firms in the United States. Also with Borger (2008), which found a negative time trend of ETR on a nation-wide level in the Netherlands (corporate taxes received by the government divided by total corporate revenue).

a coefficient of -0.001 (p. = 0.337). Model 3 provides evidence of a significant time-trend for domestic-only organizations in our sample, indicating a decrease in ETR of 0.002 (p. = 0.004) per year. Although this does not provide evidence for changes in the time-trend between these two groups, it does provide a first indication of possible differences in effective tax rates. The statistical significance of this will be further tested in our following hypotheses.

5.2.2 Testing Hypothesis 2

In the following part of this chapter the second hypothesis will be tested, to assess whether the effective tax rate of international operating organizations differs from purely domestic operating organizations. Because a downward trend in ETR’s for all firms is found in hypothesis 1 we now turn to testing hypothesis 2 to test whether this trend differs for the two groups. As indicated in chapter 3.2, multinationals are expected to report lower effective tax rates because of cross-border opportunities, which their domestic-only counterparts do not have available. Again I first simply visualize the development of the effective tax rate over the sample period, however this time the yearly sample-mean for multinational organizations (blue line) and domestic-only organizations (red line) are separated.

Figure 2

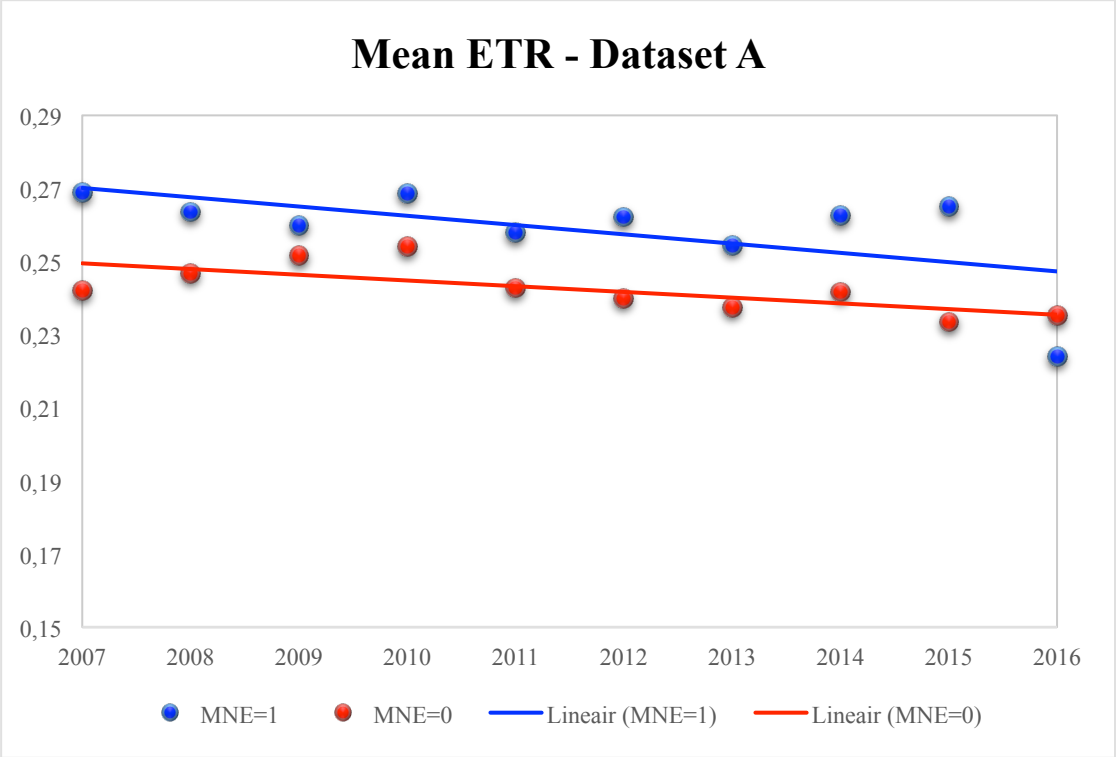


Figure 2 provides this graph, which points out two remarkable results. First, as already indicated in the tests for hypothesis 1, the figure reveals that domestic-only organizations have been able to effectively reduce their tax burden during the sample period. Although no income shifting possibilities available, these organizations report an average ETR of 24,2% in 2007 and decrease this percentage to 23,5% in 2016. Second, domestic-only organizations on average report a lower effective tax rate than multinational organizations in every year except for 2016. This provides an indication that domestic-only organizations not only are able to avoid taxes as multinationals do, but domestic organizations are able to do this in an even more effective manner resulting in an lower yearly tax burden. This is contrary to the expected result stated in hypothesis 2. To further assess this hypothesis a multivariate OLS regression is performed as is presented in table 5.

Table 5
OLS Multivariate Regression Results (Hypothesis 2)

	Model 1 (All firms)	Model 2 (Multinationals)	Model 3 (Domestics)	Model 4 (Incl. int. term)
	<i>ETR</i>	<i>ETR</i>	<i>ETR</i>	<i>ETR</i>
<i>INTERCEPT</i>	0.243	0.341	0.171	0.243
<i>MNE</i>	0.014*** (0.001)			0.014* (0.079)
<i>TIME</i>	-0.003** (0.012)	-0.006*** (0.005)	-0.002 (0.348)	-0.003** (0.019)
<i>MNE_TIME</i>				0.000 (0.989)
<i>ROA</i>	0.054*** (0.000)	-0.041 (0.164)	0.090*** (0.000)	0.054*** (0.000)
<i>ASSETS</i>	-0.002 (0.222)	-0.007*** (0.000)	0.005** (0.011)	-0.002 (0.222)
<i>LEV</i>	0.001*** (0.000)	0.001 (0.057)	0.001*** (0.001)	0.001*** (0.000)
<i>ITAR</i>	0.222*** (0.000)	0.130*** (0.000)	0.285*** (0.000)	0.225*** (0.000)
R-squared	0.045	0.025	0.061	0.045
F-test value	15.38 (0.000)	2.95 (0.000)	16.69 (0.000)	14.36 (0.000)
Observations	9,066	2,267	6,799	9,066

In this table the results of estimation eq. (2) are reported, which is a multivariate OLS regression of ETR on a linear time trend (TIME), dummy-variable for multinational operations (MNE) and control variables. All variables are as described in appendix A. The regression control for yearly fixed effects. For all regression models robust error terms are used. T-statistics are reported in parentheses below the coefficient estimates. Probability (p.) is reported in the parentheses below the coefficient estimates. Statistical significance is represented at the ten (p. < 0.1 = *), five (p. < 0.05 = **) and one (p. < 0.01 = ***) percentage levels, respectively.

To further test the second hypothesis, a multivariate OLS regression is performed as is presented in Table 3. Again the test is performed on respectively: all firms (Model 1), multinational organizations (Model 2) and domestic-only organizations (Model 3). The coefficients of control variables ROA, LEV and ITAR are all positive and significant but company size variable ASSETS does not have a significant coefficient, so no significant effect on dependent variable ETR in Model 1. Model 1 does confirm the difference in effective tax rate between domestic-only organizations and multinationals as is presented in the graph of figure 2, and provides evidence for the statistical significance of this difference. Model 1 employs independent variables TIME and MNE while controlling for company characteristics commonly known in prior research to affect firm's tax avoidance behaviour. Dummy-variable MNE reports a significant positive coefficient of 0.014 ($p = 0.001$) in Model 1, which can be interpreted as: being a multinational organization ($MNE=1$) increases the yearly effective tax rate (total income expense divided by pre-tax income) with 1.4%. This indicates that international orientated organizations report a significant higher effective tax rate compared to purely domestic organizations in their consolidated balance sheet. From this result we can conclude that the existence of international located subsidiaries inside a firm's organization has a positive effect on the reported effective corporate tax rate, so a negative effect on the firm's level of tax avoidance. This eventually results in a higher tax burden and a lower cash flow for the average international operative organization.

When looking at dependent variable TIME a negative slope on the time trend is observed of 0.003 ($p = 0.012$) for all firms taken together in Model 1. This negative slope is aligned with the results found in hypothesis 1, and further confirms the results of this hypothesis. This multivariate regression adds to hypothesis 1 that the negative time-trend remains significant while controlling for other relevant tax avoiding factors. An interesting result is found in Model 2 (multinational firms) and Model 3 (domestic only firms). Model 2 documents a significantly negative time trend ($p = 0.005$) and model 3 documents a time trend, which is negative but not significant ($p = 0.348$). It becomes peculiar when these results are compared to the results of Model 2 and 3 of hypothesis 1, because these are almost conversed: TIME in hypothesis 1 Model 2 documents no significance where Model 3 does report a significant negative time-trend. Because the multivariate OLS regressions of hypothesis 2 adds control variables and yearly-fixed effects to the OLS regression of hypothesis 1 I follow the results found in table 5. Also, because the R-squared of the models in hypothesis 2 is larger than those of hypothesis 1 in both Model 2 ($0.025 > 0.000$) and Model 3 ($0.061 > 0.001$) I place a

greater trust in the results of Table 5. However to further assess the difference in time-trend between the two groups a fourth model is created, which includes interaction term MNE_TERM. The results of this model (Model 4) show that the interaction term is not significant at all ($p = 0.989$). Taking together the insignificance of the interaction term in Model 4 and the contrary results of the tests on the individual groups of hypothesis 1 and 2 I conclude that the full sample shows a negative time-trend in ETR but no significant differences are found between the time-trends of the two groups.

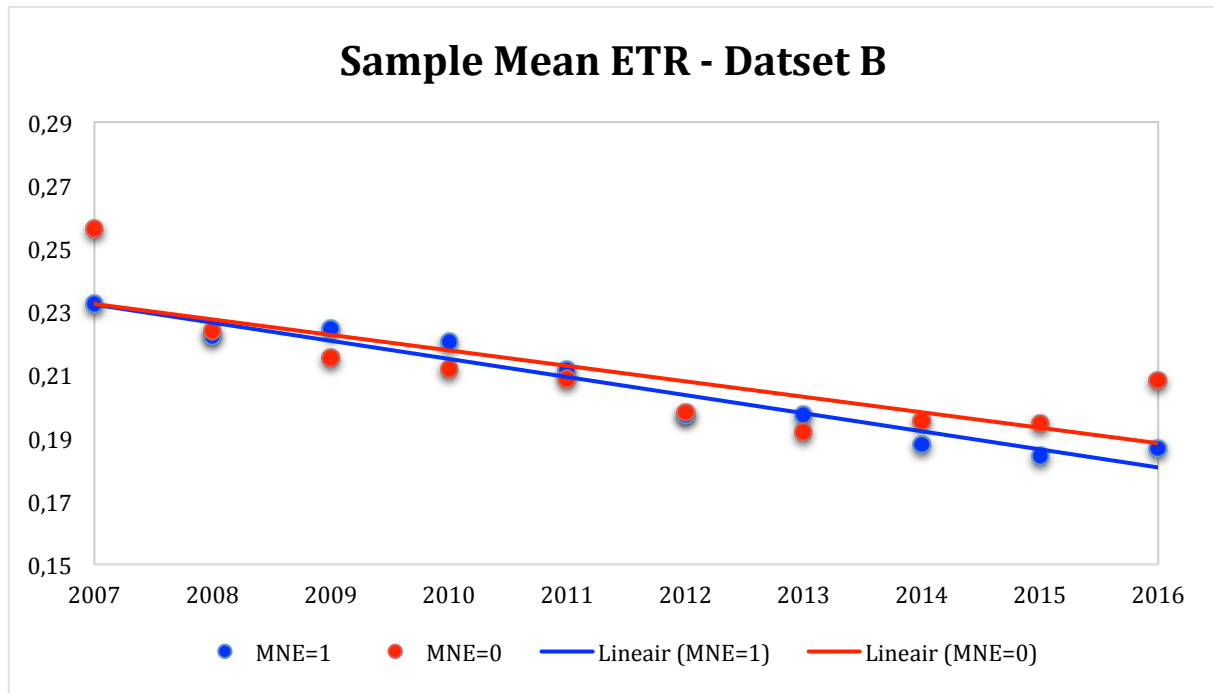
Overall the results of this section are contrary to the expectations stated in hypothesis 2. For the organization-level sample of Dataset A, purely domestic organizations report a lower ETR in their consolidated balance sheet compared to multinational organizations¹⁰. Although these international-operative organizations possess subsidiaries outside of the Netherlands that might provide them with tax-planning opportunities, the average multinational in the end documents a higher effective tax rate than a purely domestic firm. This result contradicts to the common belief that multinationals report a lower ETR and therefore has a higher level of tax avoidance than purely domestic organizations. Whether this is also the case on an unconsolidated level for subsidiaries will be tested in the following hypothesis.

5.2.3 Testing Hypothesis 3

For the third hypothesis I shift the focus from the consolidated financial statements of Dutch established organizations to (unconsolidated) financial statements of Dutch located subsidiaries. By focusing on unconsolidated financial reporting on the subsidiary level, I might be able to detect whether the use of local subsidiaries provides domestic organizations with the opportunity to lower the effective corporate tax burden, even without cross-border income shifting available. However, as further discussed in hypothesis 3 I expect reported ETR of subsidiaries owned by multinationals to be lower compared to subsidiaries owned by purely domestic groups as a result of more effective tax planning. Again, first a visualisation is given in Figure 3.

¹⁰ This is consistent with the research of Collings & Shackleton (1995) which also reported a higher for multinational firms in an U.S.-sample but inconsistent with Dyreng (2016), which did not find significant differences between multinational organizations and purely domestic organizations.

Figure 3



In figure 3 the sample mean of dependent variable ETR is plotted for both domestic (MNE=0) and multinational (MNE=1) subsidiaries. As is also shown in figures 1 and 2 a decreasing trend-line is shown during sample period 2007 - 2016 for both sample groups. Subsidiaries owned by purely domestic organizations (MNE=0) report a substantially larger ETR-value in the first (2007) and last (2016) year of our sample period, but in the other years the difference is less evident. Overall, the plot provides no clear indication of significant differences in reported ETR between Dutch subsidiaries owned by the two groups over time. To further assess hypothesis 3 a multivariate OLS regression is performed. This regression is presented in table 6.

Table 6
OLS Multivariate Regression Results (Hypothesis 3)

	Model 1	Model 2	Model 3	Model 4
	(All Firms)	(Multinationals)	(Domestics)	(Incl. int. term)
	<i>ETR</i>	<i>ETR</i>	<i>ETR</i>	<i>ETR</i>
<i>INTERCEPT</i>	0.115	0.177	0.064	0.112
MNE	-0.011*** (0.000)			-0.004 (0.336)
TIME	-0.005*** (0.000)	-0.005*** (0.000)	-0.005*** (0.000)	-0.004*** (0.000)
MNE_TIME				-0.001 (0.103)
ROA	0.081*** (0.000)	0.056** (0.000)	0.090*** (0.000)	0.080*** (0.000)
ASSETS	0.013*** (0.000)	0.005*** (0.000)	0.016*** (0.000)	0.013*** (0.000)
LEV	0.000** (0.022)	0.000 (0.264)	0.000** (0.037)	0.000** (0.022)
ITAR	0.143*** (0.000)	0.198*** (0.000)	0.113*** (0.000)	0.143*** (0.000)
<i>R-squared</i>	0.065	0.040	0.085	0.065
<i>F-test value</i>	91.47 (0.000)	14.43 (0.000)	92.89 (0.000)	85.67 (0.000)
<i>Observations</i>	20,343	5,238	15,105	20,343

In this table the results of estimation eq. (3) are reported, which is an multivariate OLS regression of ETR on a linear time trend (TIME), dummy-variable for multinational operations (MNE) and control variables. All variables are as described in appendix A. The regression control for yearly fixed effects. For all regression models robust error terms are used. T-statistics are reported in parentheses below the coefficient estimates. Probability (p.) is reported in the parentheses below the coefficient estimates. Statistical significance is represented at the ten (p. < 0.1 = *), five (p. < 0.05 = **) and one (p. < 0.01 = ***) percentage levels, respectively.

To statistically test hypothesis 3 a multivariate OLS regression is performed on Dataset B, using subsidiaries' ETR as dependent variable and MNE and TIME as independent variable. Dummy-variable MNE holds a value of 1 when the subsidiary is part of an organization also established outside the Dutch jurisdiction, in which case we label the subsidiary as part of a multinational. When the subsidiary is part of a group in which all subsidiaries are located domestically the subsidiary is labelled with value 0. The results of the multivariate OLS regression are presented in table 6. For the full sample (Model 1), control variables ROA, ASSETS, LEV and ITAR are all found positive and significant. Next, independent variable TIME is statistically significant with coefficient -0.003 ($p = 0.000$), which indicates that also on the subsidiary-level corporate tax burden has decreased in recent years. When the OLS regression is separately performed on multinational owned subsidiaries (Model 2) time-trend coefficient is -0.005 ($p = 0.000$) and for subsidiaries that belong to purely domestic organizations (Model 3) the coefficient has also a significant value of -0.005 ($p = 0.000$). Again interaction term MNE_TIME is implemented in Model 4. The coefficient of this variable is not significant ($p = 0.103$), which means that no significant differences exist in the trend over time as a result of dummy MNE. Regarding the time-trend, I conclude that a negative trend in effective tax rates is found on the full sample and on the individual samples existing of subsidiaries owned by multinationals and domestics. However, no significant differences are found between the time-trends of the two groups.

Hypothesis 3 states that the effective tax rates of subsidiaries owned by Dutch multinationals expected to be lower compared to Dutch domestic firms. The results of the OLS regression on the full sample as presented in Model 1, Table 6 confirm this hypothesis as the coefficient for dummy variable MNE is negative and significant with a value of -0.011 ($p = 0.000$). However, this significance does not hold for Model 4, when interaction term MNE_TIME is implemented in which case dummy-variable MNE loses its significance ($p = 0.336$). This can be explained as the additional effect of being a multinational (MNE=1) per year has a negative but not significant value of -0.001 ($p = 0.103$). By implementing this additional effect into the model this reduces the individual effect of dummy-variable MNE on ETR. Nonetheless, the coefficient of dummy-variable MNE is significant in the primary regression of Model 1. Therefore I can conclude that the multinational organizations in the sample are better able to report a lower level of effective tax rate for their subsidiaries – and therefore a

higher level of tax avoidance – compared to the level purely-domestic organizations are able to achieve¹¹.

The interesting fact remains that table 5 shows that purely domestic organizations report a *lower* ETR compared to multinational organizations, but table 6 provides that subsidiaries owned by domestic organizations report *higher* ETR's than multinational owned subsidiaries. This means that that the lower reported level of ETR for domestic groups compared to multinational groups as cannot be explained by the use of local subsidiaries as proposed in hypothesis 3. Which means that the higher ETR for multinational groups compared to domestic groups must be explained otherwise. One possible explanation could be the political costs hypothesis, in which international operating organizations encounter certain costs domestic-only operating organizations do not encounter¹². Other explanation of the lower tax burden for domestic organizations on a consolidated level could be the effective use of tax opportunities provided by the Dutch government as explained in chapter 2.7. Nonetheless its explanation, the results from the OLS regression on dataset A show that Dutch organizations only located in the domestic jurisdiction are able to report a lower corporate tax burden compared to international located organizations. This finding lays contrary to the common belief that multinational organizations are solely able to avoid taxes compared to smaller domestic organizations. Further, a statistically significant negative time-trend is reported of ETR during the sample period for the full sample of both dataset A and dataset B. Which shows that both samples in total (on organization-level and on subsidiary-level) are – with statutory rate held relatively equal - increasingly able to avoid taxes. The robustness of these results will be tested in the additional analysis of chapter 5.4.

¹¹ This is in line with the study of Reno (2003), which finds the same effect of international operation on the level of ETR, after controlling for firm size and profitability. However - as nearly all other studies used for this thesis – Reno (2003) is performed on a consolidated basis, and not on subsidiaries individually.

¹² The “political costs hypothesis” by Zimmerman (1983) is based on size, in which larger firms receive greater political attention that translates in higher tax burdens. However, a firm's international operations could potentially have the same effect.

5.3 Additional analysis

In this chapter two additional tests are performed to test the robustness of the results found in chapter 5. As is found when calculating the total number of recorded subsidiaries and total asset size, multinational organizations are on average much larger than purely domestic firms. This difference in size could be a potential confounding factor when testing the effect of international activity on firm's tax avoidance behaviour. Although I already control for this potential confounding factor as a control variable in the primary multivariate OLS regression, for this additional analysis the regression is re-performed for the larger firms following the study of Dyreng et al (2016). Including only the firm-years in the upper quartile of total assets operationalizes this. Whether the trend of domestic-only groups reported ETR remains negative and significantly below the trend of multinationals is shown in the results of these tests. The results of this first sensitivity tests can be found in Table 7, Model 2 for dataset A and Table 8 Model 2 for dataset B.

A second sensitivity tests performed in this chapter concerns the statutory rate on corporate income in the Netherlands. Although this rate is generalized at 25%, this is untrue for the first portion of the profit as is already described in chapter 2.2.1. Up until the amount of 200.000 EUR, corporate income in the Netherlands is taxed at a rate of 20%¹³. The portion of the income above 200.000 is taxed at the regular rate of 25%. This means that a small firm with a profit below 200.000 EUR theoretically would be able to achieve a ETR of 0.20, where a substantially larger company with a profit of multiple millions would report a higher ETR more equal to 0.25. For this research this would mean that we could come to the situation that a smaller firm is labelled as better able to avoid taxes compared to a larger firm, where in reality the lower ETR of the smaller firm is not a result of tax avoidance but a result of a lower statutory rate. It's like comparing apples to oranges. To prevent this from happening, in the second sensitivity tests I control for this by only using observations that report a pre-tax income below 200.000. This way it's assured that all firms in the sample fall under the same statutory tax rate. The results of the second sensitivity test can be found in Table 7, Model 3 for dataset A and Table 8, Model 3 for dataset B.

¹³ Until 2007 Dutch statutory tax rate on corporate income has been 20% up to 275.000EUR and 25,5% above. Since 2008 the rate is 20% up to 200.000 EUR and 25% above.

Table 7
OLS Multivariate Regression Results (additional analysis on dataset A)

	Model 1	Model 2	Model 3
	<i>(Full sample)</i>	<i>(Highest quartile)</i>	<i>(< 200.000 EUR)</i>
	<i>ETR</i>	<i>ETR</i>	<i>ETR</i>
<i>INTERCEPT</i>	0.243	0.385	0.222
<i>MNE</i>	0.014*** (0.001)	0.031*** (0.000)	0.016*** (0.000)
<i>TIME</i>	-0.003** (0.012)	-0.003 (0.186)	-0.003** (0.028)
<i>ROA</i>	0.054*** (0.000)	-0.026*** (0.558)	0.065*** (0.000)
<i>ASSETS</i>	-0.002 (0.222)	-0.015*** (0.000)	0.001 (0.712)
<i>LEV</i>	0.001*** (0.000)	-0.001 (0.326)	0.001*** (0.000)
<i>ITAR</i>	0.225*** (0.000)	0.184*** (0.000)	0.230*** (0.000)
R-squared	0.045	0.047	0.047
F-test value	14.36 (0.000)	5.53 (0.000)	16.20 (0.000)
Observations	9,066	2,263	8,897

In this table the results of estimation eq. (2) are reported, which is an multivariate OLS regression of ETR on a linear time trend (TIME), dummy-variable for multinational operations (MNE) and control variables. All variables are as described in appendix A. The regression control for yearly fixed effects. For all regression models robust error terms are used. T-statistics are reported in parentheses below the coefficient estimates. Probability (p.) is reported in the parentheses below the coefficient estimates. Statistical significance is represented at the ten (p. < 0.1 = *), five (p. < 0.05 = **) and one (p. < 0.01 = ***) percentage levels, respectively.

Model 2 of table 7 presents the result of the regression performed on the highest quartile of the sample. The significant positive effect of international operations on firms reported ETR as found in the primary regression (Model 1) is confirmed in the robustness test of Model 2. From this robustness check can be concluded that the negative effect of being a multinational organization is also confirmed for the larger organizations in our sample. Moreover, this analysis confirms that multinational organization report higher ETR's not only compared to small domestic companies but also compared to (equally) large domestic organizations. Model 2 does not confirm the negative time trend of organization's reported effective tax rate as found in the primary regression (Model 1). When performing the test on the upper quartile of the sample the coefficient of TIME loses its significance ($p = 186$). This means that for the larger organizations in dataset A no significant time-trend is observed.

In Model 3 of table 7 the results are presented for the second robustness test: for the firms in the sample reporting profits below 200.000 EUR. The coefficient MNE remains positive and significant, which means that international organizations have a higher tax burden, also when excluding larger and more profitable organizations that fall under the higher statutory tax rate. Further the time-trend remains negative and significant, signifying that also for this smaller sample the reported effective tax rate is decreasing over the sample-period. Moreover, most interesting in this second sensitivity test is the number of observations. By excluding all firms-year observations in which an organization reported a profit above 200.000 EUR only 169 observations are excluded. This small exclusion means that – beyond some exceptions (ASM, Akzo Nobel, KPN, Ahold) – most organizations used in this research are smaller organizations or report a lower profit. This finding takes the other results regarding reported ETR's more in perspective. If almost all organizations are subject to the lower statutory tax rate of 20%, this means that both the full sample and the individual groups of multinationals and domestic organizations report an average ETR substantially above statutory rate.

Additionally, robustness checks are performed on Dataset B consisting of subsidiaries owned by multinational or domestic-only organizations. Also for Dataset B I check whether the results as found in chapter 5.2 are robust by only including subsidiaries from the top quartile in asset size and a excluding all observations reporting a profit above 200.000 EUR. The results are provided in table 8.

Table 8
OLS Multivariate Regression Results (additional analysis on dataset A)

	Model 1	Model 2	Model 3
	(Full sample)	(Highest quartile)	(< 200.000 EUR)
	<i>ETR</i>	<i>ETR</i>	<i>ETR</i>
<i>INTERCEPT</i>	0.115	0.383	0.112
<i>MNE</i>	-0.011*** (0.000)	-0.008* (0.053)	-0.011*** (0.000)
<i>TIME</i>	-0.005*** (0.000)	-0.004** (0.001)	-0.005*** (0.000)
<i>ROA</i>	0.080*** (0.000)	0.024 (0.181)	0.082*** (0.000)
<i>ASSETS</i>	0.126*** (0.000)	-0.014*** (0.000)	0.013*** (0.000)
<i>LEV</i>	0.000** (0.022)	0.000 (0.334)	0.000** (0.025)
<i>ITAR</i>	0.143*** (0.000)	0.308*** (0.000)	0.144*** (0.000)
R-squared	0.065	0.052	0.067
F-test value	91.47 (0.000)	11.55 (0.000)	96.27 (0.000)
Observations	20,343	5,064	20,314

In this table the results of the sensitivity tests are reported. Model 1 represents the regular test, which is a multivariate OLS regression of ETR on a linear time trend (TIME), dummy-variable for multinational operations (MNE) and control variables. Model 2 is the same multivariate OLS regression but on the highest quartile of observations regarding size calculated using total assets. Model 3 represents the same OLS regression but excludes observations reporting a profit above 200.000 EUR. All variables are as described in appendix A. The regression control for yearly fixed effects. For all regression models robust error terms are used. T-statistics are reported in parentheses below the coefficient estimates. Probability (p.) is reported in the parentheses below the coefficient estimates. Statistical significance is represented at the ten (p. < 0.1 = *), five (p. < 0.05 = **) and one (p. < 0.01 = ***) percentage levels, respectively.

Table 8 presents the first sensitivity tests. The primary regression (Model 1) on Dataset B shows that subsidiaries owned by multinationals report a lower effective tax rate when compared to domestic-owned subsidiaries. Further, a negative and significant trend over time is found in the primary regression on Dataset B. When repeating the regression on the subsidiaries with largest total asset value (highest quartile), dummy-variable MNE remains significant and negative as shown in Model 2 of Panel B. However, the coefficient of dummy MNE is less significant in Model 2 ($p. = 0.053$) when compared to Model 1 ($p. = 0.000$). Time-trend coefficient TIME remains negative and significant when testing solely the highest quartile as is presented in Model 2 ($p. = 0.001$). In Model 3, Panel B, all subsidiaries reporting profits above 200.000 EUR are excluded. As can be expected after the sensitivity test on dataset A not many observations from dataset B are excluded from the regression. Only 29 firm-year observations of subsidiaries are deleted because these were above the limit of 200.000 EUR. This is in line with the arguments stated for dataset A.

Overall, the significant coefficient of dummy-variable MNE in both datasets holds under the robustness checks as presented in table 7 and 8. Re-performing the regression on the upper quartile of company size in both datasets and re-performing the regression when excluding firms affected by higher statutory rate did not change this significance. Time-trend coefficient TIME does not hold under the first robustness tests in the group-level sample (Dataset A), the coefficient loses its significance when performing the tests solely on the upper quartile of organizations. The significance of the negative time-trend as found in the results in chapter 5.2 does hold under the other robustness tests in dataset A and B.

Chapter 6: Conclusion

This thesis aims to assess the relation between tax avoidance behaviour and international operations over time for Dutch organizations, to test whether subsidiaries established outside of the Netherlands help Dutch firms to increasingly lower their effective tax burden. This way I assess the common belief that large international operating organizations are increasingly able to reduce their tax burden. To investigate the association over time I broadly follow the research of Dyreng (2016) for the first two hypothesis, which means that first solely the effect of time on the level of tax avoidance is calculated and second the effect of international operations and time and including control variables. For the third hypothesis the second test is re-performed on the dataset containing subsidiaries to test possible differences or explanations for the results found in prior hypotheses.

Consistent with hypothesis 1, I find a negative time-trend for reported effective tax rates during the sample period across the full sample of Dutch organizations. This means that Dutch organizations as a whole are increasingly able to reduce their tax burden. This finding is in line with the questions raised in the Dutch House of Representatives and with the studies that were initiated after this debate. On average, effective tax rates of the organizations in the sample decreased an aggregated 2,0 percentage point during the sample period 2007 until 2016. An even larger decrease in effective tax rates over time is observed for the individual subsidiaries in the sample, which decreased an aggregated 4,6 percentage point during the sample period. Although these results provide empirical evidence to state that Dutch organizations are increasingly able to avoid taxes, this is not confirmed in all additional tests in this research. The negative time-trend loses its significance on the full sample of organizations in the additional tests when re-performing the regression on the largest organizations in the sample. For the subsidiary-sample the negative time-trend that is found using the full sample of subsidiaries is confirmed by testing the different groups individually and by the two robustness checks as performed in chapter 5.3. Overall, a decrease in effective tax rates over time is reported in both datasets, which confirms the first hypothesis – but no differences in this trend are found between multinationals and domestic firms.

Additionally it is favourable to mention that – even with the negative time-trend – average reported effective tax rates in all sample-years have remained fairly above Dutch statutory tax rate. Moreover because - as found in the sensitivity tests of chapter 5.3 - almost all organizations in the sample report profits below 200.000EUR which means they effectively

are subject to the lower rate of 20% corporate income tax. Therefore, it's difficult to describe the reported negative time-trend as "tax avoidance" when this means the average effective tax rate decreased from 25.1% to 23.1%.

Of further interest is the result in hypothesis 2 regarding the difference in the level of effective tax rates between international operationalized groups and pure domestically located groups. The results of the tests do not support hypothesis 2 and are contrary to the belief that multinationals are able to report lower effective tax rates as a result of more tax planning opportunities. In fact, the results do not show the documented ETR's for multinational groups are equal to those of Dutch domestic groups - as is presented in the United States-sample of Dyreng (2016) - but the results show that multinational groups report an effective tax rate that is significantly above the rate of domestic groups. The implications of this result can be seen in two ways. First - although multinational groups might have access to tax avoidance opportunities not available to domestic organizations - domestic groups find other ways to lower efficiently lower their tax burden. As proposed in chapter 2.2.3 the Dutch tax system does oppose several tax opportunities, which are only available (or to a greater degree) to Dutch firms. A second way to look at these results is not to see reported effective tax rate of domestic organizations as "low", but to look at the effective rate of multinationals as remarkably high. When we generalize and consider the difference between multinational groups and domestic groups is only based on the existence of international subsidiaries, the suggestion could be made that the possession of internationally located subsidiaries are the reason for the higher tax burden of multinational groups. In other words: international subsidiaries might not be a blessing but a curse. Although this is an interesting thought, the results from this thesis find no evidence for this matter because subsidiaries located outside of the Netherlands do not fall in the scope of this research. Further analysis will have to test this theory.

The outcome of the second hypothesis that domestic groups in their consolidated financial statements report a lower effective tax rate compared to multinational groups is not confirmed on the subsidiary-level. In the tests of hypothesis 3 Dutch subsidiaries owned by multinational groups document an effective tax rate that is significant below the rate of subsidiaries owned by domestic groups. This result does not hold when the interaction term is implemented but does hold under the robustness checks of chapter 5.4. When solely looking at the results of the third hypothesis, a reason for the lower ETR of multinational's subsidiaries could be that

multinational organizations are better able to organize their corporate income inside their international organized cooperation. The results of the empirical tests confirm the expectations stated in hypothesis 3.

But, when the results of the second and third hypothesis are compared the findings are more remarkable. Despite the fact that the subsidiaries of Dutch multinationals report a *lower* ETR, on consolidated-level multinational groups show a *higher* effective tax rate compared to Dutch domestic groups. This is particularly impressive because the group-sample (dataset A) consists of groups identified through the sample of subsidiaries (dataset B), in other words: all subsidiaries in the second sample are part of groups in the first sample. As a result, the reported effective tax rates of groups' subsidiaries are also part of the groups consolidated financial statements. This brings us to the first large caveat of this thesis. As already mentioned in in chapter 4.3 of sample selection, a problem using the unconsolidated data of organizations in this thesis is the limited availability of financial information – especially tax information – of these firms. As a result of this I was not able to implement the tax information of al Dutch subsidiaries of the identified groups into the subsidiary-sample. Especially for some large multinational organizations as Philips (504 recorded subsidiaries) and Akzo Nobel (485 recorded subsidiaries) only a few in the Netherlands located subsidiaries are implemented in the sample of Dataset B on which the tests of hypothesis 3 are performed. Therefore I must conclude that the results of the tests of the third hypothesis are not as credible as the results of the regression might present, and these results should be interpreted with caution. In my perspective, this does not so much affect the significance of the findings for the group-sample in hypothesis 2. Although this sample of groups might consists of only a fraction of al Dutch organizations with subsidiaries located in the Netherlands, the consolidated financial data of these selected groups are complete and therefore the results of the group-sample do no suffer as much under the effect of incomplete numbers as is the fact for the subsidiary-sample.

Another limitation – which has effect on this study in total – is the effect of the proxy for tax avoidance chosen for this research. As previously described in chapter 4.2.1 the GAAP ETR which is used in this research does not capture all ways of tax avoidance behaviour. Unfortunately, the database used for this thesis limits the possibility of using other tax avoidance measures. As a consequence, the GAAP ETR does not capture tax avoidance actions such as the deferral of tax payments. Also measures that affect both the nominator as

the denominator of the GAAP ETR are effectively not captured by this measure. With respect to this limitation, the average ETR in both samples - which is substantially above statutory rate - therefore cannot result in the conclusion that no tax avoidance behaviour is executed. It therefore also does not imply that Dutch organizations of any sort do not avoid taxes in any matter. Moreover, it implies that the measure used in this thesis does not capture all possible executions.

This study adds to the literature in 4 ways. First, this research aims at a specific market – Dutch organizations with Dutch subsidiaries – that makes all firms in the sample subject to the same laws and regulations, especially to the same statutory tax system. It further adds to the tax avoidance literature that – also in a non-U.S. sample – purely domestic organizations can achieve an effective tax rate that is below the reported effective tax rate of multinational organizations. This implicates that the singular focus of academic research, policy makers and the public opinion on multinationals when discussing tax avoidance might be unjustified. Third, this thesis finds its relevance because it uses data of the firms inside the sample on both the organization-level (looking at the consolidated balance sheet) and on the subsidiary-level (by looking at the individual firm’s financial statements). To the best of my knowledge, only one study relating to tax avoidance makes use of this “unconsolidated” approach but this research uses another approach. Lastly, the results from this thesis confirm that Dutch organizations are increasingly able to lower their tax burden, however this time-trend remains substantially above effective statutory rate. This means that the results of this thesis do not confirm the fact that Dutch organizations are increasingly able to “avoid taxes” - at least not using the tax avoidance measure applied in this thesis. Instead, the results form more of a confirmation of the effectiveness of the Dutch tax system and its ability to deal with an increasingly globalized market.

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Additional documents:

Appendix A: Variable Description

Variable name	Variable definition
<i>ETR</i>	= GAAP effective tax rate, calculated as firms total corporate income-tax expense (Orbis item <i>taxation</i>) divided by pre-tax accounting income (Orbis item <i>P/L before tax</i>).
<i>MNE</i>	= Dummy-variable that is classified 0 when an organization's total number of subsidiaries located in the Netherlands (from Orbis item <i>subsidiary - BvD ID number</i>) is equal to the total number of subsidiaries belonging to the organization (Orbis item No of recorded subsidiaries). The dummy is valued 1 when the total number of subsidiaries is not equal (larger) than the total of subsidiaries located in the Netherlands.
<i>TIME</i>	= Time-trend variable, which is valued 0 in the first year of the sample period (2007) and increases up-to value 9 for the last year in the sample period (2016).
<i>MNE_TIME</i>	= Interaction term, calculated by multiplying dummy-variable MNE and time-trend variable TIME.
<i>ROA</i>	= Calculated as firm's pre-tax income (Orbis item <i>P/L before tax</i>) divided by total asset size (Orbis item <i>total assets</i>).
<i>ASSETS</i>	= Calculated as the natural logarithm of firm's total assets (Orbis item <i>P/L before tax</i>)
<i>LEV</i>	= Calculated as firm's debt divided by equity. Debt is calculated as total assets (Orbis item <i>total assets</i>) minus equity and equity is calculated as capital the sum of Orbis items <i>Capital, Shareholders funds and Other shareholders funds</i>
<i>ITAR</i>	= Calculated as the size of firm's intangible assets (Orbis item <i>intangible fixed assets</i>) divided by total assets size (Orbis item <i>total assets</i>).