Tax avoiding behaviour in the Netherlands: Do multinationals avoid more tax?

An empirical thesis on the association between company structure and tax avoiding behaviour in the Netherlands.

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Abstract

This thesis investigates whether the tax avoiding behaviour of Dutch multinationals and Dutch domestic firms in the Netherlands differs. A simple model is used to investigate whether the company structure influences tax avoiding behaviour. Using a strict definition on multinationals, this thesis finds that Dutch multinationals pay 2,5 percent less effective tax compared with Dutch domestic firms. This is consistent with the prediction being made in this thesis. This could be related to the Dutch's tax regulation system: The participation exemption and the Double Tax Treaty-network (DTT) are regulations that could explain the possible differences in effective tax rates between Dutch multinationals and Dutch domestic firms. These results can help explaining the political questions whether the regulations indeed are used to give multinationals benefits. Although, this thesis has its limitations: intercompany transactions and events cannot be controlled for and can be a bias-creating aspect.

Keywords

Tax avoiding behaviour, Dutch multinationals, Dutch domestic firms, the Netherlands and effective tax rates.

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1. Introduction and motivation

Policymakers seem to be increasingly worried towards cross-country differences in tax rates. Those cross-country differences in tax rates seem to lower the real economic activity of other countries, if taxes rate are too high. Many experts state that a prediction on a 'race to the bottom' for taxes is implemented. An example of such a prediction is the Organization for Economic Cooperation and Development (OECD) report (2000). This report investigates possible 'harmful tax practices'. The OECD report (2000) states that differences in corporate taxes rates could induce real activity shifts. However, Bartelsman and Beetsma (2003) state that those different corporate taxes could also create pure accounting income shifts between countries.

Dyreng, Lindsay and Thornock (2012) found that companies use foreign tax havens to decrease their effective tax rates. But, Dyreng et al. (2012) investigated something that has not been investigated in prior research. They stated that U.S. firms also avoid tax in their own country. They found that the state Delaware was used for this purpose and therefore could be stated as a tax haven. Firms that operate in the U.S. (domestic firms) seem to use Delaware to decrease their effective tax rates. Dyreng et al. (2012) were the first in investigating these tax benefits for domestic firms. A new topic in future research was born.

Companies that operate in foreign tax havens are stated as multinationals in the research of Dyreng et al. (2012). Combining the definitions on multinationals in prior literature, this thesis gives an answer on the existing grey area that exists in current research in multinationals. This new topic has been researched in the U.S. many times. Europe, and especially its different countries with its different tax regulations, leaves many opportunities open to investigate. In this trend, the following research question can be defined:

→   Does tax avoiding behaviour differ between Dutch multinationals and Dutch domestic firms in the Netherlands?

It is important to define an answer on this research question. First of all, the possibility of differences in tax avoiding behaviour between Dutch multinationals and Dutch domestic firms seems very likely. This is mainly because of the Dutch' tax regulation system. An example of an existing rule, which could create the differentiation between both sorts of companies' tax avoiding behaviour could be the "participation exemption" (or deelnemingvrijstelling in Dutch), the Double Taxation Treaty (DTT) network and the tax rulings. These will be further explained in the second chapter. It is important to note that it is more likely that multinationals will acquire more benefits from the participation exemption then domestic firms. Multinationals

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can pay out dividends at the subsidiaries which are based in tax havens. However, domestic firms do not have the opportunity to pay out dividends in foreign subsidiaries. Simply, because they do not have any foreign subsidiaries. Van Dijk, Weyzig and Murphy (2006) state that the Netherlands has one of the largest tax treaty networks in the world and, therefore, can be used by companies as part of their tax planning strategies. The Netherlands has been a key player in international tax planning for many years. The Netherlands could maintain this preferable place in international tax planning, because the Netherlands is a stable and reliable economic based country. This creates an incentive for companies to move to the Netherlands and stay there to benefit of the existing tax regulation system (Van Dijk et al., 2006).

The Dutch Central Bank (DNB) has a special name for the companies that are based in the Netherlands purely for tax planning reasons. The DNB calls these firms Special Financial Institutions (SFI's), or in Dutch, Bijzondere Financiële Instellingen (BFI's). Among these institutions are the famous 'mailbox companies' and 'paper headquarters' (DNB, 2000). These SFI's generate 2,500 jobs for the Dutch people and a total tax revenue for the Dutch state of €1,7 billion (van Dijk, Weyzig, & Murphy, 2006).

The study of Van Dijk et al. (2006), answers the question that circulates when the tax aspect of the Netherlands is discussed: Is the Netherlands a tax haven? The study focuses mainly on multinationals and how these multinationals benefit from the Dutch's tax regulations. The investigation of domestic firms, and whether they could profit from the tax regulations in the Netherlands, has not yet been done. As stated in the introduction, Dyreng et al. (2012) manage to find results for the U.S.A., and especially Delaware. These findings cannot be generalized to the Netherlands, regarding the fact that the Netherlands have a different tax regulation system. However, this is another research topic regarding the fact that only a country is investigated, and not a region where the country is a part of.

As explained by prior research, companies state that it is important to acquire lower effective tax rates. Lower effective tax rates could maximise the shareholders' value of the companies. Devereux, Lockwood and Redoano (2008) agree with this statement, and state that this is the reason why countries are competing with their statutory tax rates over the past 25 years. This means, that when the possibility exists to lower the effective tax rates, it seems likely that companies indeed will acquire lower tax rates. Lower effective tax rates will result in a higher net income and this is favourable for both the company self, as for the stakeholders of this company.

On the one hand, many people state that tax havens are undesirable. Dyreng, Hanlon, Maydew and Thornock (2016) state that companies should never be able to plan tax and should

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pay the tax in the country where they operate. They do not agree with the fact that multinationals have the opportunity to lower their effective tax rates and domestic firms have not. In their opinion, it is strange that the companies with the most money, are able to acquire a lower effective tax rate. On the other hand, Dharmapala and Hines Jr. (2009) state that a tax haven could be beneficial for the world. It could create opportunities for small countries, commonly below one million in population, to acquire economic activity. This could create a chance for them to keep growing and competing with the larger countries.

1.1   Findings

The sample will run in the period 2000-2016. The Compustat fundamentals database and the AMADEUS Bureau van Dijk database are used to acquire data. The website www.company.info is used to acquire information on the date when the subsidiary is acquired. The sample consists of 972 observations, having 149 different companies in the sample. Out from these 149 companies, 47 companies contain yearly observations that are multinational-related. 142 companies have yearly observations that are domestic-related. This results in 176 multinational observations and 796 domestic firm observations.

Predicted is the fact that Dutch multinationals pay less effective tax then Dutch domestic firms. This is being estimated using OLS. The following equation is being used to investigate the possible relation:

$$ETR = \alpha + \beta1 * MNE\ (DUMMY) + \beta2 * lagTA + \beta3 * LagEmployee + \beta4 \\ * lagGoodwill + \beta5 * PPE + \beta6 * RD + \beta7 * SI + \beta8 * leverage + \beta9 \\ * Capital\ expenditures + \epsilon$$

The most important variable is the dummy variable MNE. When this variables has a significant positive or negative sign, the hypothesis could be accepted or rejected. When this possible relation is found, a conclusion can be drawn regarding the existence of differences between both sorts of Dutch companies.

After controlling for financial statement accounts in a company and time fixed effects, a significant negative relation between the MNE and the ETR is found. This means, that multinationals pay less effective tax than domestic firms: this equals 2,5%. These results are informative for tax policies in the Netherlands. This thesis gives an answer on whether the implemented tax rules in the Netherlands are indeed used to benefit multinationals. Besides the information for tax policies, this thesis also contributes to the existing literature. Where tax

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related research is mainly investigated in the USA, Europe stays relative uninvestigated. Therefore, this thesis gives an answer on the effectiveness of the tax system and whether multinationals indeed are able to acquire a lower ETR compared with domestic firms in the Netherlands. Lastly, this thesis contributes to the relative grey area in the definition of multinationals. The thesis has its unique definition of multinationals, by combining prior literature.

1.2. Outline

This thesis consists of 8 chapters in total. The next chapter 2, will include a detailed theoretical background explanation of the thesis. Chapter 3 will contain the hypothesis development and the prediction on this hypothesis. Furthermore, in chapter 4 will be described how the research design is given form. Chapter 5 will contain the empirical analysis of the research design. In chapter 6, a conclusion will be drawn and an answer on the research question will be formulated. Chapter 7 will contain the bibliography with references of the used prior literature. The appendix, which is chapter 8, will contain the tables, images and graphs of this thesis.

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2. Theoretical background

This paper is related to research on tax avoiding behaviour at Dutch multinationals and Dutch domestic firms. In this chapter, existing literature is examined and the most closely related literature is described. The existing literature helps to define the gaps that exist in tax avoiding behaviour research. Those gaps are highlighted and an explanation is given on how and why these gaps should be filled. Furthermore, the choices for the research design are backed by the existing literature, which is described in the following paragraph. This chapter consists of prior research on two topics: tax avoiding behaviour in the Netherlands and multinationals and domestic firms.

2.1. Tax avoiding behaviour and the Netherlands

Tax avoidance behaviour, and especially tax avoidance behaviour at multinationals, is an aspect that is researched a lot in prior literature. As stated by Desai and Dharmapala (2006), taxing has a significant effect on restructuring decisions, pay-out policy, compensation policy and risk management decisions. So, taxes are viewed as one of many factors that shapes decision-making processes in companies. On the other hand, some researchers do not consider taxes to be part of accounting. The meaning of accounting research is to understand the information that is produced in the company and to communicate this to decision makers. Maydew (2001) states that taxes have an effect on the producing of information and explains this with an example of a chicken. His college asked: "Why did the chicken cross the road?" Maydew (2001) did not know the answer. After that, the college responded: "Because the taxes are lower on the other side of the road". The chicken represents the companies in real world.

Dyreng et al. (2016) agree with this view. They also state that taxes could have an impact on the decision-making process in companies. Although, as found by earlier research by Dyreng et al. (2012), differences exist between the decision-making processes at the two described types of companies: multinationals and domestic firms. Delaware, the state that is investigated, seems to be a tax haven for both multinationals and domestic firms. Further research on other countries or places in the world has not been done, regarding investigation in tax avoidance behaviour in both multinationals and domestic firms. Mostly, multinationals were only types of companies that were subjected to research.

Van Dijk, Weyzig and Murphy (2006) state that it is important to investigate the tax regulation system in the Netherlands. They try to answer the question whether the Netherlands is a tax haven. The paper finds that there are three main reasons why the Netherlands could be stated as a tax haven. First of all, the attractiveness of the Netherlands could be explained by

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the so-called "participation exemption". This rule exempts a company from paying its dividend taxes once again, after already paying the dividend tax. This rule occurs when the dividends between the mother and its subsidary are transferred. As explained by Van Dijk et al. (2006) the participation exemption exists to give companies the opportunity to transfer dividends free of tax between a company and its subsidiaries after paying the tax once. This gives multinationals the opportunity to pay their dividends in foreign tax havens and shift these after tax to the Netherlands. After this event, they can do anything they want with those dividends. As stated on a funny basis by Van Dijk et al. (2006), the Dutch' participation exemption has for many years been an export item, comparable with the Dutch' tulips and Gouda cheese.

Secondly, the existence of the Double Taxation Treaty (DTT) network makes it possible to reduce the amount of tax payables on dividends, interests and royalties. This network basically means that the Netherlands has appointments with other countries regarding tax regulations. Dividends, interests and royalties could be transferred to different (other) countries which have a really low statutory tax rate (the Cayman Islands or Republic of Ireland). Of course, this is only possible when one of the subsidiaries (or the mother itself) is based in the Netherlands and the other subsidiary (or mother itself) is based in one of the tax havens. This is a good reason why companies want to operate in the Netherlands.

Finally, the fact that the Netherlands has a clear and advanced tax regulation system gives an incentive to operate in the Netherlands. This gives certainty on how multinationals and its Dutch subsidiaries are getting taxed. On top of that, more general factors such as legal security and political – and economic stability are reasons to base in the Netherlands (Van Dijk et al., 2006).

Dyreng et al. (2012) were the first researchers who made a distinction between multinationals and domestic firms in tax behaviour. Given the fact that Delaware is a state in the United States of America (USA), it could be stated that it may be a 'country' on itself, with the existence of its own rules. Therefore, it is important to investigate a country, which only has one tax regulation system on itself: The Netherlands. The Netherlands seems a reasonable country to investigate, regarding the fact that it has the best economic performance in European Union and it is on the fourth place in the world following the report of the World Economic Forum (WEF, 2016). Especially with its identical tax regulation system, it gives a good reason for multinationals to operate in the Netherlands (Algemeen Dagblad, 2016).

Tax avoiding behaviour has also implications for political reasons, it seems good to discover possible differences between the tax payment behaviour of multinationals and domestic firms in the Netherlands. Nowadays, there is an ongoing debate in the Netherlands on

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whether multinationals should pay a higher corporate tax in the Netherlands compared with domestic firms. Multinationals have an effective corporate tax rate of around 25 percent, while the Dutch contractual working residents face a higher effective tax rate (Zembla, 2017). Again, the question arises whether it is 'fair' that the companies that acquire the most money are able to acquire the lowest effective tax rates. The Dutch's People's Party for Freedom and Democracy (VVD) prefers the opposite part of this debate. They state that the Netherlands should maintain their tax policies and should decrease the corporate tax rates. Only via decrease of the corporate tax rates, the Netherlands is able to maintain their current position in tax world. The VVD states that it is important to maintain this beneficial position for a relatively small country as the Netherlands (NOS, 2016).

The study of Hanlon and Heitzman (2010) gives a good summary of tax research in prior literature. They base their summary on four bases of tax, being: 1) the informational role of income tax expense reported for financial accounting, 2) corporate tax avoidance, 3) corporate decision-making including investment, capital structure and organizational form, and 4) taxes and asset pricing. Especially group 2) and 3) are important for this research. As Hanlon and Heitzman (2010) stated, the research design should somewhat change, to offer new insights in future research. This is exactly what Dyreng et al. (2012) and Dyreng et al. (2016) did. Therefore, in this research, the research design which is used in Dyreng et al. (2012) and Dyreng et al. (2016) is used to find an answer on the research question. Their most important modification is the inclusion of a dummy variable, which values "1" if the companies are multinationals and "0" if the company is a domestic firm.

Graham, Hanlon and Shevlin (2010a) state that investment decisions of companies are influenced by tax expenses in the country where they want to operate. Although the research consists of survey evidence, the research contributes to the existing question: do only multinationals profit from gaps in tax regulation systems? The survey shows that tax expenses and its tax rates have an impact on the investment decisions of companies. This means that the ETR, which is influenced by the tax rates, has impact on the decision whether the companies becomes a multinational.

Hanlon and Heitzman (2010) state that it is important to control for various financial statement accounts. They call an example of the fact that effective tax rates could change because of goodwill write-offs or increasing R&D expenses. For future research, it is important to control for those various variables. Dyreng et al. (2012) did control for those variables. Therefore, it is important to note that Dyreng et al. (2012) did their research, after the creation of the summary by Hanlon and Heitzman (2010). Dyreng et al. (2012) tried to implement the

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proposed ways to give a solution to the limitations on the studies relating tax avoiding behaviour.

2.2. Multinationals and domestic firms

What becomes clear, is the fact that the definition of a multinational contains a grey area (Donohoe, McGill & Outslay, 2012). Dyreng et al. (2016) and Rego (2003) state that a multinational is a company that obtains foreign income. However, they were aware of the fact that obtaining foreign income could contain a grey area. As stated by Hanlon and Heitzman (2010), the definition of a multinational could be different under every circumstance. Every research has its own topic, and this means that every topic has another definition of a multinational. When a more detailed definition of multinationals was given, this could take the possible grey area away. Kim and Hwang (1991) use another definition of multinationals. They state that the company should have a foreign subsidiary. This means, that obtaining foreign income is not enough to classify a company as a multinational. The problem with these definitions is the question whether the control of other subsidiaries is a good proxy, especially in the case of tax avoiding behaviour. If a subsidiary is hold for 50 percent, then the parent company will not transfer its profits, because half of the profits will transfer to the other holder(s) of the subsidiary.

Nicholas (1983) uses the definition of the United Nations. He states that multinationals are companies that control assets in two or more countries. This definition is more detailed than that of Dyreng et al. (2016) and therefore could be more useful. However, the same problem holds when the case in tax avoiding behaviour gets applied. Is controlling assets enough to state that multinationals use foreign countries to avoid tax? You control assets when you have 51 percent of the shares, but is that a good criteria regarding the topic: tax avoiding behaviour? Those are questions that arise in defining multinationals in prior literature.

Devereux and Griffith (1998) state that the definition on multinationals should be different in every research. Multinationals could be investigated in multiple aspects and therefore they need different definitions when investigated for different purposes. This means that the definition on multinationals on tax avoiding behaviour could be very different, compared with the definition in a research where productivity decisions for multinationals are investigated.

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Dunning and Lundan (2008) give a summary on the literature about multinationals. As a definition, they use the definition which is worldly accepted by, for example, the OECD:

➜ A multinational (or transnational) enterprise is an enterprise that engages in foreign direct investment (FDI) and owns or, in some way, controls value-added activities in more than one country.

Given the fact that Dyreng et al. (2016) have a general definition of multinationals, it is important to state that this thesis gives a more detailed definition than has been used by Dyreng et al. (2016). Dunning and Lundan (2008) give a list of measures, to measure the intensity of the multinationals. These include:

1. The amount and size of foreign subsidiaries or associated companies it owns or has control over.
2. The number of countries in which it operates.
3. The proportion of assets, revenue, income or employment accounted for by foreign subsidiaries.
4. The degree of internationalisation of management.
5. The extent to which its higher-value activities (R&D) are internationalised.
6. The extent and pattern of the systematic advantages arising from its governance of, and influence over, a network of economic activities located in different countries.
7. The extent to which responsibility for the creation and usage of institutions and assets, as well as decision making concerning financial and marketing issues, are devolved for foreign subsidiaries.

With the use of the literature by Dunning and Lundan (2008), it becomes easier to give a delimited definition of multinationals.

Van Rossum and Jaarsma (2016) also did a research where they used multinationals versus domestic firms. They went one step further then the definition by Dunning and Lundan (2008). Van Rossum and Jaarsma (2016) agree with Dunning and Lundan (2008), that, in order to be classified as a multinational, a company should have control in foreign value-added activities. The main aspect that they added to the definition, is the fact that the mother company should have a major control. Van Rossum and Jaarsma (2016) define this as having more than 50 percent of the outstanding shares. If a Dutch company has control in a foreign subsidiary, but less than 50 percent, Van Rossum and Jaarsma (2016) define this firm as a domestic firm. Their article brings us one step closer to the most useful definition of multinationals for the

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research question in this paper.

The fact that the definition of Van Rossum and Jaarsma (2016) and Dunning and Lundan (2008) are in line with each other, gives the starting insights in the final definition of multinationals. As already been told in the theoretical background, in prior research can be found that the definition of multinationals is variable and depending on the research question. Therefore, this research should try to combine the theories and develop the own, best usable, definition of multinationals. Chen and Wu (2010) state that the presence of more than one shareholder in a subsidiary will create the inability to exercise excessive control. This basically means, that net profits or other significant cash transfers will not happen, because the other stakeholders also can profit from these transfers. Therefore, in this research, it would be advisable to assume that a company is a multinational when it only has 100 percent of the shares of the subsidiary.

Grubert and Mutti (1991) investigate the fact whether multinationals use tariffs and taxes in their decision-making process. This decision-making process consists of the question where to operate in foreign countries. It is stated that the statutory tax rates in those foreign countries have a significant impact in where the multinational decides to produce. An important fact is their definition of multinationals. Multinationals should indeed have 100 percent of the shares to operate fully for their own interest. Besides that, Grubert and Mutti (1991) state that they really should have an operating function in this foreign country. Being in a foreign country only for tax reasons, without any operating function, does not meet the definition of a multinational. Therefore, to create the dummy multinational, we should also control for the fact that the multinational indeed has an operating function in the foreign country. This can be done with the use of two proxies: employees and operating revenue. This means that a company can be a multinational when it has a minimum of three employees in the subsidiary. On top of that, a minimum operating revenue of five million in the subsidiary is a requirement to have the value "1" in the dummy.

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3. Hypothesis development

In this chapter, the hypothesis will be developed. Several reasons will be given for the development of this hypothesis, based on prior literature. After that, the prediction of the results of the hypothesis will be formulated.

3.1. Hypothesis and prior literature

The most direct motivation for this hypothesis comes from the study of Dyreng et al. (2012). As mentioned in the theoretical background, Dyreng et al. (2012) studied the ETR of companies based in the USA. They question themselves whether the ETR of multinationals (companies with a foreign income source) differ from the ETR of domestic firms (companies that only operate in the USA). They found that domestic firms have significantly lower ETR when they have a subsidiary in Delaware. The question that arises is: How 'fair' is it to call a subsidiary in Delaware part of a domestic firm? As we all know, the USA consists of 50 states, which all have their own rules and regulations. This could be on both tax – and juristic side (A.U.C., 2017). The conclusions on whether domestic firms really are domestic (and therefore that domestic firms really could acquire tax benefits) seem questionable. It is important to investigate a country on itself, which is not a part of 50 other states. Domestic firms are getting researched on another way, which could take the arisen questions away (Dyreng et al., 2012).

Dyreng et al. (2012) also state that their results could help the politicians in the European Union (EU). The EU wants a harmonized tax system and moves away from the current tax system. They state that their results could help, showing the fact that domestic firms still could acquire tax benefits. As already been stated, this thesis is sceptical towards those conclusions.

Dyreng et al. (2016) state that over the past 25 years, the ETR of both multinationals and domestic firms have been decreased. They state that the statutory tax rate in the USA have been remained relatively constant during those 25 years. However, they still find that the ETR over the past 25 years have been decreasing for both multinationals and domestic firms. This could be related to the implementation of the tax system in Delaware. This decreases the ETR of these domestic firms in the USA. Again, this thesis remains sceptical towards those results. Is it fair to call those companies really domestic firms?

Europe is a whole other continent to investigate compared with the USA. In both investigations of Dyreng et al. (2012 and 2016), a relation between Germany and The Netherlands could be domestic, because both are states in a same region (The EU). However, this study (logically) assigns the relation between Europe and Germany as foreign, and therefore these companies are multinationals. Especially with its identical tax regulation system,

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explained in the theoretical background, it gives a good reason for multinationals to operate in the Netherlands. Following this trend, the hypothesis of this research gets developed:

➔ H0: There exist no differences in effective tax rates for Dutch multinationals and Dutch domestic firms in the Netherlands.

It is important to note the fact that the hypothesis is stated in the null-form. When this hypothesis gets rejected, there exist differences between the effective tax rates for multinationals and domestic firms in the Netherlands. This is done by defining a dummy which contains "1" if the company is a multinational and "0" when the company is a domestic firm. If this defined dummy has a significantly negative - or positive relation, we can conclude whether multinationals have a lower or higher ETR then domestic firms.

3.2. Prediction of the hypothesis

It is hard to make a prediction of the hypothesis based on prior literature. As been stated, the way how the domestic firms have been investigated is mainly based in the USA. Prior literature regarding tax avoiding behaviour has only been discussed in the USA. Therefore, this study could contribute on another way in current research. The results and predictions in this prior literature cannot be generalized to the European setting. Therefore, predictions have to be made based on knowledge.

Regarding the hypothesis, it is expected that there exists differences in ETR between Dutch domestic firms and Dutch multinationals. This is regarding the fact that the Netherlands has the opportunity to shift profits to foreign countries and lower their ETR. These profit shifts could be transferred to tax havens, which mostly have very low corporate tax rates, as already explained in the theoretical background. Domestic firms, which only are based in the Netherlands, have not the opportunity to pay their taxes in foreign tax havens. This means, that multinationals could have a lower ETR, compared with domestic firms. Therefore, the prediction is that there exist differences between the effective tax rates of Dutch multinationals and Dutch domestic firms. This difference is likely to be negative: multinationals likely will pay less taxes, which will decrease the ETR.

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4. Research design

In this chapter, the research design to give an answer on the hypothesis will be explained. Recalling the hypothesis, the prediction is that the ETR of Dutch multinationals will be lower than the ETR of Dutch domestic firms. First of all, the theoretical relations and definitions are given. Secondly, several control variables that should be capped in the model are disclosed. Subsequently, these theoretical relations and its control variables are combined in the regression model. The data and the sample, to do the investigation, are explained in the last paragraph.

4.1. Theoretical relations

Rego (2003) investigates the same aspect as this master thesis. This was a relatively new study at that time. Rego (2003) was the first one who states that foreign operations have an impact on the effective tax rates (ETR) of multinationals. ETR seem to have a negative relation with multinationals, which basically means that the ETR for domestic firms in the USA are higher than the ETR of multinationals. ETRs are widely used and seem to be a 'logical' proxy in any research that is tax related. De Mooij and Ederveen (2003) also used ETRs to draw conclusions on the allocations of foreign direct investments (FDI's). They used the ETRs to draw conclusions on which country seems the most attractive country to invest in.

ETRs are also used in political issues. The Ruding Report, by Onno Ruding (1992), is a report which explains tax developments in the European Union. Vanistendael (1992) reviews this report and states that the use of ETRs make it easy to compare different tax rates in different countries. Therefore, he proposes the following equation for calculating the ETR, which is used in this study as well:

$$ETR = \frac{Income\ taxes\ paid}{Pre-tax\ net\ income}\ (*\ 100\%)$$

With the use of pre-tax net income, all the components which generate net income are captured in the calculation of the ETR. This means that every aspect which should be taxed, is captured in this ETR.

De Mooij and Ederveen (2003) also give an overview of prior literature on which ETR-ratio is most often used. However, these are ratios that are not used in this study. They are not applicable to the research question and hypothesis. First of all, the average tax rates (ATRs) over time are used. This means that the tax rates from different countries are reviewed. This seems not applicable to this study, because we are only studying one country and therefore are

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not interested in the average tax rates over time.

Secondly, the marginal effective tax rate (METR) is widely used. The METR consists of an extra unit of income, which the company loses from investing in a new activity. This more captures the investment behaviour of companies. Although, this could be related to only one country, this tax rate is based on decisions. The tax effect of an extra investment decision gets measured. In this study, the tax effect of new decisions is not getting researched. Therefore, it is not able to use the METR.

Lastly, the average effective tax rates (AETR) is used a lot. This capture the average of both companies and countries and their tax rates. However, regarding the fact that the Netherlands are used, it seems not applicable to this study. This means that we cannot use an average ETR. Therefore, the single ETR in different years are used.

As is explained, the ETR is the most used proxy to explain tax-related questions in prior research. The main investigation was to measure whether companies pay less or more measured by a certain proxy. This certain proxy is the ETR, which was used to investigate differences in tax related behaviour at companies. In this thesis, the ETR is the proxy for tax avoiding behaviour. This basically means that a lower ETR is a proxy for higher tax avoiding behaviour. Of course, having a higher ETR refers to less or no tax avoiding behaviour.

Prior research is sceptical towards the results in tax avoiding behaviour. On the one hand, the short-term relation is investigated by Dyreng et al. (2012). They found that there exist differences in tax avoiding behaviour between multinationals and domestic firms. However, the long-term relation, investigated by Dyreng et al. (2016), showed that the tax avoiding behaviour at domestic firms and multinationals is nearly the same. This means that the ETR of both sort of companies were nearly the same.

This thesis investigates whether there exist differences in tax avoiding behaviour between multinationals and domestic firms. The dummy variable "MNE" is created to make a distinction between companies that are multinationals and domestic. The whole research design is based around this dummy variable. If there exist a significant difference in this dummy, the hypothesis is rejected.

Furthermore, the creation of the dummy *MNE* consists of a foreign subsidiary, which is controlled for 100 percent by the mother company. This reason behind this is explained in the theoretical background. Seen from a fiscal view, transferring income to a foreign source will only happen if the entire money transfer will stay in your own hands. Therefore, the subsidiary should be hold for 100 percent. Besides this, the subsidiary must have an operating function, to assure that they also obtain income from these foreign sources. Therefore, the subsidiary should

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have at least three employees and a minimum operating revenue of five million.

Given the requirements on the definition of multinationals and the operationalization of the effective tax rates, these requirements will result in the dependent variable (*ETR*) and the independent variable (*MNE*).

4.2.   Assumptions OLS and research

In this research, it is important to test and be aware for several aspects that make the findings biased: The so-called endogeneity concerns. Endogeneity is defined as a problem that occurs when an explanatory variable is correlated with the error terms (Van Lent, 2007). There are several reasons why endogeneity could occur. First of all, endogeneity could arise because of measurement errors. Examples of measurement errors are: wrong hand collecting of information on multinationals, wrong adding of information or mistakes in acquiring the data. It is important to work on a strict basis and work as efficient and flawless as possible.

Secondly, autocorrelation is an aspect which also can cause endogeneity concerns. Autocorrelation refers to the fact that a variable explains itself over time. This means that findings could be biased, because they are explained by themselves. An example of this is the use of total assets (TA), without using the lagged function of it. When the lagged function of the TA is not used, OLS could give biased estimations on the relation between the independent – and dependent variable. Furthermore, this could mean that the increased or decreased value of TA explains the relation with ETR, and not the fact whether the company is a multinational. With the addition of the lagged total assets, this possible bias is deleted. STATA can produce an autocorrelation matrix, to see which variable has influence on which other variable (Jorgenson, 1986). This matrix will be investigated in paragraph 5.4, where also the autocorrelated concerns will be reviewed. STATA is able to control for these autocorrelated concerns.

Besides autocorrelation, heteroscedasticity is an aspect which could create endogeneity concerns. Heteroscedasticity refers to the fact that the error terms (capped by ϵ in the regression) is depending on the dependent or the independent variable. Heteroscedasticity reduces the efficiency on the OLS-estimators and increases the sampling bias in the procedure (Martin & Klemkosky, 1975). STATA offers a command to review heteroscedasticity in the research. The White general test can be used to check whether there exists heteroscedasticity in the sample.

Furthermore, multicollinearity is an endogeneity creating aspect. Multicollinearity refers to the fact that two or more predicted variables are highly correlated. This is somewhat related to autocorrelation. It is important to check for multicollinearity, because multicollinearity could cause the fact that signs in a predicted variable could have an opposite value than they normally

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should have (Lafi & Kaneene, 1992). Especially regarding the fact that the sign for the dummy *MNE* is very important in this thesis. STATA offers the variance inflation factor test (vif-test) for the independent variables in the model. When the value of this test is smaller than 10, it is considered that multicollinearity is not present. The results of this test are presented in chapter 5.4.

Lastly, omitted variable bias (OVB) and simultaneous causality are aspects that could increase endogeneity in a research. OVB refers to the fact that certain (control) variables are not capped in the research model while they should have been capped. When those omitted variables are not capped in the model, the relation between the dependent and the independent variable could be biased. If those omitted variables are capped in the research model, this could change and strengthen the relation between these dependent and independent variables (Cellini, 2008). Therefore, it is always good to think about omitted variables that should have been capped in the model. Furthermore, simultaneous causality refers to the fact that the independent variable of interest and the outcome will be determined jointly. This means, that the dependent variable can influence the independent variable, but turned-around, this could also happen. Therefore, this makes the direction of causality unclear (Cellini, 2008). In this thesis that should mean that the having a higher or lower ETR should have influence on being a multinational. However, this does not seem to harm this research regarding the fact that ETR's do not influence the decision of being a multinational. Of course, being a multinational is expected to be influential on the ETR's of those companies.

Next to the endogeneity concerns, it is also important to look at the validity of the study. There are three aspects of validity: construct -, internal – and external validity. Construct validity refers to the fact that the test is actually testing what is designed to test. Endogeneity is a measure for construct validity: the more endogeneity is present, the less valid research outcomes are. Therefore, it is important to try to decrease the endogeneity in the research. Internal validity measures the fact whether drawn conclusions are really causal for the research itself. This means that we question whether the measured relation is really a causal relation. Again, the existence of endogeneity has influence on whether the possible found relation is causal or not. Lastly, external validity refers to the fact that the conclusion in this research are applicable to other research and its sample (Tinbergen, 1973). Since this research is based in the Netherlands, it seems a question whether these results can be generalized to other countries.

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4.3.   Control variables

As shown in paragraph 4.1, *ETR* and *MNE* are the variables that acquire the most attention. Control variables exist to strengthen the relation between the dependent and the independent variable. Therefore, control variables are added, to really draw conclusions on the effect of the company structure and its effect on the tax avoiding behaviour. Several variables that could have an influence on the tax avoiding behaviour are listed in this paragraph and they will be controlled for.

As mentioned shortly in 2.1, Hanlon and Heitzman (2010) were curious on whether certain control variables should be added in the empirical investigation in the tax' subject. In this paragraph, the focus is on which control variables have been used in the prior literature. Dyreng et al. (2012) and Dyreng et al. (2016) are important papers for the investigation of the control variables. The paper of Dyreng et al. (2016) is empirically the most comparable paper with this thesis. As already mentioned, Dyreng et al. (2016) implemented a lot of recommendations done by Hanlon and Heitzman (2010). One of the most important aspects in prior literature is the fact that control variables are added on a ratio-basis. Dyreng et al. (2016) stated that the ETR-ratio should be compared with other ratios as well, regarding the fact that bigger values (non-ratios) could create bias results. Therefore, in this chapter, the calculation of the ratios and its prior literature will be explained. This created more usefulness for future literature.

The first control variable, *leverage*, which is calculated by the long-term part of the debts divided by total assets, seems to be a variable that could have an impact on both company structure and tax avoiding behaviour. On the one hand, having more long-term debts could create difficulties in acquiring loans, to finance a foreign subsidiary. On the other hand, long-term debt has influence on the ETR. Changes in interest do have influence on the ETR. Extremely important are debt transfers between the mother and its subsidiary. These can influence the net income and, hence, the ETR of this company. The mother could lend money to the subsidiary and the interest that should be paid can be deducted of the net income of the subsidiary. Of course, the opposite transfer could also occur. Therefore, it is important to control for these situations. *Leverage* seems to be a control variable which captures this (Dyreng & Lindsey, 2009).

Secondly, Research & Development (*RD*) expenses seem to be added as a control variable. Especially RD expenses, which could be stated on the balance sheet or on the income statement. This is depending on the fact whether these expenses have future expecting profits. Capitalization of the R&D expenses gives a higher net profit, so a higher taxable income,

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compared with expensing these R&D costs. So, it is important to state that R&D expenses have its own fiscally effects. This has an influence on the ETR. *RD* is calculated as the RD-expenses divided by the total revenue in that year. As been stated in 2.2, R&D expenses are used to define the intensity of the subsidiary. This influences the fact whether the company is stated as a multinational (Gupta & Mills, 2002). On top of that, the lagged value of goodwill in a company is included as a control variable. In the Netherlands, goodwill has its own legislation and so could have its own impact on the ETR. *RD* and *lagGoodwill* are intangibles variables that seem to have the most impact on the ETR. This means that intangible assets on itself are not included in the regression model. *LagGoodwill* is not a ratio, because the value of the year prior to the investigation year is used (Dyreng et al., 2016).

Thirdly, property, plant and equipment (*PPE*) also influences both company structure and ETR. *PPE* can be used as a proxy for total assets, regarding the other control variables. As stated by Dyreng et al. (2012), the bigger the company, the more probably it is that they will obtain a foreign subsidiary. Therefore, we should control for this aspect. The existence of PPE has influence on the fact whether a company is able to acquire subsidiaries and therefore has influence on the company structure. Via their PPE, it could be possible that it is easier to operate in foreign tax havens and acquire tax benefits. This, of course, has influence on their ETR. Therefore, we should control for PPE (and automatically its depreciation). The PPE-ratio is being calculated as the value of PPE divided by the value of the total assets. Besides the PPE-ratio, the expenditures on capital (*capitalexpenditures*) are included as a control variable as well. This controls for possible investments or purchases in PPE in a year. The ratio of these expenditures on capital are calculated as follows: the expenditures on capital divided by PPE (Dyreng et al., 2012).

On top of that, special items (*SI*) are an aspect which is always included as a control variable in every prior tax research. Special items could be described as extraordinary items, which require separate disclosure. Besides that, it is not expected that these expenses or revenues will recur in future (Gonedes, 1975). An example could be the existence of industry specific items, such as one time losses by the sale of a specific machine in tomato-industries. Because of the fact that they are quite rare and could have their own impact on ETR, is it always safe to control for those items. Sometimes, certain special items could only be acquired by multinationals. This means that special items could have influence on the company structure in this research. Therefore, it is advisable to control for them. The special item ratio is calculated by scaling them on the total assets of the same year (Dyreng & Lindsey, 2009: Dyreng et al., 2012: Gupta & Mills, 2002).

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Lastly, the firm size is an aspect which should be controlled for. Firm size is often measured with total assets as a proxy. It seems logical that 'bigger' firms have more opportunities to acquire a subsidiary. This is what makes them big. On top of that, firms with relatively lower size could have other tax payment requirements compared with the bigger sized companies. This is measured with the use of lagged total assets (*lagTA*). On top of *lagTA*, which is a financial measure for firm size, the lagged value of employees (*lagEmployee*) in a company is included as a non-financial measure for firm size (Dyreng & Lindsey, 2009: Dyreng et al. 2016).

Time fixed effects are an aspect that could be really important in this thesis. Given the fact that the sample runs from the period 2000-2016, it could be that certain events (the financial crisis) could have an effect on the results and its conclusions. On the other hand, possible changes in statutory tax rates is also controlled for using time fixed effects. Controlling for time fixed effects will help to eliminate the possible effect of these events. Time fixed effects could help drawing more relevant conclusions, regarding the relation between the dependent – and independent variable.

4.4.   The regression model

This paragraph will combine the findings in paragraphs 4.1 and 4.3. The independent – and dependent variable, and its control variables, are combined in a regression model. This regression model consists of the following equation:

$$
\begin{aligned}
ETR = \; & \alpha + \beta 1 * MNE\ (DUMMY) + \beta 2 * lagTA + \beta 3 * LagEmployee + \beta 4 \\
& * lagGoodwill + \beta 5 * PPE + \beta 6 * RD + \beta 7 * SI + \beta 8 * leverage + \beta 9 \\
& * Capital\ expenditures + \epsilon
\end{aligned}
$$

The coefficients in this equation are estimated using an OLS-regression. The coefficient which has the most attention is *MNE*. As stated in the hypothesis, it is tested whether there exist differences in tax avoiding behaviour between multinationals and domestic firms. Therefore, the main investigation lays in the variable *MNE*. The expectation is that *MNE* will be a negative coefficient, which refers to a negative effect on the *ETR*. This implicates that multinationals try to avoid more tax, so benefit more from the Dutch tax regulation system. The hypothesis will be rejected and an answer on the research question is formulated.

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4.5. Sample and data

As could be drawn from the research question, the research focuses on Dutch companies in the Dutch regulation system. In the period 2000-2016, 149 companies and 972 observations are found. Of these 149 companies, 47 companies are classified as a multinational. Www.company.info, using the license of EY, is used to acquire information on which year these multinationals acquired their subsidiaries. Therefore, it could happen that a company could be stated as both a multinational and domestic firm. An example of this could be the following event: When a domestic firm acquired its foreign subsidiary in 2010, it results in the fact that the company is a domestic firm in the period 2000-2009 and is a multinational in 2010-2016. Consequently, 142 companies have observations where they are operating as a domestic firm. In the Appendix (table 1,2 and 3), the sample selection and the exclusion of missing and incorrect variables is explained.

Using the Compustat fundamental database based on European firms, information is found on the calculation of the ETR and the different control variables for Dutch firms. This database contains information using the identification code: "ISIN", which stands for International Securities Identification Number. Next to the ISIN, the Ticker code is another identification code which can help in merging both datasets in this research. The AMADEUS Bureau van Dijk database gives information on the subsidiaries of the Dutch mother companies. In this database, the proxies for being stipulated as a multinational can be found. When those proxies are found, the dummy variable MNE is operationalized. After that, it is merged in the Compustat fundamental database and a regression is performed.

As already stated, the period of the research consists of 2000-2016. Possible events that have occurred in this period, with the financial crisis as example, are controlled for using time-fixed effects. This could take away possible biased relations and makes the relation between the dependent – and independent variable stronger. Besides that, it is important to take away any outliers, which could create a biased relation as well. Possible positive/negative tax payments, that could relate to very high/low ETR should be dropped out of the sample. These observations should be excluded, because companies could have been liquidated or there could exist another reason why these ETRs are so abnormal. Since this research is investigating regular behaviour, abnormalities could diffuse the results. Furthermore, following the research design of Dyreng et al. (2012), only ETRs that are between 0 and 50 percent are included in the research. According to Dyreng et al. (2012), these are the most reasonable and possible rates that a company could have. This will be further explained in paragraph 4.5.

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As been explained in this chapter already, two different databases are used to investigate the hypothesis. In the AMADEUS database, STATA is used to investigate whether the Dutch company is a multinational. Subsidiaries that have lacking information in the control-level are excluded of the sample. Besides that, few Dutch subsidiaries have US-based mother firms and those firms are excluded of the sample as well. This results in a sample of 4.897 observations regarding the subsidiaries. A more detailed explanation on the exclusion of observations can be found in the Appendix: Table 2. After the creation of the dummy variable MNE, which has three requirements, the database can be merged into the other database. The three requirements were: a minimum quantity of three employees, minimum five million operating revenue and a 100 percent controlled foreign subsidiary. In this thesis, a WO-subsidiary (wholly owned → +98 percent) is recognized as a 100 percent controlled company. However, MO (Majority Owned), NG (negligible) and N.A. (not available) are considered to be no multinational in this thesis, because it is very likely that those will not contain a 100 percent control.

The other database refers to the Dutch mother firms. The information for these firms comes from the Compustat fundamentals database. The ETR is calculated and bias-creating observations are excluded. Explanations for bias-creating observations can be: firms with zero-value profit, firms who pay zero taxation and firms who have zero-value long term debts. Table 1 in the Appendix can be used to gain explanation on the sample formulation. After preparing the databases for bias-creating and missing observations, the database of the subsidiaries (holding the dummy MNE) is merged into the mother company database. After the merge, it is exactly known which companies have information about their subsidiaries and which have not. Therefore, the companies that are lacking information on subsidiaries can be dropped. The preparation and outcomes of this regression will be explained in the fifth chapter: Empirical results and analysis.

4.6.   Data selection and data cleaning

In this paragraph will be explained how the data is selected and where the final sample consists of. As already explained in paragraph 4.4, the databases of Compustat and AMADEUS Bureau van Dijk are used to operate this research. The raw data consists of 3.089 observations for the mother companies and 36.753 different subsidiaries for mother companies in the Netherlands.

First of all, the mother companies' data is cleaned. The following observations will be excluded of the sample, which is described in the Appendix: Table 1. Firms that are lacking ISIN codes, firms lacking information on tax, firms having zero profits or taxation, US mother firms, firms that lack information on PPE, NOL, long-term debts and firms having ETRs out of

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the range 0-0.5 are excluded from the sample. This leaves 1.357 observations left before the merge.

Secondly, the AMADEUS Bureau van Dijk database consists of observations regarding subsidiaries of the mother companies. The raw data starts with 36.753 observations. After excluding the following observations: missing information on ISIN, firms having a US-mother and firms lacking information on the shareholders, the final sample consists of 4.897 observations in subsidiaries before the merge. Table 2 in the Appendix gives an overview of the previously described data cleaning on subsidiaries.

After the cleaning of the raw data, the databases needs to be summarized. For the merge, a summary database was created out of the AMADEUS Bureau van Dijk database. This means, that all the companies that have subsidiaries are stipulated as a multinational (dummy-value 1) or domestic firm (dummy-value 0). Untabulated results state that this database summarizes that there is information on subsidiaries for 210 companies. From these 210 companies, 88 companies are multinationals (and get the value 1 in the dummy). The remaining 122 companies are domestic companies (and get the value 0 in the dummy). This summary database is merged in the database of the mother companies. On top of that, the website www.company.info is used to identify when the subsidiary is acquired. This is really important, because we should not identify a multinational in 2010, when the subsidiary actually is acquired in 2011.

After the summarization of the subsidiary data, this database is merged into the mother company database. This is done with the use of a many-to-one merge, based on the identification code: ISIN and the year. After the merge, 1.403 observations are left. However, this includes mother companies which have not got information on subsidiaries. Of course, turned around, there are also subsidiaries which have no information on their mother companies. After cleaning those missing observations, the sample consists of 1.147 observations and 164 companies. Those observations have 563 observations for domestic firms and 584 observations for multinationals. Thereafter, tax amounts lower than zero will be excluded of the sample, because negative net income often results in a tax benefit instead of a tax burden. This means that the ETR will be positive, because negative divided by negative results in a positive sign. This means that negative tax payments should be excluded of the sample. As will be explained in chapter 5, values of total assets above 1.000.000 will be dropped because they could create bias-related results as well. Hence, this results in the final sample, which consists of 972 observations. This is resumed in Table 3 on the Appendix. Of these 972 observations, 796 are considered to be a domestic firm and 176 observations are multinationals. 149 companies are left in the final sample. This means that the data is valid and ready for the

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empirical research, which is described in chapter 5.

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5.   Empirical results and analysis

In this chapter, the empirical part of the thesis is performed. In the first paragraph, the most general information on the research is explained. The descriptive statistics, like the mean, median and standard deviation, are described. Outliers are also an aspect which should be deleted. This will be explained as well. Furthermore, the results of the regression will be stated in paragraph 5.2. Those results will be tabulated and the analysis of these results will be described in paragraph 5.3. The results will be investigated and give the insights to test the hypothesis and answer the research question. Besides that, it is important to test the assumptions for the research, otherwise the research can output misleading results. This will be done in paragraph 5.4. Lastly, a conclusion will be drawn regarding the fact whether the investigation answers the research question.

5.1   Descriptive statistics, outliers and mutations

In this paragraph, the descriptive statistics of the sample will be explained. These results will be tabulated and can be found in the Appendix. In Table 4 and 5, the descriptive statistics for the multinationals and the domestic firms respectively are shown. Table 4 describes, first of all, that the ETR for Dutch multinationals consists of a mean of 0.209. This means that, on average, a multinational pays 20,9% effective tax over their profit income. This seems a reasonable amount, regarding the fact that the tax rates in the Netherlands are 20% for the first €200.000,- profit. It is 25% for the profit that remains and is higher than the €200.000,-. However, Table 5 describes the fact that domestic firms have an average ETR of 0.244. This means that, on average, a Dutch domestic firm pays 24,4% effective tax over their profit income. Regarding the minimum and the maximum, those are between 0% and 50%. Following Dyreng et al. (2012), outliers are removed and the other tax rates are investigated. Therefore, more outliers do not exist in the ETR and they should not be excluded. The differences in the ETR of multinationals and domestic firms are in line with the prediction made in chapter 3. Here it is predicted that Dutch multinationals could acquire tax benefits and have a lower ETR.

Remarkably, multinationals and domestic firms have nearly the same average on TA. As been formulated in paragraph 2.2, multinationals are likely to be bigger companies than domestic firms. The maximum of TA at the domestic firms is way higher than the highest value within multinationals. On the other hand, when we measure firm size using the lagged value of employees, we see that the average amount of employees in multinationals (46.000) is way higher than the average amount of employees in domestic firms (19.000). This indeed follows chapter 2.2, where is stated that multinationals seem to be bigger companies than domestic

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firms. Other variables are straightforward and can be found in table 4 (multinationals) and table 5 (domestic firms) in the Appendix. The 19.000 employees at the domestic firms seems to be a uncommonly high value. This comes from the fact that domestic firms also could be multinationals in a further stadium of the sample period. As described in the sample selection, it could be that a company was domestic in the period 2000-2009. Starting from 2010, it acquired a subsidiary and it is stipulated as a multinational. This means that relatively big companies could be stated as a domestic firm, which creates a high mean on the lagged value of employees. When employees are winsorized and the regression is run, it becomes clear that the effect is so minimal that it will not affect the presented results in this thesis. Besides the time-frame, the strict definition on multinationals could also explain the value of employees at domestic firms. If a mother holds some subsidiaries in the Netherlands only, has subsidiaries which are not controlled for by 100 percent or do not meet the five million benchmark in operating revenue, the employees are counted in a Dutch domestic firm. Of course, it could be that such companies have a lot of employees.

Table 6 in the Appendix presents the correlation matrix. The Pearson correlation is above the diagonal and the Spearman correlation can be found below the diagonal. The Pearson correlation shows that *ETR* is negatively and significantly correlated with *MNE* and *RD*. *lagTA*, *SI* and *leverage* have an insignificant negative relation with the *ETR*. *LagEmployee*, *LagGoodwill*, *PPE* and *capitalexpenditures* have an insignificant positive correlation with *ETR*. *MNE* has a negative significant correlated relation with *ETR* and *leverage*. On top of that, *MNE* has a positive significant correlation with *lagEmployee* and *lagGoodwill*. The other variables have an insignificant correlation.

5.2 Results and analysis

In this paragraph, the hypothesis is tested. The hypothesis was as follows:

> ➔ H0: There exist no differences in effective tax rates for Dutch multinationals and Dutch domestic firms in the Netherlands.

Predicted was the fact that there are differences in the ETRs between multinationals and domestic firms. This difference in ETR is likely to have a negative relation: multinationals are expected to pay a lower amount of ETR. This is being tested in the following two paragraphs.

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Table 7 contains the output on the OLS-regression. This regression is formulated as:

$$ETR = \alpha + \beta1 * MNE\ (DUMMY) + \beta2 * lagTA + \beta3 * LagEmployee + \beta4 * lagGoodwill + \beta5 * PPE + \beta6 * RD + \beta7 * SI + \beta8 * leverage + \beta9 * Capital\ expenditures + \epsilon$$

When we focus on the output, which is described in Table 7, the OLS output can be seen. We see that *MNE*, *lagTA* and *RD* are all significant at the 5%-level. *LagGoodwill* is significant at the 1%-level. *LagEmployee* and *leverage* are significant at the 10%-level. *PPE* and *SI* have a negative insignificant relation with ETR. *Capitalexpenditures* have a positive insignificant relation with ETR. This is after controlling for time fixed effects. Although the impact of *lagTA*, *lagEmployee* and *lagGoodwill* are significant, they have minimum effect on the ETR. Regarding the fact that they are significant, they should be added as a control variable to make the effect of the independent - and dependent variable stronger.

Regarding the control variables, we see that *RD* has a high significant effect on the ETR. When the RD-ratio is increasing, this has a downward effect on the ETR. This means that if the RD-ratio increases with 0.01 (1%), this results in a decrease of the ETR by 0,22 (22%). This seems a reasonable effect, regarding the fact that RD-expenses could be tax deductible, as has been described. This is in line with Dyreng et al. (2012) and Dyreng et al. (2016), where also a significant negative effect on the ETR was shown. Therefore, it is important to control for *RD*. On top of that, RD-expenses could occur at both domestic firms and multinationals, so this takes the possible endogeneity on these differences away.

PPE and *capitalexpenditures* are insignificant in the research. This could be related to the fact that these variables just do not have an effect on the ETR. Equally with Dyreng et al. (2016), *capitalexpenditures* are indeed insignificant. However, there was a predicted negative sign. PPE was positive significant. This is where this thesis is different in prior literature. *SI* have a negative insignificant effect on ETR. This seems strange, because in Dyreng et al. (2016) *SI* are strong significantly negative. This could be related to the fact that in this thesis, the *SI* has a mean which is zero.

The most important variable is the dummy variable *MNE*. When we take a look at this dummy variable, it becomes clear that this variable has a significant negative effect on ETR. The coefficient is -0,025, which means that multinationals pay 2,5% less effective taxes compared with domestic firms. Following the research question, this should mean that multinationals have more tax avoiding behaviour than domestic firms. This seems reasonable,

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following prior literature of Van Dijk et al. (2006), where they stated that the Netherlands offers tax benefits for multinationals. The participation exemption and Double Tax Treaty network (DTT) are examples of these tax benefits and enables multinationals to avoid tax within the Dutch tax regulation system. This means that the null-hypothesis can be rejected, therefore we can conclude that there is a significant negative difference between the ETR between multinationals and domestic firms. Multinationals seem to pay less effective tax over their profits before tax in the Netherlands.

5.3 Testing the assumptions for OLS

As reported in paragraph 4.2, it is important to check the assumptions for OLS when an OLS regression is performed. The endogeneity should be decreased as much as possible, to draw the most clear conclusions on the research. As described, the first concern refers to autocorrelation. When the regression is run using robust checks, there is automatically checked for autocorrelation concerns. Table 7 which is presented in the Appendix, is run using those robustness checks. Therefore, autocorrelation is being controlled for in this research.

Besides autocorrelation, heteroscedasticity is tested using the Breusch-Pagan test in STATA. In combination with the graph (see Graph 1, Appendix), we can conclude that it is likely that there will not be any significant heteroscedasticity in the sample. In Graph 1, we see that the error terms are equally divided around the y-line (0). This seems that it is very unlikely that there exist heteroscedasticity in the sample. The Breusch-Pagan test shows that the p-value of the test is 0.0047, which means that the null-hypothesis can be rejected. This means that there are no constant variances: it is very likely that there do not exists heteroscedasticity in the sample. Furthermore, to control for autocorrelation and heteroscedasticity, the regression is run using robust standard errors. This assures that we take care of these endogeneity creating concerns.

Furthermore, as described in 4.2, it is important to check for multicollinearity. This can be tested using the VIF-test. Performing the VIF-test shows that all the variables have a VIF between 1.04 and 2.30, with a mean of 1.75. This is all below the 10 benchmark, so this means that it is unlikely that there exists multicollinearity in the sample.

When normality is checked for in the OLS regression, the graph of ETR is plotted. Graph 2 in the Appendix shows the normality graph of the dependent variable ETR. As can been drawn from the graph, we see that the ETR seems to have a normal distribution. Although there seems to be more observations in the first part of the ETR (0-0.2) (0%-20%), this can be related to the fact that the corporate tax in the Netherlands is lying between 0.2-0.25 (20% - 25%). Especially

with the existence of multinationals in the sample, which can acquire 2,5% less effective tax, it seems logical that the most observations are lying in the first part of the normal distribution. The Shapiro-Wilk test supports this statement, since it rejects the hypothesis that the distribution is non-normal distributed (P=0.000).

When we test for omitted variable bias (OVB), which is done with the Ramsey test, we see that there exists omitted variables (P=0.001). This could be related to the fact that tax avoidance strategies are very hard to control for fully. As already explained in the literature, this could be because of intercompany trades, transfer of profits to subsidiaries in tax havens or other aspects which are hard to detect. On the other hand, it could have been better to use a more or less strict definition of *MNE*. However, this seems not applicable to this study regarding the fact that in tax-related studies this definition of *MNE* seems the best one. Therefore, it is not very strange that the Ramsey test shows that there exist omitted variables, simply regarding the fact that it is very hard to capture all the information needed to perform the regression better than it is done in this thesis.

Regarding the internal, external and construct validity of the research, it can be concluded that the construct validity seems to be of a reasonable sufficient value. This is regarding the fact that the endogeneity concerns are tested and have not a dangerous value for the research. Therefore, the construct validity of the study seems to be of a sufficient high value. The external validity for this thesis seems to be pretty low. This is related to the fact that it is focused in the Netherlands and the companies are Dutch. Therefore, this study cannot be generalized to other countries, regarding the fact that the Netherlands has a unique tax system compared with other companies. The internal validity in this study seems pretty high. Related to the endogeneity tests, it can be concluded that the study is testing what it really should be testing. It seems pretty easy to copy this research.

5.4 Concluding remarks

Summarizing the results, it can be concluded that the hypothesis should be rejected. After controlling for (significant) other variables, a relation between the independent and the dependent variable is found. This means, that Dutch multinationals are paying a smaller amount of effective tax than Dutch domestic firms. The dummy MNE was tested and showed a significantly negative sign: Dutch multinationals pay 2,5% less effective tax than Dutch domestic firms. Related to the research question, this means that Dutch multinationals utilize the Dutch tax regulation system more on a beneficial way compared with Dutch domestic firms. This is in line with prior literature (Dyreng et al., 2016; Dyreng et al., 2012; Van Dijk et al.,

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2006) who all state that multinationals are able to acquire lower effective tax rates and behave more on tax avoiding basis. Van Dijk et al. (2006) stated that the Dutch tax regulation system is designed for multinationals: These results confirm this statement.

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6.   Conclusion

This thesis examines the tax avoiding behaviour of Dutch companies from 2000 till 2016. The Dutch companies are divided in two groups: Dutch multinationals and Dutch domestic firms are examined. Effective tax rates (ETR) are used as a proxy for tax avoiding behaviour: having a lower ETR refers to more tax avoiding behaviour. The dummy *MNE* is used to identify whether a company is a multinational or a domestic firm. Companies are considered to be a multinational if they meet the following requirements: minimum five million operating revenue, minimum three employees and have foreign subsidiaries which are hold for 100%. After controlling for diverse effective tax increasing/decreasing financial statement accounts and time fixed effects, multinationals pay on average 2,5% less effective tax in the Netherlands, compared with the Dutch domestic firms.

6.1   Answer research question

The research question of this thesis was as follows:

→   Does tax avoiding behaviour differ between Dutch multinationals and Dutch domestic firms in the Netherlands?

When the results are related to the research question, it could be stated that the answer on the research question is: yes. Tax avoiding behaviour does differ between multinationals and domestic firms in the Netherlands. The results showed that multinationals pay 2,5% less effective tax in comparison with domestic firms. This is confirmed with the predicted hypothesis.

6.2   Contribution and implications

This research contributes to the existing literature on tax avoiding behaviour. Prior literature mainly investigated USA and its state Delaware, when tax avoiding behaviour in tax havens is investigated. However, differences between multinationals and domestic firms are not investigated that often in Europe. As have been mentioned in the introduction, the Netherlands has a unique tax regulation system, with especially their participation exemption and the Double Tax Treaty-network (DTT-network). This thesis shows that, indeed, multinationals make use of these regulations and Dutch domestic firms cannot. As questioned in the introduction, there are some political issues regarding the fact that those regulations are effective and are used for the reason why they should be used. This thesis gives a solution to this issue, regarding the fact that

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they indeed are used to give benefits for multinationals and settle themselves in the Netherlands. As has been showed, multinationals are indeed able to acquire a lower effective tax rate.

Furthermore, this thesis has its implications for the policy in the Netherlands. As mentioned, there is a debate in the Netherlands whether multinationals should have tax benefits. This thesis shows that Dutch multinationals indeed are given a tax benefit in comparison with Dutch domestic firms. This means, that this discussion is legit and that indeed multinationals are able to acquire a tax benefit of 2,5%. On the one hand, the Netherlands is leaded by the VVD and they think it is important to get as many multinationals stated in the Netherlands as possible. The results show that their policy to give multinationals benefits are implemented with their intended meaning. On the other hand, this thesis contributes to the opposites of the story. People who state that multinationals should not get their benefits can use this thesis to show that multinationals are indeed getting tax benefits.

However, it is important to note that this study investigated purely Dutch domestic firms and purely Dutch multinational companies. Consequently, this study cannot give a conclusion on foreign companies that hold subsidiaries in the Netherlands. For example, Frederik (2017) states that not the famous tax havens Bermuda or Luxemburg are the biggest tax havens, but the Netherlands is! Frederik (2017) checked this for American companies and found that American companies can acquire an effective tax rate of zero percent in the Netherlands. Frederik (2017) investigates these transactions by investigating the American company Activision, famous for creating games. Back in 2005, the Dutch regulators decided to agree with the tax agreements made by the Americans. What followed was the fact that Activision created a company in the Netherlands: ATVI CV. CV stands for the Dutch word: Commanditaire Vennootschap. The English translation is the most close to: limited partnership. When Activision sells a game, normally, the profits go to the country where the game is produced. This is in the Netherlands: ATVI CV. However, the Netherlands and the US have another opinion in where to pay the taxes. The Netherlands say that the profits are taxable in the US. The US says that the profits are taxable in the Netherlands. This results in the fact that Activision is taxed nowhere. Any conclusions on whether these transactions, when the Netherlands is used as intermediary, cannot be drawn regarding the fact that purely Dutch domestic firms and Dutch multinationals are the only companies being investigated.

6.3   Limitations and recommendations for further research

Although the research seems to have a good contribution as addition to prior literature, it is important to note that this research has its limits. First of all, as predicted in the Ramsey test in

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paragraph 5.3, it becomes clear that it is very likely that there exist omitted variables in the research. It is very likely that these could be related to intercompany related transactions. Examples of these transactions are transfers of profits to tax havens (royalty payments e.g.), loans and interest payments between the mother and its subsidiary or the percentage of profit that comes from subsidiaries in tax havens. Altogether, this means that this thesis is focusing on whether the subsidiary lays in a foreign country, and not what the fiscal effect is of this possible tax haven. Besides that, this study combines the definitions on multinationals which creates a relatively "new" definition on multinationals. This "new" seems to be the best applicable definition on multinationals in this study. However, it is hard to say whether this is the best definition: it could be that the definition on multinationals is to strong formulated or to wide.

Therefore, further research should try to map intercompany related transactions into the research when tax avoiding behaviour is getting investigated. However, logically, data to investigate such intercompany related transactions are very hard to acquire. A possible solution would be to investigate a big international multinational which uses the Netherlands as an intermediary by doing a case study. This should be compared with the Dutch multinationals and Dutch domestic firms as described in this thesis. As became clear, we know that multinationals indeed pay 2,5% less effective tax. The question remains how and mainly by which Dutch rule this tax benefit is acquired. On top of that, different questions arise on which tax havens are used by the Dutch multinationals and what their tax regulations are. So, besides that intercompany related transactions, researchers should try to include possible other tax haven regulations as well.

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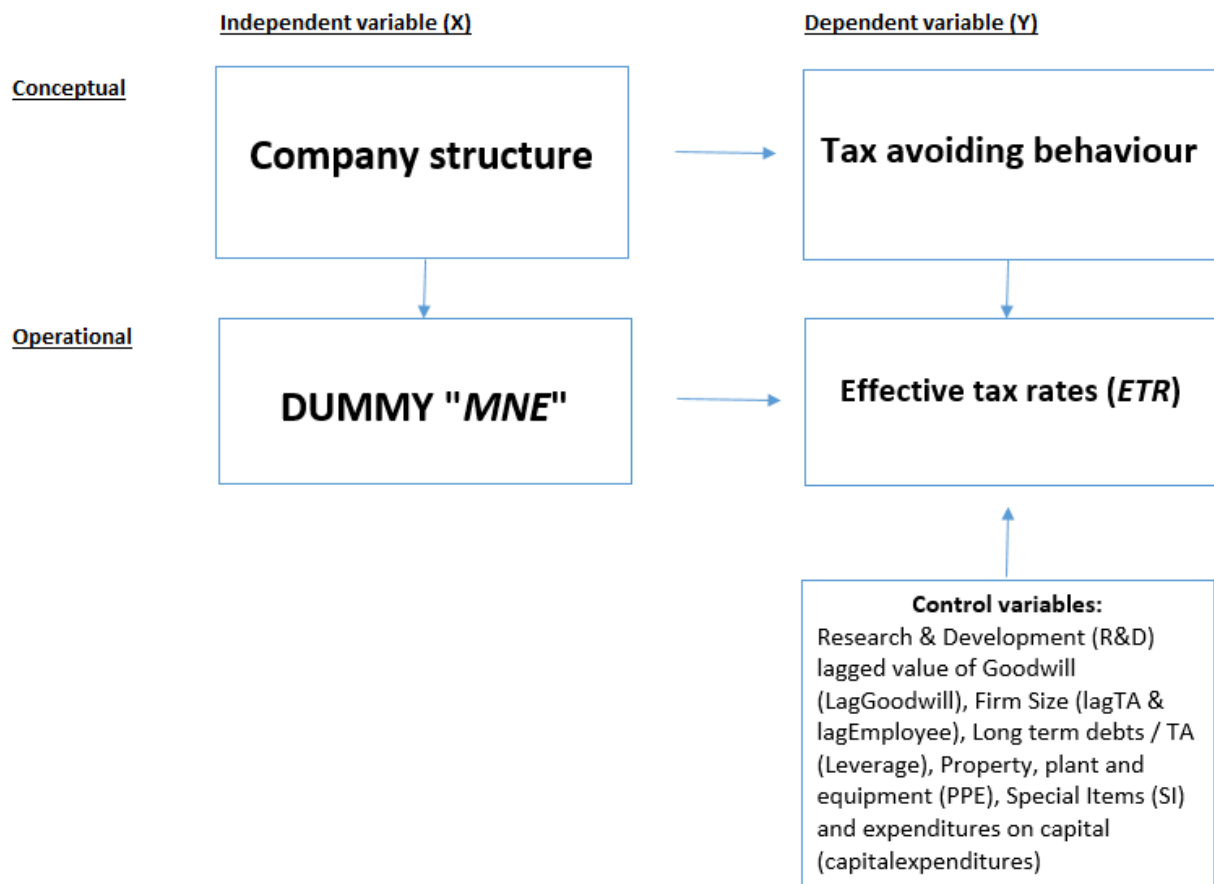## 8. Appendix

Image 1: Libby boxes

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Table 1: mother companies (Compustat Europe)

Reason	Observations
Starting data	3.089
Excluding firms without ISIN	77 (-)
	3.012
Excluding firms without tax information	90 (-)
	2.922
Excluding firms with zero profit	5 (-)
	2.917
Dropping US mother firms	42 (-)
	2.875
Excluding firms with no information on PPE	269 (-)
	2.606
Excluding firms with lacking information on NOL	385 (-)
	2.221
Excluding firms with zero-value LT debts	354 (-)
	1.867
Dropping firms who have zero taxation	89 (-)
	1.778
Excluding of firms having ETR not between 0-0.5	421 (-)
	1.357

Table 1: Data cleaning of the mother companies.

Table 2: Data cleaning of the subsidiaries

Reason	Observations
Starting data	36.753
Excluding firms without ISIN	29.993 (-)
	6.760
Excluding US-based firms	410 (-)
	6.350
Dropping firms which are lacking information on shareholders	1.453 (-)
	4.897

Table 2: Data cleaning of the subsidiaries.

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Table 3: Creation of the final sample

Starting sample after merge	1.403
Excluding firms lacking mother/subsidiary based on ISIN	256 (-)
	1.147
Dropping firms having negative tax payments	143 (-)
	1.004
Winsorizing on TA	7 (-)
	997
Missing data after merging control variables	25 (-)
Final sample	972

Table 3: Creation of the final sample

Table 4: Descriptive statistics multinationals
MNE 1= multinationals (N=177)

Variables:	Mean	Standard deviation	Minimum	Maximum
ETR (Effective Tax Rates)	0.209	0.083	0.004	0.465
lagTA (lagged Total Assets)	21606	65135	24	424467
lagEmployee (number of employees)	46	105	0	628
RD (Research and development)	0.187	0.036	0	0.172
SI (Special items)	-0.003	0.012	-0.052	0.062
Leverage	0.224	0.120	0.002	0.689
Capital Expenditures	0.084	0.047	0	0.360
lagGoodwill (Lagged Goodwill)	1838	3509	0	14896
PPE (property, plant and equipment)	0.470	0.300	0.001	1.24
Total revenues	9937	15006	29	64450
Tax	159	338	0.066	2131
PI (profit income)	721.50	1322	0.931	7646

Table 4: Descriptive statistics of Dutch multinationals. The variables are all explained in chapter 2.

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Table 5: Descriptive statistics domestic firms MNE 0 = domestic firms (N=795)				
Variables:	Mean	Standard deviation	Minimum	Maximum
ETR (Effective Tax Rates)	0.244	0.105	0.004	0.494
lagTA (lagged Total Assets)	22081	102371	24	1076602
lagEmployee (number of employees)	19	42	0	493
RD (Research and development)	0.014	0.034	0	0.360
SI (Special items)	0.000	0.02	-0.253	0.201
Leverage	0.25	0.155	0	0.881
Capital Expenditures	0.096	0.094	0	0.989
lagGoodwill (Lagged Goodwill)	633.71	1753	0	13457
PPE (property, plant and equipment)	0.497	0.445	0	3.05
Total revenues	5485	12537	4.287	96090
Tax	103	253	0.001	1977
PI (profit income)	434	1117	0.048	13969

Table 5: Descriptive statistics of Dutch domestic firms. The variables are all explained in chapter 2.

Table 6: Correlation tables Pearson (above the diagonal) and Spearman (below the diagonal)
Observations: 972

	ETR	MNE	lagTA	lagEmployee	lagGoodwill	PPE	RD	SI	leverage	Cap. Ex
ETR		-0.1323*	-0.0175	0.0547	0.0363	0.006	-0.0711*	-0.0601	-0.0196	0.0423
MNE	-0.1557*		-0.0019	0.1760*	0.2088*	-0.0250	0.0573	-0.0514	-0.0659*	-0.0553
lagTA	-0.1143*	0.1593*		0.1936*	0.0663*	-0.2070*	-0.0528	0.0014	-0.1250*	-0.1870*
lagEmployee	0.0393	0.1649*	0.7465*		0.4973*	-0.0997*	0.0275	-0.0341	-0.0317	-0.0464
lagGoodwill	-0.0666*	0.3033*	0.6140*	0.6310*		-0.0956*	0.1095*	-0.0283	0.0778*	0.0176
PPE	-0.0314	0.2078*	0.6806*	0.6856*	0.6343*		-0.083*	-0.0597	0.1202	-0.0335
RD	-0.0479	0.1757*	0.2642*	0.2452*	0.3453*	0.3771*		-0.0483	-0.1668*	0.0532
SI	-0.0287	-0.1183*	-0.2946*	-0.2225*	-0.2684*	-0.2497*	-0.1918*		-0.0155	0.0921*
leverage	-0.0183	-0.0548	0.1217*	0.0926*	0.1610*	0.2648*	-0.0568	-0.0346		0.1291*
Cap. Ex.	0.0695*	-0.0011	-0.1298*	0.1071*	0.1334*	0.1274*	0.0667*	0.0887*	0.1191*	

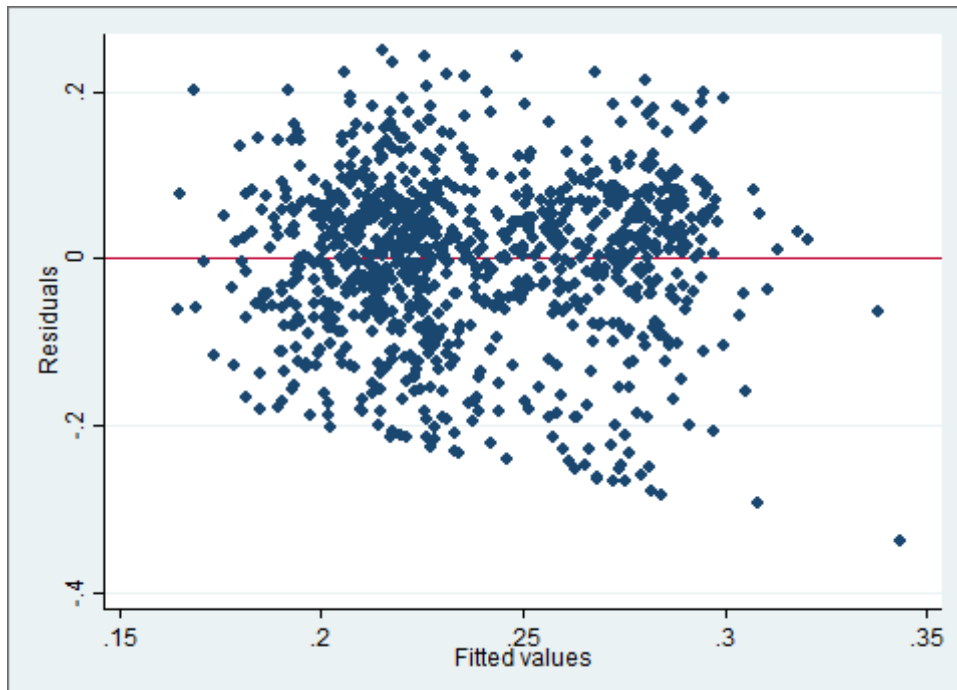Table 6: Correlation matrix, the coefficients that have a star and are black marked are significant.

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Table 7: Regression results on H1

Dependent variable: ETR

Variable	Coefficient (Standard Deviation)	P-value (t-value)
Constant	0.286*** (0.017)	0.000 (16,79)
MNE	-0,025** (0.011)	0.017 (-2,39)
lagTA	-0,001** (0.000002)	0.027 (-2,21)
lagEmployee	0,001* (0.00005)	0.081 (1,75)
lagGoodwill	0.001*** (0.000001)	0.001 (3,46)
PPE	-0,003 (0.009)	0.759 (-0,31)
RD	-0,220** (0.107)	0.040 (-2,06)
SI	-0,338 (0.301)	0.260 (-1,13)
Leverage	-0.044* (0.025)	0.076 (-1,78)
Capitalexpenditures	0.043 (0.050)	0.388 (0.86)
Time fixed effects?	YES	
N	972	
1%,5% and 10% levels	***, **, * respectively	
R²	0.1027	

Table 7: Regression analysis and its results

The ETR is the dependent variable in this regression table. All the variables have been defined in chapter 4. In the first column, the names of the variables have been reported. The second column contains the coefficients ($\beta1$ $till$ $\beta9$) of the regression and its effect. The standard deviation is reported in brackets behind the coefficients. The last column contains the p-value and the corresponding t-value in brackets.

Graph 1: Heteroscedasticity graph

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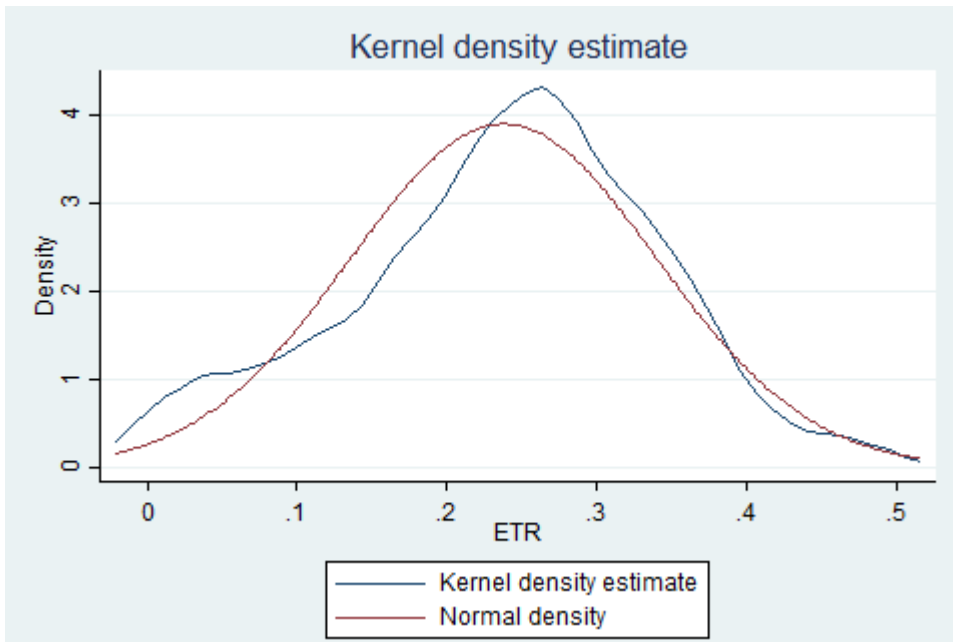
Graph 2: Normality graph of ETR

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