Radboud University Nijmegen

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The Impact of Board interlocks on Auditor Choice in the Netherlands

Master's Thesis

Abstract

This thesis investigates whether professional networks have an impact on auditor choice. Board interlocks are used to proxy these professional networks. The dataset includes non-executive directors of listed firms in the Netherlands during the 2005-2015 period. The results indicate that a firm is more likely to choose the auditng with whom they have a board interlock. The number of interlocks a firm has with a specific auditing firm compared to other auditing firms also matters. This suggests that directors share experiences about auditors with other directors in their professional network. The findings also indicate that there are other important auditor characteristcs that impact a firm's auditor choice. These characteristics together with professional networks help us to better explain auditor choice between Big 4 auditing firms, which are often treated as a homogenous group by the majority of existing research. This thesis provides empirical evidence on the positive relationship between board interlocks and auditor choice in a heavy regulated environment.

Keywords: Board Interlocks, Auditor Choice, Agency Theory, Non-executive Directors, Corporate Governance

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CONTENT

1   INTRODUCTION

The exposure of the inadequacy of the quality associated with audit services following the corporate scandals from Enron and WorldCom revealed that understanding how auditing firms are chosen is important from both an academic and corporate perspective. The literature on auditor choice appears to be abundant. However, the vast majority of these studies focus on financial variables to explain auditor choice. From an academic perspective, it is therefore important to investigate non-financial variables for example the influence of professional and social networks. From a corporate perspective, auditor choice is important because auditing is an effective monitoring tool (Jubb, 2000). The choice of an auditing firm also influences the quality of audit services (Hay, 2006). A firm's choice for a specific auditing firm can be explained from a supply and demand perspectives. From a demand point of view, the characteristics of the firm seeking the audit services influences its choice for an auditing firm. For example, the complexity of the firm (Abel-Khalik, 1993; Hay & Davis, 2004; Knechel *et al.* 2008; Simunic & Stein, 1987), the need for external financing, external equity financing and the cost of the disclosure of proprietary information ((Knechel et al. 2008) influences auditor choice. On the other hand, the supply side argues that characteristics of the audit firm influences auditor choice. For example, industry specialization (Abott and Parker, 2000; Knechel *et al.* 2008), technical expertise (Hermanson et al. 1994) and partner attributes (Behn et al. 1997) may have an effect on a firm's choice for an auditing firm. Thus most of these works use characteristics of the choosing or auditing firm to explain choice. However little is known about the effect of personal and professional networks.

The aim of this thesis is to investigate the influence of social networks on auditor choice. In particular, this thesis attempts to explore the effects of board interlocks on auditor choice in Dutch listed firms. In doing so, this thesis answers the following research question: *To what extent do board interlocks influence auditor choice?* In terms of academic contribution this research adds to existing research by providing evidence that professional networks influence auditor choice. This study also has practical relevance because it provides educators, regulators, and audit firms with a better understanding of the auditor selection process. Moreover, it could improve the functioning of the audit market because it has the potential to enable auditor differentiation, especially between the Big auditing firms. Moreover, as of writing no research about auditor choice has been conducted in the Netherlands. The research will be conducted using a sample of Dutch firms during the 2005-2015 time period. The Netherlands offers an interesting environment for this research because of the Dutch corporate governance code. In the recent years more emphasis is put on independency of firms and auditors and the role of external auditors in general. Furthermore, the Dutch Authority for the Financial Markets (Hereafter: AFM) announced that 45% of the investigated audit files of the Big 4 did not meet the requirements. This was also the case for many smaller auditing firms that were part

of the investigation (AFM Report, 2014). A wide time period is chosen because firms tend to stay with the same audit firms for many years because of the high costs associated to changing auditing firms. A decision is made to only include listed firms because of data availability. In addition, only non-executive directors are included because they are the ones tasked with auditor choice in listed firms.

The remainder of the thesis is organized as follows. A review of the literature is presented in the second chapter concluding with the set of hypotheses to be testes. Chapter three will offer insight in the sample and methodology used. The results of the analysis will be presented in chapter four. This thesis will finish with a conclusion followed by a discussion including limitations of the study and suggestions for future research.

2   LITERATURE REVIEW

Board interlocks are overlapping board memberships, which occur when corporate directors sit on the board of more than one firm (Heemskerk and Schnyder, 2008). These board interlocks have multiple benefits. First, interlocks offer a reliable and inexpensive channel of information and communication across firms (Haunschild, 1993). Second, they allow an exchange of expertise between firms. Third, interlocking directors advice management regarding the relationship between firm and external environment (Courtney & Jubb, 2005). These characteristics of board interlocks help firms with decision-making, for example auditor choice.

The difficulty in explaining auditor choice lies within the concept of audit quality. Audit quality is difficult to measure since it is not observed directly (Jubb, 2000). Moreover, the quality of an audit is not completely known to you until after the audit. This means audits are experience goods (Johansen and Pettersson, 2013). Furthermore an audit is a complex service performed in an uncertain environment. Uncertainty about the quality of goods and services can be reduced in two ways. First, it is possible to use reputation as a proxy for quality. Second, buyers can benefit from the experience of individuals in their network (Jubb, 2000). Board interlocks are an example of such network where individuals can share their experiences. This is important for understanding auditor choice, because these experiences can also be about auditing firms. *"Interlocking directors holding multiple board positions are in one of the best positions to judge the relative quality of audits due to their experience with various service providers" (Courtney & Jubb, 2005 pp. 133).* These experiences with specific audits can be quickly shared between connected firms, which can either be good or bad for the responsible auditing firms.

Board interlocks do not only offer advantages. For example, Jubb (2000) argues that interlocks have a negative effect on auditor independence. Auditor independence is defined as the refusal of the auditor to support any detected misstatements and standing against client's attempts to influence the audit report (Lu, 2005). The literature makes a distinction between being independent and looking independent (Mohamed and Habib, 2013). Especially the latter is negatively influenced by board interlocks. As an auditor, being associated with the same director across different firms makes you look less independent. Even if this is not actually the case. Auditor independence is important to ensure audit quality. In general, auditors and auditees have a self-interest in maintaining auditor independence in order to keep their credibility. In the Netherlands there are two important regulations in place that ensure auditor independence. First, there is a mandatory partner rotation every seven years. Second, since January 2016 there is also a mandatory auditing firm rotation every ten years. Note that these regulations are only applicable to Public Interest Entities (Hereafter: PIEs). In general, a firm is categorized as a PIE when it is either a listed firm or a financial firm (or both).

Since 2013, the legal system in the Netherlands allows firms to choose between a one-tier or a two-tier board structure. In the past, big firms were only allowed to adapt a two-tier board system. A two-tier board system consists of a supervisory board and a management board. Much like the name suggests, the supervisory board oversees the management board in their everyday business. A distinction can be made between executive directors and non-executive directors. The executive directors are responsible for the daily management of the firm and hence are members of the management board. Non-executive directors are not part of the executive management team, but are part of the supervisory board. The main tasks of the supervisory board are observation and advisory (Millet-Reyes and Zhao, 2010). According to Dutch law, a supervisory board consists of at least three members. Members of this board have to meet many legal requirements so their independency can be guaranteed. These legal requirements are listed in the Dutch Governance Code 2008 (Hereafter: Dutch Code). For example, non-executive board members are not allowed to be employed by the firm in the past five years or have any financial interest in the firm. The relationship of both types of directors with auditors are important. However, in this research I focus on non-executive directors for two reasons. First, this is the group where most interlocks are expected since they simply have more time and inclination to hold multiple board positions (Jubb, 2000). According to the Dutch Code, members of a supervisory board are allowed to sit on a maximum of five boards. A position as chairman counts as sitting on two boards. The number of boards are limited in order to guarantee that the members can fulfill their work requirements in each respective firm. The maximum time an individual can be member of a supervisory board in a specific firm is limited to twelve years in total. Second, non-executive directors are expected to be involved in auditor choice (Johansen and Pettersson, 2013). The latter point is crucial, since interlocks only have the ability to impact auditor choice when they connect board members that are actually involved in auditor choice (Shropshire, 2010).

Besides directors, another group that is interested in auditor choice that is worth mentioning are the shareholders. As mentioned above, shareholders have an explicit role in auditor selection. Aside from directly voting, shareholders can influence auditor selection indirectly by sharing their preferences with the directors. According to the literature, shareholders have an interest in auditor selection because it affects shareholders wealth (Jubb, 2000). This statement is true for other corporate governance mechanisms that align management and shareholder interests. Needless to say audit quality is important for shareholders. However, in practice it is very difficult to make an assessment of audit quality as a shareholder. Therefore the most used proxy for quality is auditor reputation (Johansen and Pettersson, 2013). Moreover, this is also a problem for audit firms themselves. Their main tool to advertise the quality of their services is through building a respectable reputation. This goes hand in hand with building personal relationships with clients.

2.1 HYPOTHESES

The aim of this thesis is to investigate the influence of the professional networks of non-executive board members on auditor choice. Professional networks are expected to influence auditor choice because the quality of the services offered by an audit firm are uncertain. Therefore, in an attempt to reduce such uncertainty firms seeking for auditing services may rely on their networks. If shared experiences between interlocked directors about the auditing firm are positive, then firms may select the same auditing firm as the firms belonging to their professional networks. However, the opposite could be true if the experiences with auditing firms are negative. Jubb (2000) and Johansen and Pettersson (2013) are two important studies that relate board interlocks to auditor choice.

Jubb (2000) formulates 14 hypotheses that examine connections between directors and auditors. In each hypothesis a different aspect of audit quality, corporate performance and investor confidence is included. The most important results are as follows: First, board interlocks do not show a clear direction towards a positive or negative effect on auditor choice. Second, some auditing firms are more frequently involved in director-auditor associations than others. Third, the number of interlocks varies a lot between industries. Fourth, no significant results for corporate governance variables. One of the major limitations of this study is that it only includes the year 1989. Moreover, only Australian firms and auditing firms are included in the sample. While Jubb (2000) describes plenty theory on auditor choice, she does only provide empirical evidence on the relationship between directors and auditors. The study by Johansen and Pettersson (2013) focuses specifically on auditor choice. They provide evidence that connections between non-executive directors are positively associated with auditor choice. Even though their research is conducted for Danish firms, a similar relationship can be expected for Dutch firms. Therefore my first hypothesis is:

Hypothesis 1: A firm's choice for an audit firm is positively influenced by the presence of a board interlock between the firms.

This thesis tests whether an auditing firm is more likely to be selected when it has at least one board interlock with the choosing firm. This is better known in the literature as the presence of a board interlock (Jubb, 2000). I proxy a firm's social networks through the non-executive director interlocks with other firms because non-executive directors are expected to be involved in auditor choice (Johansen and Pettersson, 2013). Apart from the presence of an interlock, the literature also discusses the extent of interlocks (Jubb, 2000). The extent depends on the total interlocks. My second hypothesis takes the number of interlocks into account and is formulated as follows:

Hypothesis 2: *A firm's choice for an audit firm is more strongly influenced by the firm's number of non-executive director interlocks with other firms*

Johansen and Pettersson (2013) offers evidence for a positive relationship between the total number of connections and auditor choice. In line with their research I expect that firms are more likely to choose the auditing firm with whom they have the most interlocks.

3   METHODOLOGY

3.1   SAMPLE DESCRIPTION

This research analyzes the effect of board interlocks on auditor choice among firms in the Netherlands. Information about Dutch companies and their board interlocks is drawn from BoardEx, a database containing detailed information on past and current board members of all public firms worldwide. Financial data for the companies in the sample and data about their auditing firms was obtained from Orbis, ThompsonOne, and annual reports. The final sample consists of 7,472 company-year observations corresponding to 119 Dutch listed firms which are followed for a total of 10 years between 2006 and 2015. The full BoardEx database included 147 listed Dutch firms, however some firms were excluded from the analysis, because of missing data, were listed for less than one year or were part of a merge / takeover. A total of 418 unique non-executive board members were active on multiple boards in Dutch listed companies during this time period. In the Netherlands there are ten auditing firms that are allowed to audit listed firms (AFM Register). This sample contains the eight biggest. These auditing firms are the Big 4 (EY, Deloitte, KPMG and PWC) and smaller auditing firms (Baker Tilly Berk, BDO, Granth Thornton and Mazars). The other two auditing firms are not included in the sample because they did not audit a listed firm during the time period. The average amount of interlocks per firm seems to be declining over time and can be seen in Graph 1 (Appendix A).

3.2   MEASURES

Dependent variable: The dependent variable in my model CHOSEN is an indicator of whether an auditing firm is chosen. This is a dichotomous variable and it takes either of two values, zero or one. CHOSEN is equal to one when the auditing firm is chosen, and zero otherwise. On any given year, a firm can choose only one auditor. In the analysis, both repeated and new firm-auditor relationships are included.

Independent variables: In order to test hypothesis 1, the variable presence of board interlocks (INTERLOCK) is used. This variable is a dichotomous variable, equal to one if there is a board interlock between the firm and auditing firm and zero when there is no interlock between the firm and auditing firm in the preceding year.

The independent variable included in the second hypothesis is the ratio of interlocks (LOCKRATIO). It is measured by the number of interlocks between firm and auditing firm divided by the total interlocks a firm has with the eight auditing firms in the sample.

Control variables: A number of control variables are included in the sample. These control variables are used to control for the choosing firm-specific and auditing firm-specific attributes.

*Firm attributes***:** A variable SIZE is included in the model. Firm size (SIZE) is measured by the logarithm of total assets. It is significantly associated with auditor choice in most other studies on this subject (Menon and Williams, 1994; Francis, 2004; Broye, 2008). The variable proxies for increased agency costs and a greater need for monitoring. Leverage (LEVERAGE) is the ratio of total debt to total assets and is also found to influence auditor choice (Firth and Smith, 1992; and Broye, 2008). LEVERAGE measures the significance of agency conflicts between insiders and debtholders. When a firm has more debt in relation to assets, agency conflicts become more important. When agency conflicts are an issue, then it is more likely that the firm chooses an auditing firm that provides a higher quality audit. Return on assets (ROA) is the ratio of net income and total assets. ROA is proxy for the profitability of a firm. When firms are more profitable, they are expected to be able to afford more expensive auditing firms (Chaney et al. 2004; Liu and Lai, 2012). I also include dummy variables for the possible impact of industry. Firms in the sample are categorized into a specific industry by the Standard Industrial Classification (SIC) code. Table 3 shows an overview of the industries.

Auditor attributes: The sample in this study consists of listed firms. In contrast to other studies, no control for Big 4 is included because over ninety-five percent of the firms in the sample has a Big 4 auditing firm. However, two other auditing firm specific variables are included. Industry specialist (SPECIALIST) is included in the model. SPECIALIST is a dichotomous variable, equal to one if an auditing firm is specialized in the firm's industry and zero when the auditing firm is not specialized. (Francis, 2004; Johansen and Pettersson, 2013). An auditing firm is specialized when it audits 60% of the firms in a given industry.
The second auditing firm specific variable is COUNTRY. COUNTRY is a dichotomous variable, equal to one when the headquarters of the auditing firm is located in the Netherlands and 0 otherwise. According to Jubb (2000), geographical proximity is valued in relationships between firm and auditor. Therefore it can be argued that a firm is more likely to choose an auditing firm that has his headquarters located in the same country as the firm.

3.3 THE MODEL

Table 1 presents descriptive statistics and a correlation matrix for all variables included in the model. None of the correlations between variables in the model are higher than 0.26. Some variables had to be omitted from the model namely return on equity and board members. These variables have higher correlations than 0,60 with return on assets and size respectively. However I have chosen to include the latter variables because they prove to be a better proxy according to the literature. Based on the remaining variables in the correlation matrix in table 1, I conclude that multicollinearity is not a threat for the remaining coefficient estimates.

I estimate the following two models, one for each hypothesis. They are very similar since the only difference is the independent variable. The results of regression using the following models are presented in the next chapter.

Hypothesis 1:
CHOSEN (0/1) = α + β_1 INTERLOCK (0/1) + β_2 SIZE + β_3 SPECIALIST(0/1) + β_4 COUNTRY (0/1) + β_5 ROA + β_6 LEVERAGE + ε

Hypothesis 2:
CHOSEN (0/1) = α + β_1 LOCKRATIO + β_2 SIZE + β_3 SPECIALIST(0/1) + β_4 COUNTRY (0/1) + β_5 ROA + β_6 LEVERAGE + ε

Table 1 Descriptive statistics

| | Mean | S.D. | Minimum | Maximum | Correlation matrix | | | | | | | |
					1	2	3	4	5	6	7	8
(1) CHOSEN	0.12	0.33	0	1	1							
(2)INTERLOCK	0.18	0.39	0	1	0.16	1						
(3) LOCKRATIO	0.08	0.21	0	1	0.10		1					
(4) SIZE	6.19	0.98	1.91	9.12	0.01	0.19	0.07	1				
(5) SPECIALIST	0.02	0.14	0	1	0.16	0.03	0.02	0.01	1			
(6) COUNTRY	0.12	0.33	0	1	0.20	0.22	0.22	0.00	0.26	1		
(7) RETURN ON ASSETS	4.40	12.22	-72.26	55.20	-0.01	0.04	0.02	0.07	-0.01	0.00	1	
(8) LEVERAGE	0.18	0.18	0	1.31	-0.00	-0.09	-0.05	-0.02	-0.01	-0.00	-0.00	1

4   RESULTS

A logistic regression is used since auditor choice is a categorical variable. Regression results for this tests are summarized in Table 2. This table contains both log odds and odd ratios. These ratios allow a more specific interpretation of the results when a variable is of categorical nature. The first hypothesis tests whether there is a relation between auditor choice and the presence of a board interlock (INTERLOCK) which is formulated as follows: *A firm's choice for an audit firm is positively influenced by the firm's social networks.* Columns (1) and (3) in Table 2 report the effect of INTERLOCK on the choice for an auditing firm. In line with my first hypothesis, the presence of a board interlock has a positive effect on the choice of an auditing firm and this effect is significant and with a log odds equal to 0,74 ($p < .001$). This implies that firms have a higher probability of choosing an auditor with whom they are connected through a board interlock. In order to better quantify this effect, one can interpret the odds ratios reported in column (3). An odds ratio of 2.09 for the variable INTERLOCK suggests that the probability of an auditing firm getting chosen is 2.09 greater when they have at least one interlock with the choosing firm.

The second hypothesis tests whether auditor choice is influenced by the number of interlocks with a specific auditing firm in relation to the firm's total interlocks of all Big eight auditors. The effect of LOCKRATIO on the choice for an auditing firm is reported in columns (4) and (6) in table 2. The independent variable LOCKRATIO has a log odds of .58 and an odds ratio of 1,79 which are significant for $p < .05$. This means that firms are more likely to choose the auditing firm with whom they have the most interlocks.

The results support both hypotheses. Auditor choice is positively influenced by the presence of board interlocks (H1). In addition, this effect is stronger when an auditing firm has more interlocks with a firm compared to other auditing firms (H2). This is also in line with a similar research by Johansen and Pettersson (2013) which provides evidence for a relationship between total interlocks and auditor choice. They report a log odds of 0,33 and an odds ratio of 1.39, which are both significant.

Table 2 also provides the results for my control variables for both regressions. The auditor specific variables (SPECIALIST, COUNTRY) have a positive effect on the choice of an auditing firm and this effect is significant ($p < .001$). The variable SPECIALIST has an odds ratio of 39,82 in the first model (column 3) and 42,95 in the second model (column 6). This indicates that a firm is more likely to choose an auditing firm which is a specialist in their industry. The variable COUNTRY has an odds ratio of 3,02 in the first model and 3,32 in the second model. This suggests that firms have a higher probability of choosing an auditor which has their headquarters in the same country.

The odds ratios for firm specific variables (SIZE, ROA, LEVERAGE) are presented in Table 2 for both regressions (Columns 3 and 6). SIZE has an odds ratio equal to 0,95 and 1,01 in regression 1 and 2 respectively. An odds ratio close to 1 means that the variable has a weak effect. This is also reflected by the log odds for SIZE which are close to zero. Columns (3) and (6) in Table 2 show similar results for the other firm specific variables ROA and LEVERAGE. In both regressions they have odds ratios close to 1 which are not significant. Previous research showed strong and significant values for these firm specific variables. This is explained by the fact that these studies have a different dependent variable. Most other researches use a dummy variable Big 4 as dependent variable. My dependent variable does not treat the Big 4 auditing firms as a homogenous group but attempts to differentiate auditor choice between Big Fours. My findings indicate that client firm's attributes no longer play an important role in the choice between for example KPMG and EY. Thus the choice between Big 4 auditing firms mainly depend on auditing firm specific characteristics SPECIALIST and COUNTRY, but also on past professional relationships INTERLOCK and LOCKRATIO.

In addition, I performed two additional analyses to test the robustness of my results. The results of these tests can be found in Table 4 and Table 5 in Appendix A. As mentioned in Chapter 2, mandatory auditing firm rotation was introduced in the Netherlands in January 2016. Many firms were obligated to change their auditing firm and decided to already choose new auditing firms in the years 2014 and 2015. Therefore in this test, the years 2014 and 2015 are omitted. In the second test I excluded financial firms. More specifically banks, insurance companies and pension funds. Financial firms generally have a slightly different board structure compared to non-financial firms. The results of both tests (Appendix B) for hypothesis 1 are statistically similar to the results presented in Table 2. However the independent variable LOCKRATIO in hypothesis 2 is no longer significant in both tests.

Table 2 Effect of board interlocks on auditor choice

This table summarizes the relationship between board interlocks and auditor choice. Odds ratio (OR) estimates are for one-unit changes in the explanatory variables. "***", "**" and "*" indicate significance at the 1%, 5%, and 10% levels, respectively.

Variable	Hypothesis 1			Hypothesis 2		
	Log[Odds]	S. E.	Odds Ratio	Log[Odds]	S. E.	Odds Ratio
	(1)	(2)	(3)	(4)	(5)	(6)
INTERLOCK (H1)	0.74***	0.14	2.09***			
LOCKRATIO (H2)				0.58**	0.29	1.79**
SIZE	-0.05*	0.03	0.95*	0.01	0.01	1.01
SPECIALIST	3.68***	0.80	39.82***	3.76***	0.79	42.95***
COUNTRY	1.11***	0.29	3.01***	1.20***	0.28	3.32***
ROA	0.00	0.00	1.00	0.00	0.00	1.00
LEVERAGE	0.12	0.08	1.12	-0.02	0.05	0.98
INDUSTRY DUMMIES	Yes			Yes		
Intercept	-2.04***	0.17	0.15	-2.32***	0.09	0.08***
Pseudo R^2		0.11			0.10	
Number of observations	7,472	7,472	7,472	7,472	7,472	7,472

5   CONCLUSION

In existing research, the focus is mainly on financial variables to explain a firm's choice for an auditing firm. An exception is the study of Johansen and Pettersson (2013) which provided evidence that the total number of board interlocks influence auditor choice. This thesis adds to this research by providing additional evidence that firms use the experience of previous professional relationships (board interlocks) when choosing an auditing firm. Previous chapter provided empirical evidence that firms are 2.09 times more likely to choose the auditing firm with whom they have a board interlock. In addition, an auditing firm is 1.79 times more likely to get chosen when they have more board interlocks with the choosing firm compared to other auditing firms. Courtney & Jubb (2005) stated that interlocking directors with multiple board positions are in one of the best position to judge auditing firms. Moreover, Haunschild (1993) argues that these directors use board interlocks as a channel of information to communicate. The results in previous chapter indicate that non-executive directors do indeed use information from their professional relationships to choose an auditing firm. This thesis also found additional evidence for auditing firm specific variables. Industry specialization and geography both are important for firms when choosing their auditing firm. These findings are in line with previous research (Francis, 2004; Johansen and Pettersson, 2013). This study also included firm specific attributes in the model. Existing research on auditor choice found that size, leverage and return on assets played an important role when choosing an auditing firm (Broye, 2008; Liu et al. 2012). However, my results indicate that these firm specific variables have a very weak relationship with auditor choice. These different findings can be explained by the fact that these studies focus on explaining the choice between Big 4 and non-Big 4 auditing firms. However, this study treats the Big 4 has a heterogeneous group which is why firm specific variables are no longer significant.

This study is the first to investigate exclusively Dutch firms with respect to the effect of board interlocks on auditor choice. The Netherlands is an interesting environment because of the Dutch corporate governance code and the introduction of mandatory auditing firm rotation. The Dutch corporate governance code got stricter of the years. This lead to a decline in the average amount of board interlocks. Excluding the years sensitive to mandatory auditing firm rotation showed similar results, granting a decrease in the odds ratio of both independent variables is noticeable.

This research has several limitations. First, the sample only included listed firms. As a result, it is impossible to draw conclusions on the influence of board interlocks on auditor choice in private firms. In order to fully understand auditor choice it is important that private firms are also investigated because they are often subject to different regulations and board structures. Second, there is only a single national context. This makes it nearly impossible to generalize the results to other countries with for example a different institutional setting and regulation. In addition, there seem to be a difference in number of interlocks per firm across countries as pointed out in the second chapter. Third, no distinction was made between new and repeated relationships between client and auditing

firm. In a new relationship, the firm would probably choose the auditing firm that is simply the best choice. In an existing relationship it is possible that a firm does not choose the best option, because it is too expensive to switch auditing firms. I expect a stronger relationship between board interlocks and auditor choice when only the years in which firms switch from auditing firm are included. The number of firm's switching their auditing firm increased because of mandatory auditing firm rotation. This number will further increase as more firms will have to rotate. This makes it an interesting topic for future research. There is also room for further research on the influence of other networks on auditor choice. Instead of looking at professional relations, one could look at social networks. For example, relationships between director and auditor by education and other activities. Another possible topic for future research lies in the fact that this study included non-executive directors as a whole. However, future studies could make a distinction between for example the audit committee, remuneration committee and the nomination committee. Where a stronger effect between board interlocks and auditor choice can be expected with non-executive directors part of the audit committee. There is also still room left to examine private firms with (non-)executive directors, since most existing literature focused on listed firms.

6   REFERENCES

Papers

1.   Abbott, L.J., & Parker, S. (2000). Auditor selection and audit committee characteristics. *Auditing: A Journal of Practice and Theory* **19**, pg. 47- 66.

2.   Abdel-Khalik, A. R. (1993). Why do private companies demand auditing? A case for organizational loss of control. *Journal of Accounting, Auditing and Finance* **8**, pg. 31-52.

3.   Almer, E.D., Philbrick, D.R., & Rupley, K.H. (2014). What drives auditor selection? *American Accounting Association* **8**, pg. 26-42.

4.   Bruynseels, L., & Cardinaels, E. (2013). The audit committee: Management watchdog or personal friend of the CEO?. The Accounting Review, **89**, pg. 113-145.

5.   Carpenter, C.G. & Strawser R.H. (1971). A study of the job satisfaction of academic accountants. *The Accounting Review* **46**, pg. 509-518.

6.   Chaney, P.K., Jeter, D.C., & Shivakumar. L. (2004). Self-selection of auditors and audit pricing in private firms. *The Accounting Review* **79**, pg. 51- 72.

7.   Coleman, J.S. (1988). Social capital in the creation of human capital. *The American Journal of Sociology* **94**, pg. 95-120.

8.   Courtney, N.P., & Jubb, C.A. (2005). Attachments between directors and auditors: do they affect engagement tenure? In *Campbell, T., Houghton, K. (Eds), Ethics and Auditing,* pg. 129-158.

9.   Davison, A.G., Stening, B.W., & Way, W.T. (1984) Auditor concentration and the impact of interlocking directorates. *Journal of Accounting Research,* **22**, pg. 313-317.

10.   Davis, G.F. (1991). Agents without principles ? The spread of the poison pill through the intercorporate network. *Administrative Science Quarterly* **36**, pg. 583-613.

11.   DeFond, M.L. (1992). The association between changes in client firm agency costs and auditor switching. *Auditing: A Journal of Practice and Theory* **11**, pg. 16-31.

12.   Dhaliwal, D.S., Lamoreaux, P.T., Lennox, C.S., & Mauler, M.L. (2015). Management influence on auditor slection and subsequent impairments of auditor independence during the post-sox period. *Contemporary Accounting Research* **32**, pg. 575-607.

13.   Firth, M. & Smith, A. (2006). Selection of auditor firms by companies in the new issue market. *Applied Economics* **24**, pg. 247-255.

14.   Francis, J. R. (2004). What do we know about audit quality? *The British Accounting Review,* **36**, pg. 345-368.

15.   Haunschild, P.R. (1993). Interorganizational imitation: The impact of   interlocks on corporate acquisition activity. *Administrative Science Quarterly,* **38***,* pg. 564-592.

16.   Hay, D.C., & Davis, D. (2004). The voluntary choice of an audit of any level   of quality. *Auditing: A Journal of Practise and Theory* **23**, pg. 37-53.

17.   Hay, D.C., Knechel, W.R., & Wong, N. (2006). Audit fees: A meta-analysis of   the effect of supply and demand attributes. *Contemporary Accounting   Research* **23**, pg. 141-191.

18.   Hay, D.C. (2013). Further vidence from Meta-Analysis of Audit Fee Research. *International Journal of Auditing* **17**, pg. 162-176.

19.   Heemskerk, E. & Schnyder, G. (2008). Small states, international pressures,   and interlocking directoriates: the cases of Switzerland and the   Netherlands. *European Management Review* **5**, pg. 41-54.

20.   Johansen, T. R., & Pettersson, K. (2013). The impact of board interlocks on auditor choice   and audit fees. *Corporate Governance: An International Review* **21**, pg. 287-310.

21.   Jubb, C. A. (2000). Choosing an auditor: corporate governance, interpersonal associations and investor confidence. *PhD thesis, Department of Accounting, University of Melbourne.*

22.   Kim, J., Soong, B.Y., & Tsui, J. (2007). Auditor quality, tenure and bank loan pricing. *Working Paper Series of the City University of Hong Kong, Kowloon.*

23.   Kirkos, E., Spathis, C., & Manolopoulos, Y. (2008). Support vector machines, Decision Trees and Neural Networks for auditor selection. *Journal of Computational Methods in Sciences and Engineering* **8**, pg. 213-224.

24.   Knechel, W.R., Niemi L., & Sundgren, S. (2008). Determinants of Auditor Choice: Evidence from a small client market. *International Journal of Auditing* **12**, pg. 65-88.

25.   Lu, T. (2005). Does opinion shopping impair auditor independence and audit quality? *Journal of Accounting Research* **44**, pg. 561-583.

26.   Menon. K. & J. D. Williams. (1994). The use of audit committees for monitoring. *Journal of Accounting and Public Policy.* **13**, pg. 121-   139.

27.   Millet-Reyes, B., & Zhao, R. (2000). A comparison between one-tier and two-   tier board structures in France. *Journal of International Financial   Management and Accounting* **21***, pg. 279-310.*

28.   Mohamed, D.M., & Habib, M.H. (2013). Auditor independence, audit quality and the mandatory auditor rotation in Egypt. *Education, Business and Society: Contemporary Middle Eastern Issues* **6**, pg. 116-144.

29.   Palmrose, Z. (1988). An analysis of auditor litigation and audit service quality. *The Accounting Review (January)*, pg. 55-73.

30.   Simunic, D. A., & Stein, M. T. (1987). Product differentiation in auditing: Auditor choice in the market for unseasoned new issues. *The Canadian Certified General Accountants' Research Foundation*.

31.   Shropshire, C. (2010). The role of the interlocking director and board receptivity in the diffusion of practices. *The Academy of Management Review* **35**, pg. 246-264.

32.   Wallace, W. (1982). Auditor selection: Changes in European and Australian companies when they choose a 'Big 5' auditor. *European Management Journal* **16**, pg. 653-659

Internet

1. (2014, September 25). AFM Report: Uitkomsten onderzoek kwaliteit wettelijke controles Big 4-accountantsorganisaties. Retrieved from: https://www.afm.nl/~/.../rapporten/2014/onderzoek-controles-big4

2. (2013, December). Dutch Governance Code 2008. Retrieved from: http://commissiecorporategovernance.nl/corporate-governance-code

3. (2016, October 16). AFM Register. Retrieved from: https://www.afm.nl/nl/professionals/registers/alle-huidige-registers.aspx?filter1=0&perpage=50&type={B5D6C574-90DE-4E1C-A997-5D84E5086C6B}

7   APPENDICES

7.1   APPENDIX A

Table 3 Number of observations per industry

Industry	Total observations	Percentage
Mining	160	2.04
Construction	480	6.13
Manufacturing	2,656	33.91
Transportation & Public Utilities	568	7.25
Wholesale Trade	248	3.32
Retail Trade	345	4.41
Finance, Insurance, Real Estate	1,695	22.68
Services	1,256	16.04
Public Administration	64	0.82
Total	7,472	100.00

Graph 1 Average interlocks per firm
The line shows the average number of interlocks per firm given the year

Average number of interlocks per firm
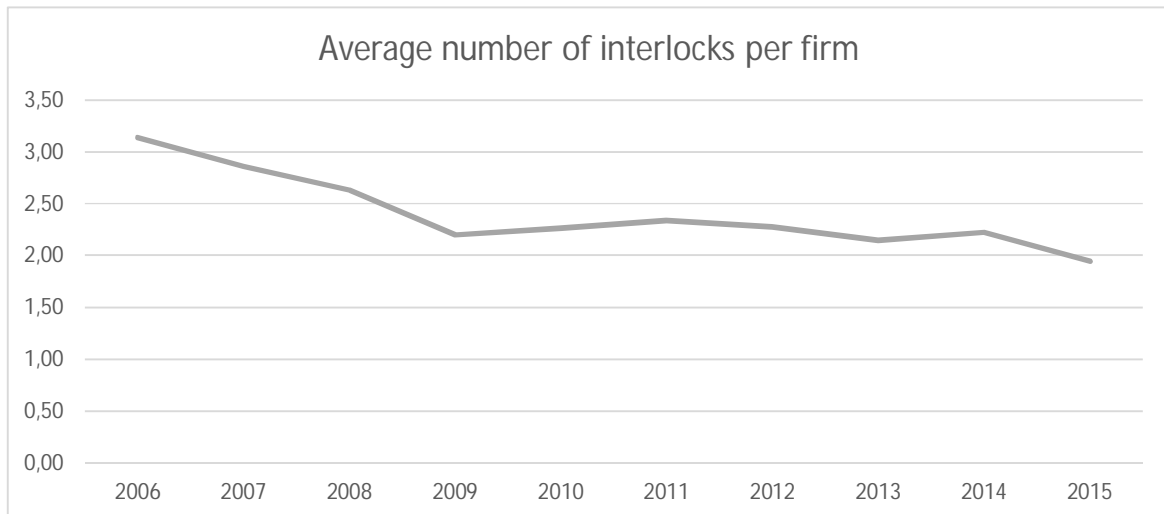
7.2 APPENDIX B

Table 4 Effect of board interlocks on auditor choice, period 2006-2013
This table summarizes the relationship between board interlocks and auditor choice. Odds ratio (OR) estimates are for one-unit changes in the explanatory variables. "***", "**" and "*" indicate significance at the 1%, 5%, and 10% levels, respectively.

Variable	Hypothesis 1			Hypothesis 2		
	Log[Odds]	S. E.	Odds Ratio	Log[Odds]	S. E.	Odds Ratio
	(1)	(2)	(3)	(4)	(5)	(6)
INTERLOCK (H1)	0.64***	0.15	1.90***			
LOCKRATIO (H2)				0.41	0.34	1.51
SIZE	-0.04	0.03	0.96	0.02	0.01	1.02
SPECIALIST	4.00***	0.97	54.43***	4.08***	0.96	59.41***
COUNTRY	1.19***	0.31	3.28***	1.29***	0.30	3.62***
ROA	0.00	0.00	1.00	0.00	0.00	1.00
LEVERAGE	0.08	0.08	1.08	-0.05	0.06	0.96
INDUSTRY DUMMIES	Yes			Yes		
Intercept	-2.44***	0.15	0.09	-2.68***	0.11	0.07***
Pseudo R^2		0.12			0.11	
Number of observations	6,112	6,112	6,112	6,112	6,112	6,112

Table 5 Effect of board interlocks on auditor choice, non-financial firms

This table summarizes the relationship between board interlocks and auditor choice. Odds ratio (OR) estimates are for one-unit changes in the explanatory variables. "***", "**" and "*" indicate significance at the 1%, 5%, and 10% levels, respectively.

Variable	Hypothesis 1			Hypothesis 2		
	Log[Odds]	S. E.	Odds Ratio	Log[Odds]	S. E.	Odds Ratio
	(1)	(2)	(3)	(4)	(5)	(6)
INTERLOCK (H1)	0.63***	0.17	1.89***			
LOCKRATIO (H2)				0.25	0.33	1.28
SIZE	-0.05*	0.03	0.95*	0.00	0.01	1.00
SPECIALIST	3.69***	0.81	39.95***	3.77***	0.80	43.38***
COUNTRY	1.23***	0.34	3.43***	1.35***	0.33	3.85***
ROA	0.00	0.00	1.00	0.00	0.00	1.00
LEVERAGE	0.11	0.10	1.12	-0.02	0.07	0.98
INDUSTRY DUMMIES	Yes			Yes		
Intercept	-2.32***	0.16	0.10	-2.56***	0.10	0.08***
Pseudo R^2		0.13			0.12	
Number of observations	5,777	5,777	5,777	5,777	5,777	5,777