Danish Accountants Are Not Tax Auditors:
Using Random Audit Data To Test the Effect of Certified Accountancy on the Tax Compliance of Small and Medium Enterprises in Denmark Between 2008 and 2014

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Introduction

> *"...preparers are, on the one hand, guardians against unequivocal breaches of the legal code and, on the other hand, exploiters of legally ambiguous features of the tax code to the advantage of the taxpayer."*[2]

Across countries, regulatory burdens fall disproportionately on small and medium enterprises (SME) (Abdul-Jabbar and Pope (2008)). To partly remedy this, since 2006, policy changes in Denmark have exempted a rising number of SMEs from the audit requirement, thus saving them from incurring the costs of hiring a certified accountant. The most recent policy change was in 2013 when the Danish government dropped the audit requirement for small holding companies and their subsidiaries. These policy changes have meant that the number of companies in Denmark without an audited financial statement has risen from 12 in 2006 to 112,000 in 2016 (Jensen and Baadsgaard (2017)). This process of deregulation has been met with wide criticism by FSR (the Association of Danish Certified Accountants) and by the press.[3] Although certified accountants' primary role in Denmark is not tax advice, these groups argue that relaxing the audit requirement makes it easier for SMEs to evade taxes because it removes the oversight that certified accountants provide. But have these exemptions led to an increase in tax noncompliance among Danish companies?

Every 2 years, the IT and Development Agency of the Danish Ministry of Taxation conducts a random audit study of approximately 3,000 SMEs in Denmark. The results show on the one hand that the vast majority of noncompliance by SMEs is not tax evasion, but simply unintentional errors. The results further show that the proportion of *intentional* noncompliance has not risen in the period of deregulation of the audit requirement (SKAT (2017)). This could suggest that there has been no effect of relaxing the audit requirement on the tax noncompliance of Danish SMEs. On the other hand, the *overall* noncompliance rates of SMEs are high in Denmark, with noncompliance found in over half of Danish SMEs and *this* proportion has risen steadily from 2008 to 2014—the same period in which the proportion of companies who have had their financial statements audited by a certified accountant has fallen steadily.

Recently, Commissioner Chris Jordan of the Australian Tax Authority stated that: "For years I've heard how tax agents were guardians of the system—these random enquiry results tell me this is not the case for some agents."[4] This paper uses Danish random audit data and asks: what is the effect of the use of certified accountants on SMEs' income tax and VAT noncompliance in Denmark?

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[2] Klepper, Mazur, and Nagin (1991:207).

[3] "Ministry promised no negative consequences—now law is criticized for costing a fortune in lost tax revenues" TV2 1.2.2018 http://nyheder.tv2.dk/2018-01-31-ministerium-aabnede-for-skattesnyd-uden-paa-forhaand-at-undersoege-risikoen.

[4] Commissioner Chris Jordan, AO Commissioner's Keynote address to the Tax Institute 33rd National Convention, Cairns, 15 March 2018 https://www.ato.gov.au/Media-centre/Speeches/Commissioner/Commissioner-s-address-to-the-Tax-Institute-National-Convention-2018/.

Certified Accountants in Denmark

Accountants in Denmark are trained to revise accounts. There are no legal constraints for hiring an accountant; all taxpayers in Denmark can choose to hire an accountant, but not many individuals make use of this option (Bentsen (2016)). Unlike in many other countries, such as in the United States, it is highly unusual in Denmark for individuals to use accountants. For individual taxpayers, 95.9 percent of information is reported to the tax administration by third parties such as banks. Of the 4.4 million Danes who received their tax returns in 2015, approximately 80 percent did not make any further changes to their tax returns (SKAT (2016)). In Denmark, the use of accountants falls mostly within the domain of companies or individual taxpayers with more complex income situations. Taxpayers who have more complex income situations—the fully or partly self-employed, registered artists, shareholders of small firms, or individuals with other sources of income such a property rental—fill out an extended tax return. Even within this group, only around 59 percent use an accountant (Bentsen (2016)). No one in this group is required to use an accountant.

Some companies, on the other hand, are required to have their financial statements fully audited by a certified accountant. Before 2006, all companies had to have their financial statements audited by a certified accountant. In 2006, companies in reporting category B[5] with a turnover under 3 million DKK ($480,000 US) could opt out of accountancy. In 2011, companies could opt out if two of the following three conditions were not exceeded for two consecutive years:

1. a balance sheet total of 4 million DKK ($640,000 US);
2. a net turnover of 8 million DKK ($1,280,000 US); or
3. an average of 12 full-time employees.

An exception to this rule was that holding companies and their subsidiaries could not opt out. This changed beginning in 2013, when holding companies and their subsidiaries could opt out of financial auditing if they met the above conditions (Jensen and Baadsgaard (2017)). Additionally, since 2013, what it means to meet the accountancy requirement has changed. Now, a company can have their financial statements fully audited by a certified accountant *or* have a "thorough scrutiny" of their financial accounts by a certified accountant. This was not the case before this time (Jensen and Baadsgaard (2017)), but there is yet to be an indication that there is a difference in the quality of the audit of the financial statements produced by these two approaches. In this paper, therefore, a thorough scrutiny and a full audit will be treated as the same thing.

The recent easing of the accountancy rules has caused a watershed of companies opting out of financial audits by certified accountants. But although fewer companies are getting the full audit of their financial statements, data from Danish tax administration show that most companies are still using accountants to review their books. Among the companies that could opt out, only 13 percent chose to opt out of having *any* help from a certified accountant in 2014.[6] This is in line with research, which shows that most SMEs find it useful to do the required accounting (Hansford and Hasseldine (2012)).

Since 2017, the Danish Ministry of Taxation has worked with the FSR to offer SMEs a special tax and VAT check.[7] The initiative is directed at the approximately 250,000 businesses that do not already have assistance from a certified accountant. It is a voluntary program, which started on January 1, 2018. This additional check has become available, because unlike in other countries, Danish certified accountants are not *legally* bound to make sure the tax and VAT are correct. The Audit Act of 2008 merely states that accountants must ensure that annual financial statements are correct and in line with the Danish Financial Statements Act of 2001.[8] What then is the effect of Danish certified accountants on tax compliance?

[5] Other categories include class A consisting for example of self-employed. For all the rules for the different reporting categories, see "Danish Act on Commercial Enterprises' Presentation of Financial Statements, etc." accessed via https://www.fsr.dk/Faglige_informationer/Regnskaber/Love%20og%20bekendtgoerelser/Aarsregnskabsloven/engelsk%20version%20af%20loven, on May 22, 2018.

[6] Data from the Danish Ministry of Taxation; see Data and Methodology section for more information on source.

[7] http://www.skm.dk/aktuelt/presse/pressemeddelelser/2017/oktober/nyt-skattetjek-af-smaa-og-mellemstore-virksomheder.

[8] "Bekendtgørelse af lov om godkendte revisorer og revisionsvirksomheder (revisorloven)" accessed via https://www.retsinformation.dk/Forms/r0710.aspx?id=183855 on May 22, 2018, and "Danish Act on Commercial Enterprises' Presentation of Financial Statements, etc." accessed via https://www.fsr.dk/Faglige_informationer/Regnskaber/Love%20og%20bekendtgoerelser/Aarsregnskabsloven/engelsk%20version%20af%20loven, on May 22, 2018.

Danish Accountants as Third-Party Agents in Tax (Non)compliance

This paper follows the definition of noncompliance given by Roth, Scholz, and Witte (1989:2) as including "both overreporting and underreporting of tax liability. It includes both deliberate underreporting that is punishable by criminal sanctions and underreporting due to misinformation, misunderstanding, negligence, or some other cause. It does not include the structuring of one's financial affairs within the law so as to reduce taxes, perhaps in ways that were not intended by lawmakers." In using this definition, this study thus follows the urging of Richardson and Sawyer (2001) to include both intentional and unintentional tax noncompliance. This is how noncompliance is measured in the random audit studies of the IT and Development Agency of the Danish Ministry of Taxation.

This paper approaches the study of tax compliance with a focus on agency theory, namely the influence of third-party agents on tax compliance. Studies on the influence of third-party agents on tax compliance are rarer than, for example, studies focusing on the probability of detection (Richardson and Sawyer (2001)), but recent studies have begun to fill this gap in the literature. The study by Boning, Guyton, Hodge, Slemrod and Troiano (2018), for example, looks at the effect of third-party agents on perceptions of the probability of detection showing that a tax audit can indirectly affect the tax compliance of firms that share the same individual tax preparer.

In the present study, the third-party agent/tax preparer studied is the certified accountant. Klepper, Mazur, and Nagin (1991) developed a model for the role that tax preparers can play in tax noncompliance using data from the Internal Revenue Service's (IRS's) Taxpayer Compliance Measurement Program. These data were collected using a stratified random sample of approximately 50,000 individual tax returns, but because of constraints on data access, the authors were able to use only summary tabulations. Using these data, they categorized two types of incomes: ambiguous and unambiguous. Unambiguous incomes are those where the income is legally deterministic, e.g., salary and most interest incomes. Ambiguous incomes, on the other hand, are those where the amount is not unequivocally prescribed by law, e.g., self-employment income and capital gains income (Klepper, *et al.* (1991:211)). Looking both at the self-prepared and preparers' returns, they built a model suggesting a dual role of tax preparers. Specifically, the authors suggest that tax preparers play the role of "exploiter" when tax laws are ambiguous, but as "enforcers" when tax laws are unambiguous. It is the preparer's role to assist taxpayers in structuring their return in such a way as to increase the after-tax income, but it is neither in the taxpayer's nor the preparer's interest to be penalized for noncompliance. According to Klepper, *et al.* (1991), tax preparers will therefore attempt to maximize after-tax income only in areas of ambiguous income using their "unique knowledge of reporting strategies" (p. 228), where tax preparers can make a reasonable argument for the legality of a possibly noncompliant approach. This is the theoretical basis for the "enforcer/ambiguity-exploiter" model (Klepper, *et al.* 1991:218), mentioned in the opening quote of this paper. The authors found that the model worked best for taxpayers with business incomes because this is an area with many ambiguous incomes.

A similar idea has been proposed by Lederman (2007) who looked at the speed bumps that third-party agents can provide for tax noncompliance. She pointed out that third-party agents can potentially *aid* in tax noncompliance when it is in the interest of either the third-party agent or the taxpayer. In a complicated tax code, there is more space for bending the rules, or as Lederman (2007:742) explains it, to play a role in "fostering or undermining compliance" than in the realm of a simpler tax code.

In a recent report by a legal think tank, the Danish tax code today is described as consisting of 696 laws, circulars, etc. (Juul (2017)). These laws have been continually changing; from 2007–2017, there were 261 proposals for legislation changes, making the Danish Ministry of Taxation the ministry with the most legislation proposals in 7 out of those 10 years. In the same time period, only six taxation laws have been repealed. According to the think tank, businesses as well as even the tax authority's own employees, have a hard time keeping up with changes to legislation.

In terms of VAT, these rules have remained relatively stable since their introduction in 1967, barring changes when Denmark entered the European Union's internal market and the adherence to the 1977 EU directive on harmonization of VAT in the member states (Ramsløv (2003)).

Tax legislation thus seemed to meet the conditions of Klepper, *et al.* (1991), namely that in this area there is high ambiguity and complexity, and theoretically, where there is therefore space for accountants to maneuver for income maximization. VAT legislation, on the other hand, would seem to provide less room for income maximizing and would thus theoretically be an area where certified accountants would act as enforcers of legislation.

As outlined above, the role of tax preparers is to work in the interests of their clients in a way that ensures that neither the taxpayer nor the preparer are penalized for noncompliance. If this is assumed to be true, even if accountancy may increase tax noncompliance, having a certified accountant conducting a full audit would decrease the appearance of intentional noncompliance, because maneuvering would take place only in areas where a reasonable argument for legality could be made.

This leads to the following three hypotheses that together describe the role of certified accountants for SME's tax compliance in Denmark:

H1: A full audit by a certified accountant is associated with lower VAT noncompliance.

H2: A full audit by a certified accountant is associated with higher income tax noncompliance.

H3: A full audit by a certified accountant is associated with lower apparent intentional noncompliance.

Studies have also shown that there is a difference in the effect of certified public accountants (CPA) and other accountants, with non-CPA being less aggressive (Richardson and Sawyer (2001:210)). But due to data constraints, this is not included in this study.

Data and Methodology

Every two years, the IT and Development Agency of the Danish Ministry of Taxation coordinates a random audit study of 3,000 SMEs. These randomly selected companies and self-employed persons are subjected to a thorough tax audit. The Danish random audit data allow for this unique opportunity to apply multivariate analyses to study whether SMEs' use of certified accountants decreases tax noncompliance, while controlling for other enterprise characteristics affecting tax noncompliance.

Similar to IRS data, it is almost 18 months before data are ready for analysis (Brown and Mazur (2003)) and the analyses and writing of the report take up to a year. The report for Tax Year 2014 was thus, for example, published in 2017 (SKAT (2017)). Unlike Klepper, *et al.* (1991), data at the level of the individual enterprise are used here, instead of summary tabulations. Klepper, *et al.* (1991) found that the model did not fit individual taxpayers with nonbusiness incomes. In this study, only the tax audits of companies are used.

Of the 2,828 enterprises selected for a random audit for Tax Year 2014, some 1,081 were companies, and the rest were self-employed individuals. The overall random sample of Danish self-employed and companies in 2014 was stratified to ensure an overrepresentation of companies to allow for the possibility of studying the effect of the new opt-out legislation on accountancy.[9] To study the effect of having an accountant versus opting out, only limited companies and limited liability companies were selected out of the 3,785 companies included for study. This was because these companies were in reporting category B, which means that they *had* the possibility of opting out of having their financial statements audited by a certified accountant, if they met the criteria mentioned above (Jensen and Baadsgaard (2017)). Limiting the analysis to only those companies resulted in a dataset of 3,641 companies. As shown in Table 1, the percentage of limited (liability) companies whose financial statements were not fully audited by a certified accountant rose from 7 percent in 2008 to 38 percent (397 out of 1044) in 2014. The drop from 2012 to 2014 being the biggest drop as a result of the significant widening of the opt-out possibility to include holding companies and their subsidiaries.

[9] Data from the risk-based tax audits of companies and the self-employed every year are not included in this study, nor can it include companies who have not been through a tax audit.

TABLE 1. Number of limited companies and limited liability companies with audited financial statements or an extended review in random audit data, by selected years, Tax Years 2008–2014

Item	2008	2010	2012	2014	Total
Financial statements not fully audited	53 (7%)	91 (10%)	143 (16%)	397 (38%)	684
Financial statements fully audited by a certified accountant	755 (93%)	777 (90%)	778 (84%)	647 (62%)	2,957
Total	808	868	921	1,044	3,641

SOURCE: Danish Ministry of Taxation, random audit studies

Not all these companies were able to opt out of having their financial statements audited, because they were too large. Because of the stricter regulations in 2008 and 2010, very few companies were able to opt out of accountancy in those years. In 2012, of the 576 companies that could opt out of full auditing, 20 percent did so, while in 2014, some 44 percent of the 897 companies that could opt out did so. (Note that these percentages are not shown in Table 1.)

The Danish random audit study on income tax and VAT compliance contains the objective enterprise characteristics used to determine the possibility of opting out of having a financial audit: number of employees, turnover, the total balance sheet, and whether the company is a holding company. An opt-out variable (0/1) was thus created with these characteristics, accounting for the change in the opt-out rules over the time span. The variable was constructed using the following criteria:

- In 2008 and 2010, only companies whose balance sheet total was less than 1.5 million DKK and whose turnover was less than 3 million DKK could opt out.
- In 2012, companies could not opt out if they were a holding company or if two of the following conditions were met: (1) turnover was greater than 8 million DKK; (2) balance sheet total was greater than 4 million DKK; or (3) they have 12 or more employees.
- In 2014, the same conditions applied as in 2012, but now holding companies could also opt out if they met the above criteria.

For constructing the variable, random audit data were combined with data from the companies' financial statements to include the companies' self-reported eligibility for opt-out. This was done because the opt-out rules span over a 2-consecutive-year period, but unfortunately the random audit data included data only for the current year. Although there were unlikely to be significant changes over a 1-year period in the turnover or balance sheet total, for example, using the additional check of the self-reported data gave further reassurance.

Combining these variables into one opt-out variable reflects the intention of the legislation: that smaller companies should be able to opt out, but not larger companies. The rationale is that large companies should not be able to opt out because their conditions are so complex that they necessitate the oversight of a certified accountant. The creation of the variable reflects how the legislation has slightly changed over the time period, but it still reflects small (opt-out = 0) versus large companies (opt-out=1). Including all variables into one also represents the idea that turnover, number of employees, and balance sheet total all reflect the same underlying factor: company size. The relatedness of the variables becomes obvious in the correlations between them. For example, the Pearson correlation between the number of employees and turnover is 0.74. Combining into one variable thus addresses problems of multicollinearity that would arise if including all company complexity variables into one regression. At the same time, it ensures a parsimonious model.

Including a variable for company complexity is essential in a regression explaining compliance. In every random audit study conducted by the Danish Ministry of Taxation, the size of an enterprise strongly influences tax compliance. Kleven, *et al.* (2016) also stresses the importance of the size of an enterprise for tax compliance. As companies' turnover, number of employees, and the balance sheet total increases, the tax code becomes ever more complicated, and tax compliance becomes more challenging. Holding companies are also consistently found to have better tax compliance than other companies. It is therefore important to control for these variables in any study of tax compliance.

The Danish Ministry of Taxation also consistently finds an influence of industry/sector on tax compliance. In several of its random audit studies, the trade industry and the farming industry have the largest tax gaps, while hotels and restaurants are shown to have the highest proportion of intentional noncompliers. In addition, in the experience of the Danish Ministry of Taxation, older companies also (continue to) use accountants, perhaps out of habit, even if they are not required to have one. Sector and age should therefore also be included in studying tax compliance.

Richardson and Sawyer (2001) call for more tax compliance studies using regression analysis. The difficulty is, of course, often the lack of randomly selected data, as also pointed out by Hanlon, Mills, and Slemrod (2005). The present study responds to that call, being able to use data with randomly selected tax audits in Denmark and using regression to predict the likelihood of an error in reported taxes and VAT.

In the Danish Ministry of Taxation's random audit studies, individual case workers make an overall assessment of the intentionality of the VAT and income tax errors committed by a company. They use a specially designed flow diagram to determine the intentionality of the noncompliance overall (see Figure A1 in the Appendix). Rating a company 0–2 (red to yellow) means that the caseworker judges a company to be making intentional errors. These are often large errors that are in the company's favor. Ratings 3–6 (green to white) are reserved for unintentional errors including, for example, small oversights or instances of overpaying. See Figure A1 in the Appendix for further information about the flow chart and rating scale. Using these data makes it possible to compare the intentionality of the noncompliance across companies.

TABLE 2. Descriptive statistics

Item	Mean	SD	Min	Max	N
Dependent variables					
VAT noncompliance	0.38	-	0	1	2107
Income tax noncompliance	0.47	-	0	1	3641
Intentional noncompliance	0.09	-	0	1	3641
Independent variables					
Financial audit by a certified accountant	0.81	-	0	1	3641
Tax year: 2008	0.22	-	0	1	3641
2010	0.24	-	0	1	3641
2012	0.25	-	0	1	3641
2014	0.29	-	0	1	3641
Sector: Farming, forestry, and fisheries	0.01	-	0	1	3641
Industry, mineral extraction, and utilities	0.05	-	0	1	3641
Construction	0.08	-	0	1	3641
Trade and transport	0.18	-	0	1	3641
IT and communication	0.04	-	0	1	3641
Finance and insurance	0.21	-	0	1	3641
Property sale and rental	0.09	-	0	1	3641
Business services	0.13	-	0	1	3641
Public administration, education, and health	0.02	-	0	1	3641
Culture, leisure, and other services	0.01	-	0	1	3641
Undefined sector	0.18	-	0	1	3641
Opt-out possibility	0.71	-	0	1	3641
Log of age of enterprise	1.88	0.98	0.00	4.73	3495

Table 2 shows the descriptive statistics of all the variables used. The first variable is VAT noncompliance. This variable is applicable only for companies that are VAT liable, meaning 2,107 companies. Of these companies, 38 percent were VAT noncompliant. Income tax noncompliance applies to all 3,641 companies in the dataset; of these, 47 percent were tax noncompliant. Intentional noncompliance, meaning a rating of 0-2 on the scale described above, is also included as a dependent variable. Table 2 shows that over the four studies, 9 percent of these limited companies and limited liability companies were judged by the tax auditors to be intentionally noncompliant. These three dependent variables are binary variables, so logistic regression is therefore appropriate for the analyses.

The independent variables included in the analysis are also shown in Table 2. The key variable is the financial audit variable, which is a dummy variable indicating whether the company has had its financial statement fully audited by a certified accountant. The table shows that this is the case for 81 percent of companies. This variable is derived from the company's annual financial statements, where it is indicated whether and what type of assistance the company has had from an accountant. This variable indicates whether the company has had a *full* financial audit by a certified accountant. This is the most encompassing role for an accountant in Denmark. Many companies have types of assistance from an accountant, e.g., a review or assistance from a noncertified accountant. This variable, thus, compares a full audit with lesser assistance from an accountant, and (in fewer cases) no assistance. See footnote 11 for results of analyses conducted comparing having assistance versus not having assistance from a certified accountant.

As shown in Table 1, there is considerable variation over the time period in the proportion of companies that have full financial audits by a certified accountant, also because of changes in legislation. Dummy variables for the tax year are thus included, and as Table 2 shows, there is an even distribution of companies over time.

The company industry/sector is included with dummy variables representing 10 different sectors as well as "undefined."[10] Finance and insurance are the biggest sector with 21 percent of companies, likely because all holding companies are grouped into this category, followed by trade and transport (including for example all shops and supermarkets) and undefined with 18 percent of companies. The age of the company is included as the log of the continuous variable ranging from 1 to 5.73 ("1" being added to the variable before taking the log), the actual ages of the companies range from 0 to 113 years with a mean of 9.84. Note that there are some missing data on this variable, but they are less than 5 percent and should therefore not affect the results. Note also that separate analyses were conducted with age included as categorical variables because reports by the Danish Ministry of Taxation (SKAT (2017)) show that there is a U-shaped effect of age on tax companies (see categories in Appendix Table A1). The overall results were comparable, however, and for ease, enterprise age is therefore included as a continuous variable.

All analyses were also conducted on data where only companies that *could* opt out were included, and the results were comparable.

Appendix Table A1 shows the effect of all the included variables in categorical format on the likelihood of a company having a financial audit by a certified accountant and on having the ability to opt out. Both models show firstly that significantly more companies could—and did—opt out in 2014 than in 2008. The first model shows that all variables, except for the total balance sheet, are associated with the likelihood of having a financial audit. It shows, for example, that companies in the finance and insurance sector are associated with a higher likelihood of having their financial statements audited than companies in public administration, health, and education, while companies in trade and transport have a lower likelihood. The second model shows naturally that companies with a small number of employees have a higher likelihood of being able to opt out. It also shows that age is associated with the possibility to opt out, which is logical, as turnover and balance sheet totals increase as the company ages.

[10] In Denmark, companies self-select their sector code when they register the company. Until 2017, it was possible to select "undefined."

Results

Table 3 shows the results of the binary logistic regression analyses with the three dependent variables: likelihood of VAT noncompliance, the likelihood of income tax noncompliance, and the likelihood of intentional noncompliance. All analyses are conducted using SAS Enterprise Guide version 7.1.

TABLE 3. Likelihood of Danish SMEs in Financial Years 2008–2014 to be income tax and VAT noncompliant and to be categorized as being intentionally noncompliant

Dependent variable:	Model 1. Likelihood of VAT noncompliance		Model 2. Likelihood of income tax noncompliance		Model 3. Likelihood of intentional noncompliance	
	Estimate	*SE*	*Estimate*	*SE*	*Estimate*	*SE*
Intercept	0.44 ***	0.03	0.86 ***	0.02	-1.01***	0.03
Financial audit =1	**-0.05 *****	**0.01**	**0.15 *****	**0.01**	**-0.62*****	**0.01**
Year (ref: 2008) 2010	-0.25 ***	0.01	-0.07 ***	0.01	0.00	0.01
2012	0.01	0.01	0.02 ***	0.01	0.05***	0.01
2014	0.27 ***	0.01	0.32 ***	0.01	-0.34***	0.01
Sector (ref: Public administration, education, and health) Construction	-0.21 ***	0.03	-0.15 ***	0.02	0.08***	0.03
Property sale and rental	-1.10 ***	0.03	-1.07 ***	0.02	-0.27***	0.03
Business services	-0.54 ***	0.03	-0.61 ***	0.02	0.32***	0.03
Finance and insurance	-0.77 ***	0.03	-1.86 ***	0.02	-1.06***	0.03
Trade and transport	-0.28 ***	0.02	-0.40 ***	0.02	0.25***	0.03
Industry, mineral extraction, and utilities	-0.55 ***	0.03	-0.57 ***	0.02	-0.89***	0.04
IT and communication	-0.29 ***	0.03	-0.65 ***	0.02	0.16***	0.03
Culture, leisure and other services	-0.38 ***	0.03	-0.98 ***	0.03	0.10***	0.04
Farming, forestry, and fisheries	-0.10 ***	0.03	-0.52 ***	0.03	-0.20***	0.04
Undefined sector	0.19 ***	0.05	-1.92 ***	0.02	-1.03***	0.03
Opt-out possibility =1	-0.43 ***	0.01	-0.27 ***	0.01	-0.07***	0.01
Log of age of company	-0.07 ***	0.00	0.03 ***	0.00	-0.25***	0.00

***p<.001

In terms of the effect of having a certified accountant fully audit a company's financial statements, Model 1 shows support for **H1**, namely that having an accountant is associated with a decrease in the likelihood of VAT noncompliance. The odds ratio is 0.96, meaning that companies with a certified accountant are 4.5 percent less likely to make VAT errors than companies that have not had their financial statements fully audited by a certified accountant. It appears that VAT is something that accountants can help companies with, or according to theory, is so unambiguous that there is no room for strategic maneuvering or errors.

Model 2, on the other hand, shows that having a full audit by a certified accountant is associated with an increase in the likelihood of income tax noncompliance. The odds ratio is 1.16, meaning that companies with a certified accountant are 15.8 percent more likely to have errors in their taxes. This supports **H2** and is in line with the theory that taxation legislation leaves enough ambiguity for tax preparers to push the limits of compliance and maneuver for income maximization.[11]

[11] Additionally, separate analyses are also run for 2012 and 2014, where data was available not just for whether companies had full audit, but also whether they simply used an accountant. As mentioned above, only 13 percent of companies that could opt out in 2014 chose to opt of out of using a certified accountant entirely. The results for this alternative study showed that there is a lower likelihood of VAT and income tax noncompliance for companies that simply have an accountant. The likelihood of VAT noncompliance decreased much more than the likelihood of income tax noncompliance, however: -47.7 percent versus -15.2 percent. These results thus support the finding that there is a difference in the effect of accountancy for VAT and income tax, but it is unclear why a full audit would result in significantly higher likelihood of income tax noncompliance, while having an accountant is associated with lower income tax compliance. This could usefully be an area for further study.

Lastly, Model 3 shows that an SME having its financial statement audited by a certified accountant is associated with a decrease in the likelihood of that company being categorized as intentionally noncompliant. The odds ratio is 0.54, meaning that companies with a certified accountant are 46.3 percent less likely to be judged as intentionally noncompliant. This supports **H3** and indicates that although certified accountancy may be associated with income tax noncompliance, it is done in such a way that the company is not judged as being intentionally noncompliant.

The models further show that companies with the opt-out possibility have lower noncompliance than companies without the opt-out possibility (35 percent lower likelihood of VAT noncompliance and 23.6 percent lower likelihood of income tax noncompliance). This means that smaller companies have higher compliance, which is in line with the descriptive results of the Danish random audit studies (SKAT (2017)). It is also in line with the intention of the legislation, namely that smaller companies should be able to opt out of accountancy.

In terms of the control variables, the variables for tax years show lower noncompliance in 2008 than in 2010 (22 percent lower likelihood of VAT noncompliance), but greater likelihood of noncompliance in 2014 versus 2008 (30.4 percent greater likelihood of VAT noncompliance). In terms of age, Model 1 shows a lower likelihood of VAT noncompliance associated with the log of the age of the company (6.6 percent lower likelihood), while Model 2 shows a higher likelihood of income tax noncompliance (3 percent higher likelihood). In terms of sector, it shows that there are wide differences in compliance across sectors, which is in line with descriptive results of the Danish random audit studies (SKAT (2017)).

Examining the Possible Selection Bias

In the above analyses, what is studied is the *association* between a full financial audit and tax/VAT noncompliance. Although the models control for the size and the (time-varying) possibility to opt out, the models cannot definitively show that accountancy *causes* noncompliance. This is because among the companies that were able to opt out of a full financial audit, the choice to have a full audit was made entirely by the company itself. There may therefore be an issue of self-selection in the model, which means that it is not possible to distinguish the effect of a full financial audit from the selection effect. A way to address this is by examining the effect of accountancy comparing those companies just under the opt-out limit with those of a slightly larger size, who do not have the opt-out possibility.

Although the opt-out possibility is legally construed using several indicators, for this grouping, only net turnover is used, knowing that company size variables are correlated. As shown in Table 4, two groups were created: one with companies with a turnover from 50 percent below the turnover limit up until the turnover limit and another group with companies with a turnover at the opt-out limit up until 50 percent above the turnover limit.

TABLE 4. Number of limited companies and limited liability companies with a net turnover between 1.5-3 million in 2008 and 2010 and 4-12 million in 2012-2014 (including holding companies in 2014)

Item	2008	2010	2012	2014	Total
Number of companies with a turnover from 50 percent below the turnover limit up to the turnover limit	28	40	26	22	116
Number of companies with a turnover at the opt-out limit up to 50 percent above the turnover limit	51	61	53	78	243
Total	79	101	79	100	359

As shown in Table 4, the two groups, as well as the overall N, are small so the power of statistical tests is therefore limited. These results are therefore less robust than the results shown in Table 3. Running a logistic regression on these data, with the same independent variables as before, but without the opt-out possibility variable, shows that companies 50 percent under the opt-out limit are 38 percent less likely to be VAT noncompliant, 47 percent less income tax noncompliant and 4 percent less likely to be deemed as intentionally noncompliant. This is in line with the results that larger companies are more likely to be noncompliant than smaller companies.

When looking at the effect of a full financial audit only for these two groups, the results firstly show that a full financial audit means a 34 percent lower likelihood of VAT noncompliance. This is in line with the results of Table 3. Unlike the results of Table 3, however, using data for only these two groups shows that a full financial audit is associated with a 12 percent *lower* likelihood of income tax noncompliance. This result indicates that a full audit is associated with a *less* positive effect on income tax compliance than for VAT noncompliance, but not the effect shown in the previous models, namely that accountancy *increases* income tax noncompliance. The results for the effects on intentional noncompliance do have the same results as those in Table 3; showing that a full audit is related to a 17 percent lower likelihood of being deemed as intentionally noncompliant.

These results thus still provide support for the enforcer/ambiguity-exploiter, namely that accountants work in the interest of their clients by decreasing the appearance of intentional errors. Also, it shows that within the relatively straightforward framework of VAT, a full financial audit can aid in decreasing VAT errors. Using these data does provide less strong evidence for the ambiguity-exploiter model, but it does show that where there is more ambiguity, a full audit has less of a positive influence on compliance.

These analyses addressing the possible self-selection problem of the data show that the overall results of the effect of accountancy on intentional noncompliance and a difference between VAT and income tax appear sound. But the small N of these additional analyses means that the possibility of self-selection is an area that could usefully be further explored using alternative methods or a larger sample.

Conclusion and Discussion

This study sought to determine the effect of a full audit of financial statements by certified accountants on the tax noncompliance of small and medium-sized enterprises in Denmark. Using data from the IT and Development Agency of the Danish Ministry of Taxation's random audits from 2008-2014, it found that there is a difference in the effect of certified accountancy on income tax versus VAT noncompliance. A full audit of a company's financial statement by a certified accountant is associated with a decrease in the likelihood of VAT noncompliance, but an increase in the likelihood of income tax noncompliance. Although certified accountancy is associated with a higher likelihood of income tax noncompliance, it is also associated with a lower likelihood of *intentional* noncompliance.

The paper thus firstly finds support for the theory of Klepper, *et al.* (1991), namely that in more ambiguous income tax legislation, accountants can act as ambiguity-exploiters, but within the more limiting confines of VAT legislation, they act as VAT-enforcers. Secondly, the results support the claim that Klepper, *et al.* (1991) make, specifically that accountants work mainly in the interests of their clients. They aid in income maximization where there is room to do so, but they do so in a way that does not appear as intentional noncompliance.

The results of this paper very much invite further inquiry examining the selection effect integral in the paper. The paper partially examines the self-selection integral in the research design with a comparison of groups, but this could be extended by using an instrumental variable or two-stage least squares approach, but a more direct approach would be to use mixed methods. Richardson and Sawyer (2001) argue for the combination of different methodologies in the study of tax compliance. One possibility for furthering this study could be combining the study's regression analysis with questionnaire studies such as those in the study by Barker and Noonan (1996) of Irish accountants. In this way, it would also be possible to study the type of accountancy selected, even the choice of accountancy firm and thus disentangle the exact mechanism for why accountancy increases income tax noncompliance, while decreasing VAT noncompliance and intentional noncompliance. It may be that this is not because of different levels of ambiguity in legislation, as proposed by the theory of Klepper, *et al.* (1991), but rather that Danish accountants do not have the expertise to understand and aid in income tax compliance while they do have the expertise to aid in VAT compliance. The introduction of the new and separate income tax and VAT check mentioned above could indicate that this may be the case. With these additional methods, it would also be possible to disentangle the difference in the effect of having a certified accountant fully auditing a company's financial statement versus a company just having the assistance of an accountant.

This paper is thus a starting point for examining what role accountants have in income tax and VAT compliance in Denmark. This research is surely important for tax administrations and for the political discussions on the easing of the accountancy standards. The possible maneuvering of Danish accountants could, for example, be an argument for simplification or stabilization of income tax legislation to minimize this possibility. But the paper also provides insight in the field of tax compliance research as it addresses the disputed link between compliance costs and tax compliance. And, as pointed out by Klepper, *et al.* (1991) and Lederman (2007:743), the possible dual role of third-party agents may also extend beyond tax law and could therefore usefully be explored in other legal fields.

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Appendix

TABLE A1. Likelihood of Danish SMEs in Tax Years 2008–2014 to have a financial audit by a certified accountant or having the opt-out opportunity

Dependent variable:	Likelihood of having a financial audit by a certified accountant		Likelihood of being able to opt out	
	Estimate	*SE*	*Estimate*	*SE*
Intercept	2.38***	0.03	2.04***	0.03
Year (ref: 2008)				
2010	-0.47***	0.01	0.21***	0.01
2012	-1.15***	0.01	0.01	0.01
2014	-2.52***	0.01	1.74***	0.01
Sector (ref: Public administration, education, and health)				
Construction	0.08**	0.03	0.08**	0.03
Property sale and rental	-0.09**	0.03	-0.24***	0.03
Business services	-0.21***	0.03	0.40***	0.03
Finance and insurance	-0.02	0.03	-0.09**	0.03
Trade and transport	-0.50***	0.03	0.08**	0.03
Industry, mineral extraction, and utilities	-0.48***	0.03	0.25***	0.04
IT and communication	-0.48***	0.03	0.36***	0.04
Culture, leisure, and other services	-0.41***	0.04	0.15**	0.04
Farming, forestry, and fisheries	-0.80***	0.03	0.18***	0.04
Undefined sector	0.12***	0.03	-0.02	0.03
Age (ref: 0-2)				
3–5 years	0.37***	0.01	-0.15***	0.01
6–9 years	0.53***	0.01	-0.33***	0.01
10–19 years	0.47***	0.01	-0.40***	0.01
20+ years	0.29***	0.01	-0.52***	0.01
Employees (ref: 0)				
1–12 employees	-0.07***	0.01	-0.08***	0.01
13–24 employees	0.17***	0.03	-1.78***	0.02
25–49 employees	0.14***	0.03	-2.06***	0.03
50+ employees	-0.28***	0.03	-3.22***	0.04
Turnover (ref: 0)				
1–10,000 kr.	-0.86***	0.04	1.21	2.30
10–100,000 kr.	0.03	0.02	0.12***	0.03
100–500,000 kr.	-0.07***	0.01	-0.30***	0.02
500,000–1 M kr.	-0.31***	0.02	0.16***	0.02
1–10 M kr.	0.51***	0.01	-1.53***	0.02
10+ M kr.	1.83***	0.03	-4.69***	0.03
Balance sheet total (ref: 0)				
1–10,000 kr.	10.29	29.18	-0.90***	0.10
10–100,000 kr.	0.71***	0.06	-1.18***	0.05
100–500,000 kr.	0.05**	0.02	0.52***	0.02
500,000–1 M kr.	0.22***	0.02	0.27***	0.02
1–10 M kr.	1.10***	0.02	-2.38***	0.01
10+ M kr.	1.91***	0.04	-2.82***	0.02
Holding company =1	0.33***	0.00	-1.21***	0.01

NOTE: ***p<.001, **p<.05

FIGURE A1. Flow diagram used by tax auditors to determine intentionality of income tax and VAT noncompliance.