THE IMPLICATIONS OF IN-HOUSE TAX EXPERTISE ON TAX BEHAVIOR

WHETHER FIRMS WITH IN-HOUSE TAX EXPERTISE PAY LESS CORPORATE INCOME TAXES RELATIVE TO FIRMS WITHOUT IN-HOUSE TAX EXPERTISE

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The Implications of In-house Tax Expertise on Tax Behavior:

Whether Firms with In-house Tax Expertise pay less Corporate Income Taxes relative to Firms without In-house Tax Expertise

Abstract:

We examine whether companies with in-house tax expertise consisting of auditing, accounting and tax consultancy firms have a tax outcome that is different to similar type of service companies without in-house tax expertise. To investigate this, we use a firm fixed effect regression model on an unbalanced panel data set consisting of private Swedish companies during the time period 2007-2017. To measure tax outcome, we use a measure that is designed to capture the tax planning behavior of private asset-light service firms. We propose and find that the group of auditors, accountants and tax consultants pay less income taxes relative to firms with similar operating and financial characteristics that do not offer tax related services. The findings support previous research that have demonstrated tax experts' ability to avoid taxes, although the research question investigated in this study is to the best of our knowledge unprecedented.

Keywords: Tax avoidance, Tax behavior, In-house tax expertise, Conforming tax avoidance and Non-conforming tax avoidance

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1. Introduction

In this study, we investigate the tax planning behavior of firms with in-house tax expertise (IHTE).

Previous research show that experts within the field of taxation have the ability to affect and reduce explicit taxes paid in a company. For example, McGuire, Omer and Wang (2012) found that audit firms with combined audit and tax expertise achieve higher levels of tax avoidance for their clients, suggesting that these experts can combine their audit and tax expertise to develop favorable tax strategies. Furthermore, Dyreng, Hanlon and Maydew (2010) showed that individual executives play a significant role in determining a firm's level of tax avoidance which also is supported by the study of Huang & Zhang (2019) that suggests that financial expert CEOs have more aggressive tax policies. With previous research suggesting that tax planning services and executives with financial expertise can affect tax avoidance, it seems likely that firms with in-house tax expertise (IHTE) such as auditors and tax consultants avoid taxes more than firms without IHTE. Moreover, tax-specific industry expertise has been associated with higher tax avoidance (McGuire et al., 2012), and firms are likely experts in their own industry if any, which should further increase the tax avoidance in firms with IHTE. We predict and find that firms with IHTE pay less taxes than firms without IHTE.

To this point, taxation research has almost exclusively focused on measuring a specific type of tax avoidance, which is how large firms' tax expense or taxable income are relative to their financial income. This has been of interest due to the fact that listed firms, which is what has been mostly studied (e.g. Robinson, Sikes, & Weaver, 2010; Rego, 2003; Dyreng, Hanlon, & Maydew, 2008, 2010; Gupta & Newberry, 1997), generally experience pressure from the capital market to report good performance (Penno & Simon 1986; Cloyd, Pratt, & Stock, 1996; Mills & Newberry 2001). Therefore, listed firms tend to pay less taxes by reducing their taxable income without reducing the financial income, which is usually referred to as non-conforming tax avoidance.

Our study is different from most of the previous taxation literature as we study private firms with IHTE and their own tax behavior as opposed to their effect on clients' tax avoidance outcome. Our sample of firms with IHTE consist of Swedish accounting, auditing and tax consultancy firms. This study is possible to perform in a Swedish setting due to two reasons. First, there is in Sweden

extensive financial data available on private firms. Second, most Swedish auditing and accounting firms are limited liability companies. Generally, these types of firms are professional partnerships (Greenwood, Hinings, & Brown 1990), where there often are less financial information and insight available. As private firms are not subject to the same capital market pressure as listed firms (Beatty & Harris, 1999; Graham et al., 2013; Shackelford & Shevlin, 2001), they can focus more on minimizing taxes rather than showing high profits (Ball & Shivakumar, 2005), which can be achieved by simply lowering their profits. Manipulating profits in order to achieve lower taxes is called conforming tax avoidance (Badertscher, Katz, & Rego, 2019), which is the main method used by private firms. We take this different behavior of private firms into account by introducing a measure similar to (Badertscher et al. 2019) that do not rely on profit measures, which often are subjects of manipulation.

More specifically, to examine the implications of IHTE on tax outcome we use a firm fixed-effects regression model on an unbalanced panel dataset of private Swedish companies during the time period 2007-2017. In the treatment group we include tax consultancy, accounting and auditing firms, while we in the control group, include firms with similar operating and financial characteristics, such as computer consultancy activities and business and other management consultancy activities. These firms are, as the treatment group, asset-light service firms. To isolate the effect of IHTE on tax behavior, we construct a matched sample between our treatment and control group, based on year, group structure and our control variables.

The result of our main test shows conclusive evidence that firms with IHTE pay less corporate income taxes relative to firms without IHTE on a 1% significance level. When we in our first robustness test compared the tax behavior of our treatment group with a second control group of law firms, that also likely have IHTE, no significant difference was found between the two groups' tax outcome. In a second robustness test, we tested for serial correlation and heteroscedasticity by including fully robust standard errors that are consistent in terms of autocorrelation and heteroscedasticity in our main test. In this test, the significant support for our findings decreased from a 1% to a 10% significance level. Overall, we argue that the results of the robustness tests strengthen the validity of our main test as it suggests that the results from our main test indeed were driven by differences in IHTE and that IHTE have a negative correlation with taxes paid.

1.1 Purpose

The purpose of this study is to investigate whether firms with IHTE pay less corporate income taxes relative to firms without IHTE. The results of the study are of interest to many stakeholders, including corporate executives and investors as it sheds light on how IHTE can affect a company's tax outcome, and hence also cash flow and returns. Knowledge of how taxation behavior differs due to tax expertise is also of interest to regulators and politicians as it examines the resilience of the corporate taxation system. In addition, this is especially interesting as we investigate the tax planning behavior of firms which to a large extent are the very firms that act as the monitors of tax planning behavior and compliance. In a broader picture, the study is also of interest to everyone that would like to understand the tax behavior of private firms and how it can be measured. The study aims to provide insights on implications of in-house tax expertise on tax behavior.

1.2 Contribution

Our study contributes to taxation research in primarily two ways. First, our study contributes to studies that examine the effect of financial and taxation expertise on corporate tax avoidance. Previous studies suggest that tax services provided by auditors resulted in higher corporate tax avoidance (Dong, Tylaite, and Wilson, 2019; Klassen, Lisowsky, and Mescall, 2016) and McGuire et al. (2012) have found tax specific industry-expertise lead to higher tax avoidance. Our research provides a new insight into this topic, as we demonstrate the effect of having IHTE on tax behavior rather than studying effect of purchasing tax services on tax avoidance as have been done before. Secondly, we contribute with further understanding to the relatively scanty field of taxation research on private firms. By using a measure for tax outcome that to our best knowledge has not been used in previous literature, we also provide a way to specifically capture the taxation behavior of private asset-light service firms, which we believe can be applicable to other industries and useful in future studies.

1.3 Scope

This study is limited to private companies in Sweden during the time period 2007-2017. The study does neither attempt to explain incentives for tax avoidance nor examine other types of taxes or tax strategies beyond corporate income tax such as Value Added Taxes (VAT), taxes on labor or

personal taxation of the owners. Moreover, this study does not investigate the separated effects of conforming and non-conforming tax avoidance.

1.4 Disposition

The study consists of 7 sections. Section 2 contains a review of previous literature and theories regarding taxation behavior and tax avoidance, followed by the development of the hypothesis used for this study. Section 3 explains the methodology and the regression model employed in the study as well the sample selection procedure. In section 4, descriptive statistics, the test results and robustness tests are presented. Section 5 presents the analysis of the results and section 6 is the conclusions of the study. Lastly, section 7 contains suggestions for future research.

2. Theory and literature review

In this section, we will present the literature, theories and models that the study is based on. First, we define tax avoidance and discuss different types of tax avoidance methods in order to construct our tax outcome measure. Secondly, we review previous studies and literature on tax experts' tax avoidance ability before introducing the hypothesis of the study.

2.1 Theoretical paradigm

2.1.1 - Definition of tax avoidance

Previous research on firm tax considerations have studied somewhat different aspects of tax avoidance, and thereby used different definitions. The definitions range from only focusing on legal tax planning activities, such as using untaxed reserves to more illegal tax activities, often referred to as tax evasion, aggressiveness or sheltering without business operation substance (Hanlon & Heitzman 2010). The aim of this study is not to focus on specific tax avoidance actions, but to broadly capture actions that affect explicit taxes. Therefore, our definition of tax avoidance is the reduction of explicit taxes, in line with the definition used by Hanlon and Heitzman (2010) and Dyreng et al. (2008), which incorporates all actions and transactions that affect a firm's explicit tax liability.

2.1.2 - Non-conforming tax avoidance and capital market pressure

Previous taxation research have almost exclusively focused on measuring tax avoidance on listed firms, which has been done by using either book-tax differences (BTD) (Mills 1998; Wilson 2009; Desai and Dharmapala 2006, 2009) or effective tax rate (ETR) measures, mainly the GAAP ETR (e.g Robinson et al., 2010; Rego, 2003; Dyreng, Hanlon, & Maydew, 2010;) and the later developed cash ETR (Dyreng et al., 2008, 2010; Henry & Sansing, 2018). Essentially, all these measures investigate how much tax a company pays relative to their pre-tax income or similar profit measures, which we refer to as non-conforming tax avoidance (Badertscher et al., 2019) Non-conforming tax avoidance is when firms lower their taxable income relative to their financial statement income, leading to a lower effective tax rate (Badertscher et al., 2019). Previous research have shown that the reason for the focus on non-conforming tax avoidance strategies is that listed firms generally experience pressure from capital markets to report good performance, thereby not reducing their book income, only taxable income (e.g. Penno & Simon 1986; Cloyd, Pratt, & Stock, 1996; Mills & Newberry 2001). Furthermore, management compensation is often linked to accounting numbers, which is another incentive for listed firms to report good financial results (Penno & Simon 1986).

2.1.3 - Conforming tax avoidance in private firms

To the best of our knowledge, only a handful of studies regarding tax avoidance behavior have been made on private firms. As private firms' tax avoidance behavior tends to differ from listed firms, conventional tax avoidance measures are not appropriate. This is due to the reason that private firms in general have less pressure from capital markets (Beatty & Harris, 1999; Graham et al., 2013; Shackelford & Shevlin, 2001), which suggests that they do not have the same incentives to keep the pre-tax income and other profits measures high. Durand and Vargas (2003) suggest that both capital and labor market forces is not as large drivers of performance in private firms as in public firms. Moreover, Graham et al. (2013) found that 87% of their sample of public companies responded that the GAAP ETR (reporting numbers) is at least as important as cash taxes paid, while only 47% were of the same opinion among the private firms in the sample. For private firms, the owners are often active in their own business and are aware of the company's performance, so they do not need to rely on financial reporting numbers to the same extent as the capital market does. Therefore, focus shifts more to minimize taxes rather than showing high profits (Ball & Shivakumar, 2005) and private firms can thereby achieve lower taxes by simply

lowering the results, either by boosting expenses or by suppressing revenue so that both book and taxable income are reduced. This tax avoidance behavior is called conforming tax avoidance (Badertscher et al. 2019). Research even suggest that profitability-based measures should not be used when evaluating performance of private firms due to the manipulation of profits for tax purposes (Durand & Vargas 2003; Shulze, Lubatkin, Dino, & Buchholtz, 2001). Non-conforming tax avoidance is also harder for private firms since they are often smaller, which generally means lower complexity, and both size and complexity has been related to non-conforming tax avoidance (Dyreng et al. 2010; Gupta & Newberry, 1997; Wilson, 2009). By this, conforming tax avoidance is commonly used in private firms rather than non-conforming tax avoidance.

Conforming tax avoidance is not captured by conventional tax avoidance measures (Badertscher et al. 2019), but there are some previous studies that take this into account. There are some older research studying conforming tax strategies when capital market pressure is low and when there is anticipation of large tax rate changes (Penno & Simon 1986; Guenther 1994; Maydew 1997). On earlier days, the literature on conforming tax avoidance is even thinner, but there are a few (Dong et al., 2019; Badertscher et al., 2019). Badertscher et al. (2019) provided evidence that whether conforming or non-conforming tax avoidance were studied, different results were found. Non-conforming strategies can be hard to adopt for small companies since they might not have as much international operations where they can choose to report profits in low tax jurisdictions.

Since our sample consist of private firms with different sizes, both conforming and non-conforming tax planning strategies can be used, which is why it is important to consider both in our measure of tax outcome. We do this by developing a measure that investigates the overall tax outcome and that illustrates how much corporate income tax that is paid in relation to the company's size, thereby taking into account both conforming and non-conforming tax avoidance.

2.2 Tax experts tax avoidance ability

Firms with IHTE is firms that to some extent offer tax advisory services or that operate in an industry where tax advisory generally is a part of the service offering. Although more industries might be applicable, the industries that we will examine as tax experts in this study are accountants, auditors and tax consultants. For tax advisory and tax consultancy industries, it is clear that these

firms have tax expertise since tax services is their core business. However, previous literature suggest that auditors also have tax expertise. Companies often turn to their auditor or accountant when it comes to tax related issues, which is the most frequent non-audit service provided by auditors (Svanström & Sundgren 2012). That indicates that auditors should have tax expertise since they, to a large extent, offer tax advisory. Moreover, McGuire et al. (2012) found that audit firms with greater overall expertise (the combined audit and tax expertise) achieves higher levels of tax avoidance for their clients, suggesting that these experts can combine their audit and tax expertise to develop favorable tax strategies. Dong et al. (2019) and Klassen et al. (2016) have also found that additional tax services provided by auditors resulted in higher corporate tax avoidance. By this, previous research show that firms with tax expertise have the ability to affect and avoid taxes for their clients. There is however, to the best of our knowledge, no previous research examining whether these firms with wide-spread tax expertise avoid taxes themselves, or to which extent. On the basis of that these firms have tax expertise, and that they are capable of avoiding taxes for other firms, it is reasonable to assume that they also are doing it themselves. An indication of this is that Huang & Zhang (2019) found that firms with financial expert CEOs, which can be seen as a proxy of internal tax expertise, have more aggressive tax policies. With a financial background, one likely considers financial aspects to be important, which includes the tax outcome, and firms with more knowledge about how to avoid taxes will probably also succeed in avoiding them to a larger extent. Moreover, tax-specific industry expertise has been associated to higher tax avoidance (McGuire et al., 2012), and firms are likely experts in their own industry if any, which would further increase the tax avoidance in firms with IHTE. Due to these reasons, our hypothesis is:

Hypothesis: Firms with in-house tax expertise pay less corporate income taxes relative to firms without in-house tax expertise.

A tax avoidance strategy is to take out more income in dividend and less in salary, which can be tax preferable for individuals with high marginal tax on labor. If this were to be used mainly by firms with IHTE, there is a risk that the results of our study could end up not being in line with our hypothesis. The effect of reclassification of salaries to dividends on a corporate level is a lower cost base, consequently leading to a higher result and tax liability, which is what our measure

capture. If this strategy were to be predominantly used by tax experts, tax experts would pay more taxes on a firm level, but lower on personal/owner-level, which would possibly lead to a contradiction of our hypothesis. A reason why this might be the case is that the firms that are included in our treatment group, such as accounting and auditing firms, often are structured as professional partnerships (Greenwood et al. 1990). In these structures, partners act as managers, key professionals and owners (Greenwood et al. 1990), which is seen as a satisfying structure to balance the otherwise usual conflicting needs of shareholders, professionals and clients (Empson & Chapman 2006; Greenwood & Empson 2003; Shafer, Lowe, & Fogarty 2002). By having key employees as owners, the firm enables the reclassification of salaries to dividends in a way that is not possible without a professional partnership structure. However, we see this risk as quite limited for our study due to two reasons. First, shifting personal income from salaries to dividends is a common strategy used by owners regardless of firms being tax experts or not. This is true especially for private firms that have a lower marginal cost of tax planning, leading to greater tax avoidance compared to listed firms (Badertscher, Katz, & Rego, 2013). Secondly, the difference in structure becomes valuable primarily when firms are larger and have many employees that they can distribute earnings to. However, as companies in our sample has a median revenue of SEK 1.415m, it suggests that the sample mainly consists of smaller firms, in which the workers often have ownership, meaning that firms in our control group should have similar opportunities to reclassify salaries to dividends as our treatment group, even though they are not structured as professional partnerships. Furthermore, in bigger firms, partners generally receive only part of their income as dividends, and it is usually only the most senior employees that are partners, representing a small share of the total workforce in a large firm. For these reasons, we believe the risk of firms with IHTE potentially paying more dividends in relation to salaries compared to our control group to be negligible, without significant impact of the study's results.

Furthermore, Sweden have specific tax rules for closely held firms, called the 3:12 rules. The rules give companies with concentrated ownership the opportunity to pay out dividend to a lower tax rate up to certain levels, incentivizing owners of closely held firms to shift their income from salary to dividends. Closely held firms are often small firms so if the treatment and control group are of widely different sizes, this could skew the results. We take this risk into consideration by matching the treatment group and control group on size. Moreover, it could also affect our result if this

would be a tax planning strategy that only tax experts use, which would lead to higher taxes paid on a corporate level for firms with IHTE, as earlier explained. However, Alstadsæter and Jacob (2016) found that owners of closely held firms shifted 6% of their total gross income from labor to dividend income in connection to the dividend tax rate cut for closely held firms in Sweden. This implies that the reclassification of salaries to dividends is a widely used strategy in closely held firms, and not only applicable to firms with IHTE, which is why we believe that the tax planning strategy should not implicate our comparison and results in a meaningful way.

Lastly, as tax planning services is the most common non-audit service from auditors, firms without IHTE might get enough help to use the same tax avoidance strategies as firms with IHTE, potentially leading to no significant differences in tax behavior between the treatment and control sample. However, we do not believe that this is the case since tax experts reasonably care more about paying lower taxes themselves, and probably know their own industry better than any other, which previous research has shown to be important for avoiding taxes (McGuire et al. 2012). In addition, even though tax planning services is widely used, it is not used by all firms and especially not small firms where the return from avoiding taxes might be too small to be worth paying for the tax planning services, which should also enable the expected differences to arise.

3. Methodology

In this section we present a brief description of our sample and its characteristics. Moreover, the regression model used to test our hypothesis is presented as well as a description of both the dependent and the independent variables. Lastly, the sample selection and data adjustments are described.

3.1 Sample

Careful consideration has been given to the selection of appropriate groups to test our hypothesis. The treatment group has been constructed with firms that generally have IHTE, meaning that the companies likely provide tax services as a part of their business offering and that they need to have this knowledge in order to provide their services. The control group consists of firms that generally do not have IHTE and do not provide tax related services. To categorize firms in those with and without IHTE, the Swedish Standard Industrial Classifications (SNI codes) which is based on EU's

recommended standard NACE Rev.2 is used. NACE is the "statistical classification of economic activities in the European Community" and is the subject of legislation at the European Union level, which imposes the use of the classification uniformly within all the member states. The treatment group of IHTE consists of companies belonging to one of the following SNI codes: Accounting and bookkeeping activities (69201), Auditing activities (69202) or Tax consultancy (69203). These types of firms, as earlier explained, are professionals within the field of taxation with an ability to avoid taxes, which has been proved in previous research (McGuire et al., 2012; Klasen et al., 2015).

For the control group, consisting of firms without IHTE, we include firms in industries with similar operating and financial characteristics as our treatment group. Previous research has shown that there are differences in tax avoidance between industries (Dyreng et al., 2008), and the aim is to minimize the risk of our results being driven by industry differences instead of difference in tax expertise. More specifically, the characteristics of the firms that are included in the control group are similar to the treatment group in terms of being asset-light service companies that first and foremost rely on employees to create the value for their customers. Industries that fulfill these criteria and are therefore included in the control group are companies belonging to one of the following SNI codes: Computer programming activities (62010), Computer consultancy activities (62020), Computer facilities management activities (62030), Other information technology and computer service activities (62090), Other information service activities n.e.c. (63990), Business and other management consultancy activities (70220), Architectural activities (71110), Advertising agency activities (73111), Graphic design (74102), Temporary employment agency activities (78200) or Other business support service activities n.e.c. (82990). Although these firms offer services that are far from related to tax-related activities, it cannot be neglected that there is a possibility that these firms have internal expertise within taxation. However, given that the samples median revenue of SEK 1.415m, we believe that the vast majority of firms in our sample are unlikely to have people employed with tax expertise. Even if some might have it, it is not on the same wide-spread level as the firms in the treatment group. Hence, we refer to these firms as firms without IHTE. A relatively large number of industries are included in the control group to reduce the risk of industry-specific characteristics and random variation in a single industry affecting the results.

Although these firms have similar operating characteristics, we also acknowledge that there are differences. Firstly, the business model and revenue stream for the treatment group is likely to be more stable, standardized and predictable, with low customer churn and a high share of recurring revenues compared to the control group. This is the case since firms with IHTE work less project-based, and demand is likely to be more stable since, for example, auditing is mandatory for larger Swedish firms. Furthermore, some firms in our control group, such as IT-consultants and IT service providers might offer self-developed software which could lead to research and development costs and capitalization of intangible assets, which unlikely is the case in our treatment group. This might however not be the case if a firm use K2 or other simplified reporting standards, since these firms do not have the option to capitalize costs. One cannot be certain of the fact that industry differences can be an affecting and explaining factor in our results. However, despite some observable differences, we believe that the control group offers high comparability and that the differences do not create unequal opportunities to manage taxes to an extent that would make the results of the study unreliable.

3.1.1 Sample construction

The empirics in our study are obtained from the Serrano database, provided by the Swedish House of Finance. The Serrano database provides information about Swedish companies gathered from the Swedish Companies Registration Office (Bolagsverket). Our observations encompass the time period 2007-2017 with unique firm identifier, enabling our construction of an unbalanced panel dataset. In 2007, the SNI code classification was updated and changed, which is why the first year in the sample period is 2007. In addition, regulations regarding private companies' taxation of dividends, the so called 3:12 rules, were substantially revised in 2006, making it unsuitable to include observations prior 2006 as Alstadsæter and Jacob (2016) found that it affected companies' tax behavior.

From the range of Swedish limited liability companies (Aktiebolag), we first excluded all companies that are subsidiaries to a group. This was done in order to only include independent companies or if part of a group, the parent companies consolidated financial statements since the results of subsidiaries can be affected by tax related decisions on a group level.

Secondly, we exclude all companies that did not have a normal 12-month reporting period stretching from January to December in order to avoid the risk of having variations in companies' results arising from time differences, such as different market and regulatory prerequisites.

Companies with zero employees and dormant companies may be used for special purposes by the owners, leading to deviating tax behavior compared to normally operating firms. Therefore, requirements are set so that only firms with at least one employee and that are actively operating in the investigated year are included. We define a firm as actively operating in the same way as the Swedish House of Finance, which is if:

- Net sales > SEK 10 thousand or if
- Other operating income > SEK 10 thousand or if
- Financial income > SEK 10 thousand or if
- Financial expenses > SEK -10 thousand or if
- The dividend amount > SEK 10 thousand or if
- Total assets > SEK 500 thousand

Furthermore, all companies that during the investigated year either are in a process of or have ended a chord, liquidation, fusion, bankruptcy or company reconstruction are excluded from the sample, since the tax behavior of these companies might be largely impacted by factors beyond the purpose of this study.[1]

To further isolate the effect of tax expertise on the tax behavior between the two sample groups, a matched sample was constructed between the 20,973 firms with IHTE and the 111,417 firms without IHTE. A matched sample also solves the issue of the full sample having a larger number of observations without IHTE compared to observations with IHTE. We used 1 to 1 nearest neighbor matching within caliper, which was set at 0.5 times the standard deviation of the variables (Rosenbaum & Rubin, 1985). Before conducting the match, we removed all observations that lacked the necessary data points needed for calculating the variables *Ctp_Sales*, *Leverage*, *Size*, *Sales_Growth* and *Sales_Employees*. Three exact matching requirements was made. These were

[1] More specifically, this was done by keeping observation that had missing values on the following variables in the Serrano data file: bol_q12dat, bol_q20dat, bol_q22dat, bol_q24dat, bol_q32dat, bol_q34dat, bol_q35dat, bol_q40dat, bol_q45dat, bol_q46dat, bol_q71dat, bol_q80dat and bol_q81dat.

same year, same type of firm in terms of being an independent or a group company, and on the variable *Loss*. Nearest possible requirements was made on number of employees and the variables *Sales_Growth, Size, Sales_Employees* and *Leverage*.

The intention with our matching requirements is to make the treatment and control group as similar as possible in terms of dimensions affecting corporate tax outcome. As the taxation behavior of loss-making firms might differ substantially from profitable firms (Henry & Sansing, 2018), an exact match was required on whether or not the company reports a positive or negative net income during the year (*Loss*). By matching exactly on year, we have also reduced the problem of having a skewed data set regarding observations from periods of different statutory tax rates. An exact match was also required on group structure as a group might have different tax avoidance possibilities than an independent company. For the nearest matching variables, sales growth (*Sales_Growth*) captures the growth potential of the company which may change the incentives for tax avoidance (Dong et al., 2019); sales (*Size*), captures the size and complexity of the company structure which may affect the possibilities of tax avoidance (Wilson, 2009); debt level to equity (*Leverage*) captures a company's financing mix that are subject to different tax treatments (Gupta & Newberry, 1997); and sales to number of employees (*Sales_Employees*) captures the effect of differences in performance. Control variables are further discussed in section 3.2.3.

After conducting the nearest neighbor match, we excluded all observations that did not get a match, or if there were a "one-way" match, meaning that the observation from the treatment group and control group matched but did not match with each other.

Finally, to limit the impact of potential outliers influencing the results, we controlled for outliers in the dataset by winsorizing the variables *Ctp_Sales, Size, Leverage, Sales_Growth* and *Sales_Employees* at the 1% and 99% levels.

Our final matched sample consists of 3,972 unique firms in the treatment group and 10,043 unique firms in the control group. The total number of observations in both groups are 15,338. The sample construction procedure can be seen in Table 1 below and the distribution between SNI codes in Appendix 1 and 2.

Table 1. Sample construction procedure

	Observations
Number of Swedish limited liability companies with desired SNI codes for the period 2007-2017:	655,813
Subsidiaries to a group	-93,307
Firms with unusual reporting period	-222,499
Firms with 0 employees	-195,728
Inactive companies during year t	-7,348
Firms in a process or during year t have ended a chord, liquidation, fusion, bankruptcy or company reconstruction	-643
Missing data points on regression variables	-3,898
Lack of match or "mismatch"	-101,714
Matched sample in number of firms	**14,015**
Matched sample in firm-year observations	**30,676**

3.2 Regression model

To examine our hypothesis, a regression model with an unbalanced panel dataset was used to analyze the implications of IHTE on corporate income tax outcome. To address whether fixed or random effects should be used in the regression, a Hausman specification test was made. In the Hausman test, Prob>chi2 was 0.0000, meaning that the model is statistically significant. This suggests that fixed effects should be used as there is a correlation between the error term and the independent variables in the panel data (Hausman & Taylor, 1981). The results from the Hausman test is illustrated in Appendix 3**.** By using fixed effects, we assume that the time-invariant characteristics are unique for each observation and should therefore not be correlated with other observations' characteristics.

Regression models estimated with panel data have several advantages over those estimated with cross-sectional or time-series data (Gupta & Newberry 1997). In particular, Slemrod and Shobe (1990) argues, that a simple pooled cross section time-series model will not provide unbiased and consistent parameter estimates if the unobserved firm-specific characteristics are correlated with

the included independent variables. In this case, the simple-pooled model suffers from an omitted variable bias because the model is misspecified, or in other words, does not account for everything it should. We overcome this problem by including firm fixed effects in our regression model. Through this, we account for individual firm heterogeneity via firm-specific constants, which capture the effect of unobserved or unmeasurable firm characteristics that vary by firm but are relatively stable over time for a given firm (Gupta & Newberry 1997).

To examine the effect of IHTE on tax outcome, we estimate the following fixed effects regression model:

$$Ctp\_Sales_{it} = \beta_0 + \beta_1 \times Tax\_Exp_{it} + \beta_2 \times Size_{it} + \beta_3 \times Loss_{it} + \beta_4 \times Sales\_Growth_{it\_1} + \beta_5 \times Sales\_Employees_{it} + \beta_6 \times Leverage_{it} + \alpha_i + u_{it} \quad (1)$$

$Ctp\_\ Sales_{it}$ is our dependent variable measuring the overall tax outcome. Tax_Exp_{it} is the main independent variable demonstrating whether a company has IHTE or not. $Size_{it}$, $Loss_{it}$, $Sales\_Growth_{it}$, $Sales\_Employees_{it}$ and $Leverage_{it}$ are the control variables that are included in order to mitigate the risk of the results being driven by factors beyond whether firms have IHTE. α_i is a fixed firm-specific component and u_{it} is the error term.

3.2.1 Dependent variable

Previous research varies in how taxes is measured, and a large majority of them have used income tax expense (GAAP ETR) or current tax expense (current ETR) as their measure. This is a reasonable approach when studying public companies, since it has been found that there are three times as many public companies that see GAAP ETR as a more important metric than cash taxes paid, rather than the other way around (Graham et al., 2013). However, for private firms the results are the opposite, with cash taxes paid deemed to be the most important taxation metric. This is consistent with theories that private firms having less capital market pressure (Beatty & Harris, 1999; Graham et al., 2013; Shackelford & Shevlin, 2001), enabling them to focus more on taxes rather than reporting high profits. Furthermore, Dyreng et. al. (2010) argues that cash taxes paid is a better measurement even for public firms since it is less affected by discretionary accounting choices. By this, and given that our sample consisting of private firms, we find cash taxes paid to be the most appropriate and reliable measure to capture the tax behavior we intent to examine.

However, Swedish private companies reporting under K2 or other simplified forms of reporting standards are not obligated to report a cash flow statement, and as our sample includes firms that potentially use these reporting standards, a proxy for cash taxes paid based on income statement figures will be used. For companies not belonging to a group, we find the tax expense reported on the income statement to be the most accurate proxy for cash taxes paid. For group companies with consolidated financial statements, adjustments have been made with regards to the effect of untaxed reserves on the tax expense. In Sweden, firms have an option to allocate up to 30% of their pre-tax income to untaxed reserves, thereby effectively reducing the current year's tax basis. At the latest, the untaxed reserves have to be reversed in the sixth year after the allocation, thus effectively functioning as a conditional tax loss carryback (Dong et al., 2019). In corporate financial statements, the allocation/reversals from untaxed reserves are reported before the income tax and is thereby included in the reported income tax expense. For firms with consolidated financial statements, the effect of allocations/reversals from untaxed reserves are not excluded from the income tax expense, which is why we adjust for the change in untaxed reserves for firms with consolidated financial statements.

For firms that have consolidated financial statements, cash taxes paid is defined as:

$$Cash\ taxes\ paid_{it} = Income\ tax_{it} - \Delta untaxed\ reserves_{it-1} \times statutory\ tax\ rate_{it} \quad (2)$$

For independent firms, cash taxes paid is defined as:

$$Cash\ taxes\ paid_{it} = Income\ tax_{it} \quad (3)$$

In Sweden, the corporate income tax has been reduced in two steps during our sample period, from 28.0% to 26.3% in 2009 and to 22.0% in 2013. As our data sample contains observations from the period 2007-2017, cash taxes paid is adjusted in a way such that the variable corresponds to a value as if the statutory tax rate was 22%. The adjustments have been conducted by multiplying cash taxes paid with (22% / 28%) for observations between 2007-2008 and multiplied by (22% / 26.3%) on observations between 2009-2012. These adjustments are made to ensure that the changes in statutory tax rates do not affect our results.

As discussed in section 2, tax avoidance measures used in much of the previous research (e.g. Dyreng et al., 2008, 2010; Hanlon & Heitzman 2010) have been scaled with and/or been dependent on a profit measure, thereby not including the effect of conforming tax avoidance, as explained in section 2.1.3. As our sample consists of private firms, our measure of tax outcome should capture both conforming and non-conforming tax avoidance behavior, which is why we will not use a profit measure as a scalar to cash taxes paid. Moreover, earlier studies with these measures have generally excluded loss-making firms, due to the inability of their model to handle them in a correct manner. Exclusion of loss-making firms can potentially lead to bias where the results does not reflect the reality. Firms have the ability to smooth out tax payments so by only including years with positive results, which is when a firm pay less taxes than they should, it might seem as the firm avoid taxes more than what the firm actually does. This is an explanation for Henry & Sansing (2018) finding opposite results from previous research when including loss firms. Furthermore, excluding loss making firms can reduce the sample considerably (36% of Henry & Sansing's sample) so that the results might not capture the whole reality, or only the reality of the profitable firms. Above suggests that a scalar should be used that captures both conforming and non-conforming tax avoidance and that enable inclusion of loss firms.

To the best of our knowledge, alternative scalars to cash taxes paid such as book-value and market value of assets have only recently been adopted (Henry & Sansing, 2018, Badertscher et al., 2019; Dong et al., 2019). Assets was used as scalar in order to have a scalar that is harder to manipulate and more stable than pre-tax income. Henry and Sansing (2018) showed that using assets as a scalar achieved this and that it had a stronger correlation with their tax avoidance measure, meaning that the result is more driven by the level of tax avoidance as opposed to its scalar. However, given the financial characteristics of our sample, we find assets to be an inappropriate proxy of the size of the companies and their operations. The reason for this is that the companies in our sample are asset-light service companies with employees as their most important asset and main determinant of the companies' capacity. As number of employees is not reflected in the balance sheet, other factors that does not reflect the size of the company will drive the value of the assets. One example could be that one company pay out dividends while another keeps the cash on the balance sheet, possibly leading to a larger value of assets even though the company might have less revenue, clients and employees. Another example could be that some companies own

their office, which does not necessarily reflect the size of operations but will make their balance sheet significantly larger than a company that rent its office. Essentially, since these businesses are asset-light, decisions like the examples above can lead to significant differences in the book value of the companies' assets despite them having similar operational capacity and size. By this, we believe that sales are a better measure of firm size, since it reflects how much business the company generates. In extension, it acts as a good proxy of their personnel needs and size since this will be determined of how much projects and revenue they generate. Sales as scalar also fulfill the criterias of capturing both conforming and non-conforming tax avoidance as well as enabling the inclusion of loss firms.

Cash taxes paid to sales *(Ctp_Sales)* - The dependent variable is defined as:

$$Ctp\_Sales_{it} = \frac{Cash\ taxes\ paid_{it}}{Sales_{it}} \quad (4)$$

The measure is defined in a way such that the numerator is positive when the company pay taxes. Therefore, a low value of the measure indicates that the company is paying less taxes compared to a firm with a higher value on *Ctp_Sales*, the dependent variable.

There is a risk of companies manipulating sales as a way of avoiding taxes, but we believe the risk to be quite limited given the characteristics of our sample firms. Under the revenue recognition rule, reported income is based on actual cash flow realizations, adjusted for accruals that are derived from independently verifiable predictors of future cash flow (Ball & Shivakumar, 2005), where the independently verifiable predictors of future cash flow is the component most likely to be up for manipulation. According to Christopher Olsson, auditor at Ernst & Young Sweden AB (April 26, 2019), firms in our sample such as auditors and IT and tax consultants often gets paid on a monthly basis, generally with a fixed price or based on the time spent (Magnusson & Söderholm, 2001), which leaves little room for making estimations on how much revenue a company generates during a financial reporting period. Many tasks such as auditing is fairly standardized so firms cannot motivate as large variations or uncertain estimations as in industries like the construction business, where the projects span over longer periods of time and the

workload needed is harder to predict. By this, we see the risk of revenue manipulation making our scalar biased to be limited.

3.2.2 Main independent variable

Tax expertise *(Tax_Exp)* - Our main independent variable is a dummy variable with the value of 1 for firms with IHTE, while the rest, demonstrating firms without IHTE have a value of 0. The coefficient for *Tax_Exp* should be negative with the dependent variable *Ctp_Sales* if our hypothesis is proved to be correct as this would suggest that the treatment group consisting of firms with IHTE pay less corporate income taxes than the control group.

3.2.3 Control variables

The chosen control variables are based on findings in previous literature. Firm size, leverage, profitability, and growth are firm-level characteristics that have been related to tax avoidance in previous literature (Dyreng et al., 2010; Gupta & Newberry, 1997), which is why they are included in the model. As our sample, in comparison to conventional tax avoidance studies, includes loss making firms, we also control for whether companies are loss-making as the tax behavior of these firms might differ substantially from profitable firms (Henry and Sansing, 2018).

Size *(Size)* - Defined as the natural logarithm of sales. *Size* is used as a control variables as the relation between firm size and tax avoidance has been studied and several articles have found a correlation (Zimmerman, 1983; Siegfried, 1974; Porcano, 1986; Rego, 2003; Gupta & Newberry, 1997; Stickney & McGee, 1982; Shevlin & Porter, 1992; Wilson, 2009). Sales is used as a proxy for firm size rather than assets as our sample consists of asset-light service companies, and hence is more appropriate than assets as explained thoroughly in section 3.3.1.

Sales to number of employees *(Sales_Employees)* - Defined as the natural logarithm of the ratio of sales divided by lagged number of employees. Firms and sectors often differ in profitability and performance, and since taxes is a direct effect of profits, it is important that the effect of these potential performance differences in the sample groups are captured. Previous research has shown that performance is related to tax avoidance (Gupta & Newberry, 1997). However, we cannot control for performance by using a profit measure, since private firms use conforming tax avoidance, which involves manipulating profits. For this reason, Badertscher et al. (2019)

accounted for performance differences by controlling for sales divided by net operating assets, which is harder to manipulate, and acts as a proxy for both performance and efficiency. However, as earlier described, balance sheet measures are not necessarily a good measure given our sample of asset light service companies. The main cost is salaries and the most important asset is employees for our sample firms, which is why it should be included in a determination of the firms' performance rather than a balance sheet measure. By this, sales divided by employees acts as our proxy for efficiency and performance. A higher value on sales to employees means that the firm generates higher revenue per employee, indicating a higher efficiency which in turn should mean more profits and taxes. The variable thereby captures profitability aspect without using a more easily manipulated profit measures.

Leverage *(Leverage)* - Defined as long-term liabilities divided by equity[2]. Leverage is included since the financing mix in terms of debt and equity have been shown to be related to tax outcomes for firms in previous literature (Gupta & Newberry, 1997). Leverage can affect tax outcomes because different investment and financing decisions are subject to different tax treatments.

Sales growth *(Sales_Growth)* - Defined as the percentage change in sales from the previous year. Sales growth has been included as a control variable as previous literature (Dyreng et al., 2010; Badertscher et al., 2013) has indicated a correlation between it and tax avoidance.

Loss making *(Loss)* - A dichotomous variable that is equal to 1 if the firm reports negative net income during year t. As discussed in the literature review, exclusion of these firms can potentially lead to bias where the results do not reflect the reality Henry and Sansing (2018). In addition, the variable will capture the asymmetry between profit making and loss-making companies' reported tax outcomes.

As previous research mostly has focused on non-conforming tax avoidance, the empirical evidence of these variables' correlation and explanatory power is primarily related to non-conforming tax avoidance. Thus, as we would like to capture both non-conforming and conforming tax avoidance

[2] In Serrano, defined as: ((långfristiga skulder kreditinstitut och obligation + långfristiga skulder kreditinstitut och obligation + långfristiga skulder koncern och intresseföretag + övriga långfristiga skulder + långfristiga skulder) / eget kapital)

in our regression model, it is important to acknowledge that the usefulness of the variables for our study might be different from previous studies solely investigating non-conforming tax avoidance. However, since the rationale behind why the control variables affect tax avoidance behavior is not limited to non-conforming tax avoidance but to general tax avoidance behavior, we believe that the variables are applicable and relevant for this study as well. As an example, larger and more complex firms avoid taxes more since they have more opportunities and resources to do so (Wilson, 2009), which should affect both non-conforming and conforming tax avoidance behavior.

4. Results

In this section we first present descriptive statistics for the variables in our main regression model. Second, we present the test results of our hypothesis followed by robustness tests, including test with a second control group as well as tests for serial correlation and heteroscedasticity with robust standard errors.

4.1 Descriptive statistics

Table 2 shows descriptive statistics for the variables in the main regression model. It is divided into Panel A & B that illustrates the data for our treatment group and control group respectively. Studying the dependent variable, *Ctp_Sales*, our treatment group consisting of firms with IHTE has a mean and median value of 4.6 and 2.4 percentage points while our control group has a mean and median value of 4.0 and 2.0 percentage points. As these results are not statistically significant, we cannot draw any conclusions from the descriptive statistics that neither confirms nor denies our hypothesis.

Since the treatment and control group have been constructed through matching on the control variables presented in the tables below, the variables' descriptive statistics are similar between the two sample groups. The mean value on *Leverage* is 41.4% for the treatment group and 38.8% for our control group. This indicates that the treatment group on average used debt as a source of financing to a greater extent than the control group. In terms of median and the 25th and 75th percentiles, no difference is observed on *Leverage* between the two groups. The variable *Sales_Growth* is 10.2% or 0.5 percentage points higher in the treatment group in terms of mean, implying that the treatment group have obtained slightly higher levels of growth compared to the

control group. The difference is however small in absolute terms. When rounding to two decimals on the variables *Size*, *Sales_Employees* and *Loss*, no differences can be observed between the sample groups in terms of median and mean. An exact match has been required on the *Loss* variable in the matching procedure explaining the lack of difference on the variable. As a matched sample has been constructed, the descriptive statistics of the sample groups do not need to be representative for the population of firms with and without IHTE. Descriptive statistics of the sample before the matching can be found in Appendix 4.

Table 2. Descriptive statistics

Panel A: Treatment group in main test								
				---------- Quantiles ----------				
Variables	n	Mean	SD	Min	.25	Mdn	.75	Max
Ctp_Sales_{it}	15,338	0.046	0.075	0.000	0.004	0.024	0.056	0.536
$Size_{it}$	15,338	15.513	3.315	10.166	13.321	14.163	18.806	22.859
$Loss_{it}$	15,338	0.142	0.349	0.000	0.000	0.000	0.000	1.000
$Sales\_Growth_{it-1}$	15,338	0.103	0.644	-0.895	-0.126	0.019	0.165	4.143
$Leverage_{it}$	15,338	0.414	1.490	0.000	0.000	0.000	0.000	10.240
$Sales\_Employees_{it}$	15,338	15.043	3.168	10.086	13.086	13.687	18.543	21.348

Notes: Ctp_Sales, Leverage, Size, Sales_Growth and Sales_Employees have been winsorized to the 1st and 99th percentiles.

Panel B: Control group in main test

				---------- Quantiles ----------				
Variables	n	Mean	SD	Min	.25	Mdn	.75	Max
Ctp_Sales$_{it}$	15,338	0.040	0.068	0.000	0.000	0.020	0.053	0.536
Size$_{it}$	15,338	15.514	3.315	10.166	13.323	14.163	18.792	22.859
Loss$_{it}$	15,338	0.142	0.349	0.000	0.000	0.000	0.000	1.000
Sales_Growth$_{it-1}$	15,338	0.097	0.639	-0.895	-0.136	0.014	0.168	4.143
Leverage$_{it}$	15,338	0.388	1.463	0.000	0.000	0.000	0.000	10.240
Sales_Employees$_{it}$	15,338	15.044	3.168	10.086	13.085	13.690	18.552	21.348

Notes: Ctp_Sales, Leverage, Size, Sales_Growth and Sales_Employees have been winsorized to the 1st and 99th percentiles.

4.2 Regression results

The results from the main regression model are presented in Table 3 below. The model estimates the effect on *Ctp_Sales* from *Tax_Exp*, as a proxy for IHTE. With a t-statistic of -3.90, a standard error of .00818 and a coefficient of 0.03191, the effect of *Tax_Exp* is statistically significant on a 1% level. The interpretation of the result is that firms with IHTE pays 3.191 percentage points lower corporate income tax in relation to their sales than firms without IHTE, holding all else equal. The result support our hypothesis that firms with IHTE pays less corporate income taxes relative to firms without IHTE on a highly 1% significant level.

Table 3. Regression results from main test with fixed effects

Dependent variable: **Ctp_Sales**			
Variables	Coefficients	t-statistics	Std. Err.
Tax_Exp_{it}	-0.03191***	-3.90	.00818
$Size_{it}$	-0.01411***	-10.04	.00140
$Loss_{it}$	-0.02564***	-21.41	.00120
$Sales\_Growth_{it-1}$	-0.00281***	-4.59	.00061
$Leverage_{it}$	-0.00214***	-5.40	.00145
$Sales\_Employees_{it}$	0.01285***	9.09	.00455
N	30,676		
Adj. R-squared	0.0431		

Notes: The symbols *, ** and *** indicates significance levels for 0.01, 0.05 and 0.01 levels respectively.

All control variables except *Sales_Employees* have a negative coefficient. The control variables are statistically significant on a 1% level. The variable *Loss* have the lowest t-statistic of -21.41. The interpretation of the control variables with a negative coefficient is that a higher value on these variable leads to lower cash taxes paid to sales. As an example, a larger firm avoid taxes more than a smaller firm, holding all else equal. Our performance measurement, sales divided with number of employees, indicates a positive relation between performance and cash taxes paid. The explanatory power, in our model measured as R^2within the matched sample was .0431, signaling that the explanatory power in our model is relatively low. The results will be analyzed in section 5.2

4.3. Robustness tests

In this section we conduct three different robustness tests. We first perform a new test using a second control group. Secondly, we test for serial correlation and heteroscedasticity and lastly, we alter our measurement for corporate tax outcome by scaling cash taxes paid with assets. The results from the robustness tests will be analyzed in section 5.2.1.

4.3.1 Test with a second control group

To test our main results for robustness we perform a new regression using a second control group consisting of law firms. The purpose of this robustness test is to further reduce the importance of biases or random variation in a single control group (Meyer 1995) and to confirm that the results from our main test indeed are driven by differences in IHTE. Law firms' value creation arise from providing legal perspective and advice to clients on how to achieve their objectives. To do this, professionals practicing law must have a thorough understanding of and ability to navigate and interpret laws and legislations, skills that are essential and highly applicable when it comes to tax planning. In addition, many lawyer firms work specifically with taxation law and tax advisory. By this, we expect law firms to have a similar level of IHTE as our treatment group consisting of auditors, accounting and tax consultancy firms, which suggests that they should be able to achieve a similar level of *Ctp_Sales*. If the result of the test is in line with our expectations, it would indicate that the expected difference in *Ctp_Sales* from the main test is indeed driven by differences in IHTE rather than industry differences.

Moreover, law firms work as an appropriate control group since the financial and operating characteristics are similar to our treatment group - asset light professional service companies that first and foremost rely on employees to create the value for their customers. These similarities, as with the control group in the main test, enables a comparison where the results are not driven by industry differences. Another similarity between law firms and the treatment group is that they often are structured as professional partnerships (Greenwood et al., 1990), meaning that partners acts as managers, key professionals and owners and thereby have an ability to shift part of their income from salary to dividends. With similar operating characteristics and firm structure, we argue that using law firms as a control group in the robustness test is appropriate.

Sample and descriptive statistics for test with a second control group

The sample selection, adjustments and matching procedure for the second control group has been the same as in the main test described in the methodology section. The difference is that the second control group now consists of law firms that belong to SNI code groups: Legal advisory and representation of activities of solicitor's firms (69201), Other legal advisory activities (69102) or Advisory activities concerning patents and copyrights (69103). A matched sample has been constructed for this robustness test, which is why a second treatment group also has been

constructed. Detailed descriptive statistics for the second treatment group is presented below in Table 4, panel A and for the second control group in panel B. The distribution between SNI codes can be seen in Appendix 5 and 6.

Table 4. Descriptive statistics

Panel A: Treatment group in first robustness test

				---------- Quantiles ----------				
Variables	n	Mean	SD	Min	.25	Mdn	.75	Max
Ctp_Sales_{it}	5,660	0.049	0.094	0.000	0.005	0.027	0.058	0.840
$Size_{it}$	5,660	15.858	3.379	10.166	13.557	14.450	19.663	23.001
$Loss_{it}$	5,660	0.144	0.352	0.000	0.000	0.000	0.000	1.000
$Sales\_Growth_{it-1}$	5,660	0.072	0.5690	-0.882	-0.145	0.012	0.154	3.554
$Leverage_{it}$	5,660	0.541	1.842	0.000	0.000	0.000	0.000	12.546
$Sales\_Employees_{it}$	5,660	15.397	3.254	10.086	13.296	13.924	19.468	21.607

Notes: Ctp_Sales, Leverage, Size, Sales_Growth and Sales_Employees have been winsorized to the 1st and 99th percentiles.

Panel B: Control group in first robustness test

				---------- Quantiles ----------				
Variables	n	Mean	SD	Min	.25	Mdn	.75	Max
Ctp_Sales$_{it}$	5,660	0.063	0.115	0.000	0.000	0.034	0.070	0.840
Size$_{it}$	5,660	15.874	3.381	10.166	13.564	14.471	19.647	23.001
Loss$_{it}$	5,660	0.144	0.352	0.000	0.000	0.000	0.000	1.000
Sales_Growth$_{it-1}$	5,660	0.066	0.581	-0.882	-0.169	0.002	0.175	3.554
Leverage$_{it}$	5,660	0.544	1.850	0.000	0.000	0.000	0.000	12.546
Sales_Employees$_{it}$	5,660	15.414	3.259	10.086	13.315	13.950	19.462	21.607

Notes: Ctp_Sales, Leverage, Size, Sales_Growth and Sales_Employees have been winsorized to the 1st and 99th percentiles.

Results for test using a second control group

The result from the robustness test with the second control group is presented in Table 5 below. The coefficient remains negative in this test, -0.00843, however less negative compared to the *Tax_Exp* coefficient in our main regression -0.03191. In addition, the t-statistics is much closer to zero in the robustness test with the second control group, -0.32 compared to -3.90 in the main regression, meaning that the result from the test using a second control group is insignificant.

Table 5. Regression results from robustness test with fixed effects using a second control group

Dependent variable: **Ctp_Sales**			
Variables	Coefficients	t-statistics	Std. Err.
Tax_Exp_{it}	-0.00843	-0.32	.02626
$Size_{it}$	-0.02485***	-7.71	.00032
$Loss_{it}$	-0.03543***	-12.83	.00028
$Sales\_Growth_{it-1}$	-0.00973***	-6.01	.00162
$Leverage_{it}$	-0.00394***	-5.13	.00077
$Sales\_Employees_{it}$	0.02232***	6.88	.00324
N	11,320		
Adj. R-squared	0.0544		

Notes: The symbols *, ** and *** indicates significance levels for 0.01, 0.05 and 0.01 levels respectively.

4.3.2 Serial correlation and heteroskedasticity

We will test for serial correlation and heteroscedasticity by including fully robust standard errors that are autocorrelation and heteroscedasticity consistent in our main regression. The purpose of this is to be able to determine how sensitive our results are to the standard errors, as there is a possibility that our fixed-effects regression might suffer from serial correlation and heteroscedasticity. Bertrand, Katz, and Mullainathan (2004) state that not controlling for serial correlation could result in overestimations of the t-statistics due to underestimation of the standard errors. Moreover, if the assumption of homoscedasticity does not hold, the standard errors could be larger or smaller than if robust standard errors were calculated (White 1980).

Results for test of serial correlation and heteroskedasticity

The mixed result from the fully robust standard errors test is presented in Table 6 below. Some of the previous calculated standard errors were slightly overestimated while others were slightly underestimated. Looking at *Tax_Exp*, our key independent variable, we can see that the unadjusted standard error is .01101 lower in the main regression model compared to the robust standard error

in the robustness test. Simultaneously, the robust standard errors is lower in the robustness test on *Size*, *Loss* and *Sales_Growth* while somewhat higher on *Leverage* and *Sales_Employees*.

Table 6. Regression results from robustness test with adjusted standard errors and fixed effects

	----------*Main test*----------			----------*Robustness test*----------		
Dependent variable:	**Ctp_Sales**			**Ctp_Sales**		
Variables	Coefficients	t-statistics	Std. Err.	Coefficients	t-statistics	Std. Err.
Tax_Exp_{it}	-0.03191***	-3.90	.00818	-0.03191*	-1.66	.01919
$Size_{it}$	-0.01411***	-10.04	.00140	-0.01411***	-6.16	.00229
$Loss_{it}$	-0.02564***	-21.41	.00120	-0.02564***	-17.83	.00144
$Sales\_Growth_{it-1}$	-0.00281***	-4.59	.00061	-0.00281***	-2.90	.00097
$Leverage_{it}$	-0.00214***	-5.40	.00145	-0.00214***	-4.71	.00045
$Sales\_Employees_{it}$	0.01285***	9.09	.00455	0.01285***	5.64	.00228
N	30,676			30,676		
Adj. R-squared	0.0431			0.0431		

Notes: The symbols *, ** and *** indicates significance levels for 0.01, 0.05 and 0.01 levels respectively. Robust standard errors are created by using organizational number as the cluster variable.

4.3.3 Cash taxes paid scaled by lagged total assets

In order to validate and test the robustness of our main test, we substitute our measure of tax outcome with cash taxes paid divided by lagged total assets, *Ctp_Assets*. This measure has been used in late research (Badertscher et al., 2019; Dong et al., 2019) and captures both conforming and non-conforming tax avoidance as our original measure, which is important when studying private firms with low or non-existing capital market pressure. Assets is an appropriate scalar since it usually is a good proxy of size with low volatility. Henry and Sansing (2018) also found that assets had higher correlation with their tax avoidance measure than pre-tax income, resulting in a measure that derives more of its value from changes in tax avoidance rather than the scalar. Although these arguments are valid, sales is a better fit for our sample consisting of asset-light service firms, as explained in section 3.2.1. However, to test the robustness of our model, it is good

to perform tests with another measure that has been used in previous research. If the result is consistent with our main test, it would increase the robustness since it suggests that one can use several different methods of measurement and still get the same results. For this test, we used the same matched sample as in the main test.

We expect the results of the robustness test with *Ctp_Assets* as main dependent variable to support our hypothesis - that firms with IHTE pay less corporate income taxes relative to firms without IHTE. However, since assets, as earlier explained in section 3.3.1, is not an appropriate measure of size for the firms in our sample, there is a risk that the results are different or less significant compared to the main test.

Results of test with cash taxes paid scaled by lagged total assets

The results from our tests with *Ctp_Assets* as our new dependent variable is presented in table 7 below. The results deviate quite substantially from the result in the main regression, using *Ctp_Sales*. In the robustness test, the coefficient on the *Tax_Exp* variable is -0.00146 compared to -0.03191 in the main regression. In addition, the t-statistics on *Tax_Exp* is only -0.34 with *Ctp_Assets* compared to -3.90 with *Ctp_Sales*. The coefficients of the control variables *Size*, *Sales_Growth* and *Sales_Employees* are of the opposite direction compared to the main test with *Ctp_Sales* as the dependent variable.

Table 7. Regression results from robustness test using *Ctp_Assets* as dependent variable

	Main test			*Robustness test*		
Dependent variable:	**Ctp_Sales**			**Ctp_Assets**		
Variables	Coefficients	t-statistics	Std. Err.	Coefficients	t-statistics	Std. Err.
Tax_Exp_{it}	-0.03191***	-3.90	.00818	-0.00146	-0.34	.00424
$Size_{it}$	-0.01411***	-10.04	.00140	0.00161**	2.12	.00073
$Loss_{it}$	-0.02564***	-21.41	.00120	-0.01855***	-29.86	.00062
$Sales\_Growth_{it-1}$	-0.00281***	-4.59	.00061	0.00549***	17.28	.00549
$Leverage_{it}$	-0.00214***	-5.40	.00145	-0.00261***	-12.71	.00261
$Sales\_Employees_{it}$	0.01285***	9.09	.00455	-0.00134*	-1.83	.00134
N	30,676			30,676		
Adj. R-squared	0.0431			0.0877		

Notes: The symbols *, ** and *** indicates significance levels for 0.01, 0.05 and 0.01 levels respectively. *Ctp_Sales, Ctp_Assets, Leverage, Size, Sales_Growth* and *Sales_Employees* have been winsorized to the 1st and 99th percentiles.

5. Analysis

In this section we will analyze our results. We begin by analyzing our research methodology followed by the results of the study, which includes a discussion of the hypothesis and robustness tests as well as the control variables.

5.1 Research method

5.1.1 Data selection

An important part of our data selection procedure was the selection of an appropriate treatment group demonstrating IHTE and a control group without IHTE. For this, we have relied on the SNI classifications that Serrano provides for each company. We evaluated the classifications by randomly selecting and investigating companies in the relevant industries, and the classifications capture what we intend in these instances. However, as these industrial classifications are defined

on a relatively high level and based on companies' principal economic activity, some niched companies or companies with several different operations might fall into classifications that does not fairly represent that specific company or the company's entire operation. Given the rich amount of different SNI classifications and the fact that the classifications is based on a firm's principal economic activity, meaning the activity which contributes the most to the value added of the firm, we however find them to be valid. In addition, with 30,676 observations in our sample, the effect of potentially including a few firms that might be inappropriate will likely not bias the results of our study in any meaningful way.

As described in section 3, observations have been removed for different reasons. For example, we have removed firms with 0 employees and firms that do not have a reporting period stretching from January to December. In addition, to mitigate the effect of potential outliers, the data has been winsorized at the 1st and 99th percentiles. Although we are of the opinion that our sample selection process including our adjustments, which are based on previous research, have improved the quality of our results, we recognize that our sample as a consequence has been reduced considerably. When reducing the sample, there is a risk that the sample might not capture the whole reality of the what we intend to measure. However, given that there is still a large number of observations in our sample (30,676), the risk is quite limited.

5.1.2 Issues relating to measuring corporate tax avoidance

A challenge with the research area of taxation is that there is no universally accepted definition of tax avoidance (Hanlon & Heitzman 2010). In the wake of this, there are several different measures of tax avoidance in the literature. As an example, Hanlon and Heitzman (2010) review a list of 12 measures of tax avoidance commonly used in previous studies. The choice of what measure to use in this study also became increasingly difficult due to the limited amount of previous research on private firms' conforming and non-conforming tax avoidance behavior. In addition, there is to the best of our knowledge no previous tax avoidance research studying the behavior specifically and solely of private service firms with asset-light balance sheets. Therefore, we constructed a new measure that takes inspiration from previous research of Badertscher et al. (2019). As the measure has not been used in previous literature, we acknowledge that it has not undergone the same

number of tests and evaluations as other frequently used measures within taxation research. The measure is however based on earlier research and customized specifically for our sample of firms.

Another issue with studying tax avoidance is that it is difficult to disentangle what part of the tax outcome that is attributed to conforming tax avoidance, and what is driven by actual performance. For example, two companies can have the same tax outcome, however one because it performs poorly and one because the profits has been taken down in order to pay less taxes. To overcome the concern, we control for firm performance and operating efficiency by using a measure that is not as easily manipulated as the pre-tax income or other profit measure. Nonetheless, the possibility of our results being driven by firm performance cannot be eliminated completely.

5.2 Analysis of results

5.2.1 Hypothesis

Tax_Exp, our main independent variable had a coefficient of -0.03191 and a t-statistics of -3.90, leading to rejection of the null hypothesis that there is no difference in tax outcome between the groups on a 1% significant level, and thereby conclude that a significant difference does exist. The results of our main test support our hypothesis that firms with IHTE pay less corporate income taxes relative to firms without IHTE. The sign of the coefficients of the control variables in the main test are consistent with previous research, which strengthens the reliability of the results concerning *Tax_Exp*, our main independent. The results of the control variables are discussed in more detail in section 5.2.2.

The result on *Tax_Exp* from our main test can be connected with the findings of McGuire et al. (2012) that found that external audit firms' overall expertise (the combined audit and tax expertise) and tax-specific industry expertise is generally associated with greater tax avoidance and Klassen et al. (2016) that found that additional tax services provided by auditors resulted in higher corporate tax avoidance, which both suggests that tax expertise have an impact on tax avoidance. However, as this study investigates the effect of IHTE, where firms without IHTE still can buy tax services, our study and results are, to the best of our knowledge unique. As our specific area of research is yet little-studied and as the Swedish regulation only offer companies a few legal ways to manage tax expense (Dong et al 2019), the results are interesting.

The first robustness test compared the tax behavior of our treatment group with a second control group that also likely have IHTE. With a t-statistics of -0.32 and a coefficient of -0.00843, no significant difference was found on the main independent variable *Tax_Exp* on a 10% level, meaning that we cannot reject the null hypothesis that there is a statistically significant difference in the two groups' tax outcome. Although we neither are statistically certain that the alternative hypothesis is true, the results suggests that the control group of law firms has a tax outcome that is similar to our treatment group, which indicate that IHTE have an effect of *Ctp_Sales*. We argue that the results from the robustness test strengthens the validity of our main test as it suggests that the results from our main test indeed were driven by differences in IHTE rather than industry differences consequently that IHTE have a negative correlation with *Ctp_Sales*.

The interpretation of the results from our robustness test including fully robust standard errors is that the calculated standard errors in the main test on the variables *Tax_Exp, Size, Loss* and *Sales_Growth* were understated due to the presence of serial correlation in the dependent variable and/or heteroscedasticity. A reason why our dependent variable might suffer from serial correlation and/or heteroscedasticity is that the number of unique firms in our sample are less than the total number of observations and that there seems to be a firm specific pattern, suggesting that there is a relationship between the dependent variable and a lagged versions of itself over various time intervals. Taking these results into consideration, the significant support for our hypothesis decreased from a 1% level to a 10% level.

The results from the third robustness test with assets as the scalar (*Ctp_Assets)* instead of sales was a coefficient of -0.00146 and a t-statistics of -0.34 for our main independent variable *Tax_Exp*, meaning that the significant support for the hypothesis is not achieved. However, as earlier motivated in section 3.3.1, we are of the opinion that the measure in our main test is the most suitable for this study, and that the mentioned issues with using Ctp_Assets on our sample can explain the deviation in results compared to our main test. The sign of the coefficients of the control variables in the main test is more in line with previous research compared to when using *Ctp_Assets*, suggesting that using assets as a scalar is not appropriate for our sample. As the result of the control variables are inconsistent with previous research, we argue that the importance of

the result concerning the main independent variable, *Tax_Exp* in this test to be lower. However, the result of this test does not support the findings in our main test.

5.2.2. Control variables

The *Size* variable had a highly negative t-statistics of -10.04 and was significant on a 1% level in our main test. *Size* has been included in multiple previous tax avoidance studies but without unambiguous support for a given direction on the coefficient. For example, Siegfried (1972) and Porcano (1986) observed a negative association between ETRs and firm size, Zimmerman (1983) and Gupta and Newberry (1997) reported a positive association while Stickney and McGee (1982) and Shevlin and Porter (1992) found no association. The results from this study strongly indicates that *Size* affect the possibilities of tax avoidance and that larger firms therefore engage in more tax avoidance relative to smaller firms. This result is consistent with the political cost hypothesis that larger firms are better able to reduce their explicit tax burdens (Dyreng et al., 2008).

The *Loss* variable had a negative t-statistics of -21.41 and was significant on a 1% level in our main test. The result of a negative t-statistic for *Loss* was expected, since profitability has a positive effect on tax burden (Stickney & McGee, 1982; Gupta & Newberry, 1997). The result is in line with the study of Dong et al. (2019) that also included *Loss* as a control variable.

The *Sales_Growth* variable had a negative t-statistics of -4.59 and was significant on a 1% level in our main test. A negative coefficient on *Sales_Growth* is in line with the study of Dyreng et al. (2010) when they used CASH ETR as their dependent variable for measuring tax avoidance. An explanation to the negative correlation between *Sales_Growth* and *Ctp_Sales* could be that firms with higher growth might put more resources into tax avoidance. The rationale behind this is that higher level of growth might create additional opportunities for non-conforming tax avoidance and greater economic incentives to avoid taxes when income becomes increasingly larger (Rego 2003; Dong et al., 2019).

The *Leverage* variable had a negative t-statistics of -5.40 and was significant on a 1% level in our main test. A negative coefficient on *Leverage* is consistent with previous research (Gupta & Newberry, 1997; Dong et al., 2019). An explanation of the negative correlation between *Leverage*

and *Ctp_Sales* is that interest expenses on debt are tax deductible while dividends on equity are not (Stickney & McGee, 1982).

The *Sales_Employees* variable had a positive t-statistics of 9.09 and was significant on a 1% level in our main test. To the best of our knowledge, the *Sales_Employees* variable has not been used in previous studies. The positive correlation with *Ctp_Sales* is however expected since a higher level on the variable indicates higher efficiency and better performance, which leads to higher profits and taxes relative to sales. Badertscher et al. (2019) used a similar variable with net operating assets instead of employees that also showed a positive correlation to the dependent variable.

6. Conclusion

The conducted study aims to distinguish potential differences in corporate income tax outcome between firms with and without in-house tax expertise. In order to answer our research question, a firm fixed-effect regression have been performed. Evidence was found that supports our hypothesis, suggesting that firms with IHTE pay less taxes than firms without IHTE. The result from the main regression was significant on a 1% level and held for robustness tests, although lower the significance level to 10% when including fully robust standard errors. However, in the robustness test using the measure of Badertscher et al. (2019), the results were insignificant, making the evidence less conclusive. As this research question has not been studied before, there are no studies that the results can be fully compared with. However, similar studies such as that Huang & Zhang (2019) found that companies with financial expert CEOs, which can be seen as a proxy for financial and tax expertise, were associated with greater tax avoidance and can thereby be seen as in line with our results. Also, the fact that earlier studies have found that that auditors and other professionals working with tax related services have the ability to affect corporate tax avoidance (Dong et al., 2019; Klassen et al., 2016; McGuire et al., 2012), and that tax-specific industry expertise increases tax avoidance (McGuire et al., 2012), could be seen as consistent with our findings.

The subject of this study is of interest to investors, since the study help them to understand the potential benefits of employing tax expertise which can be weighed against the cost it so that a decision which maximizes the return of shareholders can be made. This is not only applicable for

shareholders, but also for internal decision making as well seeking to understand the potential benefits of having in-house tax expertise.

Tax law and tax planning is also an area of much debate, where the question of whether it is morally acceptable to avoid taxes within the walls of legality is in center of attention. As this topic, to the best of our knowledge, has not been conducted on tax expertise industries' own tax planning behavior, we provide further insight and nuances regarding the ability of avoiding taxes and how large the discrepancies can be. In addition, this is especially interesting as we investigate the tax planning behavior of firms which to a large extent are the very firms that act as the monitors of tax planning behavior and compliance, and suggests that these firms pay less taxes than other firms when using our measure of tax outcome, *Ctp_Sales*. Furthermore, this study is in a broader picture of interest to everyone that would like to understand the tax behavior of private firms and how it can be measured.

7. Further research

Performing this study has given rise to several interesting ideas for further research that are presented below.

The purpose of this study is to determine whether firms with IHTE pay less corporate income taxes relative to firms without IHTE. While our measure is designed to do this, we acknowledge that companies and its owners might engage in other types of tax strategies that is beyond the scope of this study. Hence, it would be interesting to get a more thorough understanding of the implications of IHTE on tax avoidance strategies beyond corporate income tax, since the full effect of some tax strategies might only be seen when also studying owners' personal taxes. An example can be if an owner benefit from not paying salaries and instead taking out dividends, which would result in a high tax burden on a corporate level but lower on a personal level. This topic is especially interesting in Sweden since Swedish regulation allow owners of closely held firms to pay out a certain level of profits in dividends taxed at a preferential tax rate.

In addition, as our results is consistent with the political cost hypothesis that larger firms are better able to reduce their explicit tax burdens (Dyreng et al., 2008), it would be interesting to see the difference in implications of IHTE on corporate income tax outcomes in smaller versus larger firms, as these firms tend to behave differently. This could be done either by splitting the sample by size and run regression separately or interact the Tax_Exp and Size variable. By interacting these terms, or split the sample by size, one might get a more nuanced picture of the implications of IHTE on corporate income tax outcome.

Lastly, we acknowledge the challenges in examining taxation behavior of professionals working in the field of taxation in other jurisdiction, as these usually operates as partnerships, with limited external financial insight as a consequence, however, to the extent possible, we think it would be highly interesting to also investigate the implications of IHTE on tax outcome in jurisdictions beyond Sweden. Since Swedish regulation leaves few opportunities to avoid taxes (Dong et al., 2019), the differences might be even larger in other countries. An international comparison would of be interested to many stakeholders, including regulators and politicians as it can serve as an evaluation of how well each jurisdictions' corporate taxation system works.

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Appendix

Appendix 1. SNI Codes in the main treatment group

SNI Code	Frequency	Percent
69201	13,565	88.44%
69202	1,502	9.79%
69203	271	1.77%
Total	**15,338**	**100.00%**

Appendix 2. SNI Codes in the main control group

SNI Code	Frequency	Percent
62010	2,336	15.23%
62020	2,028	13.22%
62030	82	0.53%
62090	39	0.25%
63990	10	0.07%
70220	7,816	50.96%
71111	653	4.26%
73111	1,451	9.48%
74102	428	2.79%
78200	420	2.74%
82900	72	0.47%
Total	**15,338**	**100.00%**

Appendix 3. Hausman test

	---------- Coefficients ----------		
Variables	(b) fixed	(B) random	(b-B) Difference
Tax_Exp$_{it}$	-.03190	.00510	-.03700
Size$_{it}$	-.01411	-.01416	.00005
Loss$_{it}$	-.02564	-.03269	.00705
Sales_Growth$_{it-1}$	-.00281	-.00274	-.00007
Leverage$_{it}$	-.00215	-.00226	.00011
Sales_Employees$_{it}$	-.01285	.01270	.00015
Chi2	**144.62**		
Prob>chi2	**0.0000**		

Appendix 4. Descriptive statistics

Panel A: Treatment group in the main test before matching

		---------- Quantiles ----------						
Variables	n	Mean	SD	Min	.25	Mdn	.75	Max
Ctp_Sales$_{it}$	20,973	0.043	0.062	-0.001	0.004	0.024	0.055	0.369
Size$_{it}$	20,973	15.559	3.365	10.127	13.298	14.170	19.073	23.803
Loss$_{it}$	20,973	0.127	0.333	0.000	0.000	0.000	0.000	1.000
Sales_Growth$_{it-1}$	20,973	0.114	0.729	-0.927	-0.112	0.022	0.157	6.255
Leverage$_{it}$	20,973	0.476	1.775	-1.417	0.000	0.000	0.000	15.148
Sales_Employees$_{it}$	20,973	15.065	3.213	9.952	13.052	13.651	18.891	21.823

Notes: Ctp_Sales, Leverage, Size, Sales_Growth and Sales_Employees have been winsorized to the 1st and 99th percentiles.

Panel B: Control group in the main test before matching

				---------- Quantiles ----------			
Variables	n	Mean	SD	Min	.25	Mdn	.75	Max
Ctp_Sales$_{it}$	111,417	0.037	0.054	-0.001	0.000	0.018	0.053	0.369
Size$_{it}$	111,417	15.810	3.416	10.127	13.538	14.400	18.859	23.803
Loss$_{it}$	111,417	0.214	0.410	0.000	0.000	0.000	0.000	1.000
Sales_Growth$_{it-1}$	111,417	0.180	0.961	-0.927	-0.216	0.007	0.254	6.255
Leverage$_{it}$	111,417	0.553	2.153	-1.417	0.000	0.000	0.000	15.148
Sales_Employees$_{it}$	111,417	15.239	3.200	9.952	13.256	13.945	18.420	21.823

Notes: Ctp_Sales, Leverage, Size, Sales_Growth and Sales_Employees have been winsorized to the 1st and 99th percentiles.

Appendix 5. SNI Codes in the second treatment group

SNI Code	Frequency	Percent
69201	4,842	85.55%
69202	704	12.44%
69203	114	2.01%
Total	**5,660**	**100.00%**

Appendix 6. SNI Codes in the second control group

SNI Code	Frequency	Percent
69101	4,065	71.82%
69102	1,404	24.81%
69103	191	3.37%
Total	**5,660**	**100.00%**