HOW DO SWEDISH COMPANIES REACT WHEN TAX-AVOIDANCE STRATEGIES ARE EXPOSED BY THE MEDIA?

Authors: Austėja Denisovaitė
             Matas Petronis

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Austėja Denisovaitė

and

Matas Petronis

Supervisor: Milda Tylaitė

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Abstract

This research paper investigates how the Swedish listed companies react when the media exposes their and their peers' tax avoidance strategies. While the company reaction can be interpreted broadly, we investigate specifically the changes in their Effective Tax Rates (*ETR*) following the media exposure. To test this, we run 3 OLS regression models having *ETR* as the dependent variable and a binomial variable indicating the existence of the media tax announcement as a main independent variable. We discovered that Swedish firms are mostly reluctant to change their tax behavior after being exposed in the media, however, they do react when their peers' tax strategies are exposed and the direction of the reaction depends on the current level of taxes paid.

We contribute to the previous literature by analysing the relationship between media tax announcements and corporate tax strategies among peer firms in a smaller market - listed Swedish firms, which can render different results due to potential differences in media.

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1. Introduction

In this study, we investigate a link between the media tax news and subsequent corporate tax reactions among Swedish listed companies. We explore whether tax avoidance coverage in the media can make the firms reduce their tax avoidance, measured by the effective tax rate (*ETR*). In case true, this would signal that the companies care about how they are perceived in the media and are willing to forgo some of their tax avoidance opportunities.

There are several reasons why the companies could be concerned about how they appear in the media. Mainly, the media can influence tax-avoiding companies through their stakeholders (eg. customers, shareholders). For example, investors might value ethics over returns and not favor tax avoidance, thus cutting the funding. As evidence to this, stock price volatility is documented after media exposure, suggesting that some investors exit and some enter the stock (Gallemore, 2013). When it comes to customers, they might perceive such businesses as not paying their "fair share" (Graham et al., 2013, p. 1) and decide to stop buying from them, directly affecting the bottom line. The evidence for this phenomenon is observed in consumer industries especially. Together, such reasons merge into a broader concept of business reputation, which is what the media can influence, given its unrivaled power to "disseminate information" (Chen et al., 2019). We will discuss it in more depth in the upcoming sections of this paper.

However, prior research shows that the relationship between companies and media is not straightforward. In fact, when it comes to the media coverage of tax strategies and the influence it has, the evidence has been mixed (Gallemore, 2013; Graham, 2013). While the media may impact businesses following their tax avoidance, companies consider that in prior. The ones that decide to go aggressive with their tax strategies are well aware of the potential costs (including reputational) and usually well equipped to withstand them (Graham et al., 2013). However, that leaves us knowing very little about the companies that chose not to avoid taxes in anticipation of the possible reputational damage. Therefore, the relationship between businesses and media is complicated and hard to observe in isolation. We will explore this in broader terms in the literature review.

When one is looking to investigate the relationship between business and media outside the USA (where most of the current research on the topic is focused), the quality

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of media has to be taken into account. Undoubtedly, the level of independence and proactivity that journalism has can make a huge impact to what extent it can influence businesses. As an extension to that, journalism quality can also determine how seriously businesses consider the possibility of negative coverage when making such decisions as tax avoidance. For example, many of the tax avoidance possibilities could be forgone (Gallemore et al., 2013) when a country has mature investigative journalism, capable of high-impact business coverage. As we have chosen Sweden as our market of interest, there are reasons to believe that not only businesses differ from those in the USA, but also the media and journalism practices. According to the World Press Freedom Index (2020), Sweden ranks as a #4 in the world while the USA as #45. While the index takes a lot into account (e.g., "media independence", "transparency", "pluralism"), the media quality is a much broader concept. In the context of this study, we care about whether the media is proactive (i.e., seeking to investigate and bring events to public attention itself), or reactive (i.e., only reporting on what has happened). Such quality is hard to observe and we have not found studies classifying Sweden in this realm. We, therefore, do not seek to claim that the media in Sweden is better or worse than that in the USA. We rather acknowledge that the two are different, which may render different observations in our research, making it one of the reasons why the topic is worthy of investigation.

Let us consider how our study fits into the broader field of research. Firstly, as mentioned above, most of the research regarding the relationship between tax avoidance and media is based on the US data. We contribute to the existing literature by exploring the effects on listed Swedish firms, which can render different results due to differences in media. Secondly, while most of the research addresses how the focal firm itself reacts to media coverage of its tax avoidance, there is little to no literature documenting peer effects in this area (i.e. how industry peers react to media coverage of focal firm's tax avoidance). It is known that in general accounting peer effects do exist due to competition and learning (Reppenhagen et al., 2010). Similarly, these effects might exist when peer firms react to media announcements about their competitors' tax avoidance. For example, if there is little public (or market) reaction, the peer firms might decide to "keep up" and increase their tax avoidance. Alternatively, if peer firms observe that tax avoidance turns into a backlash, they might choose to pay more taxes in

hope to avoid this. By conducting our study, we expect to address this research gap. Our 2 research questions, therefore, are:

Q1: How does the focal firm change its ETR after it receives media coverage about its tax avoidance?

Q2: How do peer group firms change their ETRs after the focal firm receives media coverage about its tax avoidance?

To answer these questions empirically, we will be running two OLS regressions, firstly checking for the effects of media tax news on the mentioned firm only, and later also checking for the effect on the industry peers of the firm as well.

The remaining part of the paper will be structured into the literature review, methodology, analysis, and discussion as well as a conclusion.

2. Literature review

In the following literature review sections, we will: 1) Provide the reader with the relevant definitions of key concepts; 2) Discuss previous research covering the relationship between tax-aggressive businesses, the media and investors; 3) Review existing studies on peer effects in accounting.

2.1. Relevant definitions

Throughout the paper, we will thoroughly discuss companies that engage in different tax planning strategies. Such tax strategies are often referred to by different terms, depending on their legality or how aggressive they are. Because of that, we acknowledge the need to introduce the different terms here.

First of all, it is important to consider the difference between tax evasion and tax avoidance. Commonly, tax avoidance is considered to be any practice to reduce tax liability that is legal, often related to "exploiting tax-loopholes" (Kirchler et al., 2003, p. 536). Tax evasion, on the other hand, is defined by its illegality, for example, stemming from fraudulent accounting. Some researchers may also make other distinctions, for instance, Kirchler et al. (2003, p. 536) separates "tax flight" (also known as "tax havens") as tax management by moving companies offshore. However, for the sake of simplicity, we regard offshore accounting as tax avoidance, as long as it is legal. Kirchler et al. (2003) also note that the difference is not only in legality, but also publicly perceived morality. According to the study, tax evasion and flight are perceived as immoral and unjust (regardless of tax flight being legal), while tax avoidance does not carry a negative perception (although some of the more recent studies argue otherwise). Lastly, we will also be using terms such as "tax management", "tax planning" or "aggressive tax strategies" to refer to any attempts that firms make to reduce their tax burden regardless of their nature.

2.2. Tax strategies, media, and reputation

Reputation as a concept is relevant to our research because the damage of it is one of the most important costs that businesses consider in their cost-benefit analysis when making tax avoidance decisions (Graham et al., 2013). The answer to whether the media does influence business reputation highly depends on what we

consider "reputation" to be. It is a very indefinite concept that one can try to proxy, yet can never measure (Gallemore et al., 2013). One could think of business reputation as a perception of it by different stakeholders. A diminished business reputation, then, could be observed through such things as declining revenues, a falling stock price, etc. (Gallemore et al., 2013). However, it is important to make a clear distinction between whether the media *can* influence business reputation and whether it *does* influence it. As previously discussed, due to its unrivaled power to inform the public (Chen et al., 2019), it is almost certain that it *can* influence reputation. Yet, due to most of the businesses anticipating that, only the ones which have strong "media immunity" choose to put their reputations at stake (Gallemore et al., 2013). Thus, due to this phenomenon, the question of whether the media *does* influence business reputation is much more peculiar and worth closer examination. If the media does influence reputation, it might be one of the reasons why companies may change their tax avoidance practices following the negative tax coverage.

However, observed tax avoidance does not lead to the damage of business reputation (Gallemore et al., 2013). In a study of 118 companies that appeared under the public radar for aggressive tax strategies, Gallemore et al. (2013) find that neither the firms nor their executives suffer from reputational damage after being exposed. Nevertheless, research still suggests that managers strongly consider reputational aspects when tax planning ex ante (Graham et al., 2013). When top managers were surveyed, reputation came as the second most important factor when choosing tax strategies (Graham et al., 2013). That has something to do with the "under-sheltering puzzle" introduced by Gallemore et al (2013, p. 1), which questions why there are not more companies involved in tax avoidance given that it has few negative effects. Graham et al. (2013) could provide a partial explanation to that. Since managers in prior consider costs and benefits of tax avoidance (including the reputational aspects), the companies that undertake such activities are by default more "immune" to public scrutiny (Gallemore, 2013; Graham, 2013). In other words, companies expecting reputational damage simply choose to limit their aggressive tax strategies. Therefore, the real power of media to influence business reputation is hard to observe due to self-selection (Gallemore et al., 2013).

When it comes to the company's stock price following the exposure of its tax avoidance, research by Hanlon et al. (2008) suggests that the stock price does drop after

such news. That is especially observed in firms operating in the retail industry, showing that "backlash" is partly due to a strong negative perception of tax shelters by the retail customers (Hanlon et al., 2008, p. 127). Authors also reason that some investors may take tax aggressiveness as a sign that the company is in general aggressive with its financial reporting, which makes them "suspicious of the accuracy" (Hanlon et al., 2008, p. 127). However, no empirical evidence is presented to support this claim. In contrast to this, Gallemore et al. (2013, p. 20) find that despite the fact that a decline in stock returns is observed, it "fully reverses within thirty days". The results seem surprising, however, the authors reason that such observations may appear because, while some investors value tax avoidance negatively, some value it positively (as an effective cost saving measure) so that the net effect on the company is zero (Gallemore et al., 2013). Thus, the negative stock price reaction to news about the company's tax avoidance is present, yet temporary.

Research by Drake et al. (2019) adds to the topic of how investors value tax avoidance. According to the study, tax avoidance by itself is valued positively as it mechanically increases the "future cash flows"; However, investors negatively value "tax risk" (Drake et al., 2019, p. 152). It is defined as the volatility of future tax payments. Inevitably, with aggressive tax strategies tax risk increases because the company may get challenged by the tax authorities resulting in rulings to end some of the tax management practices. In addition to that, the likelihood of "repayment of taxes, interest, and penalties" also increases (Drake et al., 2019, p. 152). Therefore, to keep the investors satisfied, a company should reach optimality, when tax strategies are enough to keep the tax low, yet stable.

In continuity with the previous studies, Chen et al. (2019) show that when tax-avoiding companies receive media attention, they do not reduce their aggressive tax strategies. This goes in line with the previously discussed argument that companies that do choose to lower their taxes, have already considered the possible negative effects and are ready to cope with them. Like other authors tackling this topic, Chen et al. (2019) acknowledge that the real effects are difficult to capture due to statistical noise, the fact that one strategy can be substituted for another so that the net effect on tax level is zero, and simply that corporate tax strategies are subject to secrecy. Thus, while there is still a lot of uncertainty in the subject area, the evidence is more in favor of the idea that the companies that involve themselves in tax avoidance are well prepared to withstand any

public scrutiny that may arise. Alternatively, such companies may know that their shareholders value cash flows more than they value ethics.

Let us summarize what all of this means for our research. Firstly, for a long time in the past, there was no consensus in academia when it came to the relationship between tax aggressive companies, media and investors. New evidence kept arising that often challenged previous studies. Secondly, as of today, the understanding has shifted and more research favors the idea that tax-avoiding firms are prepared to withstand any public scrutiny and investors to some degree value it positively. Lastly, there is a research gap regarding how the investigation of one company's tax avoidance can have an impact not on that company itself, but rather its peers. In the next section, we will review the existing research on peer effects in accounting.

2.3. Accounting choices and peer effects

Market competition is the force that makes businesses reactive to each other. As long as the company is not a monopoly, its success is inevitably dependent on what other market participants are doing. This "reactivity" is observed throughout all business fields (e.g. strategy, marketing, human resource management) and accounting is no exception to that. The study by Reppenhagen et al. (2010, p. 629) tests the effects of accounting contagion with "stock option expensing" and finds evidence that firms do follow each other's accounting practices for several reasons. Firstly, when certain accounting decisions are implemented, they signal to the market about being good or bad through such channels as, for example, the stock price (Reppenhagen et al., 2010). Managers can, therefore, learn from this and adopt similar strategies in their companies with less risk. The authors called this "information-based contagion" (Reppenhagen et al., 2010, p. 630). Secondly, when some firm changes its accounting practices, it also influences the competitive environment. An example that authors provide is that firms compete not only for customers, but also for capital and investor attention. In that sense, competing companies have to follow through with the adoption of some accounting practices or else become inferior. That is called the "spillover-based contagion" (Reppenhagen et al., 2010, p. 632). Therefore, the research shows that there are strong incentives for companies to learn from each other's decisions when it comes to accounting.

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When it comes to contagion and tax decisions specifically, Bird et al. (2018) find evidence that peers react to each other's *ETR* (i.e. effective tax rate) changes by also changing theirs. The mentioned tax rate change reaction is on average a 10% increase in the *ETR* when the peer firm increases its, or a 10% decrease when the peer firm decreases its *ETR*. However, that is observed only on an accounting basis rather than cash (Bird et al., 2018). This is important to note because the incentives are different for changes to *ETR* on a cash versus accounting basis. A change on a cash basis would generally mean peers trying to "reverse-engineer" each other's tax strategies to stay competitive in cash flow terms (Bird et al., 2018, p. 8). Nevertheless, such an effect is not observed. What is observed, however, is firms adjusting their tax payments only in book terms. According to Bird et al. (2018), this confirms that managers perceive accounting figures (rather than actual cash flows) as more important and superior. At least to some extent, this is due to some managerial compensation being tied to the accounting rather than cash *ETR*s (Bird et al., 2018). Therefore, it is evident that peer companies try to stay competitive with their *ETR*s, yet only in the accounting sense.

In a synthesis, there is a considerable amount of prior literature on peer effects in accounting, mostly documenting evidence that firms do follow and replicate each other. Effective tax rate (book-based figure) is also subject to such peer competition. While companies surely react to each other's decisions, they do not seem to react to the media coverage about themselves, as we have previously discussed. Yet, it is not clear how the companies would react to the media coverage about their peers. There is very little research on this topic, which is a combination of the above mentioned two (i.e. peer effects and reaction to tax media coverage). After all, a learning mechanism should be similar to the one discussed by Reppenhagen et al. (2010) – following the news on tax avoidance, peer firms could observe both market and general public reactions and learn from that. Our goal is to address this research gap by examining how peer firms react to the media coverage about each other's tax strategies. In the next section, we will present the empirical underpinnings of our study.

3. *Methodology*

3.1. Data

We use panel data and a longitudinal design to answer our research questions. The rationale for it is to check how tax news, which come out at different points in time about different events, affect corporate tax behaviour. Additionally, longitudinal design helps improve the detection of correct causal relationships (Bryman, 2015).

To answer the research questions, there are two types of data required – firm level/financial data (mostly used as control variables and also to calculate the Effective Tax Rate) and data on media tax news (i.e. tax dispute outcomes, tax authority decisions, other regulatory decisions) in Swedish from Swedish newspapers. The final sample is presented in the Sample Selection Table.

3.2. Firm-level and Peer data

The firm level data on Swedish firms is obtained from Compustat over the time period of 1998 to 2019. This sample is chosen because it spans two decades, including two economic recessions. The access to Compustat is provided to us by the Stockholm School of Economics.

As we are also studying how media coverage of a focal firm affects its peers, we also need to define which companies qualify as its peers and examine the effect on them. We follow the methodology of Bird et al (2018) and group the firms into peer groups by industry using the Fama-French 12 industry classification (Appendix 1). This way we are assigning a firm a number of the industry to which the firm belongs. The rationale for this method of peer group definition, as per Bird et al (2018), is that it avoids the firm level biases that would arise if the groups were to be selected using firm self-reported peer groups. Moreover, the data is considerably more straightforward and uniform when taken from the same source (in this case – Compustat).

The table presented below depicts our financial data sample selection and data preparation process. After downloading the financial data on listed Swedish firms and merging it with the Swedish news announcements data, we have 1052 companies that make up 11767 observations. Then, as we are working with panel data, we cannot have duplicate entries/rows that appeared after merging the financial data with the tax announcements data, because some companies had several news announcements in the

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same year. For the purposes of the current research scope, we only note if the firm has had any tax media coverage in a year, therefore, we deleted the duplicate rows of data and saw a reduction in the number of firm-years only – decreased to 11739 observations. Furthermore, we treated the dependent variable – the *ETR*: we limited the *ETR* values to be between 0 and 1, so as to normalize the variable of the *ETR*. We also normalized the vector of control variables by either taking a ratio of two stock values (i.e. *LEVERAGE*, which is a ratio of total debt divided by total lagged assets) or by taking a log of a single stock variable – as we did to account for company *SIZE* by taking a log of total assets (Appendix 2). After this step, we were left with 856 firms and 6915 firm-years. After the normalization, we winsorize the vector of control variables to limit them to below the 5th percentile. This step is important because it helps avoid spurious effects induced by outliers. Finally, instead of removing the NA values for the variables that we used in our regression analyses (Appendix 2), we imputed them using the R Hmisc package and a randomized imputation method ("Package 'Hmisc'," 2021). As we did not impute the dependent variable (the *ETR*), the number of firms didn't change and our final sample is 896 firms and 6915 firm-years.

Sample Selection Table		
	Number of firms	Number of firm-years
Total number of Swedish listed firms with data available on Compustat and/or Swedish business newspapers	1052	11767
Left after leaving only unique values*	856	11739
Left after limiting ETR values to be between 0 and 1	856	6915
Final Sample	**856**	**6915**

Note: duplicate rows appeared when a firm had several tax news announcements in the same year.

Table 1. Financial data sample selection table. Table created by the authors using data from Compustat, main dataset of this study.

3.3. Media Tax Announcements

In order to be able to conduct quantitative analysis later on, the textual data of tax announcements needs to be converted to numerical data. We take a similar approach

to Bird et al. (2018) methodology for minimizing the data set of news announcements to those relevant to tax news (containing variations of the word "tax"). We use manually collected Swedish tax news announcement data[1] (collected in the approach we have just laid out) from the following Swedish newspapers: Dagens Industri and Dagens Nyheter. The announcements span the period of 1999-2018. These newspapers were chosen because they are the key source for business-related news in the Swedish setting. The majority of articles – 312 – are from Dagens Industri, and 56 are from Dagens Nyheter.

Regarding the sample of news announcements data, the final sample turned out to be 149 unique tax related news articles. The main loss of data resulted from the tax news announcements not being attributable to any specific firm rather only to the whole industry or to all firms. We decided not to include such announcements as it is unclear whether the firm would be affected by a general tax news announcement that is weakly related to its industry. Additionally, the classification of these announcements as relating to a certain industry is not straightforward, would have to be done by the authors and would not be consistent with the Fama-French 12 Industry classification (Appendix 1) we use for calculating the Peer_Article variable from firm-specific tax news announcements (see section 3.5 of this Thesis for more information).

Around 17% of firms covered in our sample receive media tax coverage. A sample of this size is normal in the field of media-tax research, a research by Chen et al (2019) of the tax media effect on corporate tax strategies in the USA has 22% of its sample firms covered by tax media. Given that the Swedish tax media is less active than in the US (as per our previous discussion in the Introduction of the Thesis), we deem this sample size acceptable.

Tax news announcements data	
	# of media tax announcements
Total tax news announcements collected from Dagens Industri and Dagens Nyheter.	368
Left after removing the news announcements that could not be attributed to specific firms	149
Final Sample	**149**

Table 2. Media announcement data sample selection table. Table created by the authors using data from Dagens Industri and Dagens Nyheter, main dataset of this study.

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[1] We thank Milda Tylaite at the Stockholm School of Economics for providing us with this data

3.4. Evaluating the negative tone

It is reasonable to expect that the companies may react to negative or positive and neutral tax announcements in the media differently. Since the data we have includes all kinds of announcements, we have to make this distinction. Therefore, we carried out a manual evaluation of the news article/announcement to capture its tone. Taking from the approach used by Chen et al. (2019), in our manual evaluation we associate the negative tone with keywords as "denied, required, not allowed". We saw that the announcements included in the regression analyses are overwhelmingly negative. The majority of articles that we deemed positive/neutral were related to the whole industry as a whole, and were already dropped after filtering for articles that are attributable to a specific company (see Sample Selection Table for Media Tax Announcements).

3.5. Tax media effect on the focal firm

Our research question tackles the relationship between media coverage of corporate tax policies and subsequent corporate tax behavior in Swedish firms and their peers. Therefore, to answer it, our analysis needs to determine whether media tax coverage influences the Tax Avoidance (*ETR*) of the focal firm and of its peers.

We follow the methodologies of Chen et al (2019) and partly Bird et al (2018) and begin the analysis with the following OLS regression:

$$ETR_{it} = \alpha_0 + \alpha_1\, Article_{i,t-1} + \alpha_2\, Article_{i,t} + \alpha_3\, Article_{i,t+1}$$

$$+ \sum_k \alpha_k\, Control_{it}^k + \sum_t \alpha_t\, YearFE_t + \sum_i \alpha_i\, FirmFE_i + \varepsilon \quad (1.1)$$

Here, we are mostly interested in obtaining statistically significant results for the coefficient before $Article_{it}$– a binary variable dedicated to capturing the effect of media coverage for firm *i* in year *t*. We set $Article_{it}$ to 1 if the firm *i* receives media tax coverage in year *t*, and maintain it at 0 otherwise. Following Bird et al (2018), we include the first lag of the $Article_{it}$ variable ($Article_{i,t-1}$) as it likely takes a year for companies to react to the media tax announcements. We also include the first lead and the variable of the same period to test whether companies could be reacting to information in the news announcements before they come out. While doing so may seem counterintuitive, observing adjustments in *ETR* even before the announcements

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are published would be a sign of firms receiving the information before the newspapers, therefore, from different channels.

As an additional check, to check for the longevity of the tax news' induced effects, similarly to how it was done in Chen et al (2019) and Bird et al (2018), we also run a test where we include the second lag of the $Article_{it}$ variable:

$$ETR_{it} = \alpha_0 + \alpha_1\ Article_{i,t} + \alpha_2\ Article_{i,t-1} + \alpha_3\ Article_{i,t-2} + \alpha_4\ Article_{i,t+1}$$
$$+ \sum_k \alpha_k\ Control_{it}^k + \sum_t \alpha_t\ YearFE_t + \sum_i \alpha_i\ FirmFE_i + \varepsilon \tag{1.2}$$

The rest of the variables included in both of the first regressions stay the same. The dependent variable – ETR_{it} is the Effective Tax Rate which we use as a measure of Tax Avoidance (as per Gallemore, 2013). We calculate the ETR by dividing the measure of *Total Income Tax* by *Pretax Profit*.

$Control_{it}^k$ is a vector of control variables following Dyreng et al (2010) methodology as used in Bird et al (2018, p. 13) that include variables for firm profitability (*ROA, EBITDA, PT_ROE*), growth in sales (*ChSALE*), expenses in Selling, General & Administrative (*SGA*), capital expenditures (*CAPEX*), balance sheet-based measures such as capital structure (*LEVERAGE*), cash holdings (*CASH*), property, plant and equipment (*PPE_RATIO*) and intangible assets (*INTANGRATIO*), and also variables that correspond to and size (*SIZE*) and a Book-Tax Difference (*BTD*). This set of control variables would help us to distill the true effect of media announcement, so that the test is not impaired by other variables that do influence *ETR* and could be correlated with announcements. For example, controlling for company size, we solve the problem of media coverage likely being higher for big firms which has an effect on *ETR*. Finally, $YearFE_t$ corresponds to year fixed effects and $FirmFE_i$ corresponds to the firm fixed effects. Adding this to the regression is important because it helps to capture the changes to *ETR* that happens over years (*YearFE*) and are applicable to all firms, for example, due to the changes in legal environment, or any changes in *ETR* that are related to unobservable specificities of a single firm (*FirmFE*) yet are constant over time.

The full list of variables and their descriptions can be found in Appendix 2.

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3.6.Tax media effect on the focal and peer firms

The second model we run checks for peer effects. For this, we take a similar approach to the methodology of Bird et al (2018) and distinguish the effect of a media mention into an effect on the focal firm and the effect on its industry peers.

$$ETR_{it} = \alpha_0 + \alpha_1\, Article_{i,t-1} + \alpha_2\, Peer\_Article_{i,t-1} + \alpha_3\, Peer\_Article_{i,t-1} * lowTA_{it}$$
$$+ \sum_k \alpha_k\, Control_{it}^k + \sum_t \alpha_t\, YearFE_t + \sum_i \alpha_i\, FirmFE_i + \varepsilon$$

<div align="right">(2.1)</div>

This estimation is similar to the (1) one, but also includes the variable $Peer\_Article_{it}$ which accounts for the media effects coming from the firm's industry peer group. It is constructed similarly to the *Article* variable – we assign 1 to $Peer\_Article_{it}$ if there was a tax news announcement in the media for any firm in the studied firm's industry peer group in the same year. We follow Bird et al (2018) argumentation and add one lag of $Peer\_Article_{it}$, because observed outcomes of tax behaviour adjustments take place with a delay. However, we later supplement our analysis with the same variable of a few different periods around the announcement.

Another new variable that appears in the second type of regression analysis is $lowTA_{it}$ ("low tax avoidance", thus the name). Since companies with high *ETR* are unlikely to be involved in tax avoidance, this is a binomial variable that is meant to control such firms. We expect such companies to be less responsive to media tax announcements when it comes to increasing their *ETR* as it is already high. We construct this variable by assigning it a 1 if the firm's *ETR* is higher than the median *ETR* value among all firms and assign it 0 otherwise.

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4. Results

In this section, we will overview the findings that proceed from the 2 regression analyses that we described in the previous passage. We will purposefully refrain from broader interpretations as that will be left for the discussion section. To begin with, we shall also take a deeper look at the data that was used in our analysis, namely statistical properties, correlations and distribution by different metrics.

4.1. Tax media data

To better understand the data that becomes the foundation of our regression analysis, we will begin by overviewing the distribution of announcements, which is the main independent variable, across Swedish firms, industries as well as over time.

TOP 10 firms by number of announcements as % of total

Firm	%
Ericsson	8,3%
Volvo	7,6%
Kinnevik	5,7%
Skandia	5,7%
Tele2	5,7%
Fabege	4,5%
Sandvik	3,8%
ICA	3,8%
Holmen	2,5%
Lindex	2,5%
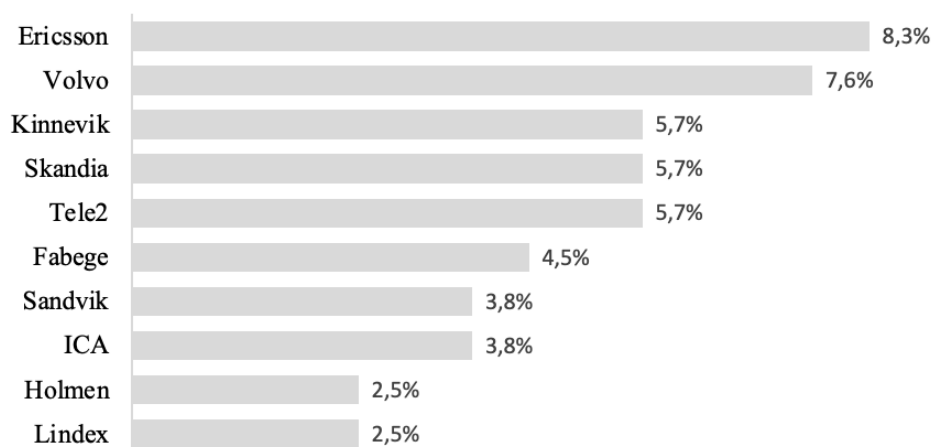
TOP 10 by # of announcement - 50,3% of total, all other firms - 49,7% of total

Figure 1. Top 10 firms in the sample by number of announcements, presented as % of total. Graph created by the authors using data from Compustat, Dagens Industri and Dagens Nyheter, main dataset of this study.

From Figure 1 it is evident that the distribution of announcements across companies has skewness, with Ericsson and Volvo receiving the most media coverage. Overall, the TOP 10 firms by the number of announcements received 50,3% of all announcements. The remaining 49,7% of announcements were received by the remaining firms in our sample. Such distribution correlates with company size, as it is reasonable to expect that bigger companies would receive more media attention than the smaller ones.

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Distribution of announcements over time (% of total by year)
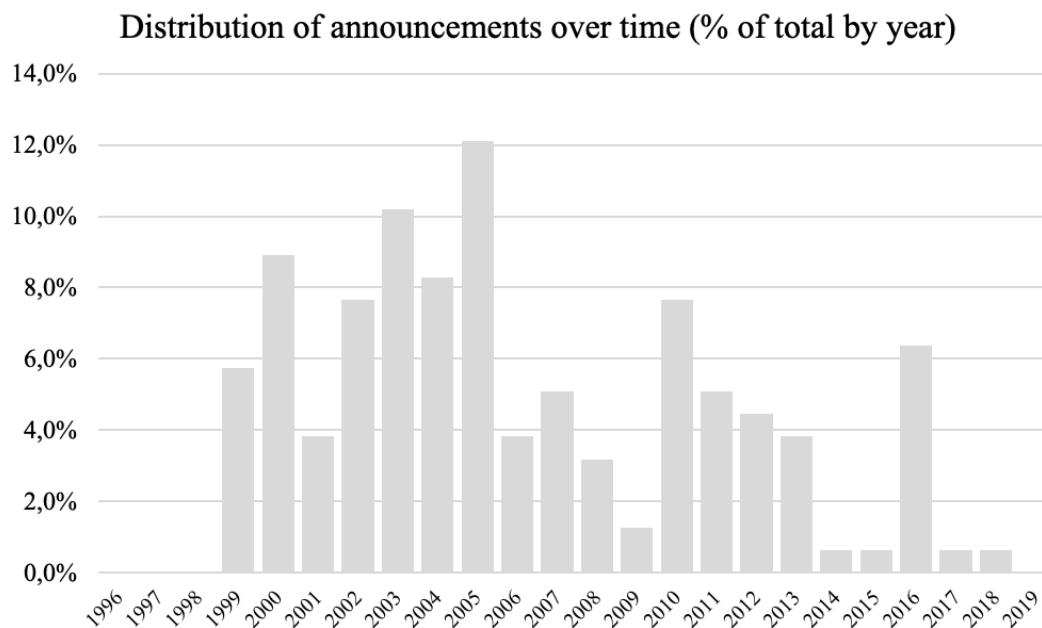
Figure 2. Distribution of announcements over time in our sample, presented as % of total by year. Graph created by the authors using data from Compustat, Dagens Industri and Dagens Nyheter, main dataset of this study.

When it comes to announcement distribution over time, it is evident that there is no emerging clear trend. Nevertheless, we can see that more of the media tax announcements were released at the beginning of the century, compared to the period of 2010-2019. For a more distinct trend, we would need more data points and more in-depth analysis to explain why it is that way.

Announcement distribution by industry (SIC division)

Industry	%
Manufacturing	38,9%
Finance, Insurance and Real Estate	25,5%
Other	11,5%
Transport., Commun., Electric, Gas and Sanitary	9,6%
Construction	5,1%
Services	5,1%
Retail Trade	3,2%
Wholesale Trade	1,3%
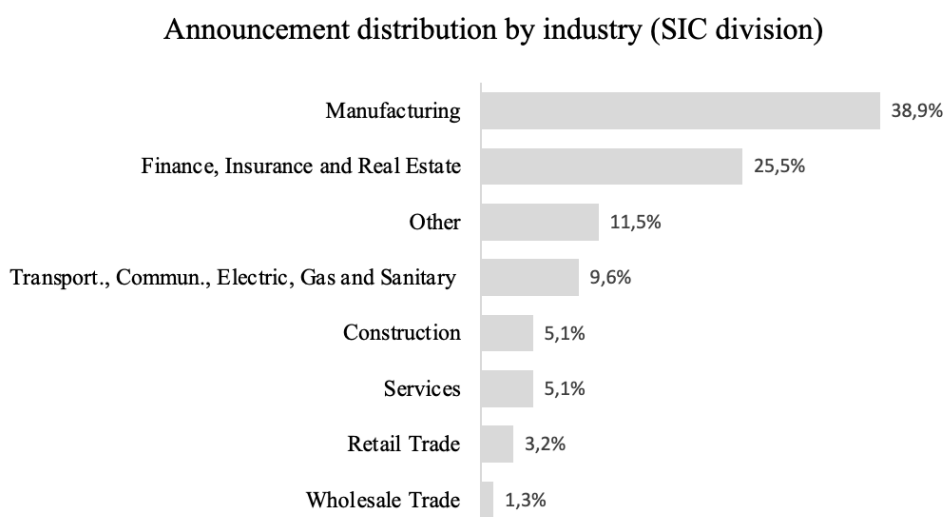
Figure 3. Announcement distribution by industry in our sample. Graph created by the authors using data from Compustat, Dagens Industri and Dagens Nyheter, main dataset of this study.

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Figure 3 provides the distribution of media tax announcements in our sample by industry. While there are many ways to classify industries, due to the available data and appropriate level of granularity, we have chosen to classify it here using the SIC broad divisions (SIC Code, n.d.). Moreover, such classification is one of the most widely used and recognized globally. Note, however, that this is not the same classification we use to select peer groups for our regression analysis.

According to the chart, it is evident that the most media tax announcements in our sample are received in "Manufacturing" and "Finance, Insurance and Real Estate". That, however, does not imply that companies in these industries are more likely to appear in the public radar or be investigated for aggressive tax strategies. The reason for such distribution has to do with the specificity of our sample, or even more so, the distribution of publicly listed Swedish companies skewed towards manufacturing and financial firms.

4.2. Financial data

Now we continue with an overview of the financial variables we use in our analysis. The following table depicts the descriptive statistics of all the variables we use in our regression analyses. Variable descriptions are provided in Appendix 2.

Descriptive Statistics

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max
ETR	6,915	0.2411	0.1476	0.000001	0.1602	0.2969	0.9978
BTD	6,915	0.0020	0.0084	-0.0128	-0.0024	0.0073	0.0154
EBITDA	6,915	0.1157	0.1109	-0.0816	0.0534	0.1864	0.3136
SGA	6,915	0.2049	0.1948	-0.1431	0.0000	0.3109	0.6336
CAPEX	6,915	0.0320	0.0258	-0.0281	0.0099	0.0503	0.0780
ChSALE	6,915	1.1194	0.2054	0.7290	0.9907	1.2501	1.4629
LEVERAGE	6,915	0.5453	0.2073	0.1447	0.4023	0.6851	0.9757
CASH	6,915	0.1144	0.0907	-0.0912	0.0379	0.1887	0.2640
SIZE	6,911	6.8783	2.3675	1.6191	5.1299	8.5848	11.8314
INTANGRATIO	6,915	0.1570	0.1543	0.0000	0.0098	0.3168	0.3977
PPE_RATIO	6,915	0.1325	0.1213	0.0000	0.0221	0.2619	0.3183
PT_ROE	6,915	0.1488	0.1890	-0.1670	0.0466	0.2667	0.4824
Article	6,915	0.0129	0.1127	0	0	0	1
Peer_Article	6,915	0.0509	0.2198	0	0	0	1
lowTA	6,915	0.4999	0.5000	0	0	1	1

Table 3. Descriptive statistics of all variables used in regression analyses. Table created by the authors using data from Compustat, Dagens Industri and Dagens Nyheter, main dataset of this study.

The table above represents the descriptive statistics of all the variables used in the later analysis after their normalization and winsorization. The first fact that is evident is that the number of observations is uniform among all the variables, as it was dealt with in the previous steps. We can also observe that the statistical noise is reduced as a result of the data preparation steps taken, namely winsorization.

As it is evident from the correlation table, the variables *ETR* and *Article* are slightly correlated. Therefore, it is possible to expect some kind of effect between the 2 in our regression analysis (although, not necessarily). The full correlation table can be found in Appendix 3.

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4.3. Tax media announcements effect on the focal firm

Linear Panel Regression Models for the relationship between ETR and media tax announcements

	Dependent variable:		
	ETR		
lag(Article)	-0.0312**	-0.0216	-0.0017
	(0.0134)	(0.0138)	(0.0112)
lag(Article, 2)		0.0088	
		(0.0141)	
lead(Article)	0.0135	0.0091	
	(0.0131)	(0.0131)	
Article	0.0121	0.0112	
	(0.0134)	(0.0132)	
lag(Peer_Article)			-0.0423***
			(0.0112)
lowTA			0.1537***
			(0.0035)
BTD	6.5759***	6.6078***	2.1132***
	(0.2624)	(0.2935)	(0.2155)
EBITDA	0.1089***	0.0885***	0.0441**
	(0.0272)	(0.0309)	(0.0209)
SGA	-0.0133	-0.0195	-0.0235
	(0.0206)	(0.0230)	(0.0150)
CAPEX	0.1563	0.1568	0.0336
	(0.0964)	(0.1065)	(0.0747)
ChSALE	-0.0061	-0.0066	-0.0109
	(0.0104)	(0.0115)	(0.0079)
LEVERAGE	0.0328*	0.0179	0.0090
	(0.0173)	(0.0198)	(0.0126)
CASH	-0.0120	0.0053	-0.0181
	(0.0285)	(0.0317)	(0.0220)
SIZE	0.0005	-0.0008	0.0021
	(0.0035)	(0.0041)	(0.0026)
INTANGRATIO	-0.0161	-0.0070	0.0185
	(0.0222)	(0.0245)	(0.0172)
PPE_RATIO	0.0609*	0.0117	0.0453*
	(0.0315)	(0.0351)	(0.0245)
PT_ROE	-0.0132	-0.0085	-0.0051
	(0.0105)	(0.0115)	(0.0084)

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lag(Peer_Article):lowTA			0.0499^{***}
			(0.0127)
Observations	4,208	3,398	5,315
R^2	0.1598	0.1568	0.3914
Adjusted R^2	0.0037	-0.0086	0.2872
F Statistic	48.2025^{***}	35.2080^{***}	194.5385^{***}
	(df = 14; 3548)	(df = 15; 2840)	(df = 15; 4537)
Note:			*p<0.10 **p<0.05 ***p<0.01

Table 4. The regression analysis output. Table created by the authors using data from Compustat, Dagens Industri and Dagens Nyheter, main dataset of this study.

Our first regression analysis was meant to find whether tax-avoiding companies adjust their GAAP Effective Tax Rate when the media expose their tax strategies. The variable of most interest here is $Article_{i,t-1}$ as we expected that, in case there is any effect of the media announcements on *ETR*, it should appear no sooner than the next period. The coefficient related to this variable is rendered small – according to the regression, the existence of media announcement is expected to on average decrease the firm's *ETR* by 0.03 percentage points in the next year. The effect here is rendered in the unexpected and counterintuitive direction, however, the statistical significance can be in question. With a p-value of 0.02, it does not pass a 1% significance test, yet passes the 5% one. Having that in mind, we cannot ignore it and will provide a possible interpretation in the discussion section.

It is also worthy to test whether having a media tax announcement could have an effect on the focal firm's *ETR* during other years. If there is any effect, it is most likely to be around the time of the announcement, therefore, we also check if such announcement could have an effect during the same period, or the *period in prior.* While it may sound counterintuitive to expect a firm to adjust its *ETR* a year before the announcement comes out, such effect could be observed in case of poor quality, reactive journalism. In such cases, a firm may anticipate bad news coming out or know about the ongoing investigation and adjust even before the announcement comes out. From the regression results, we can see that there is no evidence to support such theory. The coefficient associated with the variable $Article_{i,t+1}$ is positive, however, having no statistical significance at all. The outcome of statistical insignificance is observed for

$Article_{it}$ as well, suggesting that there is no same period relationship between tax-avoiding firm's *ETR* and media announcement exposing such strategies.

As we have added a variety of control variables, the effect that those variables have on *ETR* varies in statistical significance. For example, the most statistically significant effects are associated with the profitability variable (*EBITDA*). It shows that more profitable firms tend to have on average higher Effective Tax Rates, keeping everything else constant. On the other hand, the effects associated with the size of the asset base (SIZE), changes in Revenue (*ChSALE*), Capital Expenditures (*CAPEX*) and Capital Structure (*LEVERAGE*) are statistically significant. In other words, change in any of those variables is not expected to render any effect on the firm's *ETR*, keeping everything else constant.

As a next step, we have modified our regression to include additional lag, as a hypothesis to see whether the effect that announcements have (if any) on *ETR* fades out with time. Since we have discovered that there is a minor negative effect in one period after the announcement, the modified regression adds robustness by checking whether the effect might be even more delayed (i.e. by 2 periods). The outcome from this regression shows that the coefficient associated with the second lag of *Article* variable has no statistical significance (p-value of 0.53), and the first lag of the same variable loses significance as well. Therefore, it is highly unlikely that the effect that media tax announcements may have on *ETR* is delayed. The summary of the regression output is presented in the table above.

4.4. Tax media announcements effect on peer firms

The purpose of the final regression was to answer our second research question, namely whether peer companies react by adjusting their *ETRs* when one of their peer group companies receives a media announcement exposing their tax avoidance. Here, we also had to deal with the fact that some of the peer group companies could already have a tax rate that is high (i.e. unlikely to engage in tax avoidance), thus expecting them to increase it even more is unworthy. For this reason, we have introduced a dummy variable *LowTA* (standing for "low tax avoidance")*,* to filter out the companies with high ETRs and who are unlikely to be engaged in aggressive tax strategies. The variable *LowTA* turns 1 if a company has above median *ETR*, and 0 otherwise. Therefore, in this regression the variables of most interest are $Peer\_Article_{t-1}$ and the

interaction term ($LowTA*Peer\_Article_{t-1}$), which turns 1 when at least one of the high *ETR* company's peers received a media tax announcement in the previous period. The coefficient associated with this interaction term is 0.05. The p-value associated with it is very high and passes the 1% significance test – we can reject the hypothesis that the actual effect is zero. After controlling for high *ETR* firms, we shall consider the opposite – how do the low *ETR* companies react to tax announcements about their peers. Here, we get a coefficient associated with $Peer\_Article_{t-1}$ as -0.04 and, again, a low p-value showing sufficient statistical significance. Note, that the coefficients associated with the 2 groups have a different sign – we will link this to theory in the discussion section. Lastly, a variable we included from the previous regressions – $Article_{t-1}$– loses any statistical significance it had. This shows that, while the companies would not adjust their *ETRs* when they receive media tax announcements about themselves, they do slightly adjust it when one of their peers receives such.

4.5.Limitations

There are several limitations to our data and analysis. First of all, endogeneity of data might be an issue. This mostly concerns the data of media tax coverage, however, applies to the numerical data as well. It might be that the tax news articles in the media are released only after a tax event, therefore, firms do not react to it because the news is already known. This could be the case if the newspapers do not have journalists working on the field and are only publishing articles about events that have already occurred.

Secondly, Omitted Variable Bias might be an issue for which we might not observe a significant effect of media on the Effective Tax Rate. It is difficult to account for every reason a firm might change its Tax Avoidance therefore OVB will probably occur to some degree. However, we control for firm and year fixed effects as well as include a range of controls to mitigate this issue.

Thirdly, there are some significant news announcement data losses due to the firm coding. As the data downloaded from Compustat, where the firms are coded by the special id called gvkey, we had to utilize this code to match up this dataset with the financial data to the one with news announcements data. However, we have not been able to obtain the gvkey for all firms that have had tax-related news announcements,

resulting in some news announcements data being dropped. Finally, the financial data is incomplete as well judging by the significant number of NA values in the data.

5. *Discussion*

In this research, we were set to find out the answers to 2 questions, namely:

Q1: How does the focal firm change its ETR after it receives media coverage about its tax avoidance?

Q2: How do peer group firms change their ETRs after the focal firm receives media coverage about its tax avoidance?

Even though we did not raise any strong hypotheses, the existing academic consensus was that firms generally do not stop their aggressive tax strategies once they are exposed by the media. In line with this, we expected similar results for the Swedish market. In the first regression analysis, that we employed as the main method to answer our first research question, we modelled whether media tax announcements about the focal firm can have any effect on its Effective Tax Rate in the same period, as well as one before and after. As mentioned in the section above, the results turned out to be surprising. Instead of uncovering that the exposed companies would "pay up" and increase their tax payments or have no reaction at all (which was the initial expectation), quite the contrary was found. Although to a limited extent, the analysis suggests that when companies are exposed in the media for tax avoidance, they marginally increase their tax avoidance even further (suggested by the negative effect on *ETR*). A possible explanation for this could be, as we would like to call it, the "changing hands" argument. As uncovered in the Gallemore et al. (2013) study, it is likely that after the tax avoidance exposure in the media the company's stock "changes hands", that is, the "ethical" investors exit while the "tax aggressiveness preferring" investors enter the stock. This is suggested by a few facts outlined in the previous literature. First, that the stock price has increased volatility after the media exposure (price going down and then recovering). Second, that there indeed exists those two investor groups (to the extent that it is possible to distinguish) – favoring tax avoidance and not (Hanlon, 2008; Drake 2019). Therefore, it is plausible that when the company is publicly uncovered to be tax aggressive, it reinforces this strategy to serve their investors' preference.

Another possible explanation for the abovementioned result has to do with "cost discovery". Prior to media exposure, a tax avoiding company has a probabilistic hypothesis of how the public attention could affect their business i.e. what are the costs of tax avoidance. Weighing it against the benefits and expecting a net positive effect, the company proceeds with its strategy. After the media exposes the tax avoidance, cost

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discovery happens – the company's cost-benefit analysis of tax avoidance becomes more precise, as they now know exactly what the effects of media tax exposure are on their business. As documented in the previous literature, those effects are usually low (Gallemore, 2013; Drake, 2019), therefore the company proceeds with aggressive tax management further decreasing their *ETR*.

Moreover, we had theorized that there may be some difference between Swedish and the USA markets due to differences in media quality or proactivity in journalism, yet from the results that does not come out as true. Like in the US, Swedish companies are mostly indifferent about the negative tax news that they receive. Therefore, in the realm of the influence the media has on corporate tax decisions, there are no substantial differences between the US and Sweden.

When it comes to our second research question, we were seeking to find out whether there are any peer effects in this domain, given that firms are "reactive" to competition across all business domains, accounting being no exception (Reppenhagen et al., 2010). The rationale for this is that the fact that one of the peer companies is being investigated for tax avoidance by the media and having their reputation at stake might be a "signal" to others in the peer group and make them adjust their *ETRs*. To answer this, we have modified the first regression model to include a dummy variable that captures whether there are any media tax announcements about the peer companies to a focal firm. The results obtained are slightly different from the prior - the effect of the media tax announcements about peer companies on the focal firm's *ETR* are small yet statistically significant. As an additional robustness check, we have introduced another dummy variable (*LowTA*) to distinguish the companies into 2 categories - those with already low tax rates (potentially, engaged in aggressive tax management), and those with higher tax rates. When the companies were split into 2 groups, we have found some of the results to be surprising. The coefficients associated with the peer announcements pointed to the different directions (i.e. positive and negative) for the 2 groups. That is, a peer group firm receiving a tax announcement might make the high taxes paying group pay even more, and low taxes paying group pay less. This may be reasoned from the perspective of the management style of these companies – aggressive versus conservative. The aggressive firms, knowing that one of their peers is engaged in some form of tax management, may decide to proceed that way too. That could be due to wanting to stay competitive or simply discovering the costs of public scrutiny by that

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example and deciding that the benefits outweigh the costs. The conservative firms, on the other hand, have their reasons to be conservative (for example, a fragile brand) and coming to know that one of their peers is investigated for tax avoidance may lead to a decision to avoid such risks and slightly increase their tax rate.

Indeed, most of our results are supporting the evidence presented in the US studies of a similar kind. Graham et al. (2013) have found that firms strongly consider reputational aspects ex ante when making decisions about whether or not to engage in any tax avoidance. Nonetheless, Gallemore et al. (2013) showed that those who proceed with aggressive tax management do not suffer any damage when exposed by the media ex post. This points to the direction of existing self-selection and "media immunity". As an extension to that, Chen et al. (2019) propose that following such media exposure, firms do not reduce their tax avoidance. We have found similar results for the Swedish market, suggesting that the Swedish media doesn't have a positive impact – firms would not reduce their tax avoidance when exposed by the media. Similar things can be said about tax avoidance and peer effects. According to Bird et al. (2018) research, there are clear peer effects when it comes to changes in *GAAP ETR* – when one of the peer group companies adjust their *ETR*, others follow. Since we have found that the focal firms do slightly adjust their *ETR* following the media tax announcement about themselves, so do peer companies when one of their peers receives such news.

The results could also suggest a characteristic of the Swedish newspapers. Perhaps they serve a mere function of informing the public rather than acting a proactive investigative journalism role. This would mean that the information about illegal tax activity comes only from whistleblowers from within the firm (most likely to happen only if motivated by monetary interest, as per Dyck et al (2010)) or from tax authorities making the case public. Furthering on the same theory, the news articles published would not influence the firms in any way as the event would have happened earlier and the firms would have reacted earlier, not necessarily a year earlier as we indicated. Furthermore, the set of tax events covered by the media is likely merely a subset of all the tax events that actually happened. A conclusion would be that the role of the Swedish media, specifically tax media, is more of an informer, rather than an inducer of positive change or an investigator.

6. Conclusion

We aimed to analyse the relationship between tax media announcements and the firm tax strategy in the Swedish market – whether firms feel threatened or react to news concerning their or their industry peer tax strategies. To guide our analysis, we have put forward two research questions: the first analysing whether/how the focal firm itself is going to change its tax strategy after a media tax article/s was published about it; and the second questioning whether/how peers will change their tax strategy following a media tax article about their industry peer's tax strategy. The underlying assumption behind the second question is that peers have similar tax strategies.

To perform the analysis we have used two types of data – financial metrics on Swedish firms over the last twenty years and the textual data on news announcements which was converted to a numerical one to perform the quantitative analysis. The merged data has a panel data format and we utilize the longitudinal research design. We perform two types of regression analyses – one regressing the *ETR* of a firm on only a metric of its own tax new announcements and another regressing on also the peer tax news.

In conclusion, we do not find a straightforward relationship between the firms' tax strategies and media tax news, neither of their own nor of their peers. There is even some evidence suggesting that the focal firm increases their tax avoidance following the media exposure. We argue it could be due to the Swedish newspapers serving a role of an informer, rather than an investigator; or on another hand, the firms not bothering to change their aggressive tax strategy as they are unlikely to suffer any damage if they continue to do so even after the tax news announcement.

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8. Appendix

Appendix 1

Fama-French 12 Industry classification

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1 NoDur   Consumer Nondurables -- Food, Tobacco, Textiles, Apparel, Leather, Toys

2 Durbl   Consumer Durables -- Cars, TVs, Furniture, Household Appliances

3 Manuf   Manufacturing -- Machinery, Trucks, Planes, Off Furn, Paper, Com Printing

4 Enrgy   Oil, Gas, and Coal Extraction and Products

5 Chems   Chemicals and Allied Products

6 BusEq   Business Equipment -- Computers, Software, and Electronic Equipment

7 Telcm   Telephone and Television Transmission

8 Utils   Utilities

9 Shops   Wholesale, Retail, and Some Services (Laundries, Repair Shops)

10 Hlth   Healthcare, Medical Equipment, and Drugs

11 Money   Finance

Note. Source: French, K. R. (n.d.)

Appendix 2

Variable descriptions table

Variable definitions	
Variable	**Definition**
ETR	Calculated as a ratio between total income taxes paid and pretax profit, only including values that are between 0 and 1
Article	A tax coverage of the focal firm indicator variable equal to 1 the year that the firm has had media tax coverage, and 0 otherwise.
Peer_Article	A tax coverage of the peer firm indicator, equal to 1 the year that any of the firm's industry peers had media tax coverage, and 0 otherwise.
lowTA	A variable that accounts for Low Tax Avoidance firms (= high ETR paying firms), it is set to equal if the firm's ETR is higher than the medium, and otherwise
PPERATIO	Net property, plant, and equipment scaled by lagged total assets
LEVERAGE	The ratio meausred as total debt scaled by lagged total assets
ROA	Return On Assets, measured as operating income scaled by lagged total assets
RD	Research and Development expense scaled by total sales
SGA	Selling, General and Administrative expenses
EBITDA	Earnings before tax, depreciation and amortization
ChSALE	A percentage change in Sales
INTANGRATIO	Total intangible assets divided by lagged total assets
CASH	Cash and Cash equivalents scaled by total assets
CAPEX	Capital Expenditures scaled by property plant and equipment
PT_ROE	Pre-tax Return on Equity, measured as pretax profit scaled by total equity
SIZE	A variable meant to account for company size, calculated as a logarythm of total assets
BTD	Book-Tax Difference, measured as the difference between book income, less minority interest, and an estimate of taxable income.

Appendix 3

Correlation table

	x	y	estimate	statistic	p.value	parameter	conf.low	conf.high
ETR		BTD	0,143	12,042	0,000	6913	0,120	0,166
ETR		EBITDA	0,196	16,610	0,000	6913	0,173	0,218
ETR		SGA	-0,081	-6,734	0,000	6913	-0,104	-0,057
ETR		CAPEX	0,088	7,325	0,000	6913	0,064	0,111
ETR		ChSALE	0,032	2,657	0,008	6913	0,008	0,055
ETR		LEVERAGE	0,119	9,960	0,000	6913	0,096	0,142
ETR		CASH	-0,056	-4,645	0,000	6913	-0,079	-0,032
ETR		SIZE	0,064	5,356	0,000	6909	0,041	0,088
ETR		INTANGRATIO	0,009	0,715	0,475	6913	-0,015	0,032
ETR		PPE_RATIO	0,103	8,624	0,000	6913	0,080	0,126
ETR		PT_ROE	0,067	5,547	0,000	6913	0,043	0,090
ETR		Article	0,028	2,319	0,020	6913	0,004	0,051
ETR		Peer_Article	0,027	2,249	0,025	6913	0,003	0,051

ETR	lowTA	0,694	80,154	0,000	6913	0,682	0,706
BTD	EBITDA	-0,236	-20,184	0,000	6913	-0,258	-0,214
BTD	SGA	0,165	13,931	0,000	6913	0,142	0,188
BTD	CAPEX	-0,039	-3,238	0,001	6913	-0,062	-0,015
BTD	ChSALE	-0,067	-5,602	0,000	6913	-0,091	-0,044
BTD	LEVERAGE	0,028	2,318	0,020	6913	0,004	0,051
BTD	CASH	0,021	1,782	0,075	6913	-0,002	0,045
BTD	SIZE	-0,200	-17,006	0,000	6909	-0,223	-0,178
BTD	INTANGRATIO	0,112	9,368	0,000	6913	0,089	0,135
BTD	PPE_RATIO	-0,043	-3,579	0,000	6913	-0,067	-0,019
BTD	PT_ROE	-0,154	-12,977	0,000	6913	-0,177	-0,131
BTD	Article	-0,019	-1,588	0,112	6913	-0,043	0,004
BTD	Peer_Article	0,059	4,942	0,000	6913	0,036	0,083
BTD	lowTA	0,176	14,845	0,000	6913	0,153	0,199
EBITDA	SGA	-0,189	-15,973	0,000	6913	-0,211	-0,166
EBITDA	CAPEX	0,125	10,515	0,000	6913	0,102	0,149
EBITDA	ChSALE	0,240	20,560	0,000	6913	0,218	0,262
EBITDA	LEVERAGE	-0,054	-4,482	0,000	6913	-0,077	-0,030
EBITDA	CASH	0,097	8,116	0,000	6913	0,074	0,120
EBITDA	SIZE	0,112	9,384	0,000	6909	0,089	0,135
EBITDA	INTANGRATIO	-0,025	-2,059	0,040	6913	-0,048	-0,001
EBITDA	PPE_RATIO	0,105	8,754	0,000	6913	0,081	0,128
EBITDA	PT_ROE	0,362	32,308	0,000	6913	0,342	0,383
EBITDA	Article	0,006	0,466	0,641	6913	-0,018	0,029
EBITDA	Peer_Article	-0,002	-0,187	0,851	6913	-0,026	0,021
EBITDA	lowTA	0,222	18,972	0,000	6913	0,200	0,245
SGA	CAPEX	-0,095	-7,976	0,000	6913	-0,119	-0,072
SGA	ChSALE	-0,022	-1,848	0,065	6913	-0,046	0,001
SGA	LEVERAGE	-0,163	-13,771	0,000	6913	-0,186	-0,140
SGA	CASH	0,047	3,925	0,000	6913	0,024	0,071
SGA	SIZE	-0,352	-31,291	0,000	6909	-0,373	-0,331
SGA	INTANGRATIO	0,161	13,546	0,000	6913	0,138	0,184
SGA	PPE_RATIO	-0,064	-5,358	0,000	6913	-0,088	-0,041
SGA	PT_ROE	-0,139	-11,641	0,000	6913	-0,162	-0,115
SGA	Article	-0,049	-4,109	0,000	6913	-0,073	-0,026
SGA	Peer_Article	-0,054	-4,503	0,000	6913	-0,078	-0,031

SGA	lowTA	-0,077	-6,458	0,000	6913	-0,101	-0,054
CAPEX	ChSALE	0,022	1,851	0,064	6913	-0,001	0,046
CAPEX	LEVERAGE	0,062	5,147	0,000	6913	0,038	0,085
CAPEX	CASH	-0,107	-8,926	0,000	6913	-0,130	-0,083
CAPEX	SIZE	0,111	9,274	0,000	6909	0,088	0,134
CAPEX	INTANGRATIO	-0,245	-21,012	0,000	6913	-0,267	-0,223
CAPEX	PPE_RATIO	0,548	54,417	0,000	6913	0,531	0,564
CAPEX	PT_ROE	0,028	2,328	0,020	6913	0,004	0,052
CAPEX	Article	0,028	2,366	0,018	6913	0,005	0,052
CAPEX	Peer_Article	-0,040	-3,302	0,001	6913	-0,063	-0,016
CAPEX	lowTA	0,106	8,895	0,000	6913	0,083	0,130
ChSALE	LEVERAGE	-0,012	-0,969	0,333	6913	-0,035	0,012
ChSALE	CASH	0,051	4,273	0,000	6913	0,028	0,075
ChSALE	SIZE	-0,080	-6,701	0,000	6909	-0,104	-0,057
ChSALE	INTANGRATIO	0,029	2,390	0,017	6913	0,005	0,052
ChSALE	PPE_RATIO	-0,066	-5,472	0,000	6913	-0,089	-0,042
ChSALE	PT_ROE	0,064	5,309	0,000	6913	0,040	0,087
ChSALE	Article	-0,016	-1,360	0,174	6913	-0,040	0,007
ChSALE	Peer_Article	0,016	1,309	0,191	6913	-0,008	0,039
ChSALE	lowTA	0,024	1,959	0,050	6913	0,000	0,047
LEVERAGE	CASH	-0,317	-27,757	0,000	6913	-0,338	-0,295
LEVERAGE	SIZE	0,239	20,428	0,000	6909	0,216	0,261
LEVERAGE	INTANGRATIO	-0,005	-0,456	0,648	6913	-0,029	0,018
LEVERAGE	PPE_RATIO	0,108	9,049	0,000	6913	0,085	0,131
LEVERAGE	PT_ROE	0,088	7,351	0,000	6913	0,065	0,111
LEVERAGE	Article	0,034	2,794	0,005	6913	0,010	0,057
LEVERAGE	Peer_Article	-0,061	-5,068	0,000	6913	-0,084	-0,037
LEVERAGE	lowTA	0,084	6,988	0,000	6913	0,060	0,107
CASH	SIZE	-0,239	-20,500	0,000	6909	-0,262	-0,217
CASH	INTANGRATIO	-0,195	-16,495	0,000	6913	-0,217	-0,172
CASH	PPE_RATIO	-0,243	-20,840	0,000	6913	-0,265	-0,221
CASH	PT_ROE	0,036	3,032	0,002	6913	0,013	0,060
CASH	Article	-0,016	-1,294	0,196	6913	-0,039	0,008
CASH	Peer_Article	0,092	7,660	0,000	6913	0,068	0,115
CASH	lowTA	-0,032	-2,642	0,008	6913	-0,055	-0,008
SIZE	INTANGRATIO	0,041	3,411	0,001	6909	0,017	0,065

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SIZE	PPE_RATIO	0,221	18,838	0,000	6909	0,198	0,243
SIZE	PT_ROE	0,098	8,203	0,000	6909	0,075	0,122
SIZE	Article	0,169	14,256	0,000	6909	0,146	0,192
SIZE	Peer_Article	-0,043	-3,597	0,000	6909	-0,067	-0,020
SIZE	lowTA	0,055	4,585	0,000	6909	0,032	0,079
INTANGRATIO	PPE_RATIO	-0,243	-20,857	0,000	6913	-0,265	-0,221
INTANGRATIO	PT_ROE	-0,035	-2,877	0,004	6913	-0,058	-0,011
INTANGRATIO	Article	-0,018	-1,464	0,143	6913	-0,041	0,006
INTANGRATIO	Peer_Article	0,027	2,247	0,025	6913	0,003	0,051
INTANGRATIO	lowTA	-0,024	-1,982	0,047	6913	-0,047	0,000
PPE_RATIO	PT_ROE	0,022	1,869	0,062	6913	-0,001	0,046
PPE_RATIO	Article	0,029	2,372	0,018	6913	0,005	0,052
PPE_RATIO	Peer_Article	-0,071	-5,933	0,000	6913	-0,095	-0,048
PPE_RATIO	lowTA	0,117	9,831	0,000	6913	0,094	0,141
PT_ROE	Article	0,004	0,341	0,733	6913	-0,019	0,028
PT_ROE	Peer_Article	-0,013	-1,122	0,262	6913	-0,037	0,010
PT_ROE	lowTA	0,058	4,795	0,000	6913	0,034	0,081
Article	Peer_Article	0,069	5,763	0,000	6913	0,046	0,093
Article	lowTA	0,042	3,525	0,000	6913	0,019	0,066
Peer_Article	lowTA	0,030	2,510	0,012	6913	0,007	0,054