THE INCREMENTAL EFFECT OF TAX SHAMING ON SUBSEQUENT TAX AVOIDANCE.

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Preface

This research report is a culmination of my master's thesis and forms part of my MSc International Business Taxation Economics at Tilburg University.

I find how firms react to criticism over their tax positions very interesting. Some firms claim 'we are not doing anything illegal' while others point out that 'everyone else is doing it'. One CEO went so far as to claim that his bank was being 'held to higher standards than the church'. Nevertheless, several firms accepted wrong doing. These committed to 'avoid less' or simply 'pay more taxes'. For example, Barclays bank initially denied any illegality, then accepted that they can improve their attitude to tax and eventually closed its department committed to tax avoidance. The desire to find out why Barclays Bank PLC accepted to curtail its tax avoidance activities while AstraZeneca PLC and others chose not to address the matter at all led me to this thesis topic.

I am grateful for the comments, guidance and criticisms of my thesis supervisor Jessica Warren MSc and co-supervisor Ave-Geidi Jallai LL.M. Their contribution was invaluable throughout the process of this thesis. Additionally special thanks go to my family and friends for their unweathering support and empathy during the entirety of my study.

Enjoy reading,

Saul Musoke Kibuka MSc.

SUMMARY

It is often claimed that some firms do not contribute enough taxes relative to how much profit they generate, such firms have been publically disclosed and criticized for all to see. With some firms being criticized more than others for their tax issues, this study posits that such firms will eventually pay more in taxes than those that get lesser criticism. The sensitivity of firms to public pressure is a product of their engagement with the public, as such firms that do not engage the public are predicted to react less to public pressures than those that do. As such this study expects public condemnation for tax practices to have a greater impact on retail firms which engage the general public than the non-retail firms which only engage other firms.

This study employs a sample of 98 of the largest 100 firms on the London Stock Exchange to study their reaction to public condemnation concerning tax practices considered unfair over a period of 7 years. Results indicate that firms pay significantly higher taxes in the year that they are publicly condemned. These higher taxes paid are neither sustained nor recognized in the income statements of the firms as tax expenses. As such the reduction in tax avoidance is sensitive to how such avoidance is measure. Additionally, only a negligible and non-statistically robust difference is found in how retail and non-retail firms react to public pressure concerning their taxes. This difference is sensitive to how the criticism is quantified.

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1. Introduction

Public condemnation is a timeless manner of discouraging behavior that is deemed socially undesirable. When individuals and organizations engage in activities contra to the interests of the societies they belong to, naming and shaming is one of the practices that societies use to signify disapproval. Over the years, this disapproval has been targeted towards tax practices that are believed to be against the spirit of the common good. This naming and shaming concerning tax practices has come to be known as tax shaming. Blank (2009 pp.539) defines tax shaming as the public naming and condemnation of tax offenders or perceived offenders. Social pressure groups and some governments are increasingly using tax shaming to deter abuse of tax systems by firms by virtue of its ability to damage a company's reputation and public appeal (Austin and Wilson, 2017 pp.67).

For most profit oriented firms, the issue of taxation is not trivial. Income taxes significantly reduce the net amount of resources available to firms and if not carefully managed can wreak havoc on the cash flows, returns and competitive positions of the firms as shown in Coen (1968 pp.200), Graham, Hanlon, Shevlin, and Shroff (2014 pp.991) and McKenzie and Sakho (2010 pp.24) respectively. Tax avoidance is an efficient way of managing a firm's tax positions and increasing the probability of a positive outcome as illustrated in Cai and Liu (2009 pp.765). Firms that are efficient at reducing taxes however currently face a new dilemma; tax avoidance has a tendency to redistribute tax burdens from the shareholders to the general society in which the firm functions (Sikka and Willmott, 2010 pp.349). It essentially makes the firm a free rider benefitting from the tax contributions of non-avoiding parties while not sufficiently fulfilling its own obligations to contribute. Because of this effect, tax avoidance is perceived negatively and firms associated with it risk suffering reputational and consequently financial damage as argued in Hanlon and Slemrod, (2009 pp.127). Nevertheless, it is the reality that firms avoid taxes and their names and reputations get tarnished for such tax avoidance. The organizations and parties that fuel this naming and shaming of such firms do so with the aim of conditioning the firms to pay more taxes and thus engage in less tax avoidance. It is thus important to understand how such tax shaming of firms maps into the firm's decisions to engage in or disengage from tax avoidance after they have been shamed.

This study examines the impact of media coverage conveying tax shaming information on the subsequent tax contribution of firms when they are accused of avoiding taxes. It seeks to examine whether firm tax avoidance behavior is sensitive to the amount of media coverage dedicated to shaming the firm for its tax avoidance behavior. Specifically:

How does tax shaming affect subsequent tax avoidance?

To be able to answer this, research question, several sub questions have to be addressed. First this study puts in to context what tax avoidance is. Using different streams of literature, the meaning of tax avoidance is demarcated to suit the context of this study. This is achieved by answering the following research sub question:

What is tax avoidance?

After defining tax avoidance, it is important to place it in society. The second sub question addresses the how tax avoidance by firms interacts with the rest of the public. Specifically:

Why is there concern among the public about tax avoidance?

After establishing the place of tax avoidance in society, this study uses prior literature to define tax shaming by answering the research sub question:

What is tax shaming?

Having defined both tax avoidance shaming, this study next considers how tax shaming affects tax avoidance. To study the effect of tax shaming on effective tax rates, a quantitative multivariate ex-post facto design similar to that of Dyreng, Hanlon and Maydew (2010 pp.1170) is used. As tax avoidance behavior has been extensively discussed in the media in the past decade, it is possible to observe which firms and when such firms have come up for criticism concerning their tax behavior. With the possibility to infer and measure tax avoidance of firms through their effective tax rates, this study uses a series of quantitative measures to test for a causal relationship between tax shaming and subsequent tax avoidance. This enables this research to answer the research sub question of:

Does an increase in tax shaming result in a decrease in tax avoidance?

Finally, this study realizes that different types of firms generally have different concerns regarding what the public thinks of them. Those that depend on public perceptions are generally warry of their reputations while those that do not have to face the general public are less exposed to reputational risks. Consequently, when firms are shamed, this difference in attitude towards reputation is expected to surface in how these firms react to the shaming. Dyck, Volchkova and Zigales (2008 pp.1114) show that end consumer-selling firms are more sensitive to reputational damage that emerges from shaming than firms that do not engage in retail. As such this study examines the prospect that such differential sensitivity extends to how firms deal with tax shaming by seeking answers to the research sub question:

Is there a difference in how retail and non-retail firms' tax behavior responds to tax shaming?

Multivariate Ordinary Least Squares (OLS) regressions are used to test for the effect of shaming on the tax avoidance behavior. With the prediction that shamed firms will subsequently change their behavior as argued in Dyck et al. (2008 pp.1129), the regression models are used to estimate a firm's tax avoidance using the quantity of tax shaming it is subject to in a given year. This study uses three versions of the effective tax rate with differing definitions to proxy for tax avoidance. As explained in Section 3 these are: the GAAP Effective Tax Rate derived from Generally Accepted Accounting Principles, the Cash Effective Tax Rate reflecting the cash movements between firms and tax authorities and the three year Cash Effective Tax Rate. For the observation and quantification of tax shaming; press articles, their volume in words and reach of the publishing outlet measured using a readership rank dummy are used as proxies.

As reported in Section 4 of this study, results from the multivariate analysis indicate that firms being shamed respond by increasing the amount of tax remitted to tax authorities. This indication of reduction in tax avoidance is however sensitive to how tax avoidance is measured. When tax avoidance is measured as the GAAP effective tax rate or the long term effective tax rate, no such reduction in tax avoidance is observable. A plausible explanation for this observation is that upon shaming, firms pay taxes beyond what is legally obligated which is offset by lower payments in the consequential year. This rationalization explains why no increase in tax payments is observed with long term measure. It also explains why GAAP measures of tax avoidance do not capture the change in behavior.

Marginally significant evidence is found supporting the notion that retail firms which are generally expected to suffer more from shaming react any differently to the tax shaming from non-retail firms. Using the long term construct of tax avoidance, it is observed that retail firms pay more taxes subsequent to tax shaming than their non-retail counterparts. This differential sensitivity is however not robust. It only manifests when tax shaming is constructed as the information content contained in the tax shaming and tax avoidance is measured in the long term.

This study is subject to the following caveats; tax avoidance is defined broadly as any actions that lawfully reduce the income tax liability of a firm without proportionally reducing its income. No effort is made to determine or analyze the motives behind such actions as such motives are unobservable *ex post*. Therefore in all cases where tax avoidance is cited in this study, the intention is to convey a lawful reduction of the effective tax rate of a firm. As a consequence, some effects observed may not be manifestations of tax avoidance but some other micro economic phenomena. The fact that tax avoidance is not directly publicly observable makes it impossible to distinguish between firms that avoid taxes and those that simply yield low effective tax rates due to some other unobserved firm characteristic. A second caveat pertains to measurement of tax shaming: in measuring tax shaming, this study is restricts its reach to only written media in English published by establishments with in the United Kingdom. Focusing on only articles

published by media outlets means this study ignores the effects of other media forms such as social media, word of mouth, and audio-visual media that is not included in the Factiva Data Base employed by this study. The decision to only study written media is made on basis of data unavailability and time constraints. It thus does not preclude other avenues of tax shaming from existing or affecting the shamed firm's tax rates. The final caveat concerns sample selection; this study uses a non-random sample comprised of the largest 100 firms by market capitalization on the London Stock Exchange as of January 2011. While these firms provide the best media data due to their size attracting media attention from the media and other organizations, they are considerably bigger than the average firm. Prudence and due care must thus be exercised when the results of this study are fitted to firms dissimilar to those in the sample used.

Most of current the literature such as Hope, MA and Thomas (2013 pp.190), Lee (2015 pp.1) and Gallemore, Maydew and Thornock (2014 pp.1103) to name a few, addressing public pressure on tax avoidance focuses the act of information disclosure concerning involvement. To the best knowledge of the author of this research, no study before this addresses the incremental effect (or absence of one) of the disclosure on tax avoidance. Thus, for academia, this research serves as a baseline for quantitative analysis of tax behavior of multinational firms and their response to public pressure concerning their tax positions. It also presents an opportunity for future researchers to expound on the subject of reputation costs with a particular interest in tax avoidance. Dyck et al. (2008 pp.1128) show that shaming of companies works in specific scenarios and for specific shaming topics. This study extends their research by probing how this relationship holds when the subject of shaming is tax avoidance and multinational corporations the object. For societal organizations fighting tax avoidance using tax shaming such as Action Aid, Tax Justice Network, some governments, the Organization for Economic Cooperation and Development (OECD) and others; this study presents an opportunity to evaluate the effectiveness of their work. Besides assessment of the effect of their efforts, this study provides anti-tax avoidance organizations with innovative and comprehensive regressions that can be reverse engineered and fitted upon tax avoiding companies to predict how such firms are to react to tax shaming before resources can be committed to shaming such firms.

Firms that end up in the unfortunate position of being shamed for tax avoidance will in particular find this study useful. By evaluating what their peers have done when subjected to tax shaming, the new candidates for shaming can structure their response to shaming in the most efficient way. That is to say, if a comparable firm decided to completely ignore the shaming and kept on with its initial levels of tax avoidance without any known consequences, the firm currently subject to shaming can reasonably expect the same results if it receives a similar amount of public exposure and reacts similarly.

The rest of this study is structured as follows: Section 2 analyses the theoretical background or tax avoidance and tax shaming, reviews prior literature and develops the hypothesis; Section 3 defines the

design of this research detailing the sample and the methodology; Section 4 presents the results and discusses the results from the tests: Section 5 concludes this study, interprets the results, expounds on the limitation and advances areas of interest for further studies.

2. Literature review

This section discusses prior literature in relation to taxation, tax avoidance, shaming, reputation costs and reactions to such circumstances. Further, using prior literature, a theoretical framework is developed and used to rationalize the predictions of how tax shaming and tax avoidance interact. The section concludes with the formal statement of the hypothesizes.

2.1 Taxation and Tax Avoidance

The state generally has control over firms in its jurisdiction regardless of whether it contributes to their capital or not. This form of control enables the state to institute a claim on the wealth (profits) generated by the firms (von Stein, 1958 pp.29). This claim is settled by firms through the distribution of wealth in the form of taxes to the state. The claim of the state on firm profits is, as fronted by Janeba (1995 pp.213), established in law as Corporate Income Tax (CIT) and so is the proportion of generated wealth attributable to the state (hereafter Corporate Tax Rate). Avi-Yonah, (2006 pp.3) presents three justifications for institution of such taxes, one being a government need to condition corporate behavior, another being as a channel to promote public policy and lastly as a source of revenue for financing public goods. Among all these motives, the revenue motive is always overriding. Moreover Avi-Yonah, (2006 pp.3) asserts that, before the other two motives can be considered, such a tax must be able to raise as much revenue and as efficiently as possible. As such, this study shall only consider the revenue motive of corporate taxation and how this motive interacts with tax payers. Thus, whenever tax avoidance is addressed in this study, only the revenue generation or non-generation thereof is of concern. The policy and behavioral conditioning motives of taxation shall thus not be addressed in this study.

As economic theory posits, rational economic players are constantly in a race to maximize private wealth (Jensen, 2001 pp.229). While the state intends to finance its functions by taxing company profits (Vogel, 1988 pp.38), company shareholders intend to maximize their wealth by generating and retaining for personal benefit as much of the generated profit as possible (Gordon and Hines Jr, 2002 pp.1970).

In the non-distribution of wealth that the state would otherwise be entitled to, two legal constructs arise: one is tax avoidance and the other tax evasion. These two empirically elusive constructs are held culpable by the Her Majesty Revenue and Customs (HMRC) to cost approximately 13% (£ 6.9 Billion) of would-be tax revenue (Wahab and Holland, 2012 pp.111). The distinguishing aspect between tax avoidance and tax evasion is as noted in Kirchler, Schneider and Maciejovsky (2003 pp.536) and Alm (1988 pp.31) legality. While tax evasion is illegal non-distribution of owed taxes to the state, tax avoidance is the use or abuse of avenues provided by the law to reduce ones tax liability. For all other analysis in this study, only tax avoidance is discussed. Tax evasion is thus out of the scope of this research.

In extant literature, several definitions of tax avoidance are advocated by different scholars. Kim, Li and Zhang (2011 pp.641) define tax avoidance as the engagement in value-maximizing activities that redistribute wealth from the public to the firm's shareholders. Consistently, Freedman (2004 pp.336) broadly defines it as any arrangements that diminish and/ or extend a tax liability. She qualifies her definition to only include such arrangements that are not illegal. Alternatively, tax avoidance has been defined by Prebble and Prebble (2010 pp.693) as '*contriving transactions and structures that reduce tax in ways that are contrary to the policy or spirit of legislation*'. In contemporary literature, a distinction is made between the varying magnitudes and forms of tax avoidance. An example of such a distinction is found in Hanlon and Heitzman (2010 pp.137) who place tax avoidance on a continuum starting with acceptable tax planning such as municipal bonds and ending in what they consider abusive practices such as non-compliance, sheltering and ultimately evasion. While all these definitions uniquely capture an aspect of fiscal non distribution, they all acknowledge that for tax avoidance to exist, actions need to be taken to reduce a tax burden with which such a reduction would not be achieved. Thus, for all purposes in this study, the broadest definition is taken. That is the definition of Freedman (2004 pp.336) who defines tax avoidance as *'all arrangements to reduce, eliminate or defer a tax liability that are not illegal'*

2.2 Tax Avoidance and the State

While tax avoidance helps firms lower their costs and achieve positive cash flow benefits through tax liability postponement, it is argued by Sikka and Willmott (2013 pp.416) that these benefits are at the expense of the society in which such firms operate. On one hand, taxation avoidance enables firms better achieve their objectives while on the other hand it impedes the state's ability to amass funds necessary to finance its functions (Gangl, Torgler, Kirchler and Hofmann, 2014 pp.378). To raise such funds, states enact and enforce laws and regulations which are often in direct contrast to the motives of the firms seeking to maximize and retain wealth.

When firms avoid taxes, the funds available to governments are reduced. Since governments do not adjust their budgets to account for tax avoidance, the budget gap between the pre-avoidance anticipated revenue and post-avoidance achieved revenue is carried by other tax payers. Gravelle, (2009 pp.728) estimates that the US federal government loses 60 billion dollars annually in would be tax revenue to corporations shifting their profits to other countries as a form of tax avoidance. Fuest and Riedel, (2009 pp.3) puts the revenue loss of developing countries to corporate tax avoidance at between 35 and 160 billion dollars annually. When such amounts of would be tax revenue are avoided, the burden to raise such revenue shifts to the non-tax avoiding members of society. Tax avoidance thus redistributes the tax burden from the tax avoiding

firm to the other tax payers. Because of this disproportionate redistribution of the tax liability, the public generally views tax avoidance by corporations negatively (Fisher, 2014 pp.338).

2.3 Tax Shaming

After employing a multitude of measures against tax avoidance mostly in vein, governments, Non-Governmental Organizations (NGOs) and the general public has in recent years resorted to the old age punishment of naming and shaming (Blank, 2009 pp.542). Brainthwaite, (1989 pp.100*)* defines shaming to refer to *'all social means of expressing dissapproval with the intention of invoking remorse in the person being shamed and/or condemnation by others who become aware of the shaming'*. This definition for shaming remains relevant for this study with the only adjustment being the '*person*' defined as multinational corporations (MNCs).

In what has come to be known as tax shaming, interested parties publicly name and criticize entities that are believed to have abandoned their duty to society to contribute their share of taxes to the public good (Blank, 2009 pp.542). Over the past decade, the public aided by NGOs and media institutions has embarked on a task to shame multinational corporations that are suspected of not paying their fair share in taxes to the states that they operate in. This has been fueled by the unpopularity of tax avoidance among the general public who seem to believe that insufficient public funding especially in developing countries is caused by multinational corporations avoiding taxes (Sikka and Willmott, 2013 pp.419).

Lanis and Richardson, (2012 pp.90) contend that the redistribution of the tax burden by tax avoidance creates hostility and thus reputational damage for the tax avoiding firm. To further the arguments of this research, this study assumes that the stakeholders of a firm are at least marginally conscious of the effects of tax avoidance. As such they are aware that tax avoidance merely shifts the tax burden from the avoiding firms to its stakeholders. This assumption explains the hostility that Lanis and Richardson (2012 pp.90) observe towards tax avoiding firms. How a firm's stakeholders firm chose to express this hostility is manifested in their consequent transactions with the tax avoiding firm.

For the tax shamed firm, tax shaming poses a risk of negative market reactions from other market participants. This new dimension of risk for shamed firms has been documented as negative stock returns for shamed firms as around disclosure of their tax affairs. Hanlon and Slemrod (2009 pp.127) and Desai and Dharmapala (2006 pp.152) all embrace the premise that shaming a firm for its tax attitude brings external parties to question if the firm has the same disregard for them as it does for taxes. Watson (2015 pp.2) argues that when investors become aware of such scenarios they can react by selling or refrain from buying the firm's securities. This reasoning is consistent with the findings of Hanlon and Slemrod (2009

pp.127) that stock prices fall after companies are accused of tax avoidance. It also furthers this studies earlier stance that tax avoidance may be viewed as an abusive tool by the firm management to further their own interests at the expense of stakeholders

Besides the perceptions of shareholders, creditors suppliers and such, tax shaming fundamentally affects how consumers perceive a firm and its products. When firms are shamed for tax avoidance, the risk of reputation damage increases tremendously. Gotsi and Wilson, (2001 pp.27) define reputation as '*stakeholder's overall evaluation of a company over time*'. They contend that the a firm's reputation is a function of the stakeholders direct involvement with the company and can be conditioned by information about the firms character relative to its peers. It can thus be deduced from this definition that tax shaming will provide stakeholders with information capable of affecting a firm's reputation. Because tax avoidance is viewed negatively among the public, such an effect is bound to be negative (Mulligan and Oats, 2009 pp.690).

Several companies including ABC Corp (Google), Amazon, Apple Inc., McDonald's, SABMiller, Starbucks, Thomas Cook, Vodafone and others, have been severely criticized for maintaining low effective tax rates that were construed to be a result of tax avoidance. Among all the public uproar, tendencies to protest against such companies have been rampant with consumers encouraged to boycott the products of tax dodging companies. The Guardian (2017), claimed that a survey in the United Kingdom revealed 25% of the participants were boycotting a company's products due to tax avoidance while 43% were actively considering boycotting products for similar reasons. These boycotts are one of many manifestations of the reputational costs firms face when they are shamed for tax avoidance (Gallemore et al., 2014 pp.1104).

Gallemore et al. (2014 pp.1104) note that reputational costs are not only in relation to consumers but also suppliers, tax authorities, creditors, shareholders and such. Importantly, tax authorities are theorized to adjust their demands for information from firms that have already been exposed by other parties for noncompliance. This increased scrutiny from tax administrations is bound to lead to higher taxation of the firm as argued by the proponents of the political cost hypothesis (Zimmerman, 1983 pp.119).

2.4 Tax Shaming and Tax Avoidance

When firms are accused of impropriety dully criticized for it, the expectation as argued by Karpoff and Lott (1993 pp.761) is that they will stop such impropriety. In light of tax shaming, this study should thus expect tax shaming to be negatively correlated with corresponding tax avoidance the alternative to stopping the avoidance is continuing to endure the shame and related reputation costs or otherwise continue and conceal the avoidance at a higher cost.

Gallemore et al.'s (2014 pp.1105) study reputation damage caused by tax avoidance revelations, they find no evidence to support their premise that on aggregate firms avoiding taxes face reputational costs. One possible explanation for Gallemore et al.'s (2014 pp.1105) lack of conclusive results is aggregation of measurement. They employ a categorical variable for disclosure of tax avoidance which the author of this study believes grossly aggregates the reputational risk compounded in the amount of exposure, the information content of such exposure and the reach of such exposure. When proxies for reputation risk are disaggregated as in Zeng (2016 pp.9), tests indicate that firms pay more in taxes to enhance their reputations. Zeng (2016 pp.9) argues that firms perceive payment of taxation as a way to convey themselves as reputable. As such, this study takes the view that Zeng's (2016 pp.9) results imply paying more taxes has a positive effect on a firm's reputation. Intuitively, firms with higher reputational damage will pay higher taxes if the reputational damage concerns tax avoidance..

When Dyreng, Hoopes and Wilde (2014 pp.151) study the impact of public pressure on tax behavior, they find that reputational concerns force firms to curtail their tax avoidance. While their study and this are comparable, theirs' is mainly concerned with the disclosure of the fact than with the attributes of such disclosure. They do however provide a basis for expecting that tax shamed firms incur high enough reputational costs to offset the benefits of further avoidance. This reaffirms the hypothesis of Karpoff and Lott (1993 pp.761) that when firms are criticized for impropriety, they weigh the benefits of continuing with the tax avoidance against the reputation costs suffered because of the avoidance. As such there exists a bright line for each firm at which the costs of reputation caused by tax shaming outweigh the benefits of carrying on the tax avoidance. Whenever that line is crossed, firms will pay more in taxes to repair their reputation and prevent it from further damage as demonstrated by Zeng (2016 pp.9) in their study about tax avoidance and reputation. Where this line is for each firm is a function of the reputation damage caused which in turn is a function of the level of shaming that the firm receives.

From all the discussions above, a conceptual framework emerges; tax avoidance is socially undesirable and firms that engage in it are viewed negatively. When firms are named and shamed for tax avoidance, their reputation among their stakeholders suffers and this negatively affects their financial standings. Being rational market participants, such firms attempt to remedy their financial position by stopping the avoidance and repairing their reputation among their peers. This study seeks to prove that since the tax shamed firms are profit maximizers, they can only increase their tax costs to the extent that it marginally improves their reputation. Put differently, firms whose reputation suffered more from tax shaming will subsequently avoid less taxes than those that incurred minimal or no shaming. To prove this claim, a formal hypothesis is developed; H1 is set and tested.

H1 (in the alternate form) ceteris paribus, the extent of tax shaming suffered by a firm is negatively correlated with its tax avoidance subsequent to the shaming.

2.5 Reputation Sensitivity, Tax shaming and Tax Avoidance

Slemrod and Hanlon find evidence of retail firm's stock prices being more sensitive to tax avoidance news than nonretail firms. They argue that this differential sensitivity is attributable to fears of consumer backlash. This is consistent with earlier demonstrations that consumers boycott products of firms they believe engage in tax avoidance. Moreover, Austin and Wilson (2017 pp.67) find that reputation damage among consumers is a strong motive against tax avoidance. Retail firms have to directly deal with consumers and this puts them in a unique position. While all firms have reputational concerns regarding their stakeholders, the number of relevant stakeholders for retail firms is substantially higher as they have to consider the general public that forms their clientele as a source of reputation risk.

Final consumer facing firms are able to leverage their reputations and charge a premium for having positive reputations. This extra cash flow from the public having a positive attitude towards a firm for its reputable character is what retail firms stand to lose when they are tax shamed taxation (Farquhar, 1989 pp.25). The negative connotations attached to tax avoidance steer consumers towards developing a negative association toward the shamed firms. When this happens, consumers are theorized to reevaluate their relationship with the firms and possibly end or adjust such relationships. When such ended or adjusted relationships concern a firm's clientele, this translates in to foregone income and thus has an impact on profitability.

The results of Zeng (2016 pp.9) supporting the notion that firms pay more taxes to improve their reputations among consumer is a manifestation of tax attitude being used as a signal of social desirability. These the findings mirror those of Hanlon and Slemrod (2009 pp.127) that retail firms suffer more reputational damage from tax shaming. Since retail firms depend more on their reputations and thus theoretically suffer more from tax shaming, it is expected that such firms are willing to avoid less taxes subsequent to shaming in hope of curtailing further reputational damage. To formally test this prediction, a hypothesis is set as follows:

H2 (in the alternate form) ceteris paribus, tax shaming has a greater effect on the subsequent tax avoidance of retail firms than in nonretail firms.

3. Research Design

In this section, the research design used to answer the research question is described. The section starts out with a description of the sample. It then defines the variables, the data used to develop the variables, the transformations to the data as well as the sources and mode of collection of the data. The section ends with regression models used to test the hypothesizes developed in Section 2.

3.1 The Sample

To test the hypotheses of this study, a sample of UK, firms many of which have been targeted by tax shaming campaigns is used. In 2009, Action Aid began an anti-tax avoidance drive targeted at the largest British companies that it believed were not paying their fair share of taxes[1]. Action Aid started with requests for information about compliance with the Companies Act Sections 409 and 410 (UK 2006 pp.250-251) that required such UK firms to disclose the names and locations of their subsidiaries. Upon reluctance by the firms to volunteer their compliance information to Action Aid, the anti-avoidance campaign shifted its efforts to encompass an investigation into the compliance and noncompliance with the requirements of the UK 2006 Companies Act ending in a highly publicized report to the Companies House that cited 49 of the 100 largest firms by market capitalization on the London Stock Exchange as non-compliant with the Companies' Act (Dyreng et al. 2016 pp.148). In 2011, Action Aid escalated the anti-tax avoidance campaign with the publication of the article 'Addicted to Tax Havens'. This elaborate report detailed the use of tax havens by the FTSE 100 firms and directed a lot of media and public attention to the tax avoidance activities of multinational corporations based in the United Kingdom. Action Aid kept the anti-tax avoidance campaign active through several drives such as the *#taxpaysfor* crusade on social media platforms that identified services that society cannot afford because of corporate tax avoidance by multinational firms (Dyreng et al., 2016 pp.153-158).

The attention described above that has been aimed at the FTSE 100 firms for their tax avoidance activities justifies using the group as a sample for this study. FTSE are cited by Dyreng et al. (2016 pp.149) as making up over 75% of the market capitalization traded on the London Stock Exchange. This provides a special opportunity to study the vast majority of market participation while keeping the sample size manageable. The sample construction is identical to that used by Dyreng et al. (2016 pp.149) who study tax avoidance and disclosure policy after the Action Aid report to the UK Companies' House and Lee (2015 pp.9) in his study of corporate financial reporting and news coverage of tax avoidance. Besides these factors, this

[1] This study makes no attempt to define what share of income committed to taxation is fair.

research's author's familiarity with the English Language, a trait essential for analyzing media data places the United Kingdom before other countries for suitability of sample.

While in all analysis in the regression models the Standard Industrial Classification (SIC) codes are used to classify firms, Table 1 below provides a breakdown of the sample firms grouped as summarized along the Fama-French 12 Classifications. Quantitatively, no difference exists between the Fama-French classifications and the SIC code classifications. The Fama-French 12 Classifications are simply a consolidation of SIC codes into their core industries.

Table 1

Fama-French 12 Industrial Classification of Sample Firms

Classification	**FTSE 100 Firms**	**Sample Firms[1]**	**Firm years[2]**
Non-durable Consumer Goods	09	09	63
Durable Consumer Goods	01	01	07
Manufacturing (Machinery, Planes etc.)	06	06	42
Energy, Oil, Gas and Coal	08	08	46
Chemicals and Allied Products	03	03	21
Business Equipment	04	04	23
Telephone and Television Transmission	05	05	35
Utilities	07	07	45
Shops, Wholesale, Retail	09	09	62
Health care, Medical and Drugs	04	04	28
Finance	25	24	168
Other	19	18	121
Totals	100	98	661

Note: [1] Two FTSE 100 firms that were acquired and dissolved are dropped from the sample for this study.

[2] The mismatch between firms in the sample and firm years is due to limited data availability for 2017 financial statement variables.

To answer the research questions identified in Section 1 of this study, firm financial data of the FTSE 100 composition as of January 2011 ranging from 2009 to 2015 is collected. This time period is chosen for

analysis because 2009 is when the current wave of tax shaming fueled by anti-tax avoidance organizations such as Action Aid started. 2015 is the end of the analysis as this enables collection of 2017 data for construction of long term effective tax rates as detailed further in this section. Beyond 2015, it is not possible to construct long term effective tax rate as this requires at least two years ahead.

3.2 Measurement Tax Avoidance

Having defined tax avoidance as the firm's ability to engage in actions that lower the amount of tax due on its income, the extent and success of such activity is observed through how much taxes the firm pays on its income. That is to say, what proportion of each dollar made in profit is paid in taxes? This proportion is the effective tax rate defined as the ratio of taxes paid to the pretax income of a firm set as the firms profit before tax less special items. The effective tax rate is preferred in this study as it directly captures how much of a firm's earnings it records as income tax expense in a given fiscal year. Because both pre-tax income and tax expenses are derived following Generally Acceptable Accounting Principles (GAAP), this effective tax rate is referred to as the GAAP Effective Tax Rate (GAAPETR). The GAAPETR for firm *i* during firm year *t* is set as follows:

$$GAAPETR_{it} = \text{Tax Expense}_{it} / \text{Pre-tax Income}_{it} \quad \text{A1}$$

Hanlon and Slemrod (2009 pp.127) note that a firm's tax behavior is evidenced by its GAAPETR with firms avoiding taxes generally recording lower GAAPETRs than their non-avoiding counterparts. Tax avoidance is presented in financial statements as a reduction of the numerator in the ETR model relative to the denominator. Any (anti) tax avoidance actions aimed at (increasing) reducing the numerator will be captured by the change in the ratio of the tax expense to the pre-tax income.

While ETR captures accounting measures of tax expenses in relation to the firm's profit, it is argued by Hanlon (2003 pp.854) to be noisy. She contends that it contains income tax overstatements arising from GAAP tax expenses on transactions for which no obligation to pay taxes exists. Another problematic character of the GAAPETR as identified by Hanlon, (2003 pp.854) is the omission of tax events not accounted for through dirty surplus flows. That is to say, events such as stock based payments and Employee Stock Ownership Plans (ESOP) that are directly recorded in equity shall not have their tax consequences captured by the GAAPETR construct. To correct this misspecification, an alternative measure, the cash effective tax rate (CETR) which is the proportion of tax actually remitted to tax authorities to the pre-tax income of the firm in the given period; is developed. Set as:

$$CETR_{it} = \text{Cash Tax Expense}_{it} / \text{Pre-Tax Income}_{it} \quad \text{A2}$$

Hanlon (2003 pp.854) goes further to contend that the GAAPETR and the CETR are not very articulate as measures of a firm's tax expenditure. She focuses her criticism of the GAAPETR and CETR on their short term nature that fails to capture aspects of taxation that redistribute in the long term. To deal with this timing challenge, broader effective tax rate constructs dubbed as long term effective tax rates have been developed. The long-term effective tax rate developed by Dyreng, Hanlon and Maydew (2008 pp.68) estimates the 10 year effective tax rate. This eliminates specification issues arising from annual volatility of the effective tax rates and effects of management exercise of discretion in determining annual income numbers also known as earnings management.

For this study, a discretionary choice is made concerning the appropriate duration of time to consider for the long term effective tax rate measurement of tax avoidance. Three years is considered appropriate for analysis as it does not put unnecessary constraints on an already strained sample size. Additionally the current wave of tax shaming being a relatively new phenomenon, renders the 10 year analysis of Dyreng et al. (2008 pp.68) irrelevant for this study. Moreover, a survey by Hoopes, Mescall and Pittman (2012 pp.1610) found that 91.25% of all income tax disputes pertaining to a firm's fiscal year are resolved within 3 years of when they arise. These three factors support the use of a shorter time horizon for the long-term effective tax rate. Hence for this study, the three year effective tax rate developed by Dyreng et al. (2008 pp.68) is adopted. Under this measure, the effective tax rate at time *t* is the sum of cash tax expense of time *t, t+1* and *t+2* normalized by the sum of the corresponding pretax income. Set as:

$$\text{LongETR}_{it} = (\sum \text{Cash Tax Expense}_{i\ t,\ t+1,\ t+2}) \,/\, (\sum \text{Pre-tax Income}_{i\ t,\ t+1,\ t+2}) \qquad \text{A3}$$

The LongETR above as adopted from Dyreng et al. (2008 pp.66) captures the firm's medium term ability to maintain and adjust tax liabilities that may not be specifically tied to one financial year. It also eliminates the effects of tax cushions that are argued by Hanlon (2003 pp.854) to exaggerate tax expenses. Furthermore, using this definition enables the inclusion of firm year observations that have negative pre-tax income and those for which the tax expense or tax paid figures are negative.

Following studies by Robinson, Sikes and Weaver (2010 pp.1052), Gaertner (2014 pp.1083) and Hoopes et al. (2012 pp.1609), in all regression analysis in this study, the effective tax rates are constrained to a maximum of 1 and a minimum of 0. This eliminates interpretational issues around firms that paid more in taxes than they reported in income, those that reported a negative pre-tax income and those that received tax refunds in lieu of tax payments.

Data on all accounting constructs needed to derive the effective tax rates is retrieved from the Wharton Research Data Services (WRDS) accessible through the Compustat Global database. In several instances, the panel data from Compustat does not contain the tax paid (TXPD) data needed to construct the CETR

and the LongETR. In all such cases, the value for tax paid is manually extracted from the cash flow statements of the firm for the firm years in question. Additionally, for adjustment of the Pre-tax income by removing the special items from the income before taxes, when no such special items are reported in the financial statements, Compustat returns a missing data observation. In all such cases, the missing data observation is reset to 0.

3.3 Measuring Tax Shaming

From the Braithwaite (1989 pp.100) definition of shaming as *'all social means of expressing dissapproval with the intention of invoking remorse in the person being shamed and/or condemnation by others who become aware of the shaming'*, two quantifiable constructs can be identified. One being the extent to which others are informed about the undesirable actions of the shamed party that is to say, the circulation of such information. The other being the content of such information.

For this study to quantify the circulation of shameful information pertaining to tax behavior of firm in a given firm year, a news count variable (STORIES) is developed similar to that of Bushee, Core, Guay and Hamm (2010 pp.2). The Stories variable captures the number of times that a company is mentioned in news stories that involve tax avoidance. Because the number of news articles citing a firm is used to measure tax shaming, it is expected that the coefficient of regression on the stories variable is positively signed in its prediction of the effective tax rates subsequent to the tax shaming.

The information content of the articles written about a firm's tax avoidance activity is measured using the word count (WORDS) per article consistent with the information content measure in Bushee et al. (2010 pp.2). The thinking behind this measure of shaming is that the amount of information contained in a news article increases with the length of the article. Therefore longer articles are predicted to disclose more tax shaming information to the detriment of the shamed firm. If this prediction holds, this study expects to find a positive correlation between the word count and effectively tax rates.

It is argued in Dyck et al. (2008 pp.1101) that media is effective in shaming when it can reach a great number of relevant parties. This implies that without controlling for the reach, this study runs the risk of improperly specifying the measures for shaming. To more critically evaluate the reach of the shaming, the media outlets publishing the articles relating to tax avoidance are categorized into two classifications. The first is comprised of the top ten UK media outlets by readership as identified by the National Readership Survey (2017) and the other is all other media outlets. To be assigned to the TOP category, an article must be published by one of the following 10 outlets: (1)Daily Mail, (2) The Sun, (3) Daily Mirror, (4) The Guardian, (5) The Daily Telegraph, (6) Metro , (7) Independent, (8) London Evening Standard, (9) Daily Express and (10) Daily star; in descending order of readership. Categorizing the media sources enables this

study to create an interaction variable between the media coverage variables (Stories and Words) and the audience reached by such articles. Proportion of TOP stories and TOP words is used to capture the reach of the tax shaming suffered by the firm in a given firm year.

Since the distribution of press coverage is discontinuous in nature, with some firms receiving a substantially high amount of coverage in one period and none in the next, the variables for shaming are bound to be highly skewed. To deal with this skewedness, this study follows Bushee et al. (2010 pp.23) and Dyck et al. (2008 pp.1115) by transforming all non-normalized SHAME variables into their natural logarithms for all regression analysis.

As in Hanlon and Slemrod (2009 pp.131), the Factiva database is used to search, associate and measure the quantity of stories and level of content defined as word count per story that is written about a firm's tax avoidance behavior. The Factiva indexes media stories into a searchable database along topics, company concerned, languages, regions, publishers and such. This enables the author of this research to search and refine searches for media articles pertaining to tax avoidance of sample firms. Using search topics [*company name*] + all tax topics, English language news articles about the sample firms' tax behavior are retrieved. While Factiva greatly unburdens the researcher, it is not perfect tool as it returns a multitude of false positives. This problem of false positives necessitates reading the each individual article ascertain that it is indeed about the tax avoidance of a company. Upon determining that the article at hand is critical of the firms tax avoidance and thus of interest to this study, a count of one (1) and that of the maximum word count are assigned to the corresponding firm year. The financial book year of the firm that is cited in an article is used to assign such an article to a time period *t.* That is to say, for firm year *t* beginning in March with an article published in April, that article is assigned to time *t* while an article published in February is attributed to firm year *t-1*.

3.4 Regression Analysis

To study the effect of tax shaming on tax avoidance, linear regression models are used to explain tax avoidance behavior using tax shaming. A simple Ordinary Least Squares (OLS) regression model is developed. Relevant control variables are added to the model to reduce the probability of inappropriately attributing effects to the SHAME variables when such effects are better attributable to some other confounding variable. The simple regression Model B1 is set up as below;

$$AVOID_{it} = \beta_0 + \beta_1 SHAME_{it} + \varepsilon \qquad B1$$

In all statistical analysis, the definition of the dependent variable is explicitly stated as either ETR, CETR or LongETR. In the same spirit the definition of the independent variable SHAME is explicitly given as either STORIES or WORDS and LnSTORIES or LnWords when natural logarithms are adapted.

The variable of interest in Model B1 is SHAME which indicates the level of shaming that a firm has been subjected to and its coefficient indicates the effect of the shaming on the firms subsequent tax behavior. As it is hypothesized that shaming reduces the tax avoidance by firms, the coefficient is expected to be positive (+) and significant implying an increase in shaming to increase the firms effective tax rate.

Research by Dyck et al. (2008 pp.1101) has shown variation in how retail and non-retail firms respond to media based reputation risks. Consumer firms for which public opinion is crucial are shown to be more sensitive to reputation risks and thus shaming. To investigate the differential reaction of firms to tax shaming, retail firms are identified manually using information from their annual reports. An indicator variable is constructed and assigned 1 if the firm in question is a retail firm and 0 if otherwise. This dummy is then interacted with each of the tax shaming variables to create an interaction term RET*SHAME.

The interaction term RET*SHAME tests for the moderating effect of a firm being a retail firm on the relationship between tax shaming and tax avoidance. The interaction term is preferred to the split sample approach due to the discontinuous nature of media reporting. Moreover the author considers splitting a relatively small sample for which hundreds of fixed effects are added for analysis inappropriate. As such, if H2 is to supported, the coefficients on RET*SHAME are expected to be significantly positive.

Because the effective tax rate can be influenced by several factors besides tax shaming, the risk of a confounding variable driving the ETR variables is rather high. To ensure that results are driven by tax shaming and not a confounding factor, several control variables are added to Model B1. Following Chen , Powers and Stomberg (2015 pp.18), firm financial performance variables Return on Assets (ROA), Leverage (LEV), Net Operating Losses (NOL) and Change in Net Operating Losses (NOL) are included to extend Model B1. Research by Rego (2003 pp.828) shows that more profitable firms captured as greater ROA and less NOL and DNOL generally have lower ETRs than their less profitable peers; a phenomenon he attributes to their ability effectively avoid taxes.

Gupta and Kaye (1997, pp.3-4) document Property Plant and Equipment levels (PPE) and level of intangible assets (INTANG) to have a significant effect on the effective tax rate due to their differential treatment for taxation purposes. They are thus added to the model to capture the effect of capital intensity on depreciation and amortization expenses for tax and financial accounting purposes. As shown in Zimmerman (1983 pp.119), firm size is a significant determinant of a firm's tax expense with larger firms facing higher effective tax rates due to the political costs associated with firm size. To eliminate the effect of size on

effective tax rates, the variable LnSIZE is added to the model. The natural logarithm of total assets instead of actual total assets is used as a measure of firm size to avoid issues arising from the skewed nature of firm size as argued in Kwasnicki (1998 pp.157-158). Market to Book ratio (MBK) and the Altman's Z score (ALTz) are included to reflect the differential investment decisions undertaken by high growth and financially distressed firms respectively that are different from mature and/or financially sound firms. Richardson, Lanis and Taylor (2015 pp.112) show that distressed firms are likely to manage earnings and pay extra taxes to legitimatize such earnings. They also contend that high growth firms are likely to invest in growth projects that influence the timing of revenue and expense recognition.

Year and Industry fixed effects are added to control for macro-economic dynamics such as tax rate changes, crises and other such events that may influence effective tax rates. Upon inclusion of all experimental and control variables described above, Model B1 is extended to form Model B2 set as;

$$AVOID_{it} = \beta_0 + \beta_1 SHAME_{it} + \beta_2 RET*SHAME + \beta_3 TOP_{it} + \beta_4 RETAIL_i + \beta_5 ROA_{it} + \beta_6 LEV_{it} + \beta_7 PPE_{it} + \beta_8 INTANG_{it} + \beta_9 LnSIZE_{it} + \beta_{10} NOL_{it} + \beta_{11} DNOL + \beta_{12} ALTz_{it} + \beta_{13} MBK_{it} + \beta_{14\text{-}n} \text{Industry Year Fixed Effects} + \varepsilon \quad \textbf{B2}$$

When tax avoidance is measured as GAAPETR, Model B2 is specified as:

$$GAAPETR_{it} = \beta_0 + \beta_1 SHAME_{it} + \beta_2 RET*SHAME + \text{Controls} + \varepsilon \quad \textbf{B2.1}$$

When tax avoidance is measured as CETR, Model B2 is specified as:

$$CETR_{it} = \beta_0 + \beta_1 SHAME_{it} + \beta_2 RET*SHAME + \text{Controls} + \varepsilon \quad \textbf{B2.2}$$

When tax avoidance is defined as LongETR, Model B2 is set as:

$$LongETR_{it} = \beta_0 + \beta_1 SHAME_{it} + \beta_2 RET*SHAME + \text{Controls} + \varepsilon \quad \textbf{B2.3}$$

For all variables that are not normalized, the reporting currency is converted to the British Pound to ensure consistency in analysis and interpretation. The British Pound (£) is chosen as most FTSE 100 firms already use it as their presentation currency. Besides the pound, some of the firms in the sample present their financial results in the US dollar and the Euro. To convert the US Dollar and Euro observations to the Pound, the daily average interbank exchange rate for the final calendar day of the fiscal firm year is used. These currency exchange rates are retrieved from the publicly available FC Exchange database (FC Exchange, 2018). This conversion is consistent with what would be required of such firms by the International Financial Reporting Standard (IAS 21) for The Effect of Changes in Foreign Exchange Rates (IASB 2007).

Besides the retail variable, data used to develop the control variables in model B2 to B2.3 is retrieved from Compustat Global data base. Where such data is missing, it is manually extracted form the publicly available annual finacial statements of the concerned firms. For the retail variable, the company profile is examined using a combination of its SIC and annual reports to deduce wherether it engages in end customer facing business or not. For all data retrieved from Compustat, GVkeys are used to identify the companies. This effectively eliminates the issue of companies having more than one traded secturity on the LSE as is the example of Royal Dutch Shell.

4. Results

In this chapter, the results obtained from the research methods described in Section 3 are presented along with their interpretations where it is appropriate to interpret them. The chapter begins with a quantitative overview of the sample attributes, then reports on the covariance among the variables and finally presents the results from the regression analysis along with sensitivity analysis.

4.1 Descriptive results

As reported in Table 2, the sample used for this study consists of relatively large firms with the smallest reported firm size in total assets at the start of a firm year being £92.3 million and the largest being £1,696,486 million. The mean and (median) firm sizes are £90,695.68 million (£9,846 million) with a skewedness of 4.39 indicating a skewed distribution of firm sizes to the right. As earlier discussed in Section 3, this skewedness is dealt with through use of the natural logarithm of total assets instead of actual firm size. Among the firm years analyzed in the sample, the average firm year has a mean revenue of £ 15,742.86 million with a median revenue of £6,719million. The corresponding mean (median) net income per firm year is £1,026.1 million (£376 million).

The average (median) firm reported a tax expense of £430.8 million (£95.5 million) per firm year corresponding to a mean (median) GAAP Effective Tax Rate of 0.218 (0.219) per firm year. In the average firm year, £517 million was paid in income taxes while the median tax paid was £116.5 million leading to a mean (median) of 0.288 (0.221). The third measure of tax avoidance; LongETR which represents the moving three year cash tax expense has a mean (median) of £541.9 million (£122.6 million). This tallies to a long term effective tax rate with a mean (median) of 0.267 (0.223).

Among the 661 firm year observations in the sample, 153 have a non-zero value for news coverage indicating at least one news article was written criticizing the firm's tax avoidance behavior in a given firm year. The rest of the firm years (508) have a value of zero for news coverage meaning no story was published about a firm's tax avoidance in that particular firm year. In total, across the entire sample period, 875 news articles were written about the sample firms containing 417,247 words. Of these, 193 (99,254) articles (words) were written by top media establishments by readership as defined in Section 3 of this study. The remaining 315 (317,993) articles (words) were published by other sources.

The most written about firm year had 134 articles amounting to 71,113 words published about a firm's tax avoidance. Among firm years in which a story was written, the average (media) article count is 5.718 (2.0) while the median average word count is 2727.105 (951). Across the entire sample, the mean (median) article count is 1.324 (0) while the mean (media) word count is 631.236 (0).

TABLE 2[1]

Descriptive Statistics

Panel A: Sample Firm Attributes

Variables	N	Mean	Min.	Median	MAX	Std Dev.
TOT. ASSETS	661	90,695.0	92.3	9,846.0	1,696,486.0	217,744.0
PRE-TAX INC	661	1,796.7	-10,977.0	589.6	36,444.8	3,670.0
TAX EXPENSE	661	430.8	-16,582.0	95.5	15,687.9	5,558.0
TAX PAID	661	517.1	-90.0	116.5	14,500.0	1,307.8
STORIES	661	1.3	0.0	0.0	134.0	6.3
WORDS	661	631.2	0.0	0.0	71,113.0	3,284.0

Panel B: Descriptive Statistics of Dependant and Independent Variables

Variables	N	Mean	Min.	Median	MAX	Std Dev.
LnSTORIES	661	0.33	0	0	4.905	0.726
LnWORDS	661	1.643	0	0	11.172	3.059
TOP	661	0.056	0	0	1	0.192
GAAPETR	661	0.219	0	0.219	1	0.171
CETR	661	0.288	0	0.221	1	0.258
LongETR	621	0.267	0	0.223	1	0.225
ROA	661	0.083	-0.518	0.071	0	0.108
LEV	661	0.199	0	0.187	1.15	0.156
INTANG	661	0.213	0	0.114	1.392	0.24
LnSIZE	661	9.459	3.754	9.194	14.344	1.821
NOL	661	0.103	0	0	1	N/A
DNOL	661	-0.003	1	0	1	0.348
ALT	661	2.561	0.114	2.216	7.805	1.968
MBK	661	2.75	0.382	2.027	9.723	2.46
RETAIL	661	0.549	0	1	1	N/A
PPE	661	0.265	0	0.152	1.957	0.293

Variable Definitions:

TOT. ASSETS = The value of a firm's assets in million pounds at the start of the firm year.

PRE-TAX INC = The profit before tax adjusted for special items foe a firm year in million pounds. Defined as Pre-Tax Income less Special Items.

TAX EXPENSE = The GAAP tax expense (TXT) for a firm as reported in the Income Statement in million pounds.

TABLE 2 (*continued*)

Variable Definitions:

TAX PAID	=	The amount of taxes paid (TXPD) by a firm in million pounds for a firm year.
STORIES	=	The total number of articles written about a firm's tax avoidance in a given firm year.
WORDS	=	The total number of words contained in articles written about a firm's tax avoidance in a firm year.
LnSTORIES	=	The natural logarithm (Ln) of the total number of words as defined in WORDS above in a given firm year set as: Ln (1+WORDS).
LnWORDS	=	The natural logarithm (Ln) of the total number of Stories as defined in STORIES above in a given year set as: Ln (1+ STORIES).
TOP	=	The proportion of STORIES (WORDS) written by TOP media sources as defined in Section 3 set as: TOP/ STORIES (WORDS).
GAAPETR	=	The GAAP Effective Tax Rate of a firm for a firm year set as: Tax Expense/ Pre-Tax Income. Minimum set to 0 and maximum to 1.
CETR	=	The Cash Effective Tax Rate of a firm during a firm year set as: Tax Paid/ Pre-Tax Income. Minimum set to 0 and Maximum to 1.
LongETR	=	The rolling average 3 year CETR for a firm during a firm year set as: (∑ Cash Tax Expense *i t, t+1, t+2*) / (∑ Pre-tax Income *i t, t+1, t+2*) Minimum set to 0 and maximum to 1.
ROA	=	Net Income for a given firm year normalised by the Total Assets at the beginning of the firm year.
LEV	=	The financial leverage of a firm in a given firm year defined as Total Liabilities divided by Total Assets at the start of the firm year.
INTANG	=	The level of intangible assets of a firm divided by the value of Total Assets at the beginning of the firm year.
LnSIZE	=	The Natural Logarithm of Total Assets at the beginning of the firm year.
NOL	=	An indicator variable set to 1 if the firm year is an operating loss year and 0 if otherwise.
DNOL	=	A categorical variable for the change in NOL set to one if a firm moves from a loss position to a profit position, negative one for the initial loss year and 0 otherwise.
ALT	=	The Altman's Z Score for a given firm year. A financial distress indicator with lower values signalling pending bankruptcy. Winsorized at 2.5% at each tail.
MBK	=	The Market to Book ratio at the end of a firm year. Set as: Total Market Capitalisation / Book Value of Equity. Winsorized at 2.5% at each tail.
RETAIL	=	An indicator variable set to 1 if a firm directly serves final consumers and 0 if otherwise.
PPE	=	Total Property Plant and Equipment divided by total assets at beginning of firm year.

Note: [1] a complete overview of all variables and accompanying statistics is attached in Appendix A.

The firms in the sample are relatively financially healthy with an average (median) Altman's Z score of 2.561 (2.216) compared to the general median score of 1.81.

During firm years for which at least one article is published about a firm, the reported average GAAP effective tax rate is 0.243. This effective tax rate is 3.3 percentage points higher than 0.210 for when no

articles are published criticizing a firm's tax behavior. Primarily, this difference in mean effective tax rate when measured as GAAPETR as defined in Section 3 of this research indicates that, upon publishing at least one tax shaming article about a firm in a given firm year, the effective tax rate increases by 15.7% on average. This difference in mean is statistically significant with a Student T.Stat of 2.082 and a P.Value of 0.038.

When tax avoidance is measured as CETR, firms that are criticized for tax avoidance in a given firm year report a significantly higher (0.361) average cash effective tax rate than those that received no criticism at all, in which case the mean cash effective tax rate is 0.267. A statistical difference in mean Student T test with a T.Stat of 4.001 and P.Value of 0.000 provides significant statistical support that firms pay more in taxes when they are tax shamed during a given firm year than when they are not.

Employing a more precise measure of CETR, the LongETR results in an effective tax rate of tax shaming event firm years of 0.292 while that of non-event firm years is at 0.260. Unlike the previous two measures, this difference in mean effective tax rate is not statistically significant at 10% with a T Stat of 1.594 and a P.Value of 0.131.

From two of the three measures of tax avoidance employed in this study, preliminary evidence is found albeit insignificant in one measure, that, when firms are criticized for their tax behavior during a firm year, they report higher tax rates for that year than when they are not tax shamed at all. While the difference in mean results above provide interesting insight into the relationship between unadjusted tax shaming measures and effective tax rates, they must be interpreted with great caution as they are very simplistic and can thus be misleading. More precise and sophisticated statistics are presented further in the multivariate analysis segment of this section.

4.2 Correlation Analysis

Before the regression analysis, it is imperative that the individual Pearson's correlations among all variables in this study are analyzed. Table 3 below provides a correlation matrix explaining the relationships between the individual variables in the study. From the matrix, it can be observed that none of the important independent variables set in a single regression are severely collinear. At this stage, issues of multicollinearity among the explainer variables of this study can thus be discarded.

As can be seen in Table 3, the definitions of effective tax rate are highly and significantly correlated at a confidence level of 90%. While they define considerably identical constructs, the highest covariance coefficient among them is that of CETR and LongETR at 0.535 significant at 90%. This indicates that each of the measures captures at least a unique dimension of tax avoidance by firms in the sample.

Table 3

Pearson's correlation matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
(1) GAAP ETR	1															
(2) CETR	0.244*	1														
(3) LongETR	0.167*	0.535*	1													
(4) LnSTORIES	0.031	0.167*	0.076*	1												
(5) LnWORDS	0.070*	0.161*	0.066	0.910*	1											
(6) TOP	-0.006	0.057	0.025	0.406*	0.514*	1										
(7) ROA	0.014	-0.344*	-0.185*	-0.086*	-0.054	-0.009	1									
(8) LEV	-0.160*	-0.062	-0.132*	-0.098*	-0.080*	0.012	0	1								
(9) PPE	-0.056	-0.073*	-0.036	-0.029	0.016	-0.035	0.021	0.365*	1							
(10) INTANG	-0.014	-0.115*	-0.053	-0.069*	-0.073*	0.001	0.161*	0.176*	-0.239*	1						
(11)LnSIZE	0.154*	0.024	-0.015	0.424*	0.388*	0.155*	-0.336*	-0.074*	-0.035	-0.208*	1					
(12) NOL	0.120*	0.217*	0.068*	0.067*	0.052	0.006	-0.287*	-0.038	-0.025	-0.182*	0.062	1				
(13) DNOL	0.032	-0.271*	-0.165*	-0.037	-0.034	-0.011	0.182*	-0.009	-0.043	-0.038	0.002	0.562*	1			
(14) ALTz	-0.045	-0.092*	-0.005	-0.180*	-0.144*	-0.039	0.620*	-0.197*	0.019	0.171*	-0.677*	-0.176*	0.014	1		
(15) MBK	-0.011	-0.216*	-0.150*	-0.160*	-0.116*	-0.015	0.550*	0.158*	-0.119*	0.260*	-0.376*	-0.179*	0.016	0.481*	1	
(16) RETAIL	-0.074*	-0.084*	-0.094*	0.108*	0.106*	0.110*	0.034	-0.150*	-0.362*	-0.122*	0.171*	-0.003	0.097*	-0.088*	0.086*	1

Note: * Denotes statistical significance at 0.1.

The positive and statistically significant correlation between firm size and the GAAPETR is a manifestation of the political cost hypothesis as posited by Zimmerman (1983 pp.120) that bigger firms pay more in taxes than their smaller peers. Furthermore, it is observed through positive and statistically significant co-variances between size and the measures of tax shaming that firm size is significant in determining candidates for negative media pressure. This reinforces the finding by Watts and Zimmerman (1990 pp.139) that larger and thus more visible firms are more prone to political pressures.

Correlation coefficients ranging from 0.106 to 0.108 (all significant) between the RETAIL dummy and the tax shaming variables indicate that, a firm's belonging to the retail category as defined in Section 3 significantly increases its probability of being tax shamed. This is consistent with research by Hanlon and Slemrod (2009 pp.126) who argued that retail firms are easier targets of negative media campaigns as they are more accessible to the public than the obscure corporation engaged entirely in business to business activities. Additionally, the positive and significant covariance (0.110) between the RETAIL and TOP variables is interpreted as high readership media establishments having a pronounced preference for consumer facing firms when engaging firms for tax shaming. This extends the arguments of Dyck et al. (2008 pp.1114) that retail firms are better targets of media campaigns than their non-consumer counterparts.

Rego (2003 pp.828) found that profitable firms are more able to avoid taxes. His findings are mirrored in the correlation matrix presented in Table 3 that shows negative and statistically significant coefficients for the relationships between profitability (ROA) and tax avoidance. These coefficients potentially indicate that firms targeted for shaming are not those necessarily making the most profit but those that are easier to target and shame. Dyck et al. (2008 pp.1114) indicated in their study that it was intuitively easier to initiate and run successful negative media campaigns against marginally profitable but popular companies than it is to do the same against highly profitable oil companies whose names the public could not pronounce. This study supports their findings in that the data indicates being a consumer facing firm has no effect on profitability while it has a positive and significant effect on tax shaming. Profitability generally appears to increase tax avoidance while simultaneously reducing tax shaming.

All firm performance and capital structuring control variables are at least statistically significantly related to one or more of the definitions of tax avoidance. This implies that their inclusion in the general regression models of this study helps isolate only the effects attributable to tax shaming on consequent tax avoidance in the multivariate analysis. As noted by Sessions and Stevans (2006 pp.2852), the inclusion of these variables enables this study avoid the potential omitted variable biases.

4.3 Multivariate Analysis

It is imperative to note that all variables that are not normalized but are included in the linear regressions in this study have been transformed to their logarithmic versions. Table 4 below presents the results from Model B2.1 when tax avoidance is defined as the ability to maintain low GAAPETRs.

Table 4

OLS Regression Model B2.1[1]: $GAAPETR_{it} = \beta_0 + \beta_1 SHAME_{it} + \beta_2 RET*SHAME_{it} + Controls_{it} + \varepsilon$

		SHAME= LnSTORIES[2]				SHAME= LnWORDS[3]			
Variables	**Pred.**	**Co-eff**	**P.Val**	**Co-eff**	**P.Val**	**Co-eff**	**P.Val**	**Co-eff**	**P.Val**
Constant		0.215	0***	0.063	0.579	0.211	0***	0.078	0.486
SHAME	+	0.024	0.141	-0.038	0.219	0.007	0.032**	-0.004	0.534
RET*SHAME	+	-0.023	0.214	0.007	0.848	-0.005	0.194	-0.001	0.91
TOP	+			0.019	0.674			0.006	0.906
RETAIL				-0.054	0.027**			-0.059	0.025**
ROA	-			0.322	0.005***			0.321	0.005***
LEV				-0.083	0.377			-0.068	0.476
PPE				0.028	0.599			0.028	0.602
INTANG				0.046	0.302			0.044	0.332
SIZE	+			0.016	0.104			0.014	0.153
NOL				0.122	0.084*			0.120	0.092*
DNOL				-0.060	0.360			-0.059	0.366
ALTz				0.000	0.976			0.000	0.973
MBK	-			0.002	0.579			0.002	0.564
N			661		661		661		661
R^2			0.008		0.44		0.007		0.432
F		F= 2.47	P=0.08	F= 2.35	P= 0.004	F= 2.47	P= 0.085	F= 2.22	P= 0.008

Note: [1] both models contain unreported industry year fixed effects.

[2] Full regression model and accompanying statistics attached in Appendix B.

[3] Full regression model and accompanying statistics attached in Appendix C.

*, **, *** Indicate statistical significance at 0.1, 0.05 and 0.01 respectively.

Contrary to findings by Rego (2003 pp.805), when tax avoidance is measured as the GAAPETR, firm size is not significantly related to the effective tax rate of a firm at reasonable confidence levels. Also insignificant in determining the GAAP effective tax rate of a firm are its profitability measured as Return on Assets (ROA).The firms status as either profit making or loss making indicated by the NOL variable is a statistically significant predator of a firms GAAPETR, this is reasonably expected as taxes are levied on the firm's profits.

When tax shaming is measures as LnWORDS, the initial results from uncontrolled regression indicate a positive and statistically significant relationship between tax shaming and GAAPETR consequent to the shaming. This primarily indicates that more information about a firm's undesirable tax attitude is published, the firm subsequently avoids less taxes. Measuring tax shaming as the number of articles published about a firm's tax avoidance does not support the notion that shaming improves a firm's attitude towards.

Concerning H1, despite preliminary results from an uncontrolled regression indicating support for the predictions. When tax shaming is measured as information content (LnWORDS), controlling for other factors in the regressions indicates that such support is not sustained. Across both measures of tax shaming i.e. LnWORDS and LnSTORIES controlled regressions return results that are statistically insignificant. That is to say, when tax avoidance is measured as the ability to lower the GAAP effective tax rate, no significant relationship is observed between tax avoidance and tax shaming. Since the coefficients are insignificant at reasonable confidence levels, it is not appropriate to draw any inferences or conclusions about the relationship between tax shaming and tax avoidance relying on the results of Model B2.1 as presented in Table 4 above.

All regressions in Table 4 persistently fail to provide support for the second hypothesis of this study. The independent variable RET*SHAME that is used to test H2 is not statistically significant in any of the regression presented in table four. As such it cannot be reasonably determined if the relationship between tax shaming and tax avoidance is in any way influenced by the sensitivity of a firm to reputation damage or just random circumstances.

While the insignificance of the coefficients testing both hypothesizes means this study cannot claim a relationship exists, it does not preclude the existence of such a relationship. It simply means that when tax avoidance and tax shaming are measured as done in Model B2.1, the relationships hypothesized are not found.

Notwithstanding the results presented in Table 4 above, Table 5 below presents the results of regression Model B2.2 which takes a different measure of tax avoidance. As explained in Section 3, Model B2.2 defines tax avoidance as the ability to lower the amount of money remitted to tax authorities in the form of income tax relative to the pretax income. This definition defers from that used in Model B2.2 in that this takes into account the actual money paid and not just the amounts booked for accounting purposes.

Unlike results from Model B2.1 presented in Table 4, Model B2.2 in Table 5 below yields positive and statistically significant support for H1. This support persists even when comprehensive control variables are included in the regression. A distinct relationship between how much firms are criticized for their tax avoidance practices and how much they pay in income tax in the year they are criticized is observed.

When tax shaming is measured as the number of news articles written about a firm's tax avoidance, this relationship is positive and significant at a P.Value of 0.009 in a regression that explains 56.6% of all variation in the Cash Effective Tax Rate with a probability of the results observed being random at 0. When this study measures tax shaming as the total information content of the articles written about a firm's tax avoidance in a firm year i.e. WORDS, a relationship comparable to when just articles are measured is still observed. This relationship is positive and statistically significant at a P.Value of 0.003.

Table 5

OLS Regression Model B 2.2[1]: $CETR_{it} = \beta_0 + \beta_1 SHAME_{it} + \beta_2 RET*SHAME_{it} + Controls_{it} + \varepsilon$

		SHAME= LnSTORIES[2]				SHAME= LnWORDS[3]			
Variables	**Pred.**	**Co-eff**	**P.Val**	**Co-eff**	**P.Val**	**Co-eff**	**P.Val**	**Co-eff**	**P.Val**
Constant		0.267	0***	0.550	0***	0.265	0***	0.577	0***
SHAME	+	0.134	0***	0.052	0.009***	0.027	0***	0.014	0.003***
RET*SHAME	+	-0.104	0***	0.001	0.962	-0.020	0.001***	0.004	0.551
TOP	+			0.074	0.140			0.023	0.674
RETAIL				-0.008	0.801			-0.019	0.574
ROA	-			-0.391	0.015**			-0.408	0.011**
LEV				0.217	0.079*			0.211	0.085*
PPE				-0.116	0.07*			-0.121	0.057*
INTANG				0.001	0.984			-0.002	0.969
SIZE	+			-0.032	0.014**			-0.034	0.008***
NOL				0.393	0***			0.388	0***
DNOL				-0.395	0***			-0.389	0***
ALT				0.016	0.173			0.016	0.183
MBK	-			-0.014	0.028**			-0.014	0.02**
N			661		661		661		661
R^2			0.049		0.566		0.043		0.572
F		F=16.98	P=0.00	F=10.87	P= 0.000	F=14.7	P=0.000	F=10.6	P= 0.000

Note: [1] both models contain unreported industry year fixed effects.

[2] Full regression model and accompanying statistics attached in Appendix D.

[3] Full regression model and accompanying statistics attached in Appendix E.

*, **, *** Indicate statistical significance at 0.1, 0.05 and 0.01 respectively.

The positive and significant relationship observed in Table 5 implies that the more a firm is tax shamed, the more money it subsequently pays in income taxes in the year that the shaming takes place. This in line with findings of Dyck et al. (2008 pp.1096) that firms respond to public scrutiny by adjusting their conduct. Further this finding supports that of Dyreng et al. (2016 pp.148) who studied tax behavior among firms facing public scrutiny and found a similar relationship.

From the coefficients in Model B2.2, it can be inferred that on average, ceteris paribus, a 1% increase in the number of articles shaming a firm about its attitude towards taxes increases its CETR by 0.00052 percentage points. For the mean sample firm, a 1% increase in the number of articles written about its tax avoidance increased its cash tax rate from 28.88452 % to 28.8972. This translates into a cash tax expense increase of £2.1005 million from £517.105 million to £519.205 million. A 0.483% increase in cash effective tax rate relative to a 1% increase in tax shaming is by all means material and thus considered both economically and statistically significant.

Taking tax shaming as the information content in the shaming articles, it can be inferred that, ceteris paribus, on average, a 1% increase in word count about the firm's tax avoidance in a given firm year increases the CETR by 0.00014 percentage points. Extrapolating this over the average firm year means that each additional 1% increase in words published about a firms increases the cash paid in income taxes by £1.41774 million.

These results are consistent with those reported earlier by Hanlon and Slemrod (2009 pp.127), Lee (2015 pp.8), Hoopes et al. (2012 pp.153-158) and Hope, Ma and Thomas (2013 pp.170) who all found firms to reduce their avoidance upon being subjected to public pressure.

Uncontrolled regression in Table 4 return negative and statistically significant results from tests for the incremental effect of reputation sensitivity to tax shaming. The coefficient when H2 is tested using LnSTORIES is -0.104 significant at over 99.9 % confidence level. LnWORDS returns a coefficient of -0.020 similarly significant at over 99.9% confidence level. While these negative and significant results point to a relationship opposite of what is predicted by this study, they are not sustained upon controlling the regressions. When control variables are added to the regressions, the results tests for the second hypothesis fail to provide support for it. As such, despite the initial significant results from the basic regressions, insignificant results from the controlled regressions imply that no support is found for H2. Thus, this study cannot, within scientifically acceptable confidence bounds make inferences about how a firm's sensitivity to reputational damage moderates the relationship between tax shaming and tax avoidance.

Using our third measure of tax avoidance LongETR in Model B2.3 as defined in Section 3, the results presented in Table 6 below are obtained.

Analyzing tax avoidance using long term measures adopted from Dyreng et al. (2008 pp.67), a statistically significant relationship is observed between tax avoidance and tax shaming in the uncontrolled regressions. When tax shaming is measured as LnSTORIES, a coefficient 0.065 statistically significant at the 99.9% confidence level is obtained. Measuring tax shaming as LnWORDS yields a statistically significant coefficient of 0.013 with probability of type one errors at 0.005. These two highly significant results provide basic support for the predictions of this study that, tax shaming

reduces tax avoidance. Additional testing using controlled regressions invalidates the support provided by the uncontrolled regressions. The statistically insignificant betas obtained from controlled regressions are dissimilar to those obtained in uncontrolled regressions. This implies that the effects observed prior to controlling are not attributable to tax shaming but rather some other economic phenomena that is appropriately controlled for.

These rather low coefficients with statistically insignificant probabilities indicate that the controlled regressions used for Model B2.3 barely capture any changes in LongETR that are attributable to tax shaming. As already noted, with such high probabilities of falsely rejecting the null hypothesis, it is more appropriate not to make any inferences about the relationship between avoidance and shaming using on these results.

Table 6

OLS Regression Model B 2.3[1]: $LongETR_{it} = \beta_0 + \beta_1 SHAME_{it} + \beta_2 RET*SHAME_{it} + Controls_{it} + \varepsilon$

		SHAME= LnSTORIES				SHAME= LnWORDS			
Variables	**Pred.**	**Co-eff**	**P.Val**	**Co-eff**	**P.Val**	**Co-eff**	**P.Val**	**Co-eff**	**P.Val**
Constant		0.258	0***	0.715	0***	0.259	0.010**	0.721	0***
SHAME	+	0.065	0.005***	-0.012	0.734	0.013	0.005***	0.001	0.895
RET*SHAME	+	-0.056	0.031**	0.064	0.104	-0.011	0.006***	0.014	0.092*
TOP	+			0.018	0.757			-0.015	0.821
RETAIL				-0.019	0.506			-0.025	0.379
ROA	-			-0.306	0.119			-0.321	0.105
LEV				-0.049	0.656			-0.049	0.655
PPE				-0.098	0.259			-0.103	0.243
INTANG				0.007	0.909			0.008	0.900
SIZE	+			-0.039	0.008***			-0.040	0.008***
NOL				0.116	0.196			0.107	0.236
DNOL				-0.182	0.01**			-0.174	0.015**
ALT				-0.002	0.877			-0.002	0.894
MBK	-			-0.008	0.233			-0.009	0.198
N			621		621		621		621
R^2			0.013		0.418		0.043		0.418
F		F=4.14	P=0.016	F=2.12	P= 0.013	F=2.19	P=0.010	F=2.19	P= 0.010

Note: [1] both models contain unreported industry year fixed effects.

[2] Full regression model and accompanying statistics attached in Appendix D.

[3] Full regression model and accompanying statistics attached in Appendix E.

*, **, *** Indicate statistical significance at 0.1, 0.05 and 0.01 respectively.

The coefficient RET*SHAME used to test H2 in Model B2.3 presented in Table 6 records a statistically significant regression coefficient from the uncontrolled regression tax shaming is measured as LnSTORIES. The negative beta of -0.056 significant at 0.031 is contra to the predictions of this study. It appears to indicate that firms that are generally more sensitive to reputational damage are less likely to a just their tax positions upwards in the face of tax shaming. Additional analysis using the controlled regression however does not record any statistically significant relationship when tax shaming is measured as LnSTORIES. As such the results from the uncontrolled regression can be disregarded as attributable to some other firm characteristic or economic phenomena.

When measuring tax shaming as information content, initially attained results are similar to those obtained when the LnSTORIES measure is used. When Controls are added, the results are consistent with the predictions of this study. Similar to Hanlon and Slemrod (2009 pp.127), this study observes an incremental albeit marginal contribution of reputation sensitivity to the relationship between tax shaming. The coefficient of 0.014 significant at 0.1 with a P.Value of 0.092 indicates that, ceteris paribus, retail firms that are tax shamed subsequently payer taxes than their non-retail counterparts. While this supports the H2, it is imperative to take note of the relatively high P.Value. At 0.092, with 662 sample observations, such a P.Value is only marginally significant relative to the sample size. This marginal significance is further aggravated by the fact that of all the six controlled regression, only one has yielded support for the second hypothesis. This points to the probability of the effects being driven not by the reputation sensitivity but rather the inherent differences across the different measurement method. Moreover, this effect is not observed when tax shaming is measured as LnSTORIES but yet still manifests in the LnWORDS measurement despite the two being highly correlated. This significant marginally significant effect observed is thus not robust in the face of alternative measurement.

On the overall, some evidence is obtained that tax avoidance reduces with tax shaming. This however is only observable by measuring tax avoidance as the Cash Effective Tax Rate. The GAAPETR and LongETR consistently fail to reject the null hypothesis that no relationship exists irrespective of how tax shaming is measured. A plausible interpretation of these results is that when firms are tax shamed, they respond by paying more income taxes than legally obligated in the fiscal year of tax shaming. These increased tax payments are however unlikely to be reflected in the GAAPETR as no actual additional obligation to pay exists and thus no tax expense is recorded. The author's basis for this claim is that several firms that have been subjected to tax shaming have committed to pay more taxes even when no such liability existed; for example, when Starbucks in the UK was shamed in 2012, it responded by committing to pay 20 million in extra taxes (BBC, 2012).

The author of this study fronts the idea that tax overpayments in the fiscal year of tax shaming will revert in the years subsequent to shaming. If they are not to revert, such an effect is to be captured by

the LongETR variable in Model B2.3. The author advances that the tax overpayments in years of high shaming are offset by underpayments in years of low tax shaming.

Of the six methods used in this study, 5 fail to satisfactorily reject the null hypothesis of the H2 that no firm's sensitivity to reputational damage has no moderating effect on the relationship between tax avoidance and tax shaming. Due to the low statistical significance of the only measure that rejects the null, combined with its sensitivity to measurement construct, it is not appropriate to interpret the results. As such, this study makes no inferences or conclusions about the existence or absence of such an effect.

4.4 Sensitivity

All regressions analyzed in Subsection 3 of Section 4 are run with robust errors to overcome issues of non-normality of distribution of errors and heteroscedasticity. Regarding multicollinearity of the independent variables, the Variance Inflation Factors (VIF) of all variables are analyzed to ensure no unnecessary variables are added to the models. Across all regressions, the highest individual VIF for a variable is 7.31 (recorded from Model 2.2 and reported in Appendix D) which is considerably below the critical collinearity cut off of 10. The highest average VIF for any model in this study is 3.61 belonging to model B2.2. Link Tests run on the regressions without the absorption of fixed effects returned statistically insignificant values indicating the regression models are not improperly specified. Cooks distance tests reported in Appendices B to G indicate that no one variable improperly drives the results of the models used in this study. Ramsey RESET Tests for omitted variable bias all reject the notion that an important variable has been omitted from the models in this study. This provides assurance that no confounding variable is driving the coefficients obtained from the regression models.

To deal with effects that may arise from changes in tax rates and effects that may be attributable to specificity of industries in which sample firms operate, all regression models have been estimated with industry and year fixed effects. These effects are generated by grouping the firms into industrial classifications using dummy variables along the first two digits of their Standard Industrial Classifications (SIC) codes. The SIC code dummies are then interacted with the year classification dummies to generate 209 (207 in Regression Model B2.3) different industry year categories that are then absorbed and thus unreported in the regressions.

To better understand the direction of causation in the relationship between shaming and tax avoidance, a dummy variable for placebo effects is used as in Dyreng et al. (2016 pp.151) to ascertain the direction of the relationship. Intuitively, firms avoiding taxes are better targets for shaming, this could potentially explain the correlation between tax avoidance and tax shaming. By using the placebo, it can be ascertained if the changes in effective tax rate have to do with shaming or simply firms just randomly changing their tax behavior. To do this, this study follows that of Dyreng et al. (2016 pp.151) by lagging the tax shaming dummy variable by one firm year and including it in regression Models B2.1 B2.2 and

B2.3. If this placebo is statistically significant, it is an indication that the effects observed in regressions in subsection 3 of Section 4 are not from tax shaming but rather manifestations of firm characteristics that are unique to firms that get tax shamed.

In comprehensively controlled regressions (reported in Appendix H) as in Section 4, it is observed that the placebo dummy lagged at one year is not statistically different from 0 at any reasonable confidence level. This is interpreted as the effects in regression Models B2.1, B2.2 and B2.3 not being attributable to firm characteristics unique to the shamed firms.

Concerning alternative measurements of the dependent variables as noted by Dunbar, Higgins, Phillips and Plesko (2010 pp.18) in extant literature, two methods of measuring tax avoidance exist; the effective tax rate and the book tax differences. The preference for effective tax rate in this study is purely discretionary. While it would be desirable to subject the dependent variable tax avoidance to alternative measurement under the book-tax differences method, research by Guenther (2014 pp.16) shows that both effective tax rates and book tax differences essentially capture identical attributes of tax avoidance. It is thus not necessary to use one to check the robustness of the other. For that reason, this study does not employ the book-tax differences approach for alternative measurement. The author deems the three versions of effective tax rate used in this study as sufficient.

5. Conclusions

This section summaries the findings, interprets them where appropriate and draws conclusion. It starts with a summary of the purpose of this research, then summates the results. Significant results are addressed first followed by insignificant and finally mixed results. Additionally, the section addresses the limitations of the research and ends in a call for future research.

This research sets out to study the effect of tax shaming on subsequent tax avoidance. It seeks to examine whether an increase in public criticism of a tax avoidance is met by a reduction in the firm's tax avoidance. Because such criticism is theorized to work by damaging the reputation of the shamed firm, this study extends the research question with an inquisition in to exactly how such sensitivity to reputational damage influences the efficiency of tax shaming.

We note a distinct and significant change in the Cash Effective Tax Rates of the firms in the year of shaming. This indicates that, upon shaming, firms pay significantly more in taxes than they did in years before shaming. Among the average firm year, it is observed that, ceteris paribus, taxes paid to raise by 0.004% upon a 1% increase in the number of articles published about a firm's tax avoidance. This roughly translates to an increase of taxes by £2.1 million that is directly attributable to a 1% increase in tax shaming when it is measured as the number of articles criticizing a firm for tax avoidance in a given firm year. When Tax shaming is measured as, holding all else constant, on average 1% increase in ax shaming results in a 0.0027% increase in the firm year's Cash Effective Tax Rate. This corresponds to approximately £1.4 million in extra taxes paid that are attributable to tax shaming.

When the tax expense recorded in the income statements of the shamed firms are analyzed, no difference is observed that can be attributed to the shaming. At face value this paints a dysfunctional picture. Firms pay more tax upon shaming but do not record such tax as an expense. This anomaly is explainable. Tax avoidance by is itself not illegal. Because of this, even when firms remit more taxes to the tax authority, no tax expense is recorded as in the strict sense no legal obligation exists for the increase in such tax payments. As such accounting rules do not allow recording of nonexistent obligations especially if they are to prone to adjustments, as taxes are. Such a situation mandates that while cash is sent out to the tax authorities which is recorded in the cash flows, no tax liability arises and thus no income statement expense is recorded. This potentially explains the lack of significant results when tax avoidance is measured as GAAPETR (a noncash flow construct) even though such results exist when it is measured as the Cash Effective Tax Rate (a cash flow item).

Measuring tax avoidance in the long term yields insignificant results. This study thus obtains no evidence that firms that keep up the increased payments of tax to the authorities. Combining this result with those of the other two tests, raises an interesting prospect, firms initially pay more taxes in the year that they are shamed but not afterwards. One way to interpret this combination of results is that tax

shaming has a very short term effect. After the shaming year effects subside and firms retort to pre-shaming levels of tax avoidance. Another way to look at it is that firms ceremonially increase the tax remittances only in the year of shaming only to offset these overpayments with lower payments in the subsequent years. Encompassing all the results of this study sends us a bit to the second interpretation. That is since no tax obligation exists as noted in the non-recording of such in the GAAPETR, firms appear to simply deposit some extra money with the tax authorities. When the shaming ends, they use such monies to settle tax position of subsequent years, hence the lack of effects on the long term. In light of the conclusions of Austin and Wilson (2017 pp.67) that firms use earnings management to report high GAAP effective tax rates when it benefits their reputation, it becomes plausible that the same is done with the cash effective tax rates in when such firms are tax shamed.

Of the 6 controlled regressions that tested for reputational sensitivity effects, only one returned significant results. When tax avoidance is measured in the long term and tax shaming as information content, a significant moderation effect of reputation sensitivity is observed in the relationship between tax shaming and tax avoidance. All other measures of other tax avoidance and tax shaming fail to reject the null hypothesis that no such effect exists. Because the only support obtained for H2 is marginally significant at only 0.1 % and not robust in that it is sensitive to how both shaming and avoidance are measured, this study refrains from providing interpretations to this relationship.

This study has faced some limitations that must be considered when interpreting and/ or adopting its results. Measuring of subjective constructs is not an exact science. The quantification of tax shaming poses a specific challenge as this is a relatively new phenomenon. Proxies have to be developed which has a negative effect on both the internal and external validity of such measures. Data, design and time constraints dictate that only a limited scope of the media proxy can be evaluated in this study. Focusing on only articles published by media outlets means this study ignores the effects of other media forms such as social media, word of mouth, and audio-visual media that is not included in the Factiva data base employed by this study. Tax avoidance is similar to tax shaming in that it is just as unobservable. The effective tax rate measures used to proxy for tax avoidance in this study are prone to measuring tax avoidance with noise. While due care is taken to ensure that such measures are valid, there exists an inherent risk that tax avoidance is overstated by the effective tax rate measures as their construction captures several firm characteristics and management decisions that may not necessarily be geared towards tax avoidance.

Interestingly no difference is noticed in the in the tax positions of firms that are shamed and those that are not shamed before the shaming. Generally, at least at group consolidated level, low effective tax rates are not the trigger of tax shaming. Intuitively, it is expected that firms that made the most profit and paid the least tax on the profit are targeted for shaming, however the data shows that neither profitability nor distinctly low taxes trigger tax shaming. This observation should encourage future

researchers to further look in to the thought process of leaders of tax shaming campaigns and thus better understand how the shaming works. Another interesting aspect for future research it the extension of the results of this study to encompass broader definitions tax shaming. Since quantification and data availability limit this study to only written media, future researchers who are free from such constraints should consider extending this study to include media avenues such as social media, audio visual and word of mouth.

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Appendices

APPENDIX A
Descriptive Statistics

Variables	N	Mean	Min.	Median	MAX	Std Dev.
TOT ASSETS	661	90,695	92.346	9,846	1,696,486	217,744
REVENUE	661	15,742.86	-233	6,719	301,370.20	34,152.92
NET INC	661	1,026.10	-8,995	376	19,817.82	2,391.42
PRE-TAX INC	661	1,796.73	-10,977	589.6	36,444.84	3,669.99
TAX EXPENSE	661	430.8	-16,582	95.5	15,687.90	5,558
TAX PAID	661	517.11	-90	116.5	14,500	1,307.82
STORIES	661	1.323	0	0	134	6.282
WORDS	661	631.236	0	0	7,113	3,284
EVENT	661	0.231	0.000	0.000	1.000	N/A
GAAP EVENT= 1	153	0.243	0.000	0.233	1.000	0.189
GAAP EVENT= 0	508	0.210	0.000	0.215	1.000	0.164
CETR EVENT = 1	163	0.361	0.000	0.243	1.000	0.286
CETR EVENT = 0	508	0.267	0.000	0.213	1.000	0.245
Long EVENT = 1	144	0.292	0.000	0.242	1.000	0.212
Long EVENT= 0	477	0.260	0.000	0.216	1.000	0.228
LnSTORIES	661	0.330	0.000	0.000	4.905	0.726
LnWORDS	661	1.643	0.000	0.000	11.172	3.059
TOP	661	0.056	0.000	0.000	1.000	0.192
GAAPETR	661	0.219	0.000	0.219	1.000	0.171
CETR	661	0.288	0.000	0.221	1.000	0.258
LongETR	621	0.267	0.000	0.223	1.000	0.225
ROA	661	0.083	-0.518	0.071	0.000	0.108
LEV	661	0.199	0.000	0.187	1.150	0.156
INTANG	661	0.213	0.000	0.114	1.392	0.240
LnSIZE	661	9.459	3.754	9.194	14.344	1.821
NOL	661	0.103	0.000	0.000	1.000	N/A
DNOL	661	-0.003	1.000	0.000	1.000	0.348
ALT	661	2.561	0.114	2.216	7.805	1.968
MBK	661	2.750	0.382	2.027	9.723	2.460
RETAIL	661	0.549	0.000	1.000	1.000	N/A
PPE	661	0.265	0.000	0.152	1.957	0.293

Variable Definitions;

TOT. ASSETS = The value of a firm's assets in million pounds at the start of the firm year.

REVENUE = The total sales revenue of a firm in million pounds during the sample firm year. A gross figure.

NET INC = The net profit of a firm during a firm year in million pounds. A net figure after deduction of all expenses including taxes.

PRE-TAX INC	=	The profit before tax adjusted for special items for a firm year in million pounds. Defined as Pre-Tax Income less Special Items.
TAX EXPENSE	=	The GAAP tax expense (TXT) for a firm as reported in the Income Statement in million pounds.
TAX PAID	=	The amount of taxes paid (TXPD) by a firm in million pounds for a firm year.
STORIES	=	The total number of articles written about a firm's tax avoidance in a given firm year.
WORDS	=	The total number of words contained in articles written about a firm's tax avoidance in a firm year.
EVENT	=	A dummy variable assigned one if a firm year has a tax shaming value of more than 0 and 0 if otherwise.
GAAP EVENT= 1	=	The GAAPETR for firm years with at least one tax shaming story.
GAAP EVENT= 0	=	The GAAPETR for firm years with no tax shaming story.
CETR EVENT = 1	=	The CETR for firm years with at least one tax shaming story.
CETR EVENT = 0	=	The CETR for firm years with no tax shaming story.
Long EVENT = 1	=	The LongETR for firm years with at least one tax shaming story.
Long EVENT = 0	=	The LongETR for firm years with no tax shaming story.
LnSTORIES	=	The natural logarithm (Ln) of the total number of Stories as defined in STORIES above in a given year set as: Ln (1+ STORIES).
LnWORDS	=	The natural logarithm (Ln) of the total number of words as defined in WORDS above in a given firm year set as: Ln (1+WORDS).
TOP	=	The proportion of STORIES (WORDS) written by TOP media sources as defined in Section 3 set as: TOP/ STORIES (WORDS).
GAAPETR	=	The GAAP Effective Tax Rate of a firm for a firm year set as: Tax Expense/ Pre-Tax Income. Minimum set to 0 and maximum to 1.
CETR	=	The Cash Effective Tax Rate of a firm during a firm year set as: Tax Paid/ Pre-Tax Income. Minimum set to 0 and Maximum to 1.
LongETR	=	The rolling average 3 year CETR for a firm during a firm year set as: (∑ Cash Tax Expense i t, t+1, t+2) / (∑ Pre-tax Income i t, t+1, t+2) Minimum set to 0 and maximum to 1.
ROA	=	Net Income for a given firm year normalized by the Total Assets at the beginning of the firm year.
LEV	=	The financial leverage of a firm in a given firm year defined as Total Liabilities divided by Total Assets at the start of the firm year.
INTANG	=	The level of intangible assets of a firm divided by the value of Total Assets at the beginning of the firm year.
LnSIZE	=	The Natural Logarithm of Total Assets at the beginning of the firm year.
NOL	=	An indicator variable set to 1 if the firm year is an operating loss year and 0 if otherwise.
DNOL	=	A categorical variable for the change in NOL set to one if a firm moves from a loss position to a profit position, negative one for the initial loss year and 0 otherwise.
ALT	=	The Altman's Z Score for a given firm year. A financial distress indicator with lower values signaling pending bankruptcy. Winsorized at 2.5% at each tail.
MBK	=	The Market to Book ratio at the end of a firm year. Set as: Total Market Capitalization / Book Value of Equity. Winsorized at 2.5% at each tail.
RETAIL	=	An indicator variable set to 1 if a firm directly serves final consumers and 0 if otherwise.

APPENDIX B

OLS Regression Model B 2.1[1]: $GAAPETR_{it} = \beta_0 + \beta_1 LnSTORIES_{it} + \beta_2 RET*LnSTORIES_{it} + Controls_{it} + \varepsilon$

Variables	Pred.	Co-eff.	Std Dev.	T.Stat	P.Val	95% Conf. Interval	
Constant		0.063	0.113	0.560	0.579	-0.159	0.284
LnSTORIES	+	-0.038	0.031	-1.230	0.219	-0.099	0.023
RET*STORIES	+	0.007	0.034	0.190	0.848	-0.060	0.073
TOP	+	0.019	0.044	0.420	0.674	-0.068	0.106
RETAIL		-0.054	0.025	-2.210	0.027***	-0.103	-0.006
ROA	-	0.322	0.114	2.830	0.005***	0.098	0.545
LEV		-0.083	0.094	-0.880	0.377	-0.268	0.102
PPE		0.028	0.054	0.530	0.599	-0.077	0.134
INTANG		0.046	0.045	1.030	0.302	-0.042	0.135
SIZE	+	0.016	0.010	1.630	0.104	-0.003	0.034
NOL		0.122	0.071	1.730	0.084*	-0.017	0.261
DNOL		-0.060	0.065	-0.920	0.360	-0.188	0.069
ALT		0.000	0.008	0.030	0.976	-0.016	0.017
MBK	-	0.002	0.004	0.560	0.579	-0.006	0.011
N			661				
R^2			0.44				
Adj R^2			0.158				
F		F= 2.35	P= 0.004				
Carts absorbed			209				
VIF		Max= 7.3	Mean=3.3				
Link Test		T= 1.272	P= 0.204				
Ramsey RESET		F= 1.37	P= 0.2504				
Cook's D			<1				

Note: [1] the regression model is estimated with robust standard errors.

*, ** and *** denote statistical significance at 0.1, 0.05 and 0.01 confidence levels respectively.

APPENDIX C

OLS Regression Model B 2.1[1]: $GAAPETR_{it} = \beta_0 + \beta_1 LnWORDS_{it} + \beta_2 RET*LnWORDS_{it} + Controls_{it} + \varepsilon$

Variables	Co-eff.	Std Dev.	T. Stat	P.Val	95% Conf. Interval	
Constant	0.078	0.112	0.700	0.486	-0.142	0.299
LnSTORIES	-0.004	0.006	-0.620	0.534	-0.015	0.008
RET*STORIES	-0.001	0.007	-0.110	0.910	-0.014	0.013
TOP	0.006	0.048	0.120	0.906	-0.088	0.099
RETAIL	-0.059	0.026	-2.250	0.025**	-0.111	-0.008
ROA	0.321	0.114	2.820	0.005***	0.097	0.546
LEV	-0.068	0.095	-0.710	0.476	-0.254	0.119
PPE	0.028	0.053	0.520	0.602	-0.077	0.133
INTANG	0.044	0.045	0.970	0.332	-0.045	0.132
SIZE	0.014	0.009	1.430	0.153	-0.005	0.032
NOL	0.120	0.071	1.690	0.092*	-0.020	0.260
DNOL	-0.059	0.065	-0.900	0.366	-0.187	0.069
ALT	0.000	0.008	0.030	0.973	-0.016	0.017
MBK	0.002	0.004	0.580	0.564	-0.006	0.011
N		661				
R^2		0.4324				
Adj R^2		0.1466				
F	F= 2.22	P= 0.008				
Carts absorbed		209				
VIF	Max= 7.29	Mean= 3.59				
Link Test	T= 0.687	P= 0.687				
Ramsey RESET	F=1.10	P= 0.2417				
Cook's D		<1				

Note: [1] the regression model is estimated with robust standard errors.

*, ** and *** denote statistical significance at 0.1, 0.05 and 0.01 confidence levels respectively.

APPENDIX D

OLS Regression Model B 2.2[1]: $CETR_{it} = \beta_0 + \beta_1 LnSTORIES_{it} + \beta_2 RET*LnSTORIES_{it} + Controls_{it} + \varepsilon$

Variables		Co-eff.	Std Dev.	T. Stat	P.Val	95% Conf. Interval	
Constant		0.550	0.148	3.710	0***	0.259	0.841
LnSTORIES	+	0.052	0.020	2.610	0.009***	0.013	0.092
RET*STORIES	+	0.001	0.027	0.050	0.962	-0.052	0.055
TOP	+	0.074	0.050	1.480	0.140	-0.024	0.173
RETAIL		-0.008	0.033	-0.250	0.801	-0.073	0.056
ROA	-	-0.391	0.161	-2.430	0.015**	-0.707	-0.075
LEV		0.217	0.123	1.760	0.079*	-0.025	0.459
PPE		-0.116	0.064	-1.810	0.07*	-0.242	0.010
INTANG		0.001	0.050	0.020	0.984	-0.097	0.099
SIZE	+	-0.032	0.013	-2.460	0.014**	-0.058	-0.007
NOL		0.393	0.067	5.890	0***	0.262	0.524
DNOL		-0.395	0.061	-6.520	0***	0.000	-0.276
ALT		0.016	0.012	1.360	0.173	-0.007	0.039
MBK	-	-0.014	0.006	-2.210	0.028**	-0.026	-0.002
N			661				
R^2			0.5668				
Adj R^2			0.3487				
F		F= 10.87	P= 0.000				
Carts absorbed			209				
VIF		Max= 7.31	Mean= 3.61				
Link Test		T= 2.72	P= 0.000				
Ramsey RESET		F= 11.3	P= 0.000				
Cook's D			<1				

Note: [1] the regression model is estimated with robust standard errors.

*, ** and *** denote statistical significance at 0.1, 0.05 and 0.01 confidence levels respectively.

APPENDIX E

OLS Regression Model B 2.2[1]: $CETR_{it} = \beta_0 + \beta_1 LnWORDS_{it} + \beta_2 RET*LnWORDS_{it} + Controls_{it} + \varepsilon$

Variables		Co-eff.	Std Dev.	T. Stat	P.Val	95% Conf. Interval	
Constant		0.577	0.146	3.950	0***	0.290	0.864
LnWORDS	+	0.014	0.005	2.940	0.003***	0.005	0.023
RET*WORDS	+	0.004	0.007	0.600	0.551	-0.009	0.017
TOP	+	0.023	0.054	0.420	0.674	-0.084	0.130
RETAIL		-0.019	0.034	-0.560	0.574	-0.086	0.048
ROA	-	-0.408	0.161	-2.540	0.011**	-0.724	-0.093
LEV		0.211	0.122	1.730	0.085	-0.029	0.451
PPE		-0.121	0.063	-1.910	0.057*	-0.246	0.004
INTANG		-0.002	0.050	-0.040	0.969	-0.100	0.096
SIZE	+	-0.034	0.013	-2.670	0.008***	-0.059	-0.009
NOL		0.388	0.066	5.890	0***	0.258	0.517
DNOL		-0.389	0.060	-6.480	0***	-0.507	-0.271
ALT		0.016	0.012	1.330	0.183	-0.007	0.038
MBK	-	-0.014	0.006	-2.330	0.020**	-0.026	-0.002
N			661				
R^2			0.572				
Adj R^2			0.356				
F		F= 10.61	P=0.000				
Carts absorbed			209				
VIF		Max= 7.29	Mean= 3.59				
Link Test		T= 3.072	P= 0.002				
Ramsey RESET		F= 14.15	P= 0.000				
Cook's D			<1				

Note: [1] the regression model is estimated with robust standard errors.

*, ** and *** denote statistical significance at 0.1, 0.05 and 0.01 confidence levels respectively.

APPENDIX F

OLS Regression Model B 2.3[1]: $LongETR_{it} = \beta_0 + \beta_1 LnSTORIES_{it} + \beta_2 RET*LnSTORIES_{it} + Controls_{it} + \varepsilon$

Variables		Co-eff.	Std Dev.	T. Stat	P.Val	95% Conf. Interval	
Constant		0.715	0.171	4.180	0***	0.379	1.052
LnSTORIES	+	-0.012	0.035	-0.340	0.734	-0.080	0.056
RET*STORIES	+	0.064	0.039	1.630	0.104	-0.013	0.141
TOP	+	0.018	0.059	0.310	0.757	-0.098	0.135
RETAIL		-0.019	0.028	-0.670	0.506	-0.073	0.036
ROA	-	-0.306	0.196	-1.560	0.119	-0.691	0.079
LEV		-0.049	0.109	-0.450	0.656	-0.263	0.166
PPE		-0.098	0.087	-1.130	0.259	-0.270	0.073
INTANG		0.007	0.061	0.110	0.909	-0.113	0.126
SIZE	+	-0.039	0.015	-2.680	0.008***	-0.068	-0.010
NOL		0.116	0.089	1.300	0.196	-0.060	0.291
DNOL		-0.182	0.070	-2.590	0.01**	-0.320	-0.044
ALT		-0.002	0.015	-0.150	0.877	-0.032	0.027
MBK	-	-0.008	0.007	-1.190	0.233	-0.022	0.005
N			621				
R^2			0.418				
Adj R^2			0.099				
F		F=2.12	P= 0.013				
Carts absorbed			207				
VIF		Max= 7.25	Mean= 3.67				
Link Test		T=1.645	P= 0.100				
Ramsey RESET		F= 8.42	P= 0.000				
Cook's D			<1				

Note: [1] the regression model is estimated with robust standard errors.

*, ** and *** denote statistical significance at 0.1, 0.05 and 0.01 confidence levels respectively.

APPENDIX G

OLS Regression Model B 2.3[1]: $LongETR_{it} = \beta_0 + \beta_1 LnWORDS_{it} + \beta_2 RET*LnWORDS_{it} + Controls_{it} + \varepsilon$

Variables		Co-eff.	Std Dev.	T. Stat	P.Val	95% Conf. Interval	
Constant		0.721	0.172	4.190	0***	0.383	1.060
LnWORDS	+	0.001	0.007	0.130	0.895	-0.013	0.015
RET*WORDS	+	0.014	0.008	1.690	0.092*	-0.002	0.031
TOP	+	-0.015	0.064	-0.230	0.821	-0.141	0.112
RETAIL		-0.025	0.029	-0.880	0.379	-0.082	0.031
ROA	-	-0.321	0.198	-1.630	0.105	-0.710	0.067
LEV		-0.049	0.110	-0.450	0.655	-0.265	0.167
PPE		-0.103	0.088	-1.170	0.243	-0.275	0.070
INTANG		0.008	0.061	0.130	0.900	-0.112	0.127
SIZE	+	-0.040	0.015	-2.690	0.008***	-0.069	-0.011
NOL		0.107	0.090	1.190	0.236	-0.070	0.285
DNOL		-0.174	0.071	-2.450	0.015**	-0.313	-0.034
ALT		-0.002	0.015	-0.130	0.894	-0.031	0.027
MBK	-	-0.009	0.007	-1.290	0.198	-0.023	0.005
N			621				
R^2			0.418				
Adj R^2			0.1				
F		F=2.12	P= 0.010				
Carts absorbed			207				
VIF		Max= 7.21	Mean= 3.61				
Link Test		T=1.799	P= 0.073				
Ramsey RESET		F= 4.92	P= 0.002				
Cook's D			<1				

Note: [1] the regression model is estimated with robust standard errors.

*, ** and *** denote statistical significance at 0.1, 0.05 and 0.01 confidence levels respectively.

APPENDIX H

OLS Regression Model C: $TAX\ AVOIDANCE_{it} = \beta_0 + \beta_1 PLACEBO_{it-1} + \beta_2 SHAME_{it} + \beta_3 RET*SHAME_{it} + Controls_{it} + \varepsilon$

	TAX AVOIDANCE= GAAPETR[1]				TAX AVOIDANCE= CETR[1]				TAX AVOIDANCE= LongETR[2]			
	LnSTORIES		LnWORDS		LnSTORIES		LnWORDS		LnSTORIES		LnWORDS	
Variables	**Co-eff**	**P.Val**	**Co-eff**	**P.Val**	**Co-eff**	**P.Val**	**Co-eff**	**P.Val**	**Co-eff**	**P.Val**	**Co-eff**	**P.Val**
Constant	0.027	0.837	0.027	0.833	0.554	0***	0.576	0***	0.673	0.001***	0.678	0.001***
PLACEBO[3]	-0.002	0.633	-0.003	0.344	0.004	0.161	0.003	0.195	0.002	0.643	0.002	0.602
SHAME	-0.039	0.239	-0.004	0.568	0.042	0.04**	0.012	0.014**	-0.012	0.731	0.001	0.869
RET*SHAME	0.011	0.763	0.000	0.996	-0.012	0.666	0.000	0.960	0.052	0.198	0.010	0.265
TOP	0.000	0.994	-0.010	0.846	0.055	0.315	0.016	0.791	0.030	0.692	0.001	0.988
RETAIL	-0.043	0.048	-0.045	0.059*	0.002	0.957	-0.007	0.817	-0.005	0.868	-0.009	0.755
ROA	0.326	0.010**	0.321	0.011**	-0.346	0.039**	-0.358	0.032**	-0.377	0.073*	-0.386	0.067
LEV	-0.109	0.283	-0.093	0.361	0.199	0.134	0.196	0.135	-0.068	0.557	-0.063	0.589
PPE	0.051	0.398	0.050	0.398	-0.119	0.089*	-0.123	0.076*	-0.102	0.296	-0.107	0.277
INTANG	0.054	0.288	0.052	0.312	-0.015	0.788	-0.016	0.780	0.004	0.952	0.006	0.927
SIZE	0.018	0.106	0.017	0.122	-0.032	0.024**	-0.034	0.016**	-0.036	0.031**	-0.036	0.031
NOL	0.162	0.047**	0.159	0.052*	0.420	0***	0.415	0***	0.080	0.393	0.072	0.448
DNOL	-0.065	0.385	-0.063	0.396	-0.400	0***	-0.396	0***	-0.177	0.014**	-0.170	0.020**
ALT	-0.001	0.949	0.000	0.998	0.013	0.294	0.013	0.296	0.001	0.937	0.002	0.911
MBK	0.004	0.323	0.004	0.302	-0.013	0.037**	-0.014	0.032**	-0.006	0.476	-0.006	0.426
N		564		564		564		564		525		525
R^2		0.45		0.444		0.559		0.563		0.427		0.427
F	F=2.55	P=0.002	F=2.49	P= 0.002	F=9.05	P=0.000	F=8.680	P= 0.000	F=1.62	P=0.073	F=1.62	P= 0.03

Note: [1] the regression model is estimated with 179 categories of industry year fixed effects.

[2] the regression model is estimated with 177 categories of industry year fixed effects.

[3] Placebo is a dummy variable for an event firm year lagged by on period.

*, ** and *** denote statistical significance at 0.1, 0.05 and 0.01 confidence intervals.