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## The effect of intermediary coverage on disclosure: Evidence from a randomized field experiment

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### ABSTRACT

Intermediaries play a significant role in capital markets by reducing disclosure processing costs to market participants. Yet, due to selection and other empirical challenges, the extent and mechanisms through which intermediaries influence firm disclosure are largely unknown. To address these challenges, I conduct a field experiment that randomizes coverage of a mandatory disclosure by two key intermediaries—non-governmental organizations and the media. I show that this coverage causes noncompliant firms to publish the disclosure and firms with low-quality disclosures to improve their existing disclosures. Surprisingly, new disclosures from previously noncompliant firms are on average low quality. Survey evidence and cross-sectional tests suggest the main effect may be driven by firms perceiving pressure from the regulator, whose processing costs may have been reduced. My results yield causal estimates of the effect of intermediary coverage on disclosure and shed light on the nature of the stakeholders that subsequently exert costs on firms.

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## 1. Introduction

A fundamental factor in a firm's disclosure choice is the extent to which market participants can process the information the firm discloses (Blankespoor, 2019). Because market participants have limited attention and resources (e.g., Barber and Odean, 2008; Dellavigna and Pollet, 2009; Hirshleifer et al., 2009), they often rely on intermediaries to reduce processing costs by collecting, analyzing, and distributing firms' disclosures and other information (Blankespoor et al., 2020; Bradshaw et al., 2016; Tetlock, 2014). By easing these frictions, intermediaries play a key role in capital markets and can significantly affect the cost-benefit equilibrium that firms face when making optimal disclosure decisions.

However, the ways in which intermediaries affect disclosure are relatively unexplored, in part due to several empirical challenges. First, "intermediary coverage often occurs simultaneously with the firm disclosure and other intermediaries' coverage, making it difficult to isolate the market effects of any one intermediary"; second, firm and disclosure characteristics typically drive intermediary coverage, leading to selection problems; and third, intermediaries "often discuss multiple topics, making it difficult to isolate coverage of a particular disclosure" (Blankespoor et al., 2020).

In this paper, I examine the effect of coverage from two key intermediaries—non-governmental organizations (NGOs) and the media—on firms' disclosure decisions. Specifically, I study whether coverage of a deficient disclosure can affect the targeted disclosure, how the disclosure changes, and why coverage affects the disclosure. To do this, I conduct a field experiment that, by randomizing intermediary coverage, can address the empirical challenges of this literature. In addition, I supplement the field experiment with a survey of tax executives, cross-sectional tests, and spillover tests that shed light on the roles played by stakeholders for which processing costs are reduced.

I study NGOs and the media because we have relatively little evidence regarding their effects on disclosure, and two features make them distinct from other intermediaries and stakeholders. First, rather than catering predominantly to investors, NGOs and the media often cover political, social, and environmental issues that are of interest to consumers, regulators, and the public at large (e.g., Harrison and Scorse, 2010; Kölbel et al., 2017). Second, NGOs and the media apply implicit rather than direct pressure on firms—they reduce processing frictions for other stakeholders, which subsequently exert costs on firms (e.g., imposing fines, boycotting products, etc.) (e.g., Barnett, 2014; Baron, 2001; Yu, 2005). That is, their influence relies on delivering information that is frequently not directly related to firm value, and effectively getting that information into the hands of stakeholders (often non-investors) that can shape firm behavior.

Yet, the effect of NGO and media coverage on disclosure is unclear. Because processing costs limit market participants' benefit to consuming disclosure, a reduction in these costs can increase demand and drive up the supply of disclosure (Blankespoor et al., 2020). It can also increase disclosure by raising the expected value of penalties that regulators and other stakeholders impose on firms for non-disclosure or insufficient disclosure. In contrast, reduced processing costs also make it easier for market participants to glean information from disclosures that can be used against the firm, thus increasing proprietary costs (Verrecchia, 1983) and leading to less disclosure. Finally, there is doubt that these intermediaries can affect disclosure at all to the extent they fail to reach key stakeholders or firms discount pressure from non-investor stakeholders (Bebchuk and Tallarita, 2020, 2022; Raghunandan and Rajgopal, 2021).

To examine my research question, I identify a setting with high disclosure processing costs, and I partner with an NGO to organize a campaign that randomizes NGO and media coverage of a standalone tax disclosure in a field experiment. This allows me to ensure that intermediary coverage (1) occurs independent of firm disclosure and other intermediaries' coverage, (2) occurs randomly, to avoid selection problems, and (3) targets a disclosure related to a singular topic. The setting I exploit is a new disclosure regime in the U.K. that requires firms to prepare a qualitative disclosure about their tax strategy and publish it online. Although the disclosures are public, processing costs are high because the disclosures are not filed in any central location. The law simply requires firms to publish the disclosure in any location on the internet so long as it is free of charge and accessible to a member of the public. Hence, the cost for market participants to become aware of, acquire, and infer value implications is substantial. In fact, awareness costs appear to be sufficiently high to sustain an equilibrium with partial non-disclosure. A number of firms either do not initially publish the required disclosure or provide very low-quality disclosures, making it possible to examine the effect of intermediary coverage on non-disclosure and disclosure quality.

My empirical analysis consists of five components. First, I examine firm-level determinants of disclosure quality and accessibility. Even though the disclosure is mandatory, because it is qualitative and not filed in a central repository, firms have the latitude to manipulate its quality and accessibility to maximize firm value. Indeed, I find some evidence that greater tax aggressiveness is associated with disclosures that are shorter, more boilerplate, and located on webpages that are difficult to find, indicating that these firms perceive that publicly revealing information about their tax strategy is costly. I also find that disclosure quality and accessibility are negatively correlated, suggesting that firms may view these dimensions as substitutes on which they can strategically optimize.

Second, I conduct the field experiment by partnering with a reputable NGO, the Tax Justice Network (TJN), to produce a public report and organize a media campaign that targets two random sets of firms: firms that did not comply (hereafter

“non-disclosing firms”) and firms that complied but had low-quality disclosures (hereafter “low-quality disclosure firms”).<sup>1</sup> I then track firms' disclosure behavior for six months. Although the campaign's reach was relatively small and did not affect market returns, firms significantly changed their disclosures. By the end of the field experiment, 59 percent of treated non-disclosing firms begin disclosing, compared to 17 percent of control firms. Among low-quality disclosure firms, 7 percent of treated firms significantly improved their disclosures, compared to 0 percent of control firms.

Third, I examine the channels through which NGO and media coverage imposes pressure on firms using cross-sectional tests and a small sample of survey responses from tax executives. My findings suggest that the main results may be driven by firms perceiving pressure from the regulator (actual or anticipated), whose processing costs may have been reduced by the report. Firms also report pressure from the intermediaries themselves, as well as from external advisors and investors. In addition, external advisors such as accounting firms appear to have played an outsized role in contacting and advising firms on ex post disclosure choices.

Fourth, I analyze the content and timing of new disclosures provided by previously noncompliant treatment firms. Surprisingly, I find that these disclosures are on average lower in quality than disclosures from firms that initially complied, and that this result is driven by firms that responded more quickly. That is, although coverage from NGOs and the media has a large effect on firms' compliance with mandatory disclosure, firms respond to the coverage by producing disclosures that are low quality. This finding suggests that firms' disclosure responses to NGO and media coverage in many cases may be more symbolic gestures than substantial behavioral changes (Bednar, 2012).

Finally, I examine channels for information spillovers stemming from NGO and media coverage. Although a number of prior studies examine information transmission via intermediaries (Tetlock, 2014), information spillovers to non-targeted firms have received little attention. I exploit four network connections between firms—shared auditor, same industry, connected board, and close geographic distance—and show that non-disclosing control firms (i.e., firms not mentioned in the report) are significantly more likely to begin disclosing if they have treatment firms with headquarters locations nearby. My results are consistent with local firms sharing key information channels, such as employee connections or shared external advisors that lead to changed disclosure behavior among control firms.

My study is not without limitations. Although a field experiment addresses the empirical challenges of identifying the causal role of intermediaries discussed above, causal identification comes at the cost of generalizability. There are several reasons my setting is unique, including the disclosure being qualitative, there being no formal disclosure mechanism, and the disclosure requirement and pressure arising from a jurisdiction other than the firm's headquarter jurisdiction. Hence, my results may not generalize to other disclosure settings. Further, potential bias in survey response rates, small sample evidence, and measurement error in proxies preclude me from drawing definitive conclusions about mechanisms.

My paper makes two primary contributions. First, I contribute to a new and growing literature that examines how processing costs can affect firms' disclosure choices (e.g., Balakrishnan et al., 2014; Blankespoor, 2019). I extend this work by providing evidence on whether and how a unique set of intermediaries, NGOs and the media, can influence disclosure, even when their reach is relatively small and does not affect market returns. I do this using a field experiment that addresses the empirical challenges of this literature (Blankespoor et al., 2020), through which I can analyze the causal effect of NGO and media coverage and shed light on nuanced effects, such as coverage inducing compliant but low-quality disclosures. Moreover, I deepen our understanding of mechanisms using survey results, cross-sectional tests, and spillover tests that examine how coverage reduces processing costs and ultimately affects disclosure.

Second, I contribute to the literature on disclosure and taxes. Jurisdictions across the globe are increasingly creating new public disclosure regimes in attempts to curb aggressive tax behavior and improve transparency, and a number of recent papers examine firms' responses to these programs (e.g., Hasegawa et al., 2013; Hoopes et al., 2018; Joshi et al., 2020; Kays, 2021). My results suggest that when weighing new requirements, policymakers should consider how disclosure processing costs might affect outcomes. A qualitative disclosure with no filing mechanism, such as the U.K. Tax Strategy disclosure regime, may exhibit prohibitively high processing costs, resulting in firms disclosing very little information. However, coverage from NGOs and the media can be an effective enforcement mechanism that complements the efforts of regulators, in part by helping to reduce such regulators' processing costs.

## 2. Motivation and setting

### 2.1. Disclosure processing costs

In modeling optimal disclosure policies, classical theories assume that information is either public or private, and that public disclosures are costless to process (Fama, 1970; Marshall, 1974). Firms then weigh benefits such as greater liquidity, lower cost of capital, and reduced regulatory fines (Becker, 1968; Diamond, 1985; Diamond and Verrecchia, 1991; Lambert et al., 2007) against costs, such as proprietary costs (Verrecchia, 1983), and choose the level of disclosure that maximizes firm value.

<sup>1</sup> In determining the appropriateness of the field experiment from both ethical and legal perspectives, I consulted a number of external advisors including attorneys, the Institutional Review Board (IRB), and TJN staff. In response to my IRB application, I was informed that my experiment does not constitute human subjects research and did not require IRB approval.

A growing literature finds evidence suggesting that public disclosures are not costless to process (see Blankespoor et al. (2020) for a review). Features of disclosures themselves (e.g., complexity, location, timing of release), constraints on market participants (e.g., limited attention), and institutional features (e.g., the accessibility of financial statements) can slow or prevent disclosures from being processed. Initial studies in this area show how these costs affect capital market outcomes such as price informativeness, price responsiveness, liquidity, volatility, and trading volume.<sup>2</sup> More recent work also suggests that these frictions can influence managers' reporting behavior (e.g., deHaan et al., 2015; Samuels et al., 2021). A new and growing stream in this literature, to which this paper contributes, examines how processing costs affect firms' disclosure decisions.

### 2.1.1. The effects of processing costs on disclosure

This area of research is based on a framework where processing costs limit investors' net benefit to consuming disclosure; hence, a reduction in these costs can increase demand for disclosure and drive up its supply (Blankespoor et al., 2020). Similarly, when consumers of disclosure face high processing costs, firms can attempt to offset these costs with greater or more precise disclosure.<sup>3</sup>

For example, prior research has found that a reduction in processing costs due to XBRL leads to greater disclosure (Blankespoor, 2019), while an increase in processing costs because of shocks to investor attention results in less disclosure (e.g., Abramova et al., 2020; Basu et al., 2019; Zhou and Zhou, 2020). Further, Guay et al. (2016) and Chen et al. (2018) show that managers use voluntary disclosure to offset high processing costs due to complex financial statements.

### 2.1.2. Intermediaries and disclosure

Other papers examine the relation between different intermediaries and disclosure. Early work from Lang and Lundholm (1996) shows that firms with more informative disclosures have a larger analyst following. The authors interpret this as evidence that disclosure draws higher analyst following, leading to larger investor following, reduced information asymmetry, and reduced estimation risk. More recent work by Balakrishnan et al. (2014) uses exogenous variation in analyst coverage from brokerage closures to suggest a causal link in the other direction: reductions in analyst coverage raises the likelihood that firms issue management forecasts, and doing so improves liquidity. Bradshaw et al. (2016) notes the endogenous nature of analysts and disclosure quality and calls for future research to provide more direct links and directional effects. Beyond analysts, there is a dearth of research examining the effect of intermediaries on disclosure. I examine the roles of NGOs and the media, which are distinct from other intermediaries (and stakeholders) in two important ways. First, instead of focusing mainly on information that is relevant to investors, NGOs and media often cover political, social, and environmental issues that are pertinent to other stakeholders, such as consumers, regulators, and the public at large. This is not to say that these intermediaries strictly do not provide information to investors. Prior studies have well established that they do (e.g., Bushee et al., 2010; Engelberg and Parsons, 2011). But much of their content is directed at non-investors, despite the literature's emphasis on intermediaries reducing processing costs for investors.<sup>4</sup> Second, the source of their influence is distinct. NGOs and the media do not affect firms by transacting with them—they do not set price targets, levy fines, pass legislation, sell shares, or boycott products/services. Instead, their ability to influence relies on lowering processing costs to regulators, investors, customers, the public, and other stakeholders, which then exert pressure on firms to change behavior (Barnett, 2014; Baron, 2001; Harrison and Scorse, 2010; Kölbel et al., 2017; Yu, 2005).

Yet, very little is known about whether and how these intermediaries influence firm disclosure. There is some evidence that media coverage of certain firm behaviors is associated with firms reducing disclosure related to the targeted behavior. For example, Robinson et al. (2011), suggests that “managers respond to public criticism of CEO compensation by withholding mandated compensation information”, though the authors stress that this finding is based on a correlation. Dyreng et al. (2020) also documents a negative association between media coverage and disclosure, based on the subsidiaries listed in Exhibit 21 of the 10-K. However, there is also some evidence that once the media or NGOs call attention to a deficient disclosure, firms improve that disclosure. Dyreng et al. (2016), explores changes to firms' tax behavior in response to public pressure stemming from an NGO campaign that highlights incomplete subsidiary disclosure. The paper also presents descriptive evidence that firms increase their number of disclosed subsidiaries in the year following the pressure.

My paper similarly suggests that this type of coverage can increase and/or improve the affected disclosure, and it advances the literature in key ways. First, the field experiment improves on causal identification by removing bias in coverage,

<sup>2</sup> E.g., analytically: Fishman and Hagerty (1992); Grossman and Stiglitz (1980); Hirshleifer et al. (2011); Kim and Verrecchia (1994); Kyle (1989); Peng and Xiong (2006); Verrecchia (1982). Empirically: Barber and Odean (2008); Bhattacharya et al. (2018); Dellavigna and Pollet (2009); Engelberg and Parsons (2011); Hirshleifer et al. (2009); Kelly and Ljungqvist (2012).

<sup>3</sup> Much of this literature focuses on voluntary disclosure, whereas this paper examines firms' compliance with and the quality of mandatory disclosure. Yet, in the presence of frictions such as processing costs, the mandatory-voluntary dichotomy can transform into a continuum—a firm's position on which depends on the costs faced by the firm and its stakeholders. For example, when processing costs are high and the threat of enforcement is low, a firm may face a tradeoff in choosing to comply with mandatory disclosure that is similar to its choice to issue voluntary disclosure. Hence, I include the literature's findings on voluntary disclosure which can be informative in my setting.

<sup>4</sup> For example, Factiva lists roughly 50,000 front-page news stories in the U.S. from 2019. Of those, the five most common subjects are domestic politics (17 percent of articles), political/general news (16 percent), executive branch (12 percent), crime/legal action (12 percent), and corporate/industrial news (7 percent).

and it yields robust estimates of the effect on treatment and control firms. [Dyreg et al. \(2016\)](#) does not formally test increases in disclosure. It relies only on descriptive tables and visual trends for this finding, and often does not present a control group, making it difficult to understand the significance of their results or the other forces at play, such as spillovers.

Second, I can more cleanly observe and analyze the changes to disclosure, such as a disclosure's existence, quality, timeliness, and accessibility. [Dyreg et al. \(2016\)](#) simply observes *ex post* increases in subsidiary disclosure and assumes that new disclosures are complete. With my design, I can show that there are nuances to the “increases” in disclosure. Third, I show the effect in a setting with more tension, where the campaign's reach was relatively small and did not significantly affect market returns. Finally, while [Dyreg et al. \(2016\)](#) examines the broad causal construct of “public pressure”, I deepen our understanding of how NGO and media coverage elicits disclosure responses by exploring the role of processing costs and shedding light on the pressures exerted by individual stakeholders using survey evidence, cross-sectional tests, and spillover tests.

Overall, empirical work on intermediaries and disclosure is early and struggles to overcome the three challenges outlined in [Blankespoor et al. \(2020\)](#): the simultaneity of firm and intermediary coverage, selection problems from intermediary coverage, and the inability to isolate coverage of specific disclosures.

## 2.2. Setting

To examine the effect of NGO and media coverage on disclosure, I identify a setting (the U.K. Tax Strategy disclosure regime) with desirable properties and locate a suitable partner (TJN) with which to conduct a field experiment.

### 2.2.1. U.K. Tax strategy disclosure regime

In 2016, the U.K. parliament passed legislation as part of *Finance Act (2016)* that required large firms to publicly disclose their tax strategies (hereafter “U.K. Tax Strategy disclosure”) beginning with fiscal years that start after September 15, 2016. The requirement applies to large U.K. firms and most multinational firms with a U.K. presence.<sup>5</sup> Firms are asked to discuss four key items: (a) how the firm manages U.K. tax risks, (b) the firm's attitude to tax planning, (c) the level of risk the firm is prepared to accept for U.K. taxation, and (d) how the firm works with the British tax authority, Her Majesty's Revenue and Customs (HMRC).

Two features of this disclosure regime make it ideal for studying the effects of NGO and media coverage on disclosure. First, processing costs are high. Rather than filing the disclosures in a central repository, firms publish annual disclosures anywhere on the internet. Hence, firms are given substantial latitude in where they post this disclosure, provided it is “easily accessible to a member of the public.” In fact, the processing costs are high enough to sustain an equilibrium where nondisclosure is not uncommon. Therefore, NGO and media coverage can significantly reduce the costs that previously hindered market participants' processing of this disclosure. Second, the content of the disclosure is primarily qualitative. Thus, firms have flexibility in determining both what information to disclose and where to disclose it.

Together, these two features produce a setting where a number of firms either do not comply or produce low-quality disclosures (disclosures that are boilerplate and contain little decision-useful information for market participants). To illustrate, [Fig. 1](#), Panel A presents Nike Inc.'s and Alphabet Inc.'s disclosures, which are very short and virtually identical except for the names of the firms and their subsidiaries. For context, Panel B presents a more informative disclosure from The Procter and Gamble Company, which is nearly four times as long, has little boilerplate language, and includes tangible information related to its tax strategy that is not available in other public filings—including the size of its internal tax department, the extent to which advanced pricing agreements reduce tax risk, and total amounts of taxes paid by tax type (corporate income, employment, value added, and other).

### 2.2.2. The Tax Justice Network (TJN)

I partner with a reputable third party, TJN, to deliver the treatment in my field experiment. TJN is an independent organization dedicated to high-level research, analysis, and advocacy in the field of tax regulation. Its stated mission is to “change the weather on a wide range of issues related to tax, tax havens, and financial globalisation” ([Tax Justice Network, 2020](#)). TJN has more than 34,000 followers on Twitter and has been cited extensively by major news outlets—including the Wall Street Journal, the New York Times, the Financial Times, and many others. In 2017 it was cited in the media more than 5000 times and its podcasts reached monthly audiences of more than one million people. TJN was one of the earliest proponents of country-by-country reporting and helped to shape the current OECD country-by-country reporting framework ([PWC, 2012](#)).

I approached TJN in November 2018 with the proposition of partnering to execute a field experiment. TJN agreed to participate and jointly publish a report highlighting the disclosure behavior of U.S. multinational firms in response to the U.K. Tax Strategy disclosure regime for a random sample of firms. I discuss the TJN report in section [4.2](#).

<sup>5</sup> Specifically, firms are subject to the U.K. Tax Strategy disclosure regime if they are either (1) U.K. groups with either £2 billion in total assets or £200 million in revenue, or (2) multinational firms with global revenue over €750 million and have any presence in the U.K. The €750 million revenue threshold is based on the OECD threshold for country-by-country tax reporting.

## Panel A: Low-quality Disclosures

## NIKE UK TAX POLICY

This tax policy applies to the UK affiliates\* of Nike, Inc. The UK affiliates regard this policy as complying with their duty under paragraphs 19(C) and 22(C) of Schedule 19 Finance Act 2016 to publish a tax strategy in the current financial year. Whilst not previously published, we have operated within the principles detailed below for many years.

We seek to identify, evaluate, monitor, and manage tax risks to ensure that we comply in full with our legal obligations. Additional assistance from external advisors is sought when required. We are committed to compliance with tax laws and practices. We continuously monitor changes to tax legislation, ensuring that we take advice where appropriate from professional advisers.

Given the nature of our business and geographic footprint, it is inevitable that risks may arise with respect to the application of tax laws that are complex and uncertain at times. Whilst we do not have prescriptive levels of tax risk, we routinely seek professional advice where the application of tax law to a material transaction or a given situation is reasonably unclear or uncertain, or where specialist knowledge is required.

## 1. OUR APPROACH TO RISK MANAGEMENT

The UK tax strategy conforms with Nike, Inc.'s Code of Business Conduct and Ethics "Inside the Lines" and is owned and approved by Nike Management and overseen by the Nike, Inc. Board of Directors and Audit Committee. The day-to-day implementation of the tax strategy is delegated to the EMEA tax team and supported by the global tax and controlling teams.

## 2. TAX PLANNING

In supporting the commercial and investment needs of the business, we take into a multitude of factors including tax laws in all countries in which we operate. This includes potential incentives and reliefs. Where legally possible, we will seek to take positive steps to eliminate the risk of double taxation. Any such action is done in a way that is aligned with the group's commercial objectives and our legal obligations as well as the potential impact on our reputation.

We seek to comply with all relevant laws, including the OECD arm's length standard in relation to transfer pricing.

## 3. OUR RELATIONSHIP WITH HMRC

We engage fully with HMRC in a co-operative and compliant manner. As part of the engagement we regularly meet with HMRC to discuss and explain our business and any relevant tax issues that arise. We seek to resolve any differences through transparent discussion.

\*UK affiliates includes the following entities: Nike UK Ltd, Converse Europe Ltd, Nike Retail BV UK branch, Nike 360 UK Branch, Nike Vapor Ltd, North West Merchandising Ltd, Nike Chelsea Merchandising Ltd, Nike Mercurial I Ltd.

## UK TAX STRATEGY

This tax policy applies to the UK affiliates of Alphabet, Inc. The UK affiliates regard this policy as complying with their duty under paragraphs 19(C) and 22(C) of Schedule 19 Finance Act 2016 to publish a tax strategy in the current financial year. Whilst not previously published, we have operated within the principles detailed below for many years.

## 1. Our approach to risk management

The UK tax strategy conforms with the Group's Code of Conduct and is owned and approved by the Alphabet and Google Management and overseen by the Alphabet Board of Directors and Audit Committee. The day-to-day implementation of the tax strategy is delegated to the EMEA Tax Director, who is supported by the group tax and finance teams.

We seek to identify, evaluate, monitor and manage tax risks to ensure that we comply in full with our legal obligations. Additional assistance from external advisors is sought when required.

We are committed to compliance with tax laws and practices. We continuously monitor changes to tax legislation, ensuring that we take advice where appropriate from professional advisers. Given the nature of our business and geographic footprint, it is inevitable that risks may arise with respect to the application of tax laws that are complex and uncertain at times. Whilst we do not have prescriptive levels of tax risk, we routinely seek professional advice where the application of tax law to a material transaction or a given situation is reasonably unclear or uncertain, or where specialist knowledge is required.

## 2. Tax planning

In supporting the commercial and investment needs of the business, we take into account tax laws (as well as all other relevant matters) in all countries in which we operate. Factors that are considered include potential incentives and reliefs. Where legally possible, we will seek to take positive steps to eliminate the risk of double taxation. Any such action is done in a way that is aligned with the group's commercial objectives, meets our legal obligations, and takes into account the potential impact on our reputation. We seek to comply with all relevant laws, including the OECD arm's length standard in relation to transfer pricing.

## 3. Our relationship with HMRC

We engage fully with HMRC in a co-operative and compliant manner. As part of the engagement we regularly meet with HMRC to discuss and explain our business and any relevant tax issues that arise. We seek to resolve any differences through transparent discussion.

UK affiliates includes the following entities: Google UK Management Company Limited, Google Payment Limited, Google UK Limited, Google Infrastructure UK Limited, DeepMind Technologies Limited, Jibe Mobile Limited, Apigee Europe Limited, BeatThatQuote.com Limited and Google Engineering UK Holdings Limited.

## Panel B: High-quality Disclosure

## Core Tax Principles

Procter & Gamble is one of the world's leading consumer goods companies. We serve consumers around the world with one of the strongest portfolios of trusted, quality, leadership brands – with the consumer at the center of all we do.

## P&amp;G's Global Footprint

Procter & Gamble products are sold in more than 180 countries and territories. We have business operations in about 70 countries and manufacturing operations in nearly 40 countries.

P&G was founded in Cincinnati, Ohio in 1837. Our international operations began more than 100 years ago when we established a manufacturing facility in Canada in 1915. We entered Europe in 1930, Asia in 1955, Latin America in 1948, and Africa in 1985. P&G has funded our international expansion by reinvesting our earnings in plants, distribution facilities, infrastructure, and operating costs. Our operations have positive and diverse social and economic impacts around the world, strengthening the communities where we live and work.

Taxes are a significant element of P&G's economic contribution. Our contribution is much more than the corporate income tax we pay. P&G also pays a significant amount of taxes to national and local governments in the form of value added taxes, employment taxes, sales taxes, excise taxes, property taxes and customs duties. In the year ended June 30, 2020, our activity resulted in government tax receipts of approximately \$9.3 billion around the world, comprising corporate income tax payments of about \$3.5 billion and other taxes paid and collected of about \$6.0 billion, consisting of value added taxes, employment taxes, sales taxes, excise taxes, property taxes and customs duties.

## P&amp;G's Approach to Taxes

P&G's Core Tax Principles are based on our Purpose, Values, and Principles (PVPP). These principles have guided P&G's business for more than 180 years and are the foundation of our culture. We are known, through words and concrete actions, as a company that is responsibly governed and behaves ethically and is open and transparent in its business dealings. By proving our company responsibly, we earn the trust on which our business is based, and we build the relationships on which our future depends.

## Tax Follows Business Substance

P&G is a global company, with operations all over the world. Business operations and market needs determine where activities take place, where profits are earned, and consequently, where taxes are paid.

Intercompany transactions are based on international transfer pricing principles. Organizations for Economic Cooperation and Development (OECD) Guidelines and the laws of most countries establish the principle that transactions between different parts of a company be priced on the basis of the "arm's length" standard – the same as if the transactions were between two independent companies. Our intercompany prices, which follow this principle, are established based upon the functions, assets, and risks of the parties involved and are supported by appropriate economic analysis of similar transactions between unrelated parties. We transparently share this analysis as required with appropriate governmental authorities. We also follow the World Trade Organization, OECD, European Union and other applicable guidelines regarding indirect taxes such as consumption taxes (GST and VAT) and customs duties.

The majority of our intellectual property is created in the United States. P&G has more than 180 years of history in the U.S., and the majority of our intellectual property – such as trademarks, production technology and patents – is funded, managed and owned in the U.S., resulting in licenses being paid to the U.S. from P&G's international operations for access to this intellectual property. P&G's U.S. business represents about 40 percent of worldwide sales. The profits from P&G's U.S. business operations combined with intellectual property license fees result in around 60 percent of our global profits being taxed in the U.S.

Our investment choices are based upon long-term business needs. Where tax incentives are made available by governments, we implement them in line with the relevant statutory, regulatory, or administrative framework, and do not pursue them to secure a short-term financial advantage. P&G selects sites for its international operations based on criteria fundamental to the success of our business – proximity to consumers, access to a talented workforce, education, transportation, infrastructure, business climate, the rule of law, stable political environments, effective protection of intellectual property, and other costs.

In order to perform and serve customers and consumers most efficiently worldwide, many business activities are centralized in different locations. In our U.S. and regional headquarters locations we operate strategic business activities such as marketing, brand building, management of the product supply chain, portfolio investment decision making, and day-to-day business management. For example, in our primary regional headquarters in Switzerland, Singapore and Panama, we have more than 3,000 managerial positions, including senior business unit and regional leadership responsible for the management of the Europe, APAC (Asia, Middle East, and Africa), and Latin America regions, as well as approximately 1,500 additional administrative, technical, and support staff that provide regional and support services to P&G broadly.

Highest Level of Compliance with Financial and Tax Reporting Requirements  
P&G maintains the highest level of financial and tax reporting compliance everywhere we operate. In doing so, we observe and adhere to the tax law, the underlying tax policy intent, and the financial disclosure and reporting requirements in each jurisdiction.

## Robust Tax Stewardship and Governance

Tax stewardship and governance is the foundation of P&G's approach to taxes. Our tax organization consists of more than 200 professionals around the world who are responsible for staying abreast of applicable tax laws and ensuring that we adhere to these laws in every country in which we have a presence. We have online and classroom-based tax training programs for P&G employees in tax, finance, and other disciplines. These programs create overall awareness of our Core Tax Principles as well as the importance of tax stewardship, governance and compliance throughout the Company. We also retain experts around the world to assist in our compliance and interpretation of tax laws in the countries in which we operate. P&G's global and regional leadership plays an important role in tax stewardship and governance. Finance and Accounting (F&A) leadership regularly reviews our tax strategy and related governance processes, including an annual review with the Audit Committee of the Board of Directors. Global F&A leadership has regular oversight responsibility, ensuring P&G's tax stewardship and governance framework is in line with our Core Tax Principles, internal controls, policies, and procedures, as well as with external compliance and regulatory requirements. P&G only pursues tax advantages that is consistent with our business operations and that is based on real business substance. At P&G, tax planning must comply with both the letter and spirit of the law and be supported by real business substance.

## Transparency in Relationships with Governments and Tax Administrations

We build constructive and sustainable working relationships with governments and fiscal authorities. We have a shared interest with governments to ensure predictable, efficient, and rule-based tax administration. Where possible, we proactively seek certainty from tax authorities based upon full disclosure of all relevant facts and circumstances, including entering into bilateral Advance Pricing Agreements (APAs) where available. A bilateral APA is an agreement between two governments with respect to a specific taxpayer, specifying the pricing method to apply to intercompany transactions and how those transactions should be taxed. P&G currently has a comprehensive network of bilateral APAs which we estimate result in certainty regarding the taxation of over 70 percent of our global earnings. APAs are considered a best practice by the OECD.

P&G has several low risk designations in many of our largest markets through participation in voluntary compliance programs. These transparency programs are resource and time intensive involving management interviews, extensive documentation, and detailed presentations. For example, we were selected by the U.S. Internal Revenue Service as the U.S. participant in the first pilot of the OECD's International Compliance Assurance Program (ICAP) – a voluntary multi-country review of the cross-border tax affairs of selected multinational companies designed to encourage greater transparency, collaboration, and trust between taxpayers and tax administrations. P&G is committed to these voluntary compliance processes in an effort to promote tax certainty, efficiency, and transparency with governments.

P&G has operations in about 70 countries worldwide and our tax returns – similar to any multinational company – are continuously under audit around the world. We engage with tax authorities to respond to tax audit requests. Our working relationships with governments and fiscal authorities are conducted in a professional, constructive, and collaborative manner with full transparency of the facts of our business operations. When interacting with government officials, P&G complies with all international, U.S. federal, and state laws including the Lobbying Disclosure Act and House Leadership and Open Government Act that require reporting on lobbying activities and certification of compliance with Congressional gift rules.

Our Worldwide Business Conduct Manual articulates the global standards we expect from our daily business activities, and our legal and ethical responsibilities. We operate within the letter and spirit of the law because doing the right thing, every time, gives consumers, customers, shareholders, external business partners, government and community leaders, and other stakeholders a reason to trust us, to believe we achieve our results in the right way and that we do not tolerate illegal or unethical dealings anywhere in the world. In addition to regular training, employees are required to report any potential violations of law to Company compliance standards set forth in the Worldwide Business Conduct Manual and other policies.

## Support for Efficient, Consistent and Administrable Tax and Trade Policies

We seek to create dialogue with tax policy makers on matters of local and international importance. We do this directly and through trade associations. We support initiatives that result in economic growth, reduce trade barriers and develop the capabilities of the tax authorities, especially in developing countries. We support the ongoing efforts to lead a global consensus to create a more stable and sustainable global tax system. Specifically, we support the work of the OECD and the Inclusive Framework to design tax policies that are uniformly adopted, retain the arm's length standard, and prevent the artificial separation of taxable profits from the location of commercial and economic functions. We also support their continuing efforts to promote rules that help reduce tax disputes between countries, and the potential for multiple taxation of the same activity and associated income.

Development of consistent and sustainable tax policy is a shared responsibility. P&G believes that the business community must play an active role helping policy makers to understand the impact of tax policy choices on investment and the economy. We believe that principled taxation leads to economic stability and prosperity for countries, people, and businesses.

**Fig. 1.** Examples of U.K. Tax Strategy Disclosures. This figure presents examples of both low- and high-quality U.K. Tax Strategy disclosures. Panel A displays the low-quality disclosures provided by NIKE, Inc. (left) and Alphabet, Inc. (right). Red underlined text indicates perfect matches, green italicized and underlined text indicates non-matching words within matched phrases. NIKE's disclosure is 392 words (16th percentile); Google's disclosure is 411 words (21st percentile). The similarity between the two is 86 percent (97th percentile). The differences are primarily related to the firms' names and subsidiary listings. Panel B presents a high-quality disclosure provided by Procter & Gamble Company. The disclosure is 1451 words (99th percentile) and its maximum similarity to any other firm's disclosure is 11 percent (18th percentile). I create both visuals using WCopyFind. (For interpretation of the references to colour in this figure legend, the reader is referred to the Web version of this article.)

### 2.3. Hypothesis development

Following the framework set out above and in prior literature, I expect that coverage from NGOs and the media regarding firms' U.K. Tax Strategy disclosures will reduce market participants' costs to process this disclosure, which will enable the regulator and other stakeholders to more easily punish firms for nondisclosure or insufficient disclosure.<sup>6</sup> With reduced processing costs, the resource-constrained regulator (HMRC) faces a new enforcement equilibrium (Becker, 1968) where it can more easily enforce and impose fines for nondisclosure or insufficient disclosure. Beyond monetary fines, NGO and media coverage can also harm firm value by making these disclosure deficiencies known to a larger set of market participants. Prior work has shown that when unfavorable information about corporate behavior is publicly revealed, firms can face shareholder penalties, reputational damage, customer boycotts, employee turnover, and political backlash (Chakravarthy et al., 2014; Dyreng et al., 2016; Hanlon and Slemrod, 2009), even when the behavior is not illegal or does not violate explicit contracts.

Moreover, to the extent there are investors with non-cash-flow-based preferences—such as a preference for high levels of tax transparency—NGO and media coverage that makes these investors aware of the disclosure deficiency can reduce firm value because they require higher returns for financing activities that conflict with these preferences (Fama and French, 2007; Friedman and Heinle, 2016). Ultimately, a reduction in processing costs that results in market participants penalizing the firm for nondisclosure or insufficient disclosure will incentivize firms to comply or increase the quality of their disclosure.<sup>7</sup>

However, NGO and media coverage could also have no effect on disclosure. As described above, these intermediaries' influence depends heavily on reaching stakeholders (often non-shareholders) that can directly pressure firms. But few reports or articles become widespread enough to cause significant public outcry or swift regulatory response. Moreover, recent evidence suggests that despite a greater emphasis on CSR and stakeholder governance, firms continue to respond primarily to shareholder demands (Bebchuk and Tallarita, 2020, 2022; Raghunandan and Rajgopal, 2021). To the extent that the report fails to reach the parties that matter, or that firms discount pressure from NGOs, the media, and other non-shareholders, I would expect it to have no effect on firms' disclosures. Even if the coverage does reach stakeholders that can significantly penalize firms, such as the regulator, the report does not reduce resource constraints related to actually enforcing the disclosure requirement. That is, a reduction in processing costs may not be sufficient to induce stakeholders to take actions that affect disclosure.

Furthermore, theoretical and empirical work suggests that reduced processing costs can also incentivize firms to decrease disclosure—or at least, not increase it. By reducing processing costs, NGO and media coverage can raise attention to a firm's public disclosures by competitors and tax authorities. If these parties can more easily access and use information from a firm's U.K. Tax Strategy disclosure that allows them to reduce the profits of the disclosing firm, greater coverage can increase the proprietary costs of disclosure (Lambert et al., 2007; Verrecchia, 1983).<sup>8</sup> Under greater coverage, firms might also find it more damaging to reputational capital to reveal tax strategy information that could be perceived as aggressive or socially objectionable (Graham et al., 2014; Karpoff, 2011).

The associations found in Dyreng et al. (2020) and Robinson et al. (2011) and several well-known anecdotes also support the notion that intermediary coverage can reduce disclosure. For example, in 2009 *Bloomberg* highlighted Google's exceptionally low effective tax rate and used the firm's Exhibit 21 disclosure to shed light on Google's extensive use of tax haven subsidiaries (Drucker, 2010). The following year, Google reduced its Exhibit 21 disclosure by 98 percent—from 117 subsidiaries in 2009 to 2 subsidiaries in 2010 (Gramlich and Whiteaker-Poe, 2013).

In 2005, the *Wall Street Journal* published an article on Microsoft that identified large tax savings derived from its Irish subsidiary Round Island One Ltd, a limited liability company which is required to publicly file statutory accounts annually (Simpson, 2005). The following year, Microsoft re-registered the subsidiary as an *unlimited* liability company, which is not required to file public statutory accounts, meaning that Microsoft opted out of mandatory disclosure and accepted the cost of unlimited liability to do so (Simpson, 2006).<sup>9</sup> Although these papers and examples represent coverage of an underlying issue (e.g., tax aggressiveness) rather than coverage of a disclosure deficiency, they highlight that firms perceive costs from greater disclosure, and are willing to reduce it when intermediary coverage reduces market participants' processing costs.

<sup>6</sup> Alternatively, a more neutral perspective (as in Blankespoor (2019)) is that the reduced processing costs simply increases market participants' net benefit to consuming a firm's disclosure. This increases demand for disclosure and the firm responds with greater disclosure.

<sup>7</sup> Firms also have incentives to increase disclosure given the standard theoretical relations between disclosure, liquidity, and the cost of capital. That is, the costs discussed above are attributable, to a large extent, to increases in the cost of capital and information asymmetry, both of which have been shown theoretically and empirically to be related to disclosure (Balakrishnan et al., 2014; Brown and Hillegeist, 2007; Lambert et al., 2007, 2012; Leuz and Verrecchia, 2000; Welker, 1995).

<sup>8</sup> Prior research confirms that tax authorities use public disclosures and that firms make strategic disclosure decisions based on the expected information set held by the tax authorities (Bozanic et al., 2017). Moreover, in this setting HMRC has indicated in Correspondence with TJN that it uses U.K. Tax Strategy disclosures in its enforcement efforts alongside other reporting requirements.

<sup>9</sup> In addition, discussions with several managers regarding this disclosure confirm that firms consider their tax strategies as proprietary and are concerned about divulging information that could be used against them by competitors or tax authorities. A manager from one firm told me, "We view our tax strategy as a significant advantage over our competitors. Because we were not required to divulge any specific tax information in our U.K. tax strategy, we saw no incentive to do so."

**Table 1**  
Sample selection.

<i>Total Sample</i>			
U.S. multinational firms meeting U.K. Tax Strategy disclosure regime size thresholds	1608		
Less: Firms with no U.K. presence	847		
Total number of Compustat firms subject to U.K. Tax Strategy disclosure	761		[A]
Compustat firms with a U.K. Tax Strategy disclosure		619	[B]
Add: Non-disclosing firms		142	[C]
Add: Private firms with a U.K. Tax Strategy disclosure	60		[D]
Total sample	821		[E] = [A]+[D]
<i>Tables 2 and 3</i>			
Compustat firms with a U.K. Tax Strategy disclosure	619		[B]
Less: Firms missing returns variables	14		
Sample in Tables 2 and 3	605		
<i>Table 4</i>			
Total number of Compustat firms subject to U.K. Tax Strategy disclosure	761		[A]
Less: Firms missing returns variables	16		
Sample in Table 4	745		
<i>Table 5, Panel A</i>			
Non-disclosing firms	142		[C]
Treatment firms	71		
Control firms	71		
<i>Table 5, Panel B</i>			
Compustat firms with a U.K. Tax Strategy disclosure	619		[B]
Private firms with a U.K. Tax Strategy disclosure	60		[D]
Total firms with a U.K. Tax Strategy disclosure	679		
Firms identified as low-quality disclosure firms	290		
Treatment firms	145		
Control firms	145		

This table presents my sample selection. I start with a sample of 1608 Compustat firms that are potentially subject to the U.K. Tax Strategy disclosure regime because they exceed the worldwide or U.K. size thresholds. I then remove 847 firms that are not subject because they have no U.K. presence. Among the remaining firms, I am able to find U.K. Tax Strategy disclosures for 619 firms and unable to find disclosures for 142 firms. I then add 60 private firms from the *Forbes America's Largest Private Companies* list that are subject to the disclosure, which results in a total sample of 821 firms. Then I show how I construct the samples for the tests in Tables 2–5

Given that I examine nondisclosure and low-quality disclosure in my setting, it is difficult for firms to respond by reducing disclosure. Yet, NGO and media coverage creates incentives both for and against greater disclosure, and the extent and mechanisms through which this coverage affects disclosure is a largely unknown empirical question. Thus, I examine the causal effect of NGO and media coverage on disclosure using a field experiment.

### 3. Sample selection and descriptive statistics

#### 3.1. Sample selection

This section explains how I obtain the samples of (1) non-disclosing firms, and (2) low-quality disclosure firms in which I conduct the field experiment. I examine only U.S. firms due to the high level of tax information available in U.S. financial statements (e.g., details on unrecognized tax benefits and income taxes paid) and because resource constraints at TJN preclude a larger-scale campaign. Thus, my starting point is to build a sample that represents the full population of U.S. multinational firms subject to the U.K. Tax Strategy disclosure regime.

Firms are required to disclose if they have a U.K. presence and meet the size thresholds discussed above (section 2.1.1, footnote 6). Thus, I start with all U.S.-headquartered multinational firms in Compustat and then merge in subsidiary data from Bureau van Dijk's Amadeus database to identify the size of firms' U.K. operations. I keep firms that meet at least one of the following criteria and thus might be required to disclose: (1) total revenue of at least \$850 million, (2) U.K. revenue of at least £200 million, or (3) U.K. assets of at least £2 billion.<sup>10</sup> This yields a sample of 1608 U.S. firms, most of which enter the sample because of their total revenue.

I then keep only those firms that have a U.K. presence. I confirm U.K. operations first based on data from Amadeus or Exhibit 21, and then based on filings on the U.K. Companies House or information on a firm's website. This step eliminates 847

<sup>10</sup> The OECD set the country-by-country reporting threshold at €750 million in revenue. The U.S. set the threshold at \$850 million, which is why I require firms to have at least \$850 million in total revenue. However, to account for currency translation discrepancies, I also examine firms slightly below that threshold.

**Table 2**  
Descriptive statistics.

Description	N	Mean	Std Dev	P5	P25	P50	P75	P95
Similarity	605	0.29	0.23	0.07	0.12	0.22	0.40	0.78
Number of Words	605	616	269	296	427	568	742	1083
Boilerplate	605	0.04	0.02	0.02	0.03	0.03	0.05	0.07
Accessibility	605	4.56	1.06	1.00	5.00	5.00	5.00	5.00
Size	605	9.04	1.56	7.01	7.91	8.74	9.94	12.11
UK sales	605	0.05	0.09	0.00	0.00	0.02	0.05	0.17
Bid-ask spread	605	0.06	0.09	0.01	0.02	0.03	0.06	0.27
Long-run cash ETR	605	0.23	0.17	0.00	0.14	0.22	0.29	0.45
UTB	605	0.99	1.82	0.00	0.13	0.49	1.25	3.50
Tax havens	605	0.21	0.20	0.00	0.05	0.17	0.28	0.60
R&D	605	0.03	0.05	0.00	0.00	0.00	0.03	0.11
Intangibles	605	0.31	0.23	0.00	0.11	0.28	0.47	0.72
News	605	26.49	33.20	2.00	10.00	17.00	32.00	77.00
Leverage	605	0.32	0.25	0.03	0.18	0.30	0.41	0.66
ROA	605	0.04	0.08	-0.04	0.01	0.04	0.08	0.15
Returns	605	0.21	0.35	-0.33	0.01	0.20	0.39	0.70
Returns std dev	605	0.07	0.04	0.03	0.04	0.06	0.08	0.14
BTM	605	0.36	0.36	0.00	0.16	0.30	0.51	0.93
Missing R&D	605	0.38	0.49	0.00	0.00	0.00	1.00	1.00
Loss	605	0.13	0.34	0.00	0.00	0.00	0.00	1.00
Special items	605	-0.01	0.04	-0.05	-0.01	-0.01	0.00	0.01

This table presents descriptive statistics for the dependent and independent variables used in the determinants analysis (Table 3). All variables are defined in Appendix A.

firms. Among the remaining 761 public firms that are subject to the U.K. Tax Strategy disclosure regime, I find disclosures for 619 firms but am unable to find disclosures for 142 firms.<sup>11</sup> Finally, I collect 60 private firm disclosures by searching for all U.S. private firms that (1) have U.K. subsidiaries in Amadeus, or (2) appear on the *Forbes America's Largest Private Companies* list. I include these private firm disclosures in my analyses of disclosure quality, but I do not attempt to identify non-disclosing private firms due to the difficulty in verifying that they are subject to the disclosure.<sup>12</sup> Table 1 summarizes my sample selection.

After collecting disclosures for all U.S. multinational firms subject to the regime, I then analyze the textual attributes of each disclosure in order to build a sample of low-quality disclosure firms. For purposes of the TJN report, I choose two measures of disclosure quality: *Similarity* and *Word Count*. *Similarity* is a measure that captures a document's similarity to another's based on identical phrases. To calculate *Similarity*, I use WCopyFind, an open-source tool commonly used for plagiarism detection, which identifies common text across documents given a number of user-specified parameters.<sup>13</sup> The software produces a pairwise similarity percentage for each disclosure with every other disclosure. I then take each firm's maximum similarity percentage with another firm's disclosure as the value for *Similarity*, similar to the approach taken in McMullin (2016). *Word Count* is the number of dictionary words in each firm's disclosure.

### 3.2. Descriptive statistics and determinants analysis

In Tables 2 and 3 I present descriptive statistics and a determinants analysis, which I perform both to understand the factors that influence the content of firms' U.K. Tax Strategy disclosures and to validate the measures of disclosure quality in the field experiment. The first four rows in Table 2 contain the measures of disclosure quality. *Similarity* and *Log words* are defined above and were used to measure disclosure quality in the TJN report.<sup>14</sup> *Boilerplate* represents the amount of boilerplate text based on common phrases used in a significant portion of the total disclosures, following the approach in Lang and Stice-Lawrence (2015).

*Accessibility* is an index between 1 and 5 that represents how easily a firm's disclosure can be located, based on the step in the search methodology in which the disclosure is found. A value of 5 indicates high accessibility—specifically, that a firm's disclosure is found from the first Google search ([Firm Name] U.K. "tax" strategy) of the first search step. A value of 1 indicates that a firm's disclosure is not found until the last step. *Accessibility (Boilerplate)* is defined in greater detail in Appendix A (Appendix B). In summary, because firms have considerable latitude in choosing what information to include and where

<sup>11</sup> My complete search methodology is described in Appendix C. Some firms may have made a disclosure that I was not able to find using my search methodology. However, given that U.K. Tax Strategy disclosures are required to be easily findable by a member of the public, such firms are not in compliance with the law.

<sup>12</sup> I include private firms with the intention of comparing disclosures for firms with different capital market incentives. I do not find significant differences in the content of U.K. Tax Strategy disclosures between public and private firms before the field experiment, nor do I find significant differences in changes to firms' disclosures as part of the field experiment. I do not tabulate these results but they are available upon request.

<sup>13</sup> The specific parameters I use are described in Appendix B.

<sup>14</sup> I use *Word count* in the TJN report for ease of interpretation. In regressions I use *Log words*, which is the natural logarithm of *Word count*.

**Table 3**  
Determinants analysis.

Panel A. Disclosure Determinants									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
	Similarity		Log words		Boilerplate		Accessibility		
<i>Size</i>	-0.02** (-2.00)	-0.02* (-1.94)	0.02 (1.32)	0.03* (1.69)	-0.01* (-1.86)	-0.01* (-1.76)	-0.07* (-1.66)	-0.07* (-1.66)	
<i>UK sales</i>	-0.06 (-0.47)	-0.11 (-0.80)	0.19 (0.94)	0.19 (0.88)	0.16 (1.24)	0.18 (1.30)	-0.02 (-0.03)	0.43 (1.29)	
<i>Bid-ask spread</i>	0.35** (2.53)	0.38** (2.23)	0.20 (0.74)	0.23 (0.73)	-0.09 (-0.59)	-0.04 (-0.25)	-0.22 (-0.37)	-0.25 (-0.39)	
<i>Long-run cash ETR</i>		-0.11** (-2.07)		0.03 (0.23)		-0.03 (-0.60)		0.84*** (3.27)	
<i>UTB</i>	0.01 (0.60)	0.00 (0.42)	-0.03 (-1.64)	-0.04* (-1.82)	0.01** (2.09)	0.01* (1.65)	0.06 (1.50)	0.05 (1.17)	
<i>Tax havens</i>	-0.04 (-0.84)	-0.05 (-1.10)	0.21** (2.24)	0.22** (2.25)	-0.06 (-1.61)	-0.06 (-1.51)	0.06 (0.27)	0.15 (0.59)	
<i>R&amp;D</i>	-0.31 (-1.49)	-0.17 (-0.66)	-0.40 (-0.93)	-1.08** (-2.32)	-0.20 (-0.85)	-0.04 (-0.14)	-2.18 (-1.49)	-1.75 (-1.03)	
<i>Intangibles</i>	0.04 (0.82)	0.06 (1.21)	0.09 (1.09)	0.08 (0.92)	-0.03 (-0.85)	-0.02 (-0.58)	0.08 (0.38)	-0.06 (-0.25)	
<i>News</i>	-0.00 (-1.24)	-0.00 (-1.22)	-0.00 (-0.09)	-0.00 (-0.56)	0.00 (1.27)	0.00 (1.33)	0.00 (0.23)	0.00 (0.75)	
<i>Leverage</i>	-0.03 (-0.47)	-0.03 (-0.46)	-0.05 (-0.51)	-0.01 (-0.13)	-0.05 (-1.16)	-0.06 (-1.31)	-0.07 (-0.26)	0.02 (0.08)	
<i>ROA</i>	-0.04 (-0.21)	-0.18 (-0.86)	0.22 (0.56)	0.62 (1.46)	-0.25 (-1.61)	-0.37** (-2.21)	-1.39 (-1.47)	-0.88 (-0.84)	
<i>Returns</i>	-0.02 (-0.52)	-0.03 (-0.86)	-0.08 (-1.30)	-0.08 (-1.11)	0.06** (2.05)	0.05 (1.47)	0.22 (1.37)	0.32** (1.98)	
<i>Returns std dev</i>	-0.30 (-0.94)	-0.19 (-0.53)	0.98 (1.44)	1.04 (1.40)	-0.52* (-1.83)	-0.46 (-1.57)	-0.59 (-0.35)	-0.27 (-0.15)	
<i>BTM</i>	-0.06 (-1.29)	-0.07 (-1.44)	0.04 (0.48)	0.04 (0.48)	0.00 (0.04)	-0.01 (-0.40)	0.05 (0.30)	0.18 (1.06)	
<i>Missing R&amp;D</i>	-0.03 (-1.36)	-0.03 (-1.17)	-0.04 (-0.92)	-0.06 (-1.47)	-0.02 (-1.30)	-0.02 (-0.91)	0.00 (0.03)	-0.02 (-0.17)	
<i>Loss</i>	-0.00 (-0.05)	0.02 (0.48)	-0.05 (-0.87)	-0.01 (-0.22)	0.05* (1.65)	0.02 (0.64)	0.09 (0.59)	0.02 (0.11)	
<i>Special items</i>	-0.03 (-0.10)	0.37 (0.94)	-0.14 (-0.19)	-0.20 (-0.24)	0.09 (0.24)	-0.13 (-0.32)	-0.99 (-0.43)	-1.02 (-0.53)	
<i>Intercept</i>	0.51*** (5.86)	0.55*** (5.64)	6.05*** (35.15)	5.96*** (31.28)	0.55*** (7.01)	0.56*** (6.70)	5.19*** (11.43)	4.85*** (10.18)	
<i>Sample</i>	<i>All</i>	<i>Pretax Income &gt; 0</i>	<i>All</i>	<i>Pretax Income &gt; 0</i>	<i>All</i>	<i>Pretax Income &gt; 0</i>	<i>All</i>	<i>Pretax Income &gt; 0</i>	
<i>Observations</i>	605	566	605	566	605	566	605	566	

R-squared	0.067		0.074		0.040		0.046		0.058		0.049		0.021		0.035							
<i>Panel B. Spearman-Pearson Correlation Table</i>																						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	
Similarity	(1)	1.00	<b>-0.20</b>	<b>0.28</b>	0.02	<b>-0.22</b>	-0.01	<b>0.13</b>	0.03	0.05	<b>-0.11</b>	<b>0.10</b>	<b>0.09</b>	<b>-0.14</b>	0.04	-0.01	0.04	0.06	-0.04	<b>-0.13</b>	0.06	<b>-0.08</b>
Log words	(2)	<b>-0.12</b>	1.00	<b>-0.47</b>	-0.03	0.05	0.04	0.02	0.04	<b>-0.12</b>	<b>0.08</b>	<b>-0.11</b>	0.02	-0.01	0.01	0.01	<b>-0.07</b>	0.00	0.07	0.04	-0.04	-0.02
Boilerplate	(3)	<b>0.20</b>	<b>-0.44</b>	1.00	0.06	-0.06	0.05	0.01	0.01	<b>0.10</b>	-0.03	<b>0.10</b>	-0.01	0.04	-0.06	<b>-0.08</b>	<b>0.08</b>	-0.02	-0.04	<b>-0.10</b>	<b>0.12</b>	0.01
Accessibility	(4)	0.01	-0.01	<b>0.07</b>	1.00	<b>-0.12</b>	-0.02	0.03	<b>0.28</b>	0.05	0.00	0.00	-0.01	0.00	-0.03	-0.05	0.04	0.06	-0.02	-0.01	<b>0.07</b>	<b>-0.07</b>
Size	(5)	<b>-0.20</b>	0.06	-0.05	-0.06	1.00	<b>-0.09</b>	<b>-0.51</b>	<b>-0.13</b>	<b>0.08</b>	<b>0.27</b>	<b>-0.11</b>	-0.04	<b>0.57</b>	<b>0.08</b>	-0.03	<b>0.08</b>	<b>-0.43</b>	0.02	<b>0.12</b>	<b>-0.12</b>	<b>0.14</b>
UK sales	(6)	-0.01	0.03	<b>0.08</b>	0.00	<b>-0.10</b>	1.00	-0.02	0.02	<b>0.12</b>	<b>0.09</b>	<b>0.12</b>	<b>0.08</b>	-0.02	-0.01	0.02	0.01	0.02	<b>-0.08</b>	<b>-0.11</b>	0.06	-0.04
Bid-ask spread	(7)	<b>0.15</b>	0.03	-0.02	0.04	<b>-0.36</b>	-0.01	1.00	0.00	<b>-0.16</b>	<b>-0.22</b>	<b>-0.13</b>	-0.03	<b>-0.38</b>	0.03	<b>-0.28</b>	<b>-0.14</b>	<b>0.41</b>	<b>0.29</b>	<b>0.10</b>	<b>0.24</b>	<b>-0.12</b>
Long-run cash ETR	(8)	-0.01	0.02	-0.03	<b>0.14</b>	<b>-0.12</b>	-0.01	<b>0.07</b>	1.00	-0.05	<b>-0.08</b>	<b>-0.15</b>	<b>0.08</b>	<b>-0.08</b>	<b>-0.08</b>	<b>0.11</b>	<b>-0.12</b>	-0.03	-0.01	0.03	-0.05	-0.06
UTB	(9)	0.00	<b>-0.10</b>	<b>0.11</b>	0.04	0.06	0.04	<b>-0.09</b>	<b>-0.10</b>	1.00	<b>0.18</b>	<b>0.49</b>	<b>0.13</b>	<b>0.28</b>	0.01	0.03	<b>0.08</b>	0.03	<b>-0.32</b>	<b>-0.34</b>	<b>0.14</b>	<b>-0.14</b>
Tax havens	(10)	<b>-0.10</b>	<b>0.09</b>	-0.05	0.00	<b>0.29</b>	0.01	<b>-0.15</b>	<b>-0.12</b>	<b>0.13</b>	1.00	<b>0.08</b>	<b>-0.09</b>	<b>0.22</b>	-0.01	-0.04	<b>0.09</b>	<b>-0.10</b>	<b>-0.07</b>	0.02	0.03	-0.01
R&D	(11)	-0.02	<b>-0.08</b>	<b>0.09</b>	-0.02	<b>-0.11</b>	<b>0.16</b>	<b>-0.09</b>	<b>-0.17</b>	<b>0.48</b>	<b>0.07</b>	1.00	<b>0.10</b>	<b>0.13</b>	<b>-0.08</b>	0.05	<b>0.14</b>	0.02	<b>-0.33</b>	<b>-0.78</b>	<b>0.10</b>	<b>-0.12</b>
Intangibles	(12)	<b>0.07</b>	0.02	-0.02	0.02	<b>-0.09</b>	0.05	-0.03	0.05	0.04	<b>-0.14</b>	-0.04	1.00	-0.02	<b>0.26</b>	<b>0.11</b>	-0.04	<b>-0.12</b>	<b>-0.12</b>	<b>-0.11</b>	<b>-0.10</b>	<b>-0.24</b>
News	(13)	<b>-0.15</b>	0.01	0.02	-0.04	<b>0.58</b>	-0.05	<b>-0.22</b>	<b>-0.11</b>	<b>0.24</b>	<b>0.23</b>	<b>0.16</b>	<b>-0.10</b>	1.00	<b>0.09</b>	<b>0.10</b>	<b>-0.19</b>	<b>-0.25</b>	<b>-0.09</b>	-0.02	0.03	
Leverage	(14)	0.02	0.00	-0.06	0.00	0.00	-0.02	<b>0.07</b>	-0.05	-0.04	-0.03	<b>-0.18</b>	<b>0.23</b>	0.04	1.00	-0.01	<b>-0.07</b>	-0.01	<b>-0.28</b>	0.00	0.04	<b>-0.14</b>
ROA	(15)	-0.01	0.00	-0.06	<b>-0.08</b>	0.00	0.02	<b>-0.24</b>	-0.01	-0.03	0.00	<b>-0.08</b>	0.05	0.06	0.04	1.00	<b>0.24</b>	<b>-0.24</b>	<b>-0.37</b>	-0.07	<b>-0.58</b>	<b>0.29</b>
Returns	(16)	-0.02	<b>-0.07</b>	<b>0.08</b>	0.02	0.07	0.00	<b>-0.07</b>	<b>-0.17</b>	<b>0.09</b>	<b>0.10</b>	<b>0.12</b>	-0.03	<b>0.08</b>	-0.04	<b>0.31</b>	1.00	<b>-0.21</b>	<b>-0.38</b>	-0.06	<b>-0.20</b>	<b>0.19</b>
Returns std dev	(17)	0.05	0.04	-0.03	0.03	<b>-0.39</b>	0.01	<b>0.41</b>	<b>0.08</b>	0.02	<b>-0.09</b>	<b>0.07</b>	<b>-0.14</b>	<b>-0.14</b>	<b>0.07</b>	<b>-0.31</b>	<b>-0.22</b>	1.00	<b>0.13</b>	0.00	<b>0.31</b>	<b>-0.21</b>
BTM	(18)	-0.05	<b>0.08</b>	-0.05	0.01	<b>0.09</b>	-0.06	<b>0.22</b>	<b>0.07</b>	<b>-0.26</b>	-0.06	<b>-0.25</b>	<b>-0.11</b>	<b>-0.14</b>	<b>-0.28</b>	<b>-0.35</b>	<b>-0.37</b>	<b>0.18</b>	1.00	<b>0.27</b>	<b>0.09</b>	0.02
Missing R&D	(19)	<b>-0.08</b>	0.03	<b>-0.09</b>	0.00	<b>0.13</b>	-0.01	<b>0.07</b>	0.04	<b>-0.28</b>	0.03	<b>-0.43</b>	<b>-0.09</b>	<b>-0.07</b>	0.01	-0.02	-0.06	0.01	<b>0.29</b>	1.00	-0.03	<b>0.17</b>
Loss	(20)	0.01	-0.03	<b>0.09</b>	0.07	<b>-0.11</b>	0.01	<b>0.22</b>	0.06	<b>0.12</b>	0.01	<b>0.17</b>	<b>-0.10</b>	0.03	0.04	<b>-0.60</b>	<b>-0.23</b>	<b>0.36</b>	<b>0.12</b>	-0.03	1.00	<b>-0.26</b>
Special items	(21)	-0.03	-0.02	-0.02	-0.05	<b>0.11</b>	-0.04	<b>-0.10</b>	<b>-0.12</b>	-0.02	0.01	<b>-0.08</b>	<b>-0.09</b>	0.01	-0.03	<b>0.42</b>	<b>0.25</b>	<b>-0.26</b>	<b>-0.08</b>	<b>0.10</b>	<b>-0.37</b>	1.00

This table presents regressions of disclosure quality measures on firm characteristics (Panel A) and a correlation table (Panel B). For each dependent variable, I run two specifications, one that includes all firms and one that includes only firms with positive pre-tax income. The latter allows for the inclusion of an interpretable effective tax rate measure. Panel B presents Spearman-Pearson correlations, with Spearman rank correlations above the diagonal and Pearson correlations below the diagonal. All variables are defined in Appendix A. T-statistics based on robust standard errors are presented below the coefficients in parentheses in Panel A, with \*\*\*, \*\*, \* denotes statistical significance at the 1, 5, or 10 percent level, respectively. Bold values in Panel B represent p-values below 0.10.

**Table 4**  
Compliance with U.K. Tax strategy disclosure.

	(1) Comply	(2) Comply
<i>Size</i>	0.04*** (3.61)	0.04*** (3.39)
<i>UK sales</i>	0.79*** (4.34)	0.82*** (4.45)
<i>Bid-ask spread</i>	-0.02 (-0.12)	-0.20 (-0.78)
<i>Long-run cash ETR</i>		0.08 (0.81)
<i>UTB</i>	-0.00 (-0.05)	-0.01 (-0.35)
<i>Tax havens</i>	-0.11 (-1.47)	-0.14* (-1.75)
<i>R&amp;D</i>	0.30 (0.78)	0.38 (0.94)
<i>Intangibles</i>	0.06 (0.84)	0.10 (1.39)
<i>News</i>	0.00 (1.52)	0.00 (1.49)
<i>Leverage</i>	0.05 (0.62)	0.04 (0.44)
<i>ROA</i>	0.05 (0.14)	0.08 (0.20)
<i>Returns</i>	-0.10* (-1.89)	-0.11* (-1.89)
<i>Returns std dev</i>	0.62 (1.23)	0.42 (0.76)
<i>BTM</i>	-0.01 (-0.21)	0.02 (0.27)
<i>Missing R&amp;D</i>	-0.03 (-1.01)	-0.04 (-1.08)
<i>Loss</i>	0.03 (0.48)	0.03 (0.57)
<i>Special items</i>	0.82 (1.35)	0.81 (1.24)
<i>Intercept</i>	0.36*** (2.62)	0.35** (2.32)
<i>Sample</i>	<i>All</i>	<i>Pretax Income &gt; 0</i>
<i>Observations</i>	745	700
<i>R-squared</i>	0.058	0.070

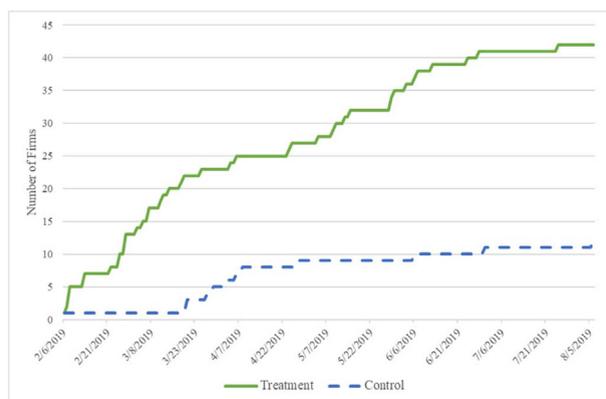
This table presents linear probability model regressions of firms' decisions to comply with the U.K. Tax Strategy disclosure requirement. *Comply* is an indicator variable equal to one if a firm provides the required disclosure, and zero otherwise. All variables are defined in [Appendix A](#). T-statistics based on robust standard errors are presented below the coefficients in parentheses. \*\*\*, \*\*, \* denotes statistical significance at the 1, 5, or 10 percent level, respectively.

to post these disclosures, I use these variables as measures of the quality and accessibility of firms' U.K. Tax Strategy disclosures.

The values in [Table 2](#) indicate that the mean (median) firm issues a disclosure that has *Similarity* of 29 percent (22 percent); contains 616 (568) words; consists of 4 percent (3 percent) *Boilerplate* text; and has an *Accessibility* value of 4.56 (5.00). Eighty percent of firms have *Accessibility* values of 5.00, and 7 percent of firms have *Accessibility* values of 1.00.

The remaining rows in [Table 2](#) contain the independent variables used in the determinants analysis and subsequent tests. *Size* is the natural log of total assets. *UK sales* is the proportion of the firm's total sales that are derived in the U.K. I predict larger firms and firms with a greater U.K. presence on average face higher political and reputational costs ([Zimmerman, 1983](#)) from providing minimal disclosure due to greater ex-ante levels of scrutiny from market participants. Larger firms may also have lower proprietary costs, given their more complete external information environments. Next, I include *Bid-ask spread* as a measure of liquidity. I predict that firms with greater liquidity have committed generally to higher levels of disclosure, and thus have higher quality and more accessible U.K. Tax Strategy disclosures.

The tax-specific variables include the long-run cash effective tax rate measured over five years (*Long-run cash ETR*), unrecognized tax benefits scaled by assets (*UTB*), and the portion of Exhibit 21 subsidiaries that are in tax havens (*Tax havens*). Long-run ETRs are a standard measure of tax avoidance first introduced by [Dyreng et al. \(2008\)](#). Unrecognized tax benefits measure the amount of uncertain tax positions that are more likely than not to be reversed upon audit from a tax authority, and are a common proxy for tax aggressiveness or tax uncertainty ([Dyreng et al., 2019](#); [Lisowsky et al., 2013](#); [Rego and Wilson,](#)



**Fig. 2.** Non-disclosing Firm Disclosures after the TJN report. This figure shows the number of treatment and control firms from the non-disclosing group that publish first-time U.K. Tax Strategy disclosures after the release of the TJN report on February 6, 2019. The total sample is the 142 non-disclosing firms that had not published the required disclosure at the time the TJN report was released. The sample is randomly assigned to treatment and control groups (71 treatment firms, 71 control firms). The names of treatment firms are included in the TJN report; the names of control firms are withheld from the report. Six months following the release, 42 treatment firms and 12 control firms had made first-time disclosures.

2012). Tax haven subsidiaries are a major component of many multinational firms' tax policies and are associated with aggressive tax strategies, including tax sheltering (Lisowsky, 2010). Given the indirect costs—both proprietary and reputational—of divulging tax strategy information, I predict that (1) *Long-run cash ETR* is positively related to disclosure quality and accessibility, and (2) *UTB* and *Tax havens* are negatively related to disclosure quality and accessibility.

Lastly, I include a number of control variables commonly used in both the disclosure and tax literature (Bushee et al., 2018; De Simone et al., 2019; Ellis et al., 2012; Glaeser, 2018; Grubert and Slemrod, 1998; Guay et al., 2016; Koh and Reeb, 2015; Merkley, 2014): *R&D*, *Intangibles*, *News*, *Leverage*, *Returns*, *Returns std dev*, *BTM*, *Missing R&D*, *Loss*, and *Special items*. I define all variables in detail in Appendix A.

I next perform the determinants analysis. My independent variables of interest capture firms' incentives for disclosure, including three measures that represent firms' underlying tax behavior. For each dependent variable, I run two specifications: one that includes the full sample, and one that contains only firms with positive pre-tax income so that I can include an interpretable effective tax rate as an independent variable.

Table 3, Panel A presents the results, where several patterns emerge. *Size* is negatively and significantly associated with *Similarity*. It is also marginally statistically associated with *Boilerplate* and *Accessibility* (negative relation) and *Log words* (positive relation), suggesting that larger firms on average have higher quality disclosures but make them less accessible to the public. *Bid-ask spread* is positively related to disclosure similarity, consistent with higher quality disclosures being associated with greater liquidity.

The three tax variables are all at least marginally statistically associated with one or more of the dependent variables. Firms with lower *Long-run cash ETR* have more similar disclosures and make them less accessible. *UTB* has a marginal negative relation with *Log words* and a positive relation with *Boilerplate*, suggesting that tax aggressiveness may be negatively associated with disclosure quality. The coefficients on *Long-run cash ETR* and *UTB* suggest that proprietary and reputational costs may deter higher-quality mandatory disclosure, consistent with managers' statements about their approach to this disclosure. On the other hand, *Tax havens* is positively related to disclosure length, which may suggest that firms with more tax havens require lengthier disclosures to adequately convey their tax strategies. Although the tax variables are not significantly related to all the measures of disclosure quality and accessibility, the results suggest that firms' underlying tax strategies are associated with disclosure quality.

In Panel B, I provide Spearman-Pearson correlations for the variables examined in Panel A. Notably, I show that *Accessibility* is negatively associated with disclosure quality (positive correlation with *Boilerplate*; negative correlation with *Log Words*), suggesting that firms may view quality and accessibility as substitutes—perhaps so that they can be compliant in the eyes of the regulator while limiting proprietary costs.

I next examine the decision to comply with the U.K. Tax Strategy disclosure requirement before the field experiment begins. I repeat the determinants analysis above but include the 142 non-disclosing firms and replace the dependent variable with an indicator for whether a firm complies. In Table 4, I present linear probability model regressions. I find positive and significant coefficients on *Size* and *UK sales*, suggesting that firms with higher political costs and regulatory scrutiny are more likely to comply. This might also suggest that firms themselves faced processing costs that hindered their awareness of the requirement, particularly small firms and those with a modest presence in the U.K. I also find marginally significant evidence that firms with greater tax haven usage are less likely to comply, which provides more context for the result in Table 3. That is, conditional on compliance, firms with greater tax haven usage provide lengthier disclosures, but firms with greater tax haven usage are less likely to comply in the first place.

**Table 5**  
Effect of NGO and media coverage on disclosure.

	(1) <i>Disclose</i>
<i>Panel A: Compliance with Mandatory Disclosure</i>	
<i>Treated</i>	0.42*** (5.72)
<i>Intercept</i>	0.17*** (3.24)
<i>Observations</i>	142
<i>R-squared</i>	0.189
<i>Panel B: Quality of Mandatory Disclosure</i>	
	(1) <i>Improve disclosure</i>
<i>Treated</i>	0.07*** (3.26)
<i>Intercept</i>	-0.00 (-0.02)
<i>Strata indicators</i>	Yes
<i>Observations</i>	290
<i>R-squared</i>	0.075

This table presents the main results of the treatment effect on mandatory disclosure. In Panel A, I examine a sample of 142 U.S. multinational firms that failed to make a required disclosure under the U.K. Tax Strategy disclosure regime; in Panel B, I examine a sample of 290 U.S. multinational firms with low-quality U.K. Tax Strategy disclosures. Firms are randomly assigned to treatment and control groups. The names of treatment firms are included in the TJN report; the names of control firms are withheld from the report. *Treated* is an indicator variable equal to one for treatment firms and zero for control firms. *Disclose* is an indicator variable equal to one if a firm makes a first-time U.K. Tax Strategy disclosure after the treatment date, and zero otherwise. *Improve Disclosure* is an indicator variable equal to one if a firm increases *Word Count* or decreases *Similarity* or *Boilerplate* in its disclosure by at least 10 percent after the treatment date, and zero otherwise. Strata indicators are included to account for the stratified random assignment to treatment and control groups in Panel B. All variables are defined in [Appendix A](#). T-statistics based on robust standard errors are presented below the coefficients in parentheses. \*\*\*, \*\*, \* denotes statistical significance at the 1, 5, or 10 percent level, respectively.

## 4. Research design

### 4.1. Assignment to treatment and control groups

After obtaining the full set of firms subject to the U.K. Tax Strategy disclosure regime and computing measures of disclosure quality, I then create the two samples in which to perform my field experiment. For the non-disclosing group, I use the entire set of 142 firms for which I could not find a disclosure. For the low-quality disclosure group, I include firms that have disclosures with (a) at least 35 percent *Similarity*, or (b) less than 410 words, which is approximately equal to the lowest quartile of each variable.<sup>15</sup> In choosing these thresholds, I attempt to capture truly low-quality disclosures while also obtaining a sample that is generalizable and has sufficient power to detect the effect of NGO and media coverage. See the [online appendix](#) for my power analysis and additional discussion on the sample selection for low-quality disclosure firms. This results in a sample of 290 low-quality disclosure firms.

Within the non-disclosing and low-quality disclosure groups, I randomly sort firms into equal-sized treatment and control groups. This results in 71 treatment and 71 control non-disclosing firms; and 145 treatment and 145 control low-quality disclosure firms. In the latter, I use stratification to ensure covariate balance on two important dimensions and to increase the power of my tests ([Athey and Imbens, 2017](#)). I stratify all observations on firm size (6 strata) and disclosure quality (3 strata) which results in 18 total strata. I stratify on firm size because it is correlated with my measures of disclosure quality. I stratify on disclosure quality to ensure balance on this dimension, as I expect the pressure from market participants to be

<sup>15</sup> I choose specific numeric thresholds rather than distributional thresholds to avoid divulging properties of the distribution that can enable readers of the TJN report to infer that control firms are missing.

related to a firm's disclosure quality. Within each of the 18 strata I randomly assign firms to treatment and control groups. Covariate balance is tabulated in the [online appendix](#), with the statistics indicating that observable covariates are balanced across both groups. In January 2019, I provided TJN with the two treatment groups for inclusion in the TJN report.

#### 4.2. Release of the TJN report

On February 6, TJN published the report on its website and coordinated media attention.<sup>16</sup> Shortly after the report was released, TJN began a social media campaign via Twitter to raise awareness of U.S. multinational firms' poor level of compliance with the U.K. Tax Strategy disclosure requirement and to encourage firms to comply or improve the quality of their disclosures. This included a series of tweets that identified each non-disclosing firm by name and tagged the firm's Twitter account.<sup>17</sup> Finally, to further ensure that firms listed in the TJN report became aware of the report, an email was sent to each firm's investor relations department notifying them of inclusion in the report and summarizing the report's analysis.

Because NGO and media influence depends on reaching key stakeholders, understanding the report's impact is important in discerning the mechanisms through which it could affect disclosure in this setting. The TJN report received media coverage from Politico's Morning Tax newsletter, Law360, and Tax Notes, and it was covered by several tax blogs. TJN's tweets were re-tweeted 107 times by users with an aggregate following of over one million users. Of the 87 unique users that re-tweeted, 78 percent were ordinary citizens, 15 percent were NGOs or activists employed by NGOs, and 6 percent were journalists or media outlets. A member of the European Parliament re-tweeted the report and a member of the U.K. parliament issued a press release about the findings. The report had a negative, but statistically insignificant, effect on the market returns of the firms that were named. Ultimately, the report's impact was relatively modest compared to the rare NGO or media reports that go viral, though it exhibited a moderate level of reach to stakeholders focused on tax and legal issues and clearly caught the attention of at least some legislators. A summary of the TJN report's coverage and market returns is included in the [online appendix](#).

Following the release of the TJN report, I tracked firms' disclosure behaviors on a weekly basis using Python scripts that searched for new disclosures and updates to existing disclosures. My script that searched for new disclosures was periodically blocked by search engines, in which case I supplemented the script with manual searches following the strategy outlined in [Appendix C](#). The script that identified changes to existing disclosures downloaded each firm's U.K. Tax Strategy disclosure based on its URL and compared the text to the previous week's version. In most cases, firms either made no changes to their disclosures or made changes but maintained the same URL. For firms that changed the URL, I manually searched for the updated URL. I ran the field experiment for six months, and I report my findings below.

## 5. Results

### 5.1. Field experiment

[Fig. 2](#) graphs the number of non-disclosing treatment and control firms that issue first-time U.K. Tax Strategy disclosures over the six months following the release of the TJN report on February 6, 2019. The figure shows a large increase in the number of treatment firm disclosures beginning immediately after the treatment. It also shows a modest increase in control firm disclosures, suggesting treatment spillovers (see section 6.2) or the natural rate of delayed disclosure.<sup>18</sup> By the end of the six-month period, 42 treatment firms and 12 control firms had disclosed. In [Table 5](#), I present this result using regression. In Panel A, the dependent variable is *Disclose*, which is an indicator variable equal to one if a non-disclosing firm makes a first-time U.K. Tax Strategy disclosure following the treatment, and zero otherwise. I regress this variable on the treatment indicator, *Treated*. The results reveal that treatment firms are 42 percent more likely to disclose than control firms (t-stat: 5.72). In total, 59 percent of treatment firms comply compared to 17 percent of control firms. The result is both statistically significant and economically meaningful and provides evidence that NGO and media coverage can have a large effect on firms' compliance with mandatory disclosure.

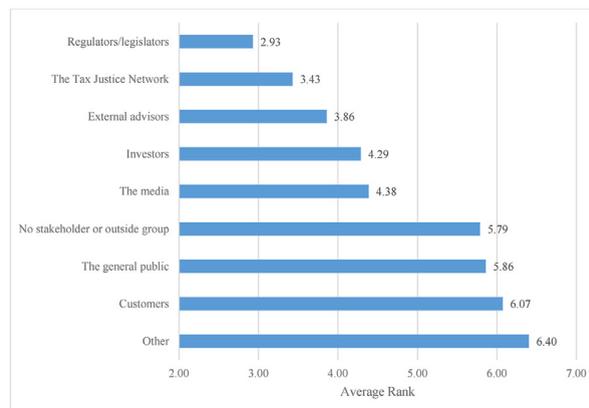
I next examine whether, and to what extent, greater NGO and media coverage causes low-quality disclosure firms to improve the quality of their disclosures by making them longer or less boilerplate. In Panel B, I examine the dependent variable *Improve Disclosure*, which is an indicator variable equal to one if a firm reduces *Similarity* or *Boilerplate*, or increases

<sup>16</sup> Specifically, the report was "embargoed", or sent to the media before its public release, which gave journalists the opportunity to publish articles simultaneously with the public release. The report is available here: <https://www.taxjustice.net/2019/02/06/one-in-nine-us-multinationals-fail-to-comply-with-tax-transparency-law/>.

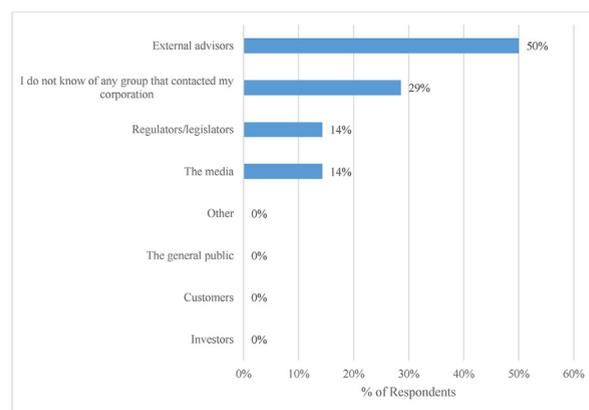
<sup>17</sup> Non-disclosing firms were all tagged on Twitter, but low-quality disclosure firms were not due to resource constraints at TJN.

<sup>18</sup> In the process of hand-collecting firms' disclosures, I found a number of firms that disclosed well after the deadline—more than a year later in some cases. Thus, I expect some portion of non-disclosing firms (both treatment and control) to disclose for reasons unrelated to the treatment. To the extent spillovers do exist, this may indicate a violation of the stable unit treatment value assumption (SUTVA). In this setting, such spillovers attenuate the treatment effect and bias against finding a statistically significant effect (see discussion in [Glaeser and Guay \(2017\)](#)). I do not design the field experiment to eliminate spillovers because they are an inherent feature of intermediary coverage. By studying NGO and media coverage in a real-world setting I enhance the generalizability of my results and am able to identify spillovers channels (see section 6.2).

Panel A: "My corporation perceived pressure to disclose/increase the quality of our U.K. Tax Strategy disclosure from:"



Panel B: "The following groups contacted my corporation regarding our U.K. Tax Strategy disclosure after seeing the Tax Justice Network report:"



**Fig. 3.** Survey of Tax Executives. This figure illustrates the results from a survey of tax executives at treated non-disclosing and low-quality disclosure firms. In Panel A, tax executives are asked to rank the importance of pressure from stakeholders and intermediaries to publish a U.K. Tax Strategy disclosure (for non-disclosing firms) or increase the quality of their disclosure (for low-quality disclosure firms), with a rank of 1 indicating the most important. The rank options are regulators/legislators, the Tax Justice Network, external advisors, investors, the media, no stakeholder or outside group, the general public, customers, or other. The order of these groups is randomized for each survey participant. In Panel B, tax executives are asked identify groups that contacted the firm as a result of the TJN report. The groups are the same as those in Panel A except that TJN is omitted. The figure presents the percentage of respondents that indicate contact from each of the groups. The total exceeds 100 percent because participants can select more than one group.

Word Count in its disclosure by at least 10 percent after the treatment, and zero otherwise.<sup>19</sup> I regress *Improve Disclosure* on a treatment indicator and strata indicators, which take into account the stratification and adjust the standard errors accordingly (Bruhn and McKenzie, 2009). The coefficients on *Treated* and the intercept reveal that 7 percent of treatment firms and 0 percent of control firms, respectively, make significant changes to their U.K. Tax Strategy disclosures in the six months following the TJN report and that the difference between treatment and control is statistically significant (t-stat: 3.26).

The significant change in firms' disclosure behavior is notable, for at least two reasons. First, the treatment was relatively small and did not affect market returns. While one might expect firms to react to NGO and media campaigns that go viral and negatively impact market values, such as in Dyreng et al. (2016), it is less clear that firms would increase disclosure in response to more run-of-the-mill coverage. Second, while it is not too shocking that non-disclosing firms would start complying, as they were in clear violation of the law, it is surprising that any low-quality disclosure firms would improve their disclosures. These firms were compliant, by the letter of the law. They had no legal obligation to change their disclosures, they

<sup>19</sup> I also run this specification with other thresholds for *Improve disclosure*. At 25 percent, 5 percent of treatment firms are classified as having significantly changed their disclosures (t-stat: 2.72); at 50 percent, it becomes 2 percent of treatment firms (t-stat: 1.73). There are no firms that decrease the quality of their disclosures.

**Table 6**  
Effect of NGO and media coverage on disclosure: Channels.

	(1) <i>Disclose</i>	(2) <i>Disclosure quality</i>
<i>Regulator pressure</i>	0.29** (2.56)	14.33* (1.79)
<i>Investor pressure</i>	0.21** (2.01)	17.71** (2.34)
<i>External advisor information</i>	0.09 (0.85)	9.91 (1.34)
<i>Size</i>	0.08* (1.90)	5.89* (1.88)
<i>UTB</i>	0.02 (1.47)	1.63* (1.93)
<i>Tax havens</i>	-0.06 (-0.29)	9.22 (0.62)
<i>Leverage</i>	0.20 (0.90)	14.36 (0.94)
<i>BTM</i>	-0.40** (-2.44)	-29.97*** (-2.68)
<i>Loss</i>	0.51*** (3.21)	28.13** (2.17)
<i>Intercept</i>	-0.33 (-0.99)	-39.06 (-1.65)
<i>Observations</i>	71	71
<i>R-squared</i>	0.303	0.305

This table examines the channels through which treatment firms experienced pressure as a result of the TJN report. The sample consists of the 71 non-disclosing treatment firms, and the dependent variable *Disclose* is an indicator variable equal to one if a firm makes a first-time U.K. Tax Strategy disclosure after the treatment date, and zero otherwise. *Disclosure quality* is the interaction of *Disclose* and a rank variable representing the firm's disclosure quality relative to others in the sample. The three independent variables of interest are cross-sectional indicator variables that explore channels associated with firms disclosing after the release of the TJN report. *Regulator pressure* is an indicator variable equal to one if firms are above the sample median of U.K. presence (U.K. sales), and zero otherwise. *Investor pressure* is an indicator variable equal to one if firms are above the sample median of retail investor ownership percentage, and zero otherwise. *External advisor information* is an indicator variable equal to one if firms have more than the sample median number of treated firms that have headquarter locations within 100 miles or shared auditors, and zero otherwise. All variables are defined in Appendix A. T-statistics based on robust standard errors are presented below the coefficients in parentheses. \*\*\*, \*\*, \* denotes statistical significance at the 1, 5, or 10 percent level, respectively.

faced higher disincentives for disclosure, and they experienced only a modest shock. Still, a significant portion of treatment firms meaningfully improved their disclosures, relative to control firms.

## 5.2. Which market participants impose the pressure?

In order to identify the primary market participants from which firms perceive pressure to disclose, following the field experiment, I perform two analyses: (1) a survey of tax executives at firms listed in the TJN report, and (2) a cross-sectional test.

### 5.2.1. Survey evidence

To conduct the survey, I use LinkedIn to manually identify and reach out to tax executives at each firm listed in the TJN report. A primary obstacle in conducting a survey is the ability to identify the individual(s) responsible for their firm's U.K. Tax Strategy disclosure. Fortunately, many of the disclosures contain metadata that list the name of the individual who created the file. For 83 firms I am able to identify these individuals and locate their LinkedIn profiles, which confirms their role as internal tax executives and makes it possible to contact them. For the remaining firms, I attempt to identify up to two tax executives most likely involved in drafting this disclosure. This results in a total survey population of 283 tax executives.

I then create the survey and send it to my survey population.<sup>20</sup> The survey contains two questions aimed at identifying the market participants who apply the pressure. First, I ask the executives to rank groups from which their firms perceived pressure to disclose (for non-disclosing firms) or improve the quality of their disclosure (for low-quality disclosure firms). The groups to be ranked are regulators/legislators, investors, external advisors, customers, the general public, TJN, the media, no stakeholder or outside group, or other (with prompt for user input). Second, I ask them to list the actual parties that contacted them as a result of the TJN report. The groups in the second question are the same as the first except that TJN

<sup>20</sup> I obtained IRB approval to conduct the survey. To protect participants' privacy and confidentiality, the survey was anonymous and I did not require participants to provide identifiable information. I did, however, request that participants provide contact information if they were open to follow-up discussions.

**Table 7**  
Disclosure quality and accessibility of new disclosures.

	(1) <i>Similarity</i>	(2) <i>Log words</i>	(3) <i>Boilerplate</i>	(4) <i>Accessibility</i>
<i>Panel A: All Treatment Firms</i>				
<i>Treated</i>	0.04 (0.99)	-0.10* (-1.68)	0.05* (1.93)	0.06 (0.42)
<i>Controls</i>	Yes	Yes	Yes	Yes
<i>Observations</i>	661	661	661	661
<i>R-squared</i>	0.128	0.130	0.078	0.047
<i>Panel B: Treatment Firms that Disclosed within 30 days</i>				
<i>Treated</i>	0.17*** (3.41)	-0.27*** (-3.76)	0.08** (2.50)	-0.33 (-1.20)
<i>Controls</i>	Yes	Yes	Yes	Yes
<i>Observations</i>	636	636	636	636
<i>R-squared</i>	0.377	0.398	0.206	0.173
<i>Panel C: Treatment Firms that Disclosed after 30 days</i>				
<i>Treated</i>	-0.02 (-0.50)	-0.00 (-0.06)	0.04 (1.37)	0.30** (2.30)
<i>Controls</i>	Yes	Yes	Yes	Yes
<i>Observations</i>	644	644	644	644
<i>R-squared</i>	0.097	0.126	0.131	0.093

This table examines the disclosure quality and accessibility of new disclosures made by non-disclosing firms following the release of the TJN report. The dependent variables are *Similarity* in column (1), *Log words* in column (2), and *Boilerplate* in column (3); and *Accessibility* in column (4). In each model, I compare treatment firms' new disclosures to initially compliant firms' disclosures in an entropy balanced sample. In Panel A, I compare all new disclosures of treatment firms that publish their first-time U.K. Tax Strategy disclosures after the TJN report to disclosures from initially compliant firms. In Panel B (Panel C) I compare the disclosures of the 17 (20) treatment firms that publish their first-time U.K. Tax Strategy disclosures within 30 days (after 30 days) of the TJN report to disclosures from initially compliant firms. Treatment firms' new disclosures refers to the 42 treatment firms in the non-disclosing group that publish first-time U.K. Tax Strategy disclosures after the TJN report was released. Initially compliant firms refers to the sample of 619 public firms that make a disclosure before the treatment (see Table 1). All variables are defined in Appendix A. All control variables from Tables 2 and 3 are included. T-statistics based on robust standard errors are presented below the coefficients in parentheses. \*\*\*, \*\*, \* denotes statistical significance at the 1, 5, or 10 percent level, respectively.

is removed. The ordering of the groups is randomized in both questions to prevent response-order effects (Krosnick and Alwin, 1987).

Importantly, these questions are designed to capture pressure even if the respondent was not directly contacted by outside groups. Firms can experience costs related to their disclosures even when they are not directly contacted, and/or they may act before such contact occurs. For example, firms anticipating regulatory action may correct their disclosure before a slow, bureaucratic government agency can follow up. Furthermore, the person responding to the survey may not be aware of the firm being contacted by outsiders even if the firm was contacted. Still, to fully understand how NGO and media coverage exerts pressure on firms through market participants, it is important to identify which parties actually contacted firms about the TJN report.

I received 14 survey responses (a 5 percent response rate) and present these results in Fig. 3. Panel A illustrates the results of the first question, where tax executives rank the nine groups listed above—with a ranking of 1 representing the most important and 9 the least important. Regulators/legislators received the highest ranking, with an average rank of 2.93, followed by TJN (3.43), external advisors (3.86), investors (4.29), and the media (4.38). Tax executives reported very little pressure from the general public, customers, or other parties, and seldom reported that they did not perceive pressure from stakeholders.

Panel B illustrates the results of the second question, where tax executives identify the groups that contacted their firms because of the TJN report. Half of the participants indicate that an external advisor contacted them, followed by “I do not know of any group that contacted my corporation” (29 percent), regulators/legislators (14 percent), and the media (14 percent). Because participants can identify more than one group, the total exceeds 100 percent.

Overall, the results from the survey provide some evidence that firms perceived the greatest source of pressure as coming from regulators/legislators. However, the fact that “regulators/legislators” is the most important source of perceived pressure in Panel A, but only 14 percent of firms (2 out of 14) in Panel B were contacted by them, suggests that many firms anticipated these costs instead of being directly pressured. Still, I find some evidence that processing costs were reduced: two firms report being contacted, a member of parliament issued a statement on the report (Dodds, 2019), and a director at HMRC indicated that the TJN report provided new information regarding firms' U.K. Tax Strategy disclosures.<sup>21</sup> Firms also appear to have felt pressure from investors, as well as from the intermediaries themselves. In addition, external advisors play a major role in

<sup>21</sup> I spoke with a director at HMRC who indicated that the TJN report provided new information. HMRC does not share compliance data about firms. However, the director indicated that in general this kind of information may be used by HMRC's Customer Compliance Managers in their ongoing assessment of, and conversations about, risk with firms.

**Table 8**  
Spillover channels.

	(1) <i>Disclose</i>
<i>Treated same auditor</i>	0.01 (0.97)
<i>Treated same industry</i>	0.01 (0.69)
<i>Treated connected board</i>	0.12 (1.18)
<i>Treated local</i>	0.03** (2.37)
<i>Size</i>	0.01 (0.21)
<i>UTB</i>	-0.02 (-0.42)
<i>Tax havens</i>	0.08 (0.46)
<i>Leverage</i>	0.28 (1.16)
<i>BTM</i>	-0.12 (-1.00)
<i>Loss</i>	-0.03 (-0.21)
<i>Intercept</i>	-0.26 (-0.86)
<i>Observations</i>	71
<i>R-squared</i>	0.170

This table examines the spillover channels that may have affected non-disclosing control firms' propensity to disclose a U.K. Tax Strategy disclosure. The sample consists of the 71 non-disclosing control firms, and the dependent variable *Disclose* is an indicator variable equal to one if a firm makes a first-time U.K. Tax Strategy disclosure after the treatment date, and zero otherwise. The independent variables of interest are four channels that connect control firms to treatment firms. *Treated same auditor* is the number of treatment firms in the TJN report have the same auditor as the control firm. *Treated same industry* is the number of treatment firms in the TJN report that are in the control firm's industry, using Hoberg and Phillips TNIC2 industries. *Treated connected board* is the number of treatment firms that have at least one shared board member with the control firm. *Treated local* is the number of treatment firms that have a headquarters location within 100 miles of the control firm's headquarters. All variables are defined in [Appendix A](#). T-statistics based on robust standard errors are presented below the coefficients in parentheses. \*\*\*, \*\*, \* denotes statistical significance at the 1, 5, or 10 percent level, respectively.

informing firms about the TJN report and advising firms about disclosure responses. In summary, despite the relatively modest campaign, NGO and media coverage was able to reduce processing costs to stakeholders that could then sufficiently pressure firms for greater disclosure.

While the survey results are an informative and direct manner to ascertain the ultimate source of pressure, a caveat is in order. Most tax executives did not respond to my survey request, leading to a small sample. Moreover, to the extent there are systematic differences in the types of executives who responded, my results may not be representative of the full population of firms covered by the TJN report. I caution readers to interpret these results accordingly. In addition, to address this concern, I undertake an orthogonal approach by examining a cross-sectional test of the complete sample.

### 5.2.2. Cross-sectional test on pressure

Guided by the survey results, I create proxies for pressure from regulators, investors, and external advisors, and I examine their associations with the propensity and quality at which non-disclosing firms produce a U.K. Tax Strategy disclosure following the TJN report. I present the results in [Table 6](#).

*Regulator pressure* represents firm's visibility and importance to the U.K. tax authority, HMRC. It is computed as an indicator variable equal to one for firms that are above the sample median of *UK sales*, and zero otherwise. *Investor pressure* is an indicator variable equal to one if firms are above the sample median of retail investor ownership percentage (one minus institutional ownership), and zero otherwise.<sup>22</sup> *External advisor information* is an indicator variable equal to one if firms have more than the sample median of the combined sum of (1) the number of firms within close proximity (headquarters locations within 100 miles) that are listed in the TJN report, and (2) the number of firms with a shared auditor listed in the TJN report, and zero otherwise. The dependent variables are *Disclose* and *Disclosure quality*, which is the interaction of *Disclose* and a rank

<sup>22</sup> I use retail ownership as my proxy because conversations with managers at firms listed in the TJN report and with analysts at the United Nations Principles for Responsible Investment (UNPRI) suggest the investors that have preferences for tax transparency are primarily retail investors and a small minority of institutional investors.

variable for the firm's disclosure quality that is created using the same approach used in the stratification process. All variables are defined in detail in the appendix.<sup>23</sup>

In Tables 6 and I find that firms facing greater regulator and retail investor pressure are significantly more likely to begin to disclose and do so with higher disclosure quality, but I do not find a significant relation between disclosure and external advisors. While not fully aligning with the survey responses, these results corroborate the notion that firms perceived pressure from the regulator, and to a lesser extent, other market participants.<sup>24</sup>

Note, however, that these cross-sectional tests have limitations, particularly due to the small sample and potential for measurement error in the proxies, which attempt to capture high-level constructs that are difficult to precisely measure. For example, the measure for regulatory pressure is based on U.K. sales—a broad measure that could capture other pressures, such as investor pressure, if investors are more aware of firms with a larger U.K. presence. Further, the investor and external advisor proxies could be particularly noisy to the extent actual investor pressure to disclose is not well explained by retail investor ownership or contact from external advisors is not well explained by treated firms being located nearby or having a shared auditor.

## 6. Additional analyses

### 6.1. Analysis of new disclosures

To further shed light on the extent to which intermediary coverage can affect disclosure, I next examine the quality, accessibility, and timeliness of non-disclosing firms' first-time U.K. Tax Strategy disclosures. In Table 7, I compare disclosures from the 42 treated non-disclosing firms that make first-time U.K. Tax Strategy disclosures after the TJN report to the 619 disclosures that existed before the field experiment (hereafter "initially compliant firms"). I examine the dependent variable *Similarity* in column (1), *Log words* in column (2), *Boilerplate* in column (3), and *Accessibility* in column (4).

Because the choice of noncompliance with the U.K. Tax Strategy disclosure is not random, selection issues might drive differences between new disclosures and those from initially compliant firms (e.g., firms that choose not to publish a disclosure in the first place may face greater marginal costs of disclosure than initially compliant firms due to observable or unobservable factors). To mitigate these concerns, I employ entropy balancing to weight observations such that covariates across the treatment and control groups have equal means and standard deviations.<sup>25</sup>

The coefficients on *Treated* in Panel A show that new disclosures are significantly shorter and more boilerplate than disclosures from initially compliant firms. In Panels B and C, I divide the sample into firms that publish a disclosure within 30 days of the TJN report (Panel B), and firms that publish a disclosure after 30 days (Panel C). The results in these panels indicate that the lower quality of new disclosures is primarily driven by firms that respond quickly. Disclosures issued within 30 days of the TJN report are 17 percentage points higher in *Similarity*, have 27 percent fewer words, and are 8 percentage points higher in *Boilerplate*. The magnitudes of these differences are high. The baseline level of *Similarity* and *Boilerplate* from initially compliant firms is 29.3 percent and 37.6 percent, respectively, indicating that these new disclosures are 58 percent more similar and 21 percent more boilerplate than initially compliant firms' disclosures. The results in Panel C show that the quality of disclosures issued after 30 days is not statistically distinguishable from the quality of initially compliant firms' disclosures, but they are significantly more accessible.

Overall, these results reveal that NGO and media coverage may have a more nuanced relation with disclosure. Although coverage has a large positive effect on compliance with mandatory disclosure, firms appear to comply by producing low-quality disclosures, consistent with firms responding to intermediary coverage in a largely symbolic manner (Bednar, 2012). In an untabulated analysis, I further examine the factors related to disclosure timeliness. I find that tax aggressiveness is associated with more timely disclosures while firm size is associated with less timely disclosures—suggesting that firms facing incentives for less disclosure respond quickly with very low-quality disclosures, whereas firms that have incentives for greater disclosure take more time to respond but issue higher quality and more accessible disclosures.

### 6.2. Spillovers

Lastly, I examine information spillovers between non-disclosing firms. As mentioned above and illustrated in Fig. 3, the delayed rise in control firm disclosures is suggestive of spillovers. I test for these in Table 8 by examining the propensity for the

<sup>23</sup> Due to low degrees of freedom in this sample, I include a smaller set of control variables by removing those that add little explanatory power to the model, determined using each variable's Shapley value (Shapley, 1953; Sharapov et al., 2021). The tabulated model has a better fit than a model with all of the controls from Table 2 (adjusted R-squared of 0.200 vs 0.188) and the results are largely consistent, except with lower statistical significance on the *Investor pressure* coefficient.

<sup>24</sup> I also compute these measures as continuous variables. I find similar results, except that the statistical significance of *Regulator pressure* is reduced ( $t = 0.98$  in column (1),  $t = 1.34$  in column (2)).

<sup>25</sup> I include all the covariates used in Tables 3 and 4 except for those related to returns (bid-ask spread, annual return, the standard deviation of returns), which I omit because they are missing for two treatment firms. The results are consistent if I include these variables and drop the firms with missing values. For parsimony, I tabulate only the specification that uses the full sample and omits *Long-run cash ETR*. In an untabulated analysis, I also compare the differences between these new disclosures and those from initially compliant firms without any matching as well as with a propensity-score matched sample. All results remain consistent with those tabulated.

71 non-disclosing *control* firms to issue a U.K. Tax Strategy disclosure as a function of four distinct spillover channels. *Treated same auditor* is the number of treated firms in the TJN report that have the same auditor as the control firm. *Treated same industry* is the number of treated firms in the TJN report that are in the same text-based industry (TNIC2 from [Hoberg and Phillips \(2016, 2017\)](#)) as the control firm. *Treated connected board* is the number of treated firms in the TJN report that have a shared board member with the control firm. *Treated local* is the number of firms that have a headquarters location within 100 miles of the control firm's headquarters. I interpret this variable as representing unobservable connections between closely located firms. For example, nearby firms are more likely to have connections between employees or have shared external advisors. Beyond the auditor, however, these connections are not publicly available but should be picked up by *Treated local*.

The results in [Table 8](#) suggest that spillovers to control firms occur primarily when there are more treatment firms nearby. The statistically significant coefficient on *Treated local* indicates that one additional treated firm within 100 miles of the control firm increases the probability of the control firm disclosing by 3 percent. Although I cannot directly observe the connections between local firms and therefore speak conclusively to the mechanisms, this finding is consistent with the survey results that identify external advisors as a major player in contacting and advising firms about this disclosure. These advisors have network connections to a large number of firms and likely broadcast the information to many clients, not just the ones actually listed in the report.

## 7. Conclusions

I examine the effect of NGO and media coverage on firm disclosure. Although a large literature explores the effects of processing costs on capital markets, few papers have shown how these frictions influence the amount of disclosure firms provide. Fewer still have been able to shed light on the effect of intermediaries on disclosure, due to the empirical challenges of disentangling intermediary coverage and firm disclosure, dealing with selection in coverage, and isolating coverage of an individual topic or disclosure. I use a field experiment to address these problems, and I focus on two relatively unexplored intermediaries—NGOs and the media—to show the extent and channels through which coverage affects firms' propensity to comply with or improve the quality of a mandatory disclosure.

It is important to note several limitations of this study. First, I examine a relatively narrow setting with unique institutional and design features. For example, in my setting the disclosure is qualitative, there is no formal disclosure mechanism, and the disclosure requirement and pressure arise from a jurisdiction other than the firm's headquarter jurisdiction. Given these features, my findings in this setting may not generalize more broadly. However, the narrow focus permits me to employ a research design with strong internal validity. Second, although I use several distinct empirical approaches to support my inferences, the results of each test should be interpreted with appropriate caution in light of its limitations. The survey, although informative, involves relatively few participants and could be biased to the extent that responses are correlated with the decision to participate in the survey. Likewise, the cross-sectional and spillover tests use proxies for high-level constructs that could lend to alternative interpretations of the mechanisms. Ultimately, I employ a number of distinct empirical techniques, each with its own strengths and limitations, to enhance our understanding of firms' disclosure responses to coverage of deficient disclosure by NGOs and the media.

## Data availability

Data will be made available on request.

## Appendix A. Variable Definitions

Variable	Definition	Source
<i>Similarity</i>	The highest percentage point similarity of one firm's U.K. Tax Strategy disclosure to another firm's. This variable is created with WCopyFind. I explain this tool and the parameters used in <a href="#">Appendix B</a> . In <a href="#">Tables 7</a> , I compute <i>Similarity</i> using the sample of both pre-existing and new disclosures. To prevent initially compliant firms' disclosures from having their <i>Similarity</i> scores changed by new disclosures, for these firms I use the original scores that I computed before the field experiment.	Raw documents, WCopyFind
<i>Boilerplate</i>	A measure of the portion of text in a firm's U.K. Tax Strategy disclosure that is found in at least 10 percent of the total documents. I explain the precise computation further in <a href="#">Appendix B</a> . In <a href="#">Tables 7</a> , I compute <i>Boilerplate</i> using the sample of both pre-existing and new disclosures. To prevent initially compliant firms' disclosures from having their <i>Boilerplate</i> scores changed by new disclosures, for these firms I use the original scores that I computed before the field experiment.	Raw documents
<i>Log Words</i>	The natural logarithm of the number of dictionary words contained in a firm's U.K. Tax Strategy disclosure.	Raw documents
<i>Word Count Accessibility</i>	The number of dictionary words contained in a firm's U.K. Tax Strategy disclosure.	Raw documents Search methodology

(continued on next page)

(continued)

Variable	Definition	Source
	An index between 1 and 5 that indicates how accessible a firm's U.K. Tax Strategy disclosure is, based on the step in the search methodology in which the disclosure is found. A value of 5 (most accessible) is assigned to firms' whose disclosures are found in the first search of Step 1 ([Firm Name] U.K. "tax" strategy); a value of 4 is assigned if the disclosure is found in the remaining searches in Step 1; a value of 3 is assigned if the disclosure is found in Step 2; a value of 2 is assigned if the disclosure is found in Step 3; and a value of 1 is assigned if the disclosure is found in Step 4.	
Size	The natural logarithm of total assets ( <i>AT</i> ).	Compustat
UK sales	The combined assets of U.K. subsidiaries listed in Amadeus ( <i>TOAS</i> ) in millions, divided by total assets in Compustat ( <i>AT</i> ).	Amadeus, Compustat
Bid-Ask Spread	The average daily value of the bid-ask spread ( <i>ASK-BID</i> ), scaled by price ( <i>PRC</i> ) and multiplied by 100.	CRSP
Long-run cash ETR	The five-year cash effective tax rate, computed as the five-year sum of cash taxes paid ( <i>TXPD</i> ) divided by the five-year sum of pre-tax income before special items ( <i>PI-SPI</i> ).	Compustat
UTB	Unrecognized tax benefits ( <i>TXUBEND</i> ) scaled by total assets ( <i>AT</i> ) and multiplied by 100.	Compustat
Tax havens	Number of Exhibit 21 haven subsidiaries, scaled by the total number of Exhibit 21 subsidiaries. Data obtained from Scott Dyreng's website.	10-K, Exhibit 21
R&D	Research and development expense ( <i>XRD</i> ), scaled by total assets ( <i>AT</i> ).	Compustat
Intangibles	Intangible assets ( <i>INTAN</i> ), scaled by total assets ( <i>AT</i> ).	Compustat
News	The counts of distinct news events about a firm in the last 91 days ( <i>AEV</i> ).	Ravenpack
Leverage	Long-term debt ( <i>DLC + DLTT</i> ) divided by total assets ( <i>AT</i> ).	Compustat
ROA	Income before extraordinary items ( <i>IB</i> ) divided by total assets ( <i>AT</i> ).	Compustat
Returns	Buy and hold return ( <i>RET</i> ) over the fiscal year.	CRSP
Returns std dev	Standard deviation of monthly returns ( <i>RET</i> ) over the fiscal year.	CRSP
BTM	Book value of equity ( <i>CEQ</i> ) divided by market value of equity ( <i>CSHO*PRCC_F</i> ).	Compustat
Missing R&D	An indicator variable equal to one if R&D is missing and zero otherwise.	Compustat
Loss	An indicator variable equal to one if net income ( <i>NI</i> ) is below zero, and zero otherwise.	Compustat
Special items	Special items ( <i>SPI</i> ), scaled by total assets ( <i>AT</i> ).	Compustat
Comply	An indicator variable equal to one if a firm publishes a U.K. Tax Strategy disclosure (before the field experiment), and zero otherwise.	Search methodology
Disclose	An indicator variable equal to one if a non-disclosing firm publishes a U.K. Tax Strategy disclosure after the TJN report, and zero otherwise.	Search methodology
Treated	An indicator variable that is equal to one for treatment firms and zero for control firms.	Randomization
Improve disclosure	An indicator variable equal to one if a firm significantly improves its U.K. Tax Strategy disclosure after the TJN report, and zero otherwise. I define a significant improvement as at least a 10 percent increase in <i>WORD COUNT</i> or a 10 percent decrease in <i>Similarity</i> or <i>Boilerplate</i> .	Search methodology
Strata	A series of indicator variables for each of the 18 strata in the low-quality disclosure sample. I stratify on two dimensions: size (6 strata) and disclosure quality (3 strata), for a total of 18 strata. I use sales as a proxy for firm size because it is the only financial variable available for the private firms in my sample. To create the disclosure quality strata, I rank firms by the values of <i>Similarity</i> and <i>Log Words</i> and add the two ranks. I then sort by the added rank variable and create three equal-sized strata.	Search methodology, Compustat.
Disclosure quality	The interaction of <i>Disclose</i> and a rank variable for the firm's disclosure quality that is created using the same approach used in the stratification process. Specifically, the rank variable is computed by ranking sample firms by (1) <i>Similarity</i> , and (2) <i>Log words</i> , separately, then adding the two ranks together, and finally sorting the combined rankings to create the disclosure quality rank.	Search methodology
Regulator pressure	An indicator variable equal to one if firms are above the sample median of U.K. presence ( <i>UK sales</i> ), and zero otherwise.	Amadeus, Compustat
Investor pressure	An indicator variable equal to one if firms are above the sample median of retail investor ownership percentage, and zero otherwise. Retail investor ownership is the inverse of institutional ownership.	Thomson Reuters Institutional Holdings
External advisor information	An indicator variable equal to one if firms have more than the sample median of the combined sum of (1) the number of local firms listed in the TJN report, and (2) the number of firms with a shared auditor listed in the TJN report, and zero otherwise. Local firms are those with headquarter locations within 100 miles of the firm's own headquarters.	Compustat, Audit Analytics
Treated same auditor	A count variable of the number of firms listed in the TJN report that have share the same auditor as the focal firm.	Audit Analytics
Treated same industry	A count variable of the number of firms listed in the TJN report that are in the same industry as the focal firm. Industry is determined based on Hoberg-Phillips text-based industries (TNIC2).	Hoberg-Phillips TNIC2

(continued)

Variable	Definition	Source
<i>Treated connected board</i>	A count variable of the number of firms listed in the TJN report that have at least one shared board member with the focal firm.	Boardex
<i>Treated local</i>	A count variable of the number of firms listed in the TJN report that have headquarters within 100 miles of the focal firm's headquarters.	Compustat

## Appendix B. Similarity and Boilerplate Variable Computations

### Panel A. Similarity.

I compute *Similarity* using WCopyFind, which is an open-source program that identifies common phrases across distinct documents, primarily for the purpose of identifying plagiarism. The program accepts a number of user-defined inputs and reports documents' pairwise similarity. In this paper, I follow [McMullin \(2016\)](#) and use the following parameters to identify the similarity of U.K. tax strategy disclosures:

1. Shortest phrase to match = 6.
2. Minimum percentage of matching words = 60 percent.
3. Most imperfections to allow = 6.
4. Ignore all punctuation.
5. Ignore outer punctuation.
6. Ignore numbers.
7. Ignore letter case.
8. Skip non-words.
9. Skip words longer than 20 characters.

### Panel B. Boilerplate.

To compute *Boilerplate*, I follow an approach similar to [Lang and Stice-Lawrence \(2015\)](#), hereafter LS. I count the number of trigrams contained in each U.K. Tax Strategy disclosure, where a trigram is an ordered group of three words. I classify trigrams that appear in at least 10 percent of the disclosures as boilerplate trigrams. I then calculate *Boilerplate* as the percentage of a disclosure's total trigrams that are boilerplate trigrams.

This computation differs from that in LS in two ways. First, I count the words in boilerplate ngrams as boilerplate language, whereas LS counts all of the words in sentences that contain boilerplate phrases. I do this because a number of firms make extensive use of bullet points and thus have very few but complex sentences. Hence, an analysis that relies on sentences is not reliable in my setting. To illustrate, the commonly used Gunning fog index computes textual complexity using sentence length and the number of syllables in words. In LS, the average fog index value for their large sample of annual reports is 19.52, with a standard deviation of 1.73. In my sample of U.K. Tax Strategy disclosures, the average value for fog is 28.36 with a standard deviation of 25.60. That is, in my sample the standard deviation is almost 15 times larger, which is a product of many disclosures that contain an abnormally low number of sentences. Second, I alter the thresholds that determine boilerplate. LS uses tetragrams (four-words) that occur in 60 percent of documents. In my setting, there are zero tetragrams (or even trigrams) that occur in at least 60 percent of the documents. Therefore, I use trigrams, which are much more commonly used to analyze textual similarity, and I lower the 60 percent threshold to 10 percent, which achieves values for *Boilerplate* that are comparable to LS.

## Appendix C. Methodology for Hand Collection of U.K. Tax Strategy Disclosures

I first obtained a list of firms that are potentially subject to the U.K. Tax Strategy disclosure regime, as discussed in section 3.1. To obtain each firm's disclosure, I then conducted a uniform five-part search methodology.

**Step 1:** Perform the following searches ten searches on Google.

1. [Firm Name] U.K. "tax" strategy.
2. [Firm Name] U.K. "tax" statement.
3. [Firm Name] U.K. "tax" approach.
4. [Firm Name] U.K. "tax" policy.
5. [Firm Name] U.K. "tax" paragraph schedule 19 finance at 2016.
6. [Firm Name] global "tax" strategy.
7. [Firm Name] global "tax" statement.
8. [Firm Name] global "tax" approach.
9. [Firm Name] global "tax" policy.

10. [Firm Name] global “tax” paragraph schedule 19 finance at 2016.

These ten Google searches captured approximately 92 percent of all the disclosures I was able to locate.

**Step 2:** For each of the remaining firms, manually visit their website and examine all of the following pages, if they exist:

1. Governance documents.
2. Corporate social responsibility.
3. Legal.
4. Media.
5. About us.

**Step 3:** For any remaining firms, visit the firm's general investor relations webpage and in the search bar perform the same Google searches (omitting the company name). Visit both U.S. and U.K. versions of the website, if applicable.

**Step 4:** For any remaining firms, identify the name of any U.K. subsidiary disclosed in the most recent Exhibit 21 or in Amadeus. If the name is significantly different than the U.S. parent's name, I repeated the entire search strategy above, substituting the subsidiary name for the parent name.

**Step 5:** For any remaining firms, confirm a presence in the U.K. by searching for the firm or its subsidiary at the Companies House website.<sup>26</sup> If the firm files financial statements as a dormant company, it is removed. Otherwise, I included the firm in my list of non-disclosing firms.

#### Appendix D. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jacceco.2022.101522>.

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<sup>26</sup> Companies House filings can be found here: <https://beta.companieshouse.gov.uk/>.

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