Double trouble? IRS's attention to financial accounting restatements

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Abstract

We examine whether the Internal Revenue Service (IRS) uses public information to obtain qualitative signals regarding the quality of firms' financial information or management integrity. Using the procurement of public information as a proxy for IRS attention, we test whether public signals of poor information quality (restatements) lead to an increase in IRS attention. To begin, we document that the IRS is both more likely and quicker to acquire public filings announcing a restatement than any other filing of the firm. Furthermore, we examine instances in which the IRS is more likely to learn of a restatement and find an increase in attention around both press releases and media coverage of the restatement. Next we examine the implications of increased IRS attention. Employing path analysis, we find that IRS attention is associated with both higher levels of future tax settlements and a greater likelihood of the mention of a tax audit. Overall our results are consistent with the IRS responding to signals of poor information quality or management integrity as if financial misreporting and tax reporting are related.

Keywords Restatements · Financial misreporting · Internal control weaknesses · IRS attention · Tax enforcement · Political costs · Regulatory interaction

JEL codes G28 · H20 · H25

1 Introduction

Research provides limited insight into what draws the attention of tax authorities to public information and how that information is used in the process of examining corporate tax positions. For publicly traded firms in the United States, the Internal Revenue Service (IRS) has access to both public and private information from publicly

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mandated disclosures required by the Securities and Exchange Commission (SEC) and private disclosures submitted via corporate tax returns. The use of public information provides additional data to the IRS that can be used in tax enforcement to complement the agency's private information. We investigate whether the IRS uses public information to obtain qualitative signals about firms' information environment or management integrity. We then examine the implications of increased IRS scrutiny for firms' future tax activity and the enforcement thereof.

The IRS and other tax authorities face increasing resource constraints. John Koskinen, a former IRS commissioner, used his resignation in 2017 to call attention to the dangers of continual budget cuts to the agency. He stressed to Congress that the agency's outdated information technology systems and understaffing have both surfaced as a direct result of underfunding (Davidson, 2017).[1] Data published by the IRS covering the number of audits completed, relative to corporations filing annual tax returns, show that IRS audit rates for large companies have also fallen by almost 38% in 2017, relative to 2010.[2] In this environment, the need for informative signals to better deploy limited resources is greater than ever.

Research examines the use of tax-related public information by the IRS in its audits. Specifically, Mills and Sansing (2000) model the role of book-tax differences on the likelihood of an IRS audit. Mills et al. (2010) later examine the role of tax reserve disclosures under FIN 48 in tax compliance. More recently, Bozanic et al. (2017) directly examine instances of the IRS accessing firms' public disclosures. They find that the use of public information increased following the implementation of Financial Accounting Standards Board (FASB) 2006, ASC 740–10, (FIN 48), which required firms to disclose tax reserve information. It remains unknown whether the IRS's interest in public information extends beyond tax disclosures to more qualitative signals of potential tax misreporting. Building on the analysis of Bozanic et al. (2017), we examine instances of financial restatements as potentially useful signals to the IRS of poor information quality or management integrity. In doing so, we provide evidence of the IRS using a broader range of public information to obtain qualitative signals about the likelihood of tax misreporting.

Research finds evidence of serious consequences for firms stemming from restatements (e.g., Hribar & Jenkins, 2004; Karpoff et al., 2008a; Kravet & Shevlin, 2010). Financial restatements are likely to draw the attention of the IRS for the following three reasons, which are not necessarily mutually exclusive. First, in some instances, restatements can have direct implications for tax returns. In these cases, the inaccurately reported information consists of tax conforming restatements that transition to and directly affect the tax return.[3] Whether the restatement is conforming would likely be unknown to the IRS prior to accessing the SEC filing. Second, financial statement

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[1] For the full article see: https://www.washingtonpost.com/news/powerpost/wp/2017/11/07/irs-chief-departs-blasting-congress-for-budget-cuts-threatening-tax-agency/?noredirect=on&utm_term=.b1c5d8e80968

[2] For more information regarding the audit enforcement data, see IRS SOI Tax Stats – Business Tax Statistics provided on https://www.irs.gov/statistics/soi-tax-stats-business-tax-statistics.

[3] Erickson et al. (2004) focus on firms that have restated their financial statements due to fraud allegations by the SEC. They find that managers of some firms are willing to pay taxes on overstated earnings. We note that financial restatements do not simultaneously trigger the data within a tax return to update. Following a restatement, three scenarios can occur. First, the IRS and the restating firm can do nothing and leave the tax return as filed. Second, the IRS can update its information through the new publicly available financial disclosures or through an audit. Lastly, the firm can amend prior tax returns directly affected by the financial restatement and, as a result, provide the IRS with the updated information.

misreporting could be viewed as a signal of aggressive tax reporting. Third, the IRS may observe fraud, a misapplication of GAAP, or other errors and question whether the poor quality of the firm's financial information extends to its tax filings. The latter two reasons fall under the cockroach theory, which predicts that, where one problem surfaces, more are likely to be revealed.[4]

We measure IRS scrutiny by implementing an approach similar to that used by Bozanic et al. (2017). They use a novel dataset that identifies a portion of the IRS's acquisition of publicly available financial information. This dataset captures the downloads of firms' financial reports from EDGAR and allows us to observe the timing, type, frequency, and breadth of the IRS's retrieval of these reports, whether they be current or historical. We use downloads of all publicly available filings to measure the level of IRS attention for each firm and aggregate the total downloads for a given month over the sample period. We identify the month of a restatement announcement and examine whether IRS attention increases around this event.[5]

We begin by examining IRS downloads around public filings that disclose a restatement and compare that to IRS downloads for the same filings during nonrestating periods for the same firms (nonrestatements). We find that, relative to all other public filings and relative to the same nonrestating forms, (1) the IRS acquires the restatement filing at a significantly greater rate and (2) the timeliness of the IRS in downloading the restatement form is significantly faster. Further, we find the IRS has become much faster in downloading all public filings across our sample period. The average time to download a restatement related filing in 2006 was over 600 days and declined to just two days in 2016. We also find that the IRS is quicker to download restatement-related filings when the restatement is accompanied by a media article or press release but that this difference in speed, relative to other restatement filings, is not significant.

Next we test whether restatements lead to an increase in IRS attention using an event study approach. This design partially allays concerns over endogeneity because the timing of the event is specific to the signal of the restatement rather than to a firm effect. We find that IRS attention significantly increases around restatements. We next examine the types of restatements more likely to draw increased scrutiny. Hennes et al. (2008) find that disentangling the nature of a restatement is essential in determining its importance. Because the majority of restatements arise from a misapplication of GAAP, we use these restatements as the base group to test the incremental effect of restatements stemming from fraud and errors.[6] We expect restatements due to fraud will be the strongest signal of corporate wrongdoing. As expected, we find restatements

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[4] In informal discussions, IRS officials emphasized the fact that the agency's staffers are not simply auditing the tax return itself but any information they can gather that is useful in assessing risk of tax noncompliance. The use of public information is an important component of enforcement and can be used to identify issues of concern or validate that tax reporting is being done correctly.

[5] Admittedly, examining the downloading of public filings indirectly measures the IRS's interest in restatements. There are other measures to examine how other stakeholders respond to restatements (e.g., stock returns, interest rates, audit fees, etc.). However, when it comes to the IRS (and other tax authorities), the downloading of public filings provides a useful point of view.

[6] While Hennes et al. (2008) categorize restatements into intentional (fraud) and unintentional (errors) categories based on three criteria. We modify this approach by creating three separate categories for restatements as recorded by Audit Analytics: GAAP violations, clerical errors, and fraud. We posit that unintentional restatements from GAAP violations and clerical errors represent potentially different signals for the IRS and should therefore be considered individually.

attributable to fraud result in an incremental increase in attention, relative to restatements stemming from the misapplication of GAAP. We do not find an increase in IRS attention in response to restatements stemming from errors. We also identify restatements for which the firm must reissue financial statements and inform investors. These restatements have been nicknamed "Big R" restatements. We find that Big R restatements significantly increase IRS attention, suggesting that restatements perceived as more severe trigger a greater increase in information acquisition by the IRS.

Apart from restatements, other public signals about a firm's information quality or management integrity may lead to an increase in IRS attention. In our next set of tests, we investigate IRS attention following a firm's disclosure of material weaknesses. Gallemore and Labro (2015) and Frank et al. (2009) posit that a disclosure of material weaknesses indicates poor information quality that managers are forced to rely upon when making tax planning decisions or issuing management guidance. Given that internal control weaknesses provide a signal about information quality, we investigate whether IRS attention is increasing after a firm discloses internal control weaknesses. We find evidence consistent with increased downloads of firms' public information following such a disclosure. This result is particularly interesting because, unlike some restatements, the receipt of an internal control weakness does not have direct implications for previously filed tax returns.

Our second set of tests examine the implications of increased IRS attention stemming from restatements for firms' future tax settlements and the probability of disclosing a tax audit by the IRS within the firm's 10-K. Using path analysis, we find evidence that, as firms receive more attention from tax authorities following a restatement, there is a subsequent increase in tax settlements and the likelihood of mentioning a tax audit within the firm's 10-K.

Our study demonstrates IRS interest in public filings is more expansive than has been documented previously. Our results are consistent with the IRS paying attention to qualitative signals of tax misreporting that are not directly tied to tax accruals or tax disclosures. We also show that the IRS's interest in these qualitative signals has increased significantly over our sample period. Our findings are consistent with the IRS using publicly available information to understand the tax implications of restatements. Our results are also consistent with the IRS monitoring restatements as part of more sophisticated risk assessments to efficiently deploy limited resources.

We also document real consequences for firms associated with the increase in IRS scrutiny around restatements. We find firms incur larger tax settlements and are more likely to disclose they are under tax audit following the increase in IRS attention related to restatements. Research has identified a number of costs associated with restatements and internal control weaknesses (Ashbaugh-Skaife et al., 2007; Cassell et al., 2013; Chakravarthy et al., 2014; Efendi et al., 2007; Johnston & Petacchi, 2017; Karpoff et al., 2008a). By showing that IRS attention increases following a restatement, we broaden the implications of financial misreporting to include another important stakeholder of the firm, the tax authorities.

Our results also add to the ongoing debate about the connection between aggressive financial and tax reporting. Wilde and Wilson (2018) note that the evidence on the relation between aggressive financial and tax reporting is mixed. Some evidence indicates a negative association in situations where managers may want to avoid

additional scrutiny of financial reports (e.g., Erickson et al., 2004; Lennox et al., 2013). Other studies find evidence consistent with an aggressive corporate culture leading to a positive relationship between aggressive financial and tax reporting (Frank et al., 2009; Lisowsky, 2010; Wilson, 2008). Our evidence suggests that the IRS behaves in a manner consistent with the notion that aggressive tax and financial reporting are linked.

We recognize that our measure of IRS attention has limitations. First, the IRS likely uses a variety of sources to obtain firms' public information (e.g., firms' investor relations websites). Second, our construct of interest is whether the IRS deploys more resources into audits when it receives qualitative signals about a firm. We use the downloading of public filings through the SEC as a proxy for this resource deployment (i.e., IRS attention), but we recognize these publicly observable data are just a small glimpse into an opaque process. Our finding that the increased IRS attention around restatements is linked to changes in future tax settlements and the likelihood of disclosing a tax audit compliments the findings of Bozanic et al. (2017). Together, these results provide additional evidence for a growing branch of the literature that uses EDGAR downloads to measure scrutiny from various stakeholder groups.

2 Background and hypothesis development

2.1 Restatement implications

A report produced by Audit Analytics reviewing restatements through 2016 finds that restatements remain common among public companies. A total of 671 different restatements were issued by 615 unique firms in 2016 alone (Bonaldi, 2017).[7] Not all restatements arise due to management's intentional manipulation of financial reports. Many restatements are due to poor internal controls and poor information quality within a firm. The restatement literature also includes studies related to the connection between executive compensation and incentives to restate earnings, the impact on auditors associated with a restatement firm, the effect on becoming a takeover target, and the various significant costs to restating.[8]

2.2 IRS use of public disclosures

Research finds that the IRS will rely on public signals in assesing whether and to what extent to audit a firm (Beck et al., 2000; Mills et al., 2010; Mills & Sansing, 2000; Sansing, 1993). Bozanic et al. (2017) use the introduction of FIN 48, which increased public tax disclosure requirements, to examine the IRS's attention to public financial disclosures. They find that IRS attention increased following FIN 48 and the implementation of uncertain tax benefit (UTB) disclosures, indicating that the use of public information by the IRS complements its private tax return information. Their results suggest that the changes made by the SEC in financial disclosure altered the IRS's

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[7] For more information see http://www.auditanalytics.com/blog/2016-financial-restatements-review/.
[8] Related studies include the work of Kinney Jr and McDaniel (1989), Guo et al. (2016), Armstrong et al. (2010), Burns and Kedia (2006), Efendi et al. (2007), Hennes et al. (2014), Swanquist and Whited (2015), Amel-Zadeh and Zhang (2015), Palmrose et al. (2004), Badertscher et al. (2011), and Karpoff et al. (2008a, b).

behavior regarding their public disclosure acquisition. In an additional analysis, they test the impact of the IRS implementing Schedule UTP, whose requirements resemble those of FIN 48, and find that IRS attention decreased following its enactment.

2.3 Hypothesis development

Hoopes et al. (2012) investigate the relation between tax avoidance and IRS monitoring. They highlight a decline in the number of corporate audits completed each year. They find that closer IRS monitoring limits corporate tax avoidance. The IRS SOI Tax Stats – Business Tax Statistics data provide additional detail on IRS enforcement rates over time. The data show that the amount of time devoted to companies with assets over \$20 billion fell by 49% from 2010 to 2017. Kubick, Lynch, Mayberry, and Omer (Kubick et al., 2016, p. 1756) note: "The IRS, as well as other taxing authorities, faces resource constraints. While taxing authorities likely possess a broad array of tax-related data, such data must be processed into information that allows them to target specific firms, as well as relevant tax issues."

One potentially useful signal to the IRS in determining how to deploy limited resources is the issuance of a restatement. Restatements result in updated information of a previously inaccurate disclosure. There are several reasons the IRS may increase scrutiny of financial statements following a restatement. These explanations are not mutually exclusive. First, the revised information may contain data that directly affect what was previously submitted to the IRS via a tax return. For example, this would be the case if the firm reported fraudulent earnings to both the SEC and IRS. Second, financial misreporting may signal potential tax misreporting. Lastly, the IRS may observe a restatement stemming from either fraud or an error and begin to question the general information quality of the firm, as poor information quality could be associated with errors in the tax return. To make any of the determinations above, the IRS needs access to the restating firm's accounting reports.[9]

There are reasons to expect restatements might not draw much notice. First, most restatements related to fraud cause firms to restate earnings downward, which potentially reduces their taxes owed (assuming they reported the inflated earnings on their originally filed tax returns). As a result, it is not clear how interested the IRS will be if a firm lowers its income, resulting in lost revenue for the IRS as affected tax returns are amended and refunds issued from the overstated earnings. Second, restatements may carry no tax implications simply because the firm did not report inflated earnings for tax or only used nontax conforming methods to adjust its earnings. In either case, the IRS does not stand to gain in the form of increased tax payments from the restatement itself. Finally, the IRS does inquire as to whether a restatement has occurred in the current or previous five tax reporting periods on the Schedule M-3 included with the corporate tax return. Thus, it is unclear whether a public restatement announcement would draw much attention since the firm would report the restatement eventually on the tax return.

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[9] We also searched the Internal Revenue Manual, an official compendium of internal guidelines for the IRS, for instances of the use of restatements in the examining process. The only reference to restatements came from the Compliance Assurance Process examinations, where restatements are used to help determine a firm's eligibility to participate.

Therefore whether restatements affect IRS scrutiny is an empirical question. This leads to our first hypothesis.

> *H1: IRS attention to a firm's public filings will increase in the month of a restatement announcement.*

The nature of a financial restatement can vary in severity ranging from fraud to a clerical error and from intentional to unintentional. Specifically, restatements can be classified as involving either clerical errors (i.e., unintentional mistakes) or irregularities (i.e., intentional misreporting or fraud) as defined by SAS No. 99 (AICPA 2002). In addition, some restatements result from an investigation by the SEC while others are self-reported. We expect restatements involving fraud to be of the greatest interest to the IRS because they provide the strongest signal of an aggressive corporate culture. This leads to our second hypothesis.

> *H2a: Restatements stemming from fraud will generate a larger increase in attention from the IRS, relative to all other restatement types.*

It is equally interesting to examine whether IRS downloads of financial statements increase around restatements stemming from clerical errors. While the implications of these restatements are smaller and less indicative of corporate culture than fraud, they may still raise a red flag for tax authorities. The IRS may view these restatements as a signal of poor information quality that extends to the firm's tax returns and choose to reexamine or expend additional effort in examining the restatement firm in hopes of finding similar errors in the firm's tax filings. Nonetheless, we expect restatements resulting from clerical errors will generate the least interest from the IRS because they likely convey little information about the culture of the firm. This leads to our next hypothesis.

> *H2b: Restatements stemming from an error will generate a smaller increase in attention from the IRS, relative to all other restatement types.*

Our final set of predictions focus on the consequences of increased IRS attention. In their online appendix, Bozanic et al. (2017) find IRS attention is associated with future tax settlements and references of being under tax audit within 10-Ks. These findings support the validity of using IRS downloads of public filings as a proxy for IRS scrutiny and suggest meaningful consequences for firms associated with this scrutiny. We use the event study nature of our setting to examine these consequences in more detail. Specifically, we use path analysis to see whether increased IRS attention associated with restatements is associated with changes in future tax settlements and the likelihood of disclosing a tax audit. In other words, we examine both the direct link between the restatement and future tax enforcement and the indirect effect that stems from the increased IRS attention around the restatement. This leads to our final hypothesis.

> *H3: The increase in IRS attention around restatements will be associated with a change in future tax enforcement.*

3 Research design and sample selection

3.1 Research design

We measure IRS attention following the approach developed by Bozanic et al. (2017). We use a dataset that tracks the IRS's obtainment of financial filings or forms hosted on the SEC's EDGAR servers. EDGAR provides the public with access to all SEC required filings and forms for all public companies. For those interested in access to the information, a server log file records the following important data: the Central Index Key (CIK) of the company whose information was requested, the IP address of the user accessing the information, the date and time of the request, and a link that contains an accession number to the form or filing being requested. Each day during the year contains a log of all download activity for that day. Using this information, we can locate instances of IRS downloads and the filings being requested for download on a daily basis.

Our primary dependent variable of IRS attention is *IRS DOWNLOADS$_{i, m}$* and is measured as the number of times in month m of year t that the IRS downloads one of firm i 's public filings associated with any fiscal year. We focus on all public information because our construct for IRS attention is based on whether the IRS acquires additional public information on restating firms. We believe this approach captures the extent to which the IRS focuses on a firm by acquiring all qualitative and quantitative information available beyond that disclosed within financial statements. A desire to learn about the firm and the nature of its operations and not just the restatement would be consistent with the findings of Drake et al. (2016).

We also construct two alternative variables of IRS attention. Our first variable, *IRS DOWNLOAD BREADTH*, is measured by counting the number of unique accession numbers downloaded each month. If the IRS is downloading the same 10-K filing for a given year multiple times, *IRS DOWNLOAD BREADTH* will only identify this as one instance. The same can be said for the exhibits of the 10-K, where downloads can occur for the separate exhibits uploaded to the 10-K. Drake et al. (2016) observe a high frequency of requests by investors clicking through index pages to arrive at the filing they seek. Therefore we eliminate the potential error of double counting downloads that are of the same filing. We continue to count filings of separate years as separate downloads for this measure. For example, a 10-K from 2010 and from 2011 are counted separately, as they each contain their own unique accession number. Our second variable, *IRS DOWNLOAD TYPE*, is measured as the total number of different forms downloaded each month, regardless of the year the form was initially filed. Therefore all 10-Ks downloaded are counted as one instance for any month.

Because we aggregate downloads on a monthly basis, we investigate the month of a restatement announcement to analyze variation in IRS attention. The choice of a monthly window represents a trade-off between a desire to identify an increase in attention directly attributable to the restatement and recognition that the tax authority does not necessarily have an incentive to process information related to the restatement at the same speed as investors. We estimate the following equation using OLS.[10]

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[10] In untabulated analyses, we also estimate Eq. (1) using a negative binomial regression. Results are available upon request.

$$IRS\ ATTENTION_{i,m} = \beta_0 + \beta_1 RESTATE_{i,m} + \beta\ TAX\ AVOIDANCE_{i,t} + \\ \beta\ FIRM\ CHARACTERISTICS_{i,t} + \varepsilon_{i,t}, \tag{1}$$

where $RESTATE_{i,\ m}$ is our main coefficient of interest and is defined as an indicator variable equal to one in month m of the restatement for firm i and zero otherwise. Determinants of tax avoidance that may contribute to the IRS's interest in a firm include GAAP effective tax rate (*GAAP ETR*), cash effective tax rate (*CASH ETR*), book-to-tax differences (*BTD*), change in tax loss carryforwards (*NOL CHANGE*), net deferred tax assets (*DTA*), net deferred tax liabilities (*DTL*), and unrecognized tax benefits (*UTB*). Other potential determinants of IRS interest in a firm include size (*SIZE*), market-to-book ratio (*MTB*), multinational status (*MNE*), leverage (*LEV*), intangible asset intensity (*INTANGIBLE INTENSITY*), R&D intensity (*R&D INTEN-SITY*), inventory intensity (*INVENTORY INTENSITY*), capital intensity (*CAPITAL INTENSITY*), pretax profitability (*ROA*), sales growth (*SALES GROWTH*), and cash holdings (*CASH*).[11] All previously defined control variables are measured from fiscal year-end data t and subsequently applied to each corresponding month m of the fiscal year. To control for general attention stemming from the release of a 10-K or 10-Q, we include indicator variables equal to one if either are released during the month and label these variables as *10-K* and *10-Q*, respectively. Next, to control for whether downloads are mechanical in nature, meaning that the IRS downloads all public information as it becomes available regardless of its cause, we construct the variable *FORMS*, which represents the total number of new forms available for download for firm i during each month m over our entire sample period. We do so by using the EDGAR master index file. As a result, *FORMS* controls for the fact that a restatement may generate abnormal IRS attention simply because it has created new forms available for download that otherwise would not exist. Lastly, because the sample period covers two significant legislative changes that relate to our analysis, FIN 48 and Schedule UTP, we include firm and month-year fixed effects to account for the impact of the two legislative changes and any other firm invariant monthly effect.

Next we focus on identifying where IRS attention is strongest, conditional on the nature of the restatement. Relying upon restatement classification defined by Audit Analytics, we partition restatements attributable to fraud and errors, relative to accounting rule application failures (GAAP violations), and perform the following additional tests.

$$IRS\ ATTENTION_{i,m} = \beta_0 + \beta_1 RESTATE_{i,m} + \beta_2 FRAUD_{i,m} + \beta_3 ERROR_{i,m} \\ + \beta\ TAX\ AVOIDANCE_{i,t} + \beta\ FIRM\ CHARACTERISTICS_{i,t} + \varepsilon_{i,t}. \tag{2}$$

In Eq. (2), we include an indicator variable, $FRAUD_{i,\ m}$, which equals one for the month of a restatement if firm i has a restatement due to fraud and zero otherwise. We also include an additional indicator variable, $ERROR_{i,\ m}$, which equals one in the month of a restatement if firm i has a restatement due to an unintentional clerical error and zero otherwise. The inclusion of both $FRAUD_{i,\ m}$ and $ERROR_{i,\ m}$ indicates the incremental

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[11] All variable measurements are defined in the appendix.

effect that the accompanying attribute of the restatement has on IRS attention, relative to the base group of accounting misapplications. The coefficient of β_1 indicates the base effect of restatements on IRS attention with the added incremental effect from β_2 and β_3 for the fraud or error related restatements.

3.2 Sample selection

Using the server logs from EDGAR, we identify IRS activity from the list of downloads that detail the filings being requested for a firm and the date accessed. Although the SEC replaces the final octet of users' IP addresses with letters to preserve privacy, we can still determine when the IRS makes a request and for what filing. Due to the removal of the last octet of IP addresses, we can only use IP addresses for which the entire final octet is solely owned by the IRS. The American Registry for Internet Numbers (ARIN) contains information that allows us to identify who the owner of an IP address is when usng the "whois" tool located within the search bar. Within ARIN, we identify IP addresses whose entire octet blocks are solely owned by the IRS. This approach allows us to ascertain with confidence when the IRS has downloaded information.[12] The number of downloads of financial statements that is linked to the IRS servers is our proxy for IRS attention. We identify 12unique IRS-owned IP addresses that we then match to the IP addresses listed on the daily logs of downloads kept on the EDGAR servers.[13]

After obtaining the distinct IRS IP addresses, we next use Python and iterate through each daily log file from 2004 to 2016 and extract only those downloads that match an IRS IP addresses. This approach allows us to obtain a single dataset containing all IRS downloads during the period of 2004 to 2016, resulting in a total of 2,031,290 total downloads. We use the indexes for each year of the downloads to attach the correct name of the file or form that was requested through its accession number for every download made. We then aggregate the daily total of downloads to monthly totals and merge the information to Compustat.

Table 1 shows the composition of unique forms downloaded by the IRS. We document 451 different filings downloaded at least once over the sample period but limit our presentation of the results to the top 30 most requested. Like Bozanic et al. (2017), we find 10-Ks to be the most frequently downloaded filing. They are followed by forms 8-K, 4, 10-Q, and DEF 14A. Figure 1 presents the total amount of raw downloads and total downloads for the top five forms mentioned made by the IRS over the period of 2004 to 2016. As can be seen from the figure, the number of downloads begins to increase in 2008 and spikes in 2009. However, in subsequent years, the number of downloads exhibits a downward trend that suggests the IRS may be acquiring less information from EDGAR over time.[14] Our final sample contains all

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[12] There are several IP addresses linked to the IRS that do not contain the entire block of the final octet. Unfortunately, those IP addresses are not included into the sample because of our inability to verify that the download comes from the IRS.

[13] Our finding of 12 IP addresses for the IRS mirrors that of Bozanic et al. (2017). An example of a block of IRS IP addresses can be found here: https://whois.arin.net/rest/net/NET-204-62-146-0-1 (as of August 2017).

[14] IRS agents may have shifted how they acquire public filings. In informal discussions, officials at the IRS indicated that some resources, like that of Capital IQ or Bloomberg, are available to certain IRS offices, but that the access is not uniform across divisions or time. However, they did not provide us with further details.

firms that have restated during the period from 2007 to 2016.[15] We identify restatement firms using the Audit Analytics database. Within these data, we can determine when a restatement was filed, the form used to announce the restatement, the firms issuing the restatement, and the reasons behind it. Figure 2 shows the number of restatements by year over our sample period.

Finally, we merge the sample of downloads to the sample of restatement firms and include only those firms that have restated at least once in our final sample. Each restatement firm remains in the sample period with the month of the restatement being marked by the indicator variable $RESTATE_{i, m}$, as defined earlier. Table 2 describes our sample selection process. The final number of firms represents the total number of unique *firm-years* that have a restatement within the sample period. These *firm-year* observations are then spread over the calendar year to the month pertaining to the correct fiscal year of the firm. As a result, the total number of *firm-month* observations is 163,132.

4 Results

4.1 IRS attention and restatements—Univariate analysis

Table 3 provides descriptive statistics for the sample related to *IRS ATTENTION* and the controls for *TAX AVOIDANCE* and *FIRM CHARACTERISTICS*. The average number of monthly downloads for a firm during the period is 2.51, which equates to 30.12 downloads per year. The reported 0 median indicates that most firms do not receive any attention in a given month, with the maximum reaching 338 downloads in a single month. The small number of downloads is consistent with the findings of Drake et al. (2016), who document the average daily download for all firms equals 1.235 by any and all users of financial statement information, whereas we are considering a single user, the IRS. Sample firms have a mean *SIZE* of 6.42 ($614 million) and a mean *ROA* of −17%. The average sample firm also has a mean of 25% and 22% for *GAAP ETR* and *CASH ETR*, respectively. The total number of restatements occurring during the sample period is 2068. Of the restatements included, the percentage attributable to errors is 4%, instances of fraud represent 3%, and the percentage of restatements related to accounting misapplications is 93%.[16] Finally, Table 3 shows the mean (median) number of new forms, *FORMS*, issued each *firm-month* over our sample period to be 6.51 (4.00).

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[15] We restrict our analyses to 2007, as the control variable *UTB* begins in this year and is an important determinant of IRS attention, as documented by Bozanic et al. (2017).

[16] The restatement types may not be mutually exclusive. Some restatements stem from a combination of errors, GAAP violations, or fraud. As a result, we assign those observations according to severity. If a restatement stems from both an error and fraud, we categorize that restatement as fraud (one instance). Likewise, if a restatement stems from both a GAAP violation and fraud, we categorize that restatement as fraud (18 instances). Finally, if a restatement stems from both a GAAP violation and an error, we categorize that restatement as a GAAP violation (22 instances). The sample contains no observations where a restatement is a combination of all three restatement types.

Table 1 Top 30 Forms Downloaded by IRS

Rank	SEC Form Type	# Downloads
1	10-K	878,013
2	8-K	305,926
3	4	138,014
4	10-Q	131,114
5	DEF 14A	62,499
6	SC 13G	41,064
7	20-F	39,430
8	SC 13D	28,537
9	CORRESP	26,056
10	S-1	21,623
11	S-4	19,554
12	6-K	18,345
13	REGDEX	16,956
14	UPLOAD	16,879
15	425	16,418
16	D	15,605
17	424B3	15,208
18	10-K405	11,866
19	10KSB	9,881
20	424B5	9,675
21	40-F	8,517
22	13F-HR	7,887
23	S-3	7,809
24	10QSB	7,713
25	S-8	7,315
26	5	7,285
27	424B2	6,986
28	ARS	6,896
29	SC TO-T	5,934
30	11-K	4,755

This table presents form type and count of *IRS DOWNLOADS* (unscaled, unlogged raw count) for the top 30 most downloaded forms by the IRS during our sample period. Each form includes the original and any amended form filed following the original submission (i.e., 10-K/A, 10-Q/A, DEF/A 14A, etc.)

Figures 3a through 3e graphically illustrate an analysis of the mean number of downloads surrounding the month of restatement by the top five most downloaded forms by the IRS.[17] The download activity demonstrated in both figures is consistent with IRS attention increasing in the restatement month followed by a lingering, albeit smaller, amount of attention in the subsequent months for 10-Ks and 8-Ks only.

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[17] We also present the mean number of total downloads surrounding a restatement by firms with total assets above and below $20 billion in the online appendix.
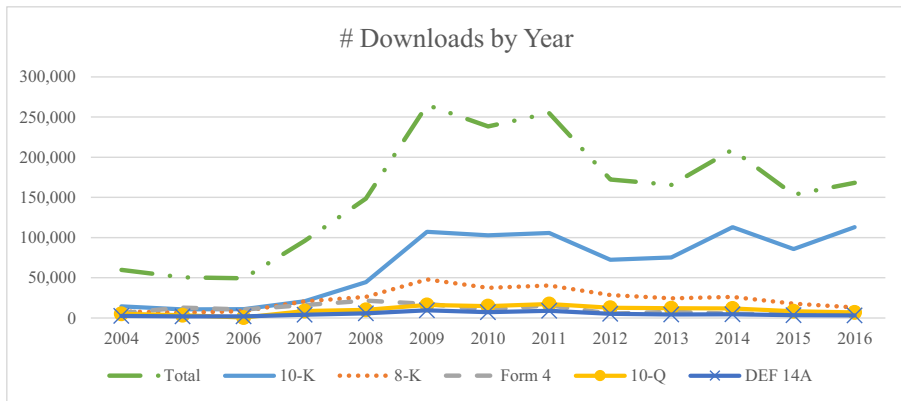
Fig. 1 Total Number of Downloads by Year for All Downloads and the Top Five Most Downloaded Forms
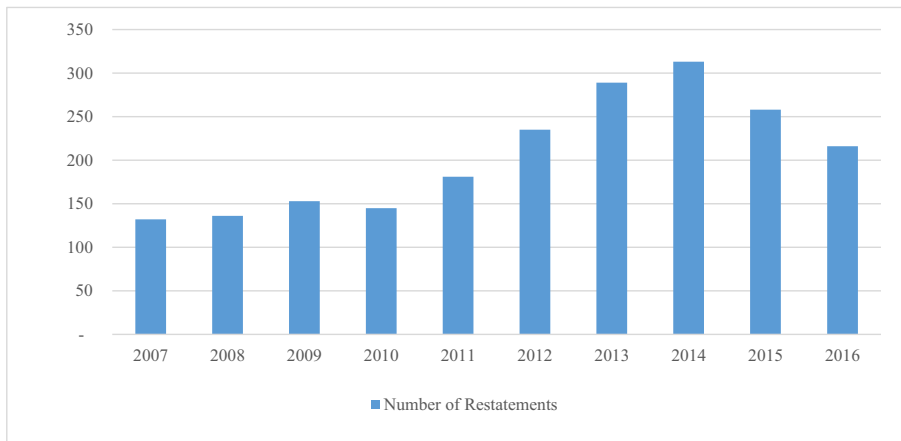

Fig. 2 Total Number of Restatements by Year

Next we investigate the difference in IRS downloads of forms used to announce restatements, relative to the same nonrestating forms. To accomplish this, we first identify the specific form used to announce the restatement as disclosed by the Non-Reliance Restatements database from Audit Analytics (the variable FORM_FKEY) and then calculate the number of times the IRS downloads this specific form for a total of 1786 restatement filings and 336,771 nonrestatement filings.[18] We then aggregate the number of downloads for all other forms that have not been used at some point for a restatement announcement for a total of 1,118,449 different filings of our sample firms over our sample period.

In Table 4 Panel A, we present the average total downloads of each form and then decompose this average into monthly, weekly, daily, and hourly downloads based on

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[18] We lose 282 restatements announced via press releases for which there is no accession number or filing on EDGAR to determine the number of downloads by the IRS for that announcement.

Table 2 Sample Selection

	N
All financial restatement *firm-years* from 2007 to 2016	6,925
Add:	
All other *firm-years* for the sample period of 2007–2016 that pertain to restatement firms.	41,546
Less:	
Firm-years with no IRS attention during the sample period	(4,685)
Firm-years with any missing control variables	(29,811)
Final sample of *firm-year* observations	13,975*

* The 13,975 *firm-years* are expanded to reach 163,132 *firm-months* over the sample period. A *firm-month* contains the applicable fiscal year-end data that the month belongs to.

the timing of the IRS download, relative to the filing date. We find that the average number of times the IRS downloads a form used to announce a restatement is 4.383, while the averages of the total number of downloads for nonrestatements and all other forms are 1.025 and 0.080, respectively. We then compare the statistical difference in means between these amounts and find evidence that the monthly, weekly, and daily averages are statistically greater for those forms used to announce a restatement. The difference in average downloads within an hour of filing is not statistically significant. Next, in Panel B, we show the average number of downloads for the top forms used to announce a restatement and compare this average to the same nonrestating forms. We find that the 10-Q is the most commonly used form for restatement announcements followed by forms 10-K and 8-K. We find that, for each of the top forms, the average number of downloads by the IRS is greatest when the form is a restatement announcement. However, we fail to find a statistical difference in means for the 10-Q.

In Panel C, we document the speed at which the IRS makes its first download of any EDGAR filing and label this variable *SPEED*. We find a total of 1,092 unique forms filed to the EDGAR system for which our sample firms announced a restatement with at least one download by the IRS.[19] We then repeat this process for nonrestatements. We present the averages of *SPEED* for forms used to announce a restatement, nonrestatements, and all other forms. We find that the average number of days until the IRS first downloads the form announcing a restatement is just over 111 days. We also find that the averages for nonrestatements and all other forms are 317 days and 576 days, respectively. The difference in means is also statistically significant, which suggests it takes the IRS 206 days (465 days) less to download a form announcing a restatement than the nonrestatements (all other forms). We then depict this relationship over our sample period in Fig. 4. While Fig. 4 shows that the timeliness of the IRS to download a filing after it becomes publicly available increases over time, the average timing is statistically faster in each year of our sample period for restatements. For example, in 2016, we find the average number of days it takes the IRS to download a

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[19] We lose another 694 restatements of which the IRS does not download.

Table 3 Descriptive Statistics

| | (1) | (2) | (3) | (4) | (5) | (6) |
	N	Mean	S.D.	P25	Median	P75
Dependent Variable						
IRS DOWNLOADS	163,132	2.51	13.58	0	0	1
IRS DOWNLOAD BREADTH	163,132	0.76	3.73	0	0	1
IRS DOWNLOAD TYPE	163,132	0.44	1.07	0	0	1
Descriptive Statistics of Restatements						
ERRORS	2,068	0.04	0.21	0	0	0
FRAUD	2,068	0.03	0.16	0	0	0
Tax Avoidance						
GAAP ETR	163,132	0.25	0.30	0.00	0.22	0.35
CASH ETR	163,132	0.22	0.22	0.00	0.17	0.34
BTD	163,132	−0.23	1.78	−0.06	0.00	0.03
UTB	163,132	0.01	0.02	0.00	0.00	0.01
DTA	163,132	0.05	0.05	0.01	0.04	0.07
DTL	163,132	0.05	0.05	0.01	0.03	0.07
NOL CHANGE	163,132	0.16	1.07	0.00	0.00	0.02
Firm Characteristics						
ROA	163,132	−0.17	1.44	−0.05	0.04	0.09
SIZE	163,132	6.41	2.34	5.10	6.59	7.96
MTB	163,132	2.69	10.02	1.01	1.86	3.38
MNE	163,132	0.58	0.49	0.00	1.00	1.00
LEV	163,132	0.22	0.27	0.00	0.14	0.34
INTANGIBLE INTENSITY	163,132	0.22	0.27	0.01	0.12	0.34
R&D INTENSITY	163,132	0.24	1.27	0.00	0.00	0.80
INVENTORY INTENSITY	163,132	0.11	0.15	0.00	0.06	0.17
CAPITAL INTENSITY	163,132	0.24	0.26	0.05	0.15	0.34
SALES GROWTH	163,132	0.14	0.69	−0.05	0.05	0.16
CASH	163,132	0.18	0.28	0.04	0.10	0.22
10-K	163,132	0.08	0.27	0.00	0.00	0.00
10-Q	163,132	0.24	0.43	0.00	0.00	1.00
FORMS	163,132	6.51	8.42	2.00	4.00	9.00

Table 3 presents the descriptive statistics our variables. The dependent variable as well as the other control variables are subject to the data requirements of Table 5. We also provide descriptive statistics of restatements occurring within the sample period. The data cover the sample period of 2007–2016. All continuous variables are winsorized at the first and 99th percentiles. All variables are generated from Compustat and the SEC.

form used to announce a restatement is two days, while it takes 14 days for nonrestatements (this difference is also statistically significant). The increasing speed suggests that the filing of Schedule M-3 with the tax return indicating that a restatement has occurred is probably not triggering the downloads of public filings by the IRS, at
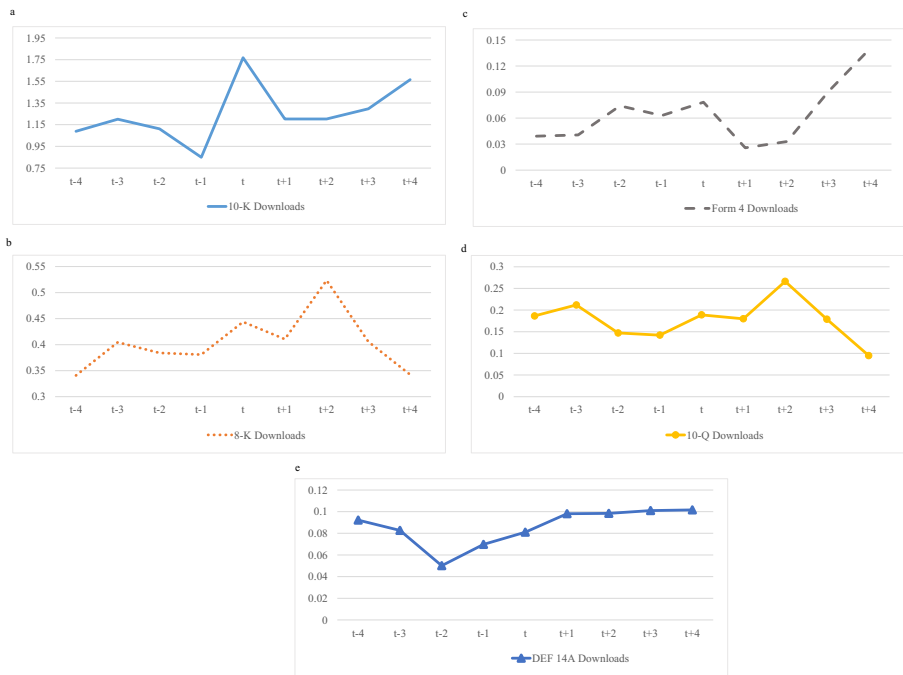
Fig. 3 **a** Mean 10-K Downloads in the Months Surrounding a Financial Restatement. **b** Mean 8-K Downloads in the Months Surrounding a Financial Restatement. **c** Mean Form 4 Downloads in the Months Surrounding a Financial Restatement. **d** Mean 10-Q Downloads in the Months Surrounding a Financial Restatement. **e** Mean DEF 14A Downloads in the Months Surrounding a Financial Restatement

least in the later years of the sample. Of course, some downloads of public filings may be triggered by the Schedule M-3.[20]

In Panels D and E, we examine how the download speed varies as a function of the likelihood of being under audit and restatement types more likely to draw the attention of the IRS. First, in Panel D, we separate our sample into 11 groups based on firm size and determine the relative audit rates of the IRS within each particular group using data from the IRS SOI Tax Stats – Business Tax Statistics. We find limited evidence that as firms' probability of being under audit increases, *SPEED* also increases; however, we note that *SPEED* is greatest for restatement forms, relative to nonrestatement forms, among nearly all size tranches (the only exception being AT less than $1 million). Second, in Panel E, we identify restatements that require firms to reissue prior financial statements and alert investors of the reissuance (Big R restatements) and compare their download speed to that of all other restatement types (little r restatements). We find that the average download speed is greater for Big R restatements, relative to little r restatements.

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[20] If announcing a restatement via the Schedule M-3 on the firm's corporate tax return is triggering the downloads of public filings by the IRS, we would expect a spike in downloads around either or both March and September, as these are the due dates for corporate tax returns to be filed for calendar year-end firms. Figure OA2 in our online appendix documents the average number of downloads by month over the calendar year for calendar year-end firms within our sample during the year of restatement. There appears to be no meaningful spike in information acquisition by the IRS around either March or September.

Table 4 IRS Attention and Restatements – Univariate Analysis

Panel A: Average Number of Downloads—Restatement Forms versus Nonrestatement and All Other Forms

Dependent Variable	[1] Restatements (n=1,786)	[2] Nonrestatements (n=336,771)	[3] All Other Forms (n=1,118,449)	[1]-[2] Diff[1]-[2]	[1]-[3] Diff[1]-[3]
IRS DOWNLOADS	4.383	1.025	0.080	3.358***	4.302***
Monthly	0.734	0.175	0.012	0.559***	0.722***
Weekly	0.424	0.092	0.007	0.332***	0.417***
Daily	0.159	0.028	0.003	0.131***	0.156***
Hourly	0.005	0.003	0.001	0.002	0.004

Panel B: Average Number of Downloads for the Top Forms Used for Restatement Announcements

Dependent Variable	[1] Restatements		[2] Nonrestatements		[1]-[2]
	N	Mean	N	Mean	Diff[1]-[2]
IRS DOWNLOADS					
10-Q	708	0.521	55,368	0.415	0.106
10-K	576	13.656	17,880	8.985	4.671**
8-K	352	0.417	233,020	0.356	0.610*

Panel C: Average Speed of a Form's First Download—Restatements versus Nonrestatements and All Other Forms

Dependent Variable	[1] Restatements (n=1092)	[2] Nonrestatements (n=42,250)	[3] All Other Forms (n=28,161)	[1]-[2] Diff[1]-[2]	[1]-[3] Diff[1]-[3]
SPEED	111	317	576	-206***	-465***

Table 4 (continued)

Panel D: Download Speed by Audit Probability

Dependent Variable	[1] IRS Audit Rates by Firm Size from 2007 to 2016*	[2] Restatements		[3] Nonrestatements		[2]–[3]
		N	Mean	N	Mean	Diff[1]–[2]
SPEED						
AT ≥ $20B	87.86%	87	132	4,684	399	**−267*****
$20B>AT ≥ $5B	44.71%	140	84	7,100	336	**−252*****
$5B>AT ≥ $1B	27.09%	131	58	11,223	364	**−306*****
$1B>AT ≥ $500 M	18.58%	121	104	4,054	297	**−193**
$500 M>AT ≥ $250 M	15.99%	109	99	3,842	294	**−195**
$250 M>AT ≥ $100 M	14.80%	101	140	3,200	308	**−168***
$100 M>AT ≥ $50 M	13.90%	91	150	1,640	247	−97
$50 M>AT ≥ $10 M	8.43%	88	155	2,453	236	**−81***
$10 M>AT ≥ $5 M	2.21%	47	70	496	207	**−137****
$5 M>AT ≥ $1 M	1.53%	24	168	596	170	−2
$1 M<AT	0.92%	7	182	383	145	37

Panel E: Download Speed—Big R versus Little r

Dependent Variable	[1] Big R (n=302)	[2] Little r (n=790)	[1]–[2] Diff[1]–[2]
SPEED	81	153	**−72*****

Table 4 (continued)

Panel F: Average Length of Time Until First IRS Download

Dependent Variable	[1] Press Release (n=282)	[2] Media Article (n=43)	[3] All Other Restatements (n=1,743)
LENGTH	90	85	126

Panel G: Average Number of Downloads for Restating Firms versus Firms in the Highest Quintile of *F-SCORE* by Year

Dependent Variable	[1] Day of Restatement		[2] Month of Restatement		[3] Year of Restatement	
	Restatements (N=2,068)	Nonrestatements (N=44,508)	Restatements (N=2,022)	Nonrestatements (N=44,508)	Restatements (N=1,935)	Nonrestatements (N=3,709)
IRS DOWNLOADS	0.306***	0.055	5.353***	1.650	38.186***	28.690

Table 4 presents the average number of downloads for forms used to announce a restatement, relative to the same nonrestating forms and to all other form types. Thus the averages depict the IRS downloads of unique filings over our sample period. Panel A shows the average number of downloads for restatement forms, nonrestatement forms, and all other forms. In Panel B, we show the average number of downloads for the top three forms used to announce a restatement: forms 10-Q, 10-K, and 8-K. Panel C then presents the speed at which the IRS first downloads a form where *SPEED* is measured as the number of days it takes the IRS to download the form announcing a restatement. Panels D and E then break down the download speed by firm size (audit probability) and Big R restatements, respectively. Next, in Panel F, we measure the length of time it takes the IRS to download one public filing of a restating firm following a press release, media article covering the restatement, and all other restatements (*LENGTH*). Finally, in Panel G, we compare the average daily, monthly, and yearly downloads of restatements to firms within the highest quintile of the likelihood of committing an accounting misstatement (*F-SCORE*). We use a t-test and compare the equality of means within the different subgroups. *, **, and *** indicate significance at the 0.10, 0.05, and 0.01 levels, respectively.

¥ We determine IRS audit rates by firm size using publicly available information from the IRS SOI Tax Stats – Business Tax Statistics.
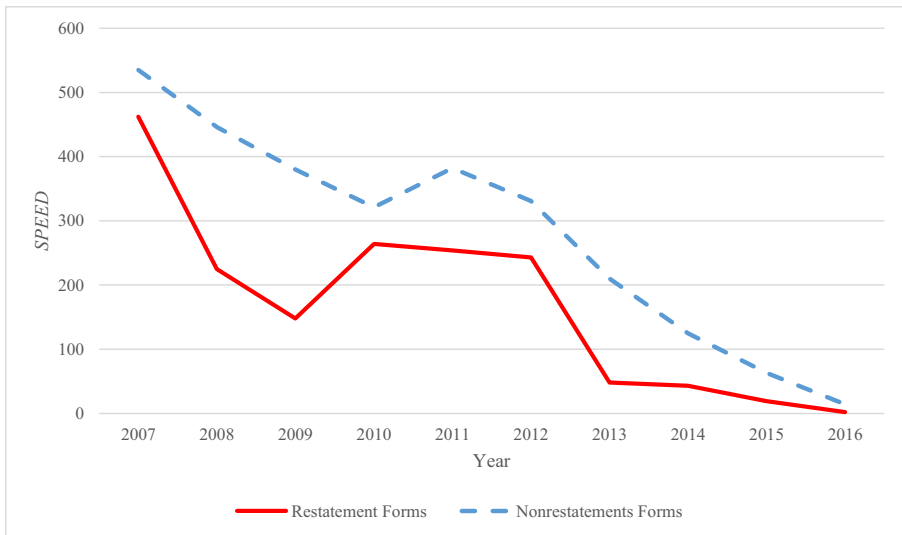
Fig. 4 Average Speed of a Form's First Download by Year—Restatements versus Nonrestatements and All Other Forms

Next, in Panel F of Table 4, we examine whether IRS attention is triggered by either a firm's press release or an associated media article covering the restatement. Within our sample, we find a total of 282 restatements announced via press release. Using RavenPack, we then search all the major news sources for firm-specific articles regarding a restatement within our sample. We include in our definition of major news sources the following outlets: *The Wall Street Journal*, *The Washington Post*, *The New York Times*, *The Los Angeles Times*, or the major newswires (Associated Press, Dow Jones, or Reuters). We find a total of 43 articles covering restatements in our sample. As we have no means to track IRS downloads of press releases and news articles, we document the length of time it takes the IRS to make a single download of any public filing following a restatement and label this variable as *LENGTH*. We find that the average amount of time it takes the IRS to download a public filing of a firm following its restatement via press release is 90 days. Similarly, we find it takes the IRS an average of 85 days to download a public filing of a restatement firm following the publication of a media article covering the restatement. In contrast, it takes 126 days in cases where the restatement is not accompanied by either a press release or media article. Our results indicate that the length of time until the first download is shorter in cases of media articles and press releases about the restatement. However, this difference in length is not significant across each type. More generally, this analysis suggests that media coverage and press releases may point the attention of the IRS to a restatement quicker than what would otherwise be expected, but the effect is not large.

As restatements are endogenous events, the firm characteristics associated with the likelihood of restatement may be the same ones likely to draw the IRS's attention. To investigate this alternative explanation for our findings, we examine whether any underlying firm characteristics are more likely to be associated with an IRS download than the restatement announcement itself. Following Dechow et al. (2011), we first categorize firms as those most likely to have material accounting misstatements in a

given year. Specifically, we calculate a firm's *F-SCORE* by modeling the factors associated with the likelihood of an accounting misstatement occurring. We present this analysis in Panel G of Table 4. We begin by comparing the average number of downloads for restatements to nonrestatements during the same period but of firms in the highest quintile of *F-SCORE* at that time. If the firm characteristics modeled by the *F-SCORE* predict misstatements and determine IRS attention, we should see a similar frequency of downloads among firms with high *F-SCORE*s and no restatements and those with high *F-SCORE*s and restatements. In other words, we would not expect much difference in attention between firms likely to restate that do not actually restate and those that do actually. We find a statistically significant difference in means for the average number of downloads in the day, month, and year of the restatement versus nonrestatement during the same period.

Overall, the evidence presented in Table 4 suggests that the reaction to a restatement by the IRS through its acquisition of public information differs from any other public filing event. Indeed, we find evidence that the forms used to announce a restatement are downloaded more frequently and promptly than all other public filings, even more so than the same forms used to announce the restatement but in nonrestating periods.

4.2 IRS attention and restatements—Multivariate analysis

As discussed in Section 3, we estimate Eq. (1) using the month of a restatement to test its impact on IRS attention. Table 5 presents the results of estimating Eq. (1). Panel A is our main analysis where we proxy for IRS attention using the logs of *IRS DOWNLOADS*, *IRS DOWNLOAD BREADTH*, and *IRS DOWNLOAD TYPE* plus one as the dependent variables in Columns (1), (2), and (3), respectively. The coefficient on *RESTATE* is significantly positive in all three columns and is consistent with IRS scrutiny of the restating firm increasing during the restatement window, relative to other months during the sample period. Specifically, the coefficient of 0.081 in Column (1) suggests an increase in monthly IRS attention of about 8.4%.[21] The controls *UTB*, *SIZE*, and *CASH* are also positively significant, consistent with the findings of Bozanic et al. (2017). We then include the results from a Vuong and Wald test as additional tests of the explanatory power of our model. Vuong's (1989) likelihood ratio test compares two models in terms of fit and indicates whether one model has significantly better fit than the other. The first model we use is Eq. (1), whereas our second model is Eq. (1) minus the variable *RESTATE*. Along the same lines, Biddle, Seow, and Siegel (1995) developed a Wald-type test that examines whether one set of independent variables explains the variations in the dependent variable significantly better than another set of independent variables. We use this test and examine whether the inclusion of *RESTATE* creates a statistically significant improvement in the fit of the model. Across both tests, we find a statistically significant improvement in explanatory power and fit of the model by including the variable *RESTATE*.

In Panel B, we assess whether a restatement leads to sustained IRS attention. To do this, we eliminate our restatement window of one month and assign an indicator variable equal to one for the month of restatement and all other future *firm-month* observations following the restatement. As such, we relax the assumption that IRS

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[21] In the online appendix, we find an increase of 29.8% from the mean in expected downloads (counts) in the restatement month when using a negative binomial regression.

attention to restatements will be timely and allow for a longer horizon analysis. This design choice comprises a generalized differences-in-differences approach, which allows for the staggered event timing of a restatement. We report the results of all three proxies of IRS attention, *IRS DOWNLOADS*, *IRS DOWNLOAD BREADTH*, and *IRS DOWNLOAD TYPE*. Across all three, we continue to find that, following a restatement, the IRS places increased attention on the restating firm.

Finally, in Panel C, we reassess Eq. (1) but use unique public filings uploaded to EDGAR and the time of the upload as our unit of observation. In this analysis, the variable *RESTATE* is equal to one if the form is used to announce a restatement and zero otherwise. Our dependent variable is the log of *SPEED*. We also include form fixed effects as an additional fixed effect to control for time invariant heterogeneity across the different types of public filings. Thus we test whether the IRS is timelier to download a public filing announcing a restatement, relative to all other filings. We find a total of 30,173 forms that satisfy the variable requirements of Eq. (1) and that contain at least one download. In Column (1), we find that the IRS is faster to download a restatement, relative to all other public filings. In Column (2), we include interactions of firm and form fixed effects and continue to find a negative relation between restatements and the time it takes the IRS to download the form announcing the restatement. Additionally, the magnitude of the coefficients of −0.330 and − 0.227 in Columns (1) and (2), respectively, suggest an increase of 28.1 and 20.3% in the speed with which the IRS downloads a filing announcing a restatement, relative to filings that do not announce a restatement. We also include results from the Vuong and Wald tests. With the exception of the Vuong test in Column (2), we again find evidence that the explanatory power and fit of the model improve with the inclusion of *RESTATE*.

Overall, the results in Table 5 suggest that, as firms restate financial information, the restatement appears to be noticed by the IRS, as shown by increased acquisition of the firm's public information. The results also suggest that this process is timely to the restatement disclosure.[22] In summary, restatements appear to impact the IRS's data gathering.

4.3 Analysis of IRS attention and restatement causes

Next we examine how the various causes and attributes of a restatement influence IRS attention. We estimate Eq. (2) and report the results in Table 6 Panel A for the full sample. For brevity, we include only the results for the log of *IRS DOWN-LOADS* plus one as the dependent variable. In Column (1), we first examine whether restatements stemming from fraud result in incrementally more attention from the IRS and therefore drop *ERROR* from Eq. (2). The coefficient on *RESTATE* remains significantly positive. The coefficient on *FRAUD* is also significantly positive, indicating IRS attention increases when restatements result from fraud. We also conduct a Chi-square test at the bottom of Column (1) to

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[22] This result is also subject to potential measurement error of *IRS DOWNLOADS* in the month of the restatement. The exact date a restatement is revealed varies within months so that downloads we pick up in the announcement month may occur before the restatement announcement itself. To address this issue, we shift the restatement window to the second month following the restatement and continue to find a significant relation for the second month following a restatement announcement for both samples (results not tabulated). This result suggests that the IRS responds relatively quickly to an announcement of a restatement through its information acquisition and that our measure of *IRS DOWNLOADS* correctly captures IRS attention.

Table 5 IRS Attention and Restatements—Multivariate Analysis

Panel A: IRS Attention Following a Restatement

	(1)	(2)	(3)
Dependent Variable:	Log (IRS DOWNLOADS+ 1)	Log (IRS DOWNLOAD BREADTH+ 1)	Log (IRS DOWNLOAD TYPE+ 1)
RESTATE	0.081***	0.080***	0.073***
	(0.024)	(0.015)	(0.012)
GAAP ETR	0.010	0.014	0.011
	(0.018)	(0.012)	(0.009)
CASH ETR	−0.023*	−0.017*	−0.011
	(0.014)	(0.009)	(0.007)
BTD	0.003	−0.002	−0.002
	(0.007)	(0.005)	(0.004)
UTB	0.990***	0.709***	0.566***
	(0.257)	(0.177)	(0.133)
DTA	−0.174	−0.082	−0.052
	(0.128)	(0.087)	(0.063)
DTL	0.247	0.140	0.121
	(0.261)	(0.179)	(0.127)
NOL CHANGE	0.001	0.001	0.001
	(0.003)	(0.002)	(0.001)
ROA	−0.008	−0.001	0.001
	(0.009)	(0.006)	(0.005)
SIZE	0.058***	0.039***	0.031***
	(0.011)	(0.008)	(0.006)
MTB	−0.000	0.000	−0.000
	(0.000)	(0.000)	(0.000)
MNE	0.033*	0.024*	0.016
	(0.020)	(0.014)	(0.011)
LEV	−0.010	−0.010	−0.005
	(0.025)	(0.016)	(0.012)
INTANGIBLE INTENSITY	−0.030	−0.005	−0.000
	(0.028)	(0.019)	(0.014)
R&D INTENSITY	−0.002	−0.002	−0.002
	(0.003)	(0.002)	(0.002)
INVENTORY INTENSITY	−0.527*	−0.092	−0.057
	(0.059)	(0.039)	(0.029)
CAPITAL INTENSITY	−0.032	−0.019	−0.022
	(0.032)	(0.021)	(0.016)
SALES GROWTH	−0.008**	−0.006**	−0.004**
	(0.004)	(0.003)	(0.002)
CASH	−0.027**	−0.015*	−0.011
	(0.013)	(0.009)	(0.007)
10-K	0.097***	0.055***	0.054***
	(0.023)	(0.014)	(0.011)

Table 5 (continued)

10-Q	−0.071*	−0.077***	−0.063***
	(0.039)	(0.023)	(0.019)
FORMS	0.006***	0.004***	0.003***
	(0.000)	(0.000)	(0.000)
Observations	163,132	163,132	163,132
R-Squared	0.229	0.226	0.225
Firm FE	Yes	Yes	Yes
Month-Year FE	Yes	Yes	Yes
Cluster	Firm	Firm	Firm
Vuong's Z-statistic	2.60***	3.37***	3.94***
Wald χ^2-statistic	14.55***	31.20***	40.07***

Panel B: Sustained IRS Attention

Dependent Variable:	(1)	(2)	(3)
	Log (IRS DOWNLOADS + 1)	Log (IRS DOWNLOAD BREADTH + 1)	Log (IRS DOWNLOAD TYPE+1)
RESTATE	0.024*	0.022***	0.019***
	(0.013)	(0.008)	(0.006)
Observations	163,132	163,132	163,132
R-squared	0.229	0.226	0.225
Controls	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes
Month-Year FE	Yes	Yes	Yes
Cluster	Firm	Firm	Firm

Panel C: Download Timeliness Following a Restatement

Dependent Variables:	(1)	(2)
	Log (SPEED)	Log (SPEED)
RESTATE	−0.330**	−0.227*
	(0.132)	(0.135)
Observations	30,173	25,449
R-squared	0.564	0.699
Controls	Yes	Yes
Firm FE	Yes	No
Month-Year FE	Yes	Yes
Form FE	Yes	No
Firm-Form FE	No	Yes
Cluster	Firm	Firm
Vuong's Z-statistic	4.67***	1.37
Wald χ^2-statistic	6.30**	2.81*

This table presents the results of Eq. (1), which estimates the effect of a restatement on IRS attention. Panel A uses the logs of *IRS DOWNLOADS*, *IRS DOWNLOAD BREADTH*, and *IRS DOWNLOAD TYPE* plus one as the dependent variables. Panel B tests whether a restatement is associated with sustained IRS attention by measuring *RESTATE* as an indicator variable equal to one for month *m* of a restatement and all other future periods for firm *i*. Finally, Panel C tests the timeliness of IRS attention following a restatement by taking the

log of the amount of days following a restatement until the IRS downloads the form announcing the restatement (*SPEED*). In addition, various controls have been included that control for general IRS attention for tax reasons and for firm characteristics. See the appendix for all variable definitions. All regressions contain an intercept and firm and month-year fixed effects that are not tabulated. In Panel B, we include form and firm-form fixed effects. For brevity, we omit presentation of the coefficients and standard errors for all control variables in Panels B and C. Standard errors are clustered by firm and presented in parentheses. *, **, and *** indicate significance at the 0.10, 0.05, and 0.01 levels, respectively

assess whether fraud restatements individually attract IRS attention by summing the coefficients of *RESTATE* and *FRAUD* and testing the difference from zero. The Chi-square test statistic is significant, suggesting that fraud restatements alone are a significant factor in attracting IRS attention.

Column (2) presents the results of estimating Eq. (2) without the variable *FRAUD* to assess the impact of an error on IRS attention. The coefficient on *RESTATE* remains significant, regardless of the inclusion of *ERRORS*. *ERRORS*, on the other hand, has a negative and insignificant coefficient, indicating that IRS attention is not incrementally affected by the presence of a restatement caused from an error. This result is intuitive, as it suggests that errors are incidental and do not indicate any pattern of misreporting. Moreover, our findings are consistent with the results of Hennes et al. (2008). We also examine the joint significance of the coefficient from *RESTATE* plus the coefficient from *ERRORS* and test its difference from zero using a Chi-square test as conducted in Column (1). This test allows us to examine whether the restatements stemming from errors alone significantly determine IRS attention. The Chi-square test statistic is insignificant, suggesting errors do not contribute to IRS attention when considered individually. Finally, Column (3) presents the results of estimating Eq. (2) fully. The results mirror those when each restatement cause is examined individually.[23]

Next, in Panel B of Table 6, we replace the variables *FRAUD* and *ERRORS* with the variable *BIG R* as an alternative measure of the nature of the restatement. We measure *BIG R* is an indicator variable equal to one if the restatement requires the firm to alert investors and reissue its financial statements. We identify a total of 572 restatements considered *BIG R* by identifying when the restatement is accompanied by a 4.02 8-K revision. Thus this analysis helps identify the severity of the restatement. We find a significantly positive relation between *BIG R* and IRS attention, suggesting that restatements in which prior financial statements are reissued and investors were alerted are a significant factor of IRS attention. Importantly, the main effect (*RESTATE*) remains significantly positive, which suggests that even restatements that are more immaterial in nature continue to garner attention from the IRS. Overall, the results from Table 6 continue to highlight the value of restatements as signals to the IRS in its information gathering and that the most severe restatements garner the most attention.

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[23] In the online appendix, we test whether tax related restatements lead to increased IRS attention but fail to find a significant incremental effect.

Table 6 Analysis of Restatement Types and IRS Attention

Panel A: Fraud versus Errors

Dependent Variable:	(1)	(2)	(3)
IRS DOWNLOADS	FRAUD	ERRORS	All
RESTATE	0.075***	0.083***	0.078***
	(0.023)	(0.023)	(0.023)
FRAUD	0.145*		0.146*
	(0.080)		(0.080)
ERRORS		−0.092	−0.092
		(0.064)	(0.064)
Observations	163,132	163,132	163,132
R-Squared	0.229	0.229	0.229
Firm FE	Yes	Yes	Yes
Controls	Yes	Yes	Yes
Month-Year FE	Yes	Yes	Yes
Cluster	Firm	Firm	Firm
χ^2 Test: RESTATE plus ERRORS/FRAUD			
χ^2 (p value)	7.18*** (0.007)	0.03 (0.868)	

Panel B: Big R vs Little r

Dependent Variable:	(1)
IRS DOWNLOADS	BIG R
RESTATE	0.044**
	(0.018)
BIG R	0.089***
	(0.025)
Observations	163,132
R-Squared	0.229
Controls	Yes
Firm FE	Yes
Month-Year FE	Yes
Cluster	Firm
χ^2 Test: RESTATE plus BIG R	
χ^2 (p value)	20.98***
	(0.000)

This table presents the results of estimating Eqs. (2). In Panel A, each column presents the result of including or excluding the different restatement types (errors and fraud) in the regression. The base group for this analysis is accounting misapplications (GAAP violations). In Panel B, we introduce a new variable, BIG R, that represents restatements in which prior financial statements were reissued and investors were alerted to restatements. In addition, various control variables, omitted for brevity, have been included that control for general IRS attention for tax reasons and for firm characteristics. The dependent variable, IRS DOWNLOADS, is measured as the number of times during a month m that the IRS acquired a firm's public information through a download for firm i in year t. See the appendix for all variable definitions. All regressions contain an intercept and firm and month-year fixed effects that are not tabulated. *, **, and *** indicate significance at the 0.10, 0.05, and 0.01 levels, respectively

4.4 Analysis of IRS attention and the disclosure of internal control weaknesses

As an alternative signal of poor information quality, we extend our analysis to disclosures of a material weakness in annual 10-K filings. Sarbanes-Oxley (SOX) section 404 requires firms to report on the adequacy of internal controls over financial reporting and assess its overall financial reporting ability. Research has used internal controls as proxies of information quality. For example, Gallemore and Labro (2015) use the absence of material weaknesses in internal controls to proxy for high internal information quality and test its association with tax avoidance. They find that firms with high information quality have lower effective tax rates, suggesting a firm's ability to avoid taxes is affected by the quality of information on which tax planning is based. In addition, Feng et al. (2009) examine the relation between internal control quality and the accuracy of management guidance. They find that managers of firms with ineffective internal controls release less accurate forecast guidance. Similar to these studies, we view internal control weaknesses as informative of firms' internal information quality. We expect the IRS may be interested in internal control weaknesses as a signal of low-quality accounting information that could lead to errors in tax compliance.

Because internal control weaknesses are disclosed annually, this analysis requires us to implement a slightly different approach to our model specification. We first identify firms that disclose material weaknesses in internal controls through the Audit Analytics SOX 404 Internal Controls database. This data source allows us to pinpoint the fiscal years in which firms disclose a material weakness(es) and the origin of the weakness(es). For this analysis, we retain only those firms that have disclosed at least one material weakness during the sample period. Next we modify our sample composition of the IRS downloads data. We first aggregate the number of downloads occurring for each firm in each year of the sample period from 2007 to 2016. This results in a total of 3,531 *firm-year* observations as our final sample of which all observations have at least one download during the year and one internal control weakness disclosed during the sample period.

We use two alternative variables of interest in this analysis. The first we label *ICW TOTAL$_{i,t}$*, which measures the total number of internal control weaknesses disclosed by firm *i* in year *t*. The second we create as an indicator variable, *ICW$_{i,t}$*, that equals one for *firm-year* observations that contain at least one internal control weaknesses disclosed for the associated fiscal year and zero otherwise. Table 7, Panel A, presents the descriptive statistics of the sample for the variables *IRS DOWNLOADS*, *ICW TOTAL*, *ICW*, and controls.[24] To address concerns that attention to internal control weaknesses relates to restatements, we eliminate an additional 182 *firm-year* observations where a weakness disclosure is accompanied by a restatement. The mean (median) number of *firm-year* IRS downloads is 31.11 (9.00). Approximately 21.6% (763) of the *firm-year* observations disclose at least one material weakness during the sample period. Of these firms, the mean (median) number of material weaknesses disclosed in each *firm-year* observation with at least one internal control weakness for the fiscal year is 2.09 (2.00).

Table 7, Panel B, contains the multivariate analysis of IRS attention on firms that disclose a material weakness. We regress *IRS DOWNLOADS* on *ICW TOTAL* and *ICW* using OLS. We cluster standard errors by firm and include industry and year fixed effects. Column (1) presents the results of using *ICW TOTAL* as our independent variable of

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[24] We exclude the control variables *10-K*, *10-Q*, and *FORMS*, as those variables capture *firm-month* variation.

interest. The coefficient on *ICW TOTAL* is 0.037 and is significant. This suggests that a one-unit increase in *ICW TOTAL* results in a 3.7% increase in *IRS DOWNLOADS*. Column (3) replaces *ICW TOTAL* with *ICW* and repeats the same analysis as in Column (1). The coefficient on *ICW* is also significantly positive with a coefficient value of 0.112. This suggests that, on average, a *firm-year* observation that discloses at least one ICW results in an increase in downloads by the IRS of 11.2%. Columns (2) and (4) present the results of the same regression analyses but with firm fixed effects in the place of industry fixed effects. Our inferences remained unchanged. The results in Table 7 suggest that the IRS heeds signals of poor information quality and increases scrutiny of these firms in response.

5 IRS attention and future tax settlements

To this point, we have assumed that information accumulated by the IRS is tied to information use. We next investigate whether IRS attention to signals of poor information quality leads to direct firm consequences in the form of future settlements with tax authorities and references to a tax audit in the firm's 10-K. FIN 48 dictates how firms account for income tax uncertainty, and, as part of the requirements of FIN 48, firms must disclose a tabular rollforward of changes in the UTB reserves. Included in this rollforward is any change in UTBs related to settlements with tax authorities. Robinson et al. (2016) note that practitioner guidance instructs firms to record cash payments to tax authorities on the settlement line of the tabular rollforward. We use this line item to measure the association between increased IRS scrutiny of firms' financial filings around a restatement and future settlements with tax authorities. However, we recognize that the use of both settlements and mentions of being under tax audit have limitations, as we have no way to validate whether the enforcement activity directly corresponds to the period of restatement. Depending on the lag between when a restatement is disclosed and the years that need to be restated, the IRS may be actually auditing the firm for the years that are restated. That said, we expect the restatement to be of interest to the IRS, even if the timing between the years restated and the years under audit are off, because it provides a signal about information quality or management integrity that would suggest the firm's tax filings may warrant greater scrutiny. Nevertheless, the results of this analysis should be interpreted accordingly.

For this analysis, we again estimate a path analysis.[25] We define *SETTLE* following Robinson et al. (2016) as the firm's settlements with tax authorities reported in the post-FIN 48 period from $t + 1$ through $t + 4$ or $t + 5$ as a proportion of the firm's total UTBs at year t. *SETTLE* captures the percentage of UTBs in year t that are paid to tax authorities. Next we define *IRS AUDIT REF*$_{t + 1}$ as an indicator equal to one if the firm discloses a tax audit in its 10-K and zero otherwise.[26] We then measure this variable at time $t + 1$.

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[25] Bozanic et al. (2017) test for an association between IRS 10-K downloads and an indicator variable equal to one if a firm disclosed a decrease in the UTB balance related to settlements with a tax authority and references to a tax audit in the firm's 10-K. They find that the probability of a decrease in the settlement line item and mention of a tax audit increases in the number of downloads. Our analysis differs in that we attempt to identify how an increase in IRS attention is connected to future settlements and a reference to being under IRS audit using a path analysis.

[26] Following Bozanic et al. (2017), we seek references to a tax audit by identifying audit related words ("audit," "exam," "investigation," or "inspect") that occur within 20 characters of "IRS," "I.R.S.," or "Internal Revenue Service."

Table 7 IRS Attention and Internal Control Weaknesses

Panel A: Descriptive Statistics

	(1)	(2)	(3)	(4)	(5)	(6)
	N	Mean	S.D.	P25	Median	P75
Dependent Variable						
IRS DOWNLOADS	3,531	31.11	73.32	4.00	9.00	23.00
Independent Variables						
ICW	3,531	0.22	0.41	0.00	0 .00	0.00
ICW TOTAL	756	2.09	1.59	1.00	2.00	3.00
GAAP ETR	3,531	0.25	0.16	0.12	0.27	0.36
CASH ETR	3,531	0.20	0.18	0.04	0.19	0.31
BTD	3,531	−0.47	2.99	−0.02	0.01	0.04
UTB	3,531	0.01	0.02	0.00	0.00	0.01
DTA	3,531	0.05	0.05	0.01	0.04	0.07
DTL	3,531	0.04	0.05	0.01	0.03	0.07
NOL CHANGE	3,531	0.19	1.19	0.00	0.00	0.01
ROA	3,531	−0.32	2.10	0.02	0.06	0.10
SIZE	3,531	6.16	2.54	5.16	6.44	7.77
MTB	3,531	2.24	9.66	1.08	1.91	3.18
MNE	3,531	0.59	0.49	0.00	1.00	1.00
LEV	3,531	0.21	0.29	0.00	0.12	0.31
INTANGIBLE INTENSITY	3,531	0.22	0.25	0.02	0.13	0.34
R&D INTENSITY	3531	0.16	1.13	0.00	0.00	0.05
INVENTORY INTENSITY	3,531	0.11	0.14	0.00	0.07	0.18
CAPITAL INTENSITY	3,531	0.24	0.25	0.06	0.16	0.33
SALES GROWTH	3,531	0.14	0.59	−0.03	0.06	0.17
CASH	3,531	0.18	0.25	0.04	0.11	0.22

Panel B: Regression Analysis
Dependent Variable:

Log (IRS DOWNLOADS)	(1)	(2)	(3)	(4)
ICW TOTAL	0.037**	0.070***		
	(0.017)	(0.023)		
ICW			0.112**	0.188***
			(0.054)	(0.067)
GAAP ETR	−0.520***	−0.245	−0.517***	−0.248
	(0.171)	(0.203)	(0.171)	(0.203)
CASH ETR	0.283**	−0.043	0.288**	−0.038
	(0.141)	(0.171)	(0.141)	(0.170)
BTD	0.065***	0.079*	0.063***	0.0781*
	(0.024)	(0.042)	(0.023)	(0.042)
UTB	7.506***	6.972***	7.578***	6.845***
	(1.592)	(2.466)	(1.594)	(2.483)
DTA	0.747	−1.322	0.734	−1.326
	(0.553)	(1.055)	(0.551)	(1.053)

Table 7 (continued)

DTL	−0.488	−0.376	−0.461	−0.342
	(0.664)	(1.624)	(0.663)	(1.606)
NOL CHANGE	0.050***	0.024	0.049***	0.023
	(0.017)	(0.020)	(0.017)	(0.019)
ROA	−0.147***	−0.121*	−0.144***	−0.117*
	(0.038)	(0.063)	(0.038)	(0.063)
SIZE	0.278***	0.159**	0.279***	0.167**
	(0.017)	(0.075)	(0.017)	(0.075)
MTB	−0.002	−0.003	−0.002	−0.003
	(0.002)	(0.003)	(0.002)	(0.003)
MNE	−0.023	0.014	−0.024	0.015
	(0.059)	(0.121)	(0.059)	(0.120)
LEV	0.163*	0.352***	0.165*	0.364***
	(0.086)	(0.125)	(0.085)	(0.124)
INTANGIBLE INTENSITY	−0.105	−0.149	−0.106	−0.160
	(0.116)	(0.191)	(0.116)	(0.190)
R&D INTENSITY	−0.013	−0.025	−0.013	−0.026
	(0.014)	(0.032)	(0.014)	(0.032)
INVENTORY INTENSITY	−0.248	−0.525	−0.241	−0.538
	(0.240)	(0.500)	(0.240)	(0.497)
CAPITAL INTENSITY	−0.313**	−0.450	−0.320***	−0.469
	(0.123)	(0.296)	(0.123)	(0.298)
SALES GROWTH	0.004	−0.033	0.006	−0.029
	(0.035)	(0.051)	(0.036)	(0.051)
CASH	−0.012	−0.169	−0.013	−0.171
	(0.083)	(0.123)	(0.083)	(0.123)
Observations	3,531	3,531	3,531	3,531
R-squared	0.293	0.215	0.293	0. 219
Industry FE	Yes	No	Yes	No
Firm FE	No	Yes	No	Yes
Year FE	Yes	Yes	Yes	Yes
Cluster	Firm	Firm	Firm	Firm

Panel A presents the descriptive statistics for *IRS DOWNLOADS*, *ICW TOTAL*, and *ICW* for all *firm-year* observations for the sample period of 2007 to 2016. *ICW TOTAL* presents the descriptive statistics of all 755 *firm-year* observations that disclose at least one material weakness. Panel B presents the results of OLS regressions of *IRS DOWNLOADS* on whether a firm has disclosed an internal control weakness for a given fiscal year. In addition, various control variables have been included that control for general IRS attention and for firm characteristics. The dependent variable, Log (*IRS DOWNLOADS*), is the log of the number of times during a year that the IRS acquired a firm's public information through a download for firm i in year t to address skewness in the measure. All regressions contain year, either firm or industry fixed effects, and an intercept that are not tabulated. We winsorize all continuous variables at the first and 99th percentiles Standard errors are clustered by firm and are presented in parentheses below each coefficient. *, **, and *** indicate significance at the 0.10, 0.05, and 0.01 levels, respectively

Table 8 presents the results of the path analysis. We report the indirect effects on $SETTLE_{t+1, t+4}$ as the outcome variable in Panel A, the indirect effects on $SETTLE_{t+1, t+5}$ in Panel B, and the indirect effects on $IRS\ AUDIT\ REF_{t+1}$ in Panel C. We find the direct (unmediated) effect of *RESTATE* on the outcome variables in each panel to be insignificant. However, we find that the indirect effect of *RESTATE* on all three outcome variables is positively significant across all three mediating paths, *ATTENTION*, Log (*ATTENTION* + 1), and *ABV AVE ATTENTION*. These results suggest that IRS attention from restatements results in higher future tax settlements and a higher likelihood of disclosing a tax audit, albeit both the settlements and the mention of being under audit are not directly connected to the restatement alone.

In sum, the results presented in this section reflect an association between increased information acquisition following public signals of poor information quality and future IRS scrutiny through both tax settlements and the disclosure of a tax audit. We provide some evidence of tax-related consequences to firms for low-quality financial reporting. However, we again note that we cannot directly link either the tax settlements or the tax audit disclosures to the specific years of the restatement.

6 Robustness tests

In this section, we include a brief discussion of the additional analyses and robustness checks associated with our study, all of which are documented in the online appendix. First, we recognize that a restatement is an endogenous event likely to arise from several different sources. To help mitigate the concern that our results are influenced by a confounding variable, we follow prior studies (Call et al., 2018; Christensen et al., 2017; Larcker & Rusticus, 2010) and use the impact threshold for a confounding variable (ITCV), which quantifies the sensitivity of our results to a potentially confounding omitted variable. We also follow Oster (2019) and use the coefficient of proportionality, δ, approach, which allows for confounding to occur along one or more factors, thereby quantifying the extent of unobserved selection needed to invalidate a result. The results from both tests provide confidence that potential unobservable factors correlated with both IRS attention and restatements are unlikely to drive our results, suggesting that restatements are a unique event capturing the attention of the IRS that is unrelated to any observable or unobservable factor.

Next we document attention to restatements using alternative users of financial statements, where there is no clear reason the user would be interested in a restatement.[27] Accordingly, we obtain downloads by Fannie Mae, the Bureau of Economic Analysis, and the department of Transportation and fail to find a significant relation between all three entities' download activity and restatements. Second, we modify our research design to represent *firm-day* observations and reestimate Eq. (1). We also redefine *RESTATE* to be an indicator equal to one for the day of the restatement and zero otherwise. Using a total of 1,965,491 *firm-day* observations, we continue to find IRS attention to be positively associated with a restatement, even after including firm-year fixed effects that eliminate controls

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[27] We acknowledge there may be valid reasons for these organizations to be interested in restatements, but we are at least unaware of what those reasons would be.

Table 8 Path Analysis of IRS Attention on Future Settlements

Panel A: Restatements, Dependent variable = SETTLE_{t+1, t+4}

	(1)		(2)		(3)	
	PATH= ATTENTION		PATH= Log (ATTENTION+ 1)		PATH= ABV AVE ATTENTION	
	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat
Direct Path						
p[RESTATE, SETTLE_{t+1, t+4}]	0.017	0.57	0.009	0.29	0.015	0.49
Mediated Path						
I. p[RESTATE, PATH]	0.378***	3.85	0.332***	4.69	0.404***	3.86
II. p[PATH, SETTLE_{t+1, t+4}]	0.001**	2.32	0.032***	5.00	0.049***	2.59
Indirect effect (IxII)	0.001**	1.99	0.011***	3.42	0.020**	2.15
Observations	4,409		4,409		4,409	

Panel B: Restatements, Dependent variable = SETTLE_{t+1, t+5}

	(1)		(2)		(3)	
	PATH= ATTENTION		PATH= Log (ATTENTION+ 1)		PATH= ABV AVE ATTENTION	
	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat
Direct Path						
p[RESTATE, SETTLE_{t+1, t+5}]	0.062	1.26	0.049	0.99	0.055	1.12
Mediated Path						
I. p[RESTATE, PATH]	0.368***	3.23	0.313***	3.75	0.408***	3.27
II. p[PATH, SETTLE_{t+1, t+5}]	0.001**	1.99	0.047***	4.64	0.089***	2.99
Indirect effect (IxII)	0.001*	1.69	0.015***	2.92	0.036**	2.21
Observations	3,407		3,407		3,407	

Panel C: Restatements, Dependent variable = IRS AUDIT REF_{t+1}

	(1)		(2)		(3)	
	PATH= ATTENTION		PATH= Log (ATTENTION+ 1)		PATH= ABV AVE ATTENTION	
	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat
Direct Path						
p[RESTATE, IRS AUDIT REF_{t+1}]	−0.004	0.38	−0.006	0.67	−0.002	0.24
Mediated Path						
I. p[RESTATE, PATH]	0.383***	6.85	0.289***	7.21	0.370***	6.00
II. p[PATH, IRS AUDIT REF_{t+1}]	0.004**	7.93	0.022***	8.37	0. 021***	5.40
Indirect effect (IxII)	0.001***	5.18	0.006***	5.46	0.008**	2.63
Observations	9,651		9,651		9,651	

This table presents the results of path analysis of the relations among a source variable (restatement), mediating variables, and the outcome variable, *SETTLE,* for restatement firms. *SETTLE* is measured as the aggregate amount of settlements made by a firm from years $t + 1$ to $t + 4$ in Columns (1) and (2) and from years $t + 1$ to $t + 5$ in Columns (3) and (4), scaled by Compustat variable TXTUBEN in year t. We estimate a generalized structural equation model (GSEM) of the direct effect of a restatement on future tax enforcement as well as the indirect effects through increased IRS attention. GSEM allows for multilevel models to fit the data. The three proxies we use of IRS attention are the amount of IRS downloads of a firm's public

information for the three-month window following a restatement in the restatement year and in all other *firm-years* (*ATTENTION*), the log of *ATTENTION* plus one (Log [*ATTENTION* + 1]), and an indicator variable equal to one if *ATTENTION* in year *t* is greater than the average three-month downloads of year *t-1*. In Panels A and B, the equations in the GSEM include a regression of the outcome variable, *SETTLE*, on the mediating variables and all other control variables, and regressions of each mediating variable on the source variable, *RESTATE*. In Panels C, we repeat the above analyses but use an alternative dependent variable *IRS AUDIT REF*, which is an indicator variable equal to one if the firm discloses a tax audit within its 10-K measured at time *t* + 1. We exclude the analyses for the other mediating variables for brevity. The results show the unstandardized path coefficient, labeled p[.], with clustered standard errors.

that do not vary by month (e.g., variables of financial statement information like *SIZE* and *CASH ETR*). Third, we investigate the IRS's acquisition of specific form types using the top five most downloaded forms in individual regressions (e.g., forms 10-K, 8-K, 4, 10-Q, and DEF 14A). We find a positive and significant relation between a restatement and 10-K and 8-K downloads but fail to document a significant association for the other three. Fourth, we exclude IRS downloads of the top five most downloaded filings and reexamine IRS attention to restatements. We continue to find a positive and significant relation between the information acquisition of these seemingly less popular filings and a restatement.

7 Conclusion

We examine whether restatements draw scrutiny from the IRS. We use a unique dataset that captures the IRS's acquisition of firms' public financial disclosures, which proxies for IRS attention. We first find that the information acquisition tendencies of the IRS for restatements are unique. We then find an increase in the acquisition of all public filings in the month of the restatement announcement. We also investigate restatements initiated from fraud investigations and those that require firms to alert investors and reissue financial statements and find that both add incrementally to the attention the IRS gives a restatement. In a separate analysis, we use the disclosure of internal control weaknesses as an additional signal of poor information quality and find a similar increase in IRS attention following the disclosure of such a weakness. Finally, we investigate the consequences of the observed increase in IRS attention. Using path analysis, we find that IRS attention around restatements relates positively to future tax enforcement using future tax settlements and disclosures that the firm is under tax audit.

We broaden understanding of the IRS audit process. Our results are consistent with the IRS monitoring qualitative information not directly linked to tax information as a useful signal of tax misreporting. The results suggest that the IRS believes aggressive or poor-quality financial reporting is likely to be positively associated with tax misreporting. Further, our analysis shows the timeliness of IRS downloads of public filings has increased dramatically over our sample period. The gathering of public information to more efficiently deploy increasingly limited resources indicates sophisticated risk assessments on the part of the IRS.

Appendix

Table 9 Variable Definitions

ABV AVE ATENTION	An indicator variable set equal to one if *ATTENTION* in year *t* is greater than the average three-month downloads of year *t-1*.
ATTENTION	The amount of IRS downloads for the three-month window following a restatement in the restatement year and in all other *firm-years*.
BIG R	An indicator variable equal to one if the company issues a 4.02 8-K revision, zero otherwise.
BTD	Pretax income (PI) minus current domestic and foreign tax expense (TXFED + TXFO) grossed up by 35%, scaled by assets (AT).
CAPITAL INTENSITY	Net property, plant, and equipment (PPENT) divided by lagged total assets (AT).
CASH	Cash holdings (CH) scaled by lagged total assets (AT).
CASH ETR	Taxes paid (TXPD) divided by pretax book income net of special items (PI-SPI).
DTA	Net deferred tax assets (TXNDBA) scaled by total assets (AT).
DTL	Net deferred tax liabilities (TXNDBL) scaled by total assets (AT).
ERRORS	An indicator variable set equal to one in which a restatement is attributable to an error and zero otherwise.
F-SCORE	We first calculate the predicted value (PV) of an accounting misstatement following model 1 of Panel A of Table 7 of Dechow et al. (2011). The probability of misstatement is then calculated as $PR=e^{PV}/(1+e^{PV})$. Finally, *F-SCORE* $=PR/0.0037$.
FORMS	The total number of new filings for firm *i* of month *m* available for download on EDGAR.
FRAUD	An indicator variable set equal to one during the restatement windows attributable to fraud and zero otherwise.
GAAP ETR	Total tax expense (TXT) divided by pretax book income net of special items (PI--SPI).
ICW	An indicator variable set equal to one for *firm-year* observations that disclose a material weakness and zero otherwise.
ICW TOTAL	The total number of material weakness disclosed by a firm for a given *firm-year* observation.
INTANGIBLE INTENSITY	Intangible assets (INTAN) divided by lagged total assets (AT); missing values set equal to zero.
INVENTORY INTENSITY	Inventory (INVT) divided by lagged total assets (AT).
IRS AUDIT REF	An indicator equal to one if the firm referred to a tax audit in its 10-K and zero otherwise
IRS DOWNLOAD BREADTH	The number of downloads of unique accession numbers by IP addresses belonging to the IRS during month *m* of year *t* for firm *i*.
IRS DOWNLOAD TYPE	The number of downloads of the different form types by IP addresses belonging to the IRS during month *m* of year *t* for firm *i*.
IRS DOWNLOADS	The total number of downloads made by IP addresses belonging to the IRS during month *m* of year *t* for firm *i*.
LENGTH	Measured as the length of time it takes the IRS to download one public filing of a restating firm following a press release or media article covering the restatement
LEV	Long-term debt (DLTT) divided by lagged total assets (AT).

Table 9 (continued)

MTB	Number of shares outstanding at the end of the year multiplied by the price per share at year end divided by book value of equity (PRCC_F*CSHO/CEQ).
MNE	An indicator variable set equal to one if a firm is not missing pre-tax foreign income (PIFO), indicating a multinational firm.
NOL CHANGE	Change in the tax loss carryforward (TLCF) divided by total assets (AT).
R&D INTENSITY	R&D expense (XRD) divided by sales (SALE); missing values set equal to zero.
RESTATE	An indicator variable equal to one for all *firm-month* or *firm-year* observations with a restatement and zero otherwise.
ROA	Pretax book income (PI) divided by total assets (AT).
SALES GROWTH	The change is sales (SALE) scaled by the prior year.
SETTLE	Measured as the aggregate amount of settlements made by a firm from years $t + 1$ to $t + 4$ and to $t + 5$ scaled by year end UTBs (TXTUBEN).
SIZE	The log of total assets (AT) as of the end of the year.
SPEED	Measured as the number of days it takes the IRS to download the form announcing a restatement.
UTB	Year-end UTBs (TXTUBEN) divided by total assets (AT).
10-K	An indicator variable equal to one if a 10-K is released during the month.
10-Q	An indicator variable equal to one if a 10-Q is released during the month.
FORMS	The total number of new forms available for download for firm i during each month m over our entire sample period.

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