TAX ENFORCEMENT AND RESTATEMENTS

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Abstract

Prior research in restatement presumes that restatements are closely connected with managers' incentives to manage earnings which can be prevented by higher corporate governance. Desai et al (2007) suggest that tax enforcement can be viewed as one of the corporate governance mechanism which works as a deterrent against accounting misstatement of firms. I examine whether tax enforcement has an effect on firms' overall accounting quality by using restatement as a proxy for earnings quality. Furthermore, I test whether the threat of IRS audit has stronger effects on accounting irregularities than it has on the occurrence of simple accounting errors with restatement data classified by Hennes et al (2008) as either caused by irregularities or caused by errors. The results show that tax enforcement is positively associated with overall accounting quality, but that positive association is no longer valid when extreme cases of GAAP-violations are concerned. My findings are mostly consistent with previous research that tax enforcement works as a corporate governance mechanism increasing overall accounting quality.

1. Introduction

Tax enforcement has not been widely regarded as a corporate governance mechanism until Desai et al (2007) suggested that tax enforcement functions as a corporate governance mechanism reducing managers' incentives to obfuscate firms' profits for private benefit. Desai et al (2007) claims that the state, as "*de facto* one of the largest minority shareholders", has the incentive to monitor financial transactions of firms for the purpose of preventing management from diverting taxable income for private benefits. This incentive gives the tax authority a motive to voluntarily provide additional monitoring of management which would have positive externalities for outside shareholders. This is because the monitoring of taxable income might also lead to the increase of book income quality when book-tax difference is not that significant. The question is whether tax audit can really influence accounting quality of firms when its primary purpose is just to inspect firm's compliance with tax code rather than to detect accounting misstatements of a firm. In the first part of this study, I examine the relationship between the likelihoods of restatements, one of the most widely used earnings quality metric, and the level of tax enforcement in an attempt to find an answer to the above question. In the second part, I go further to examine whether tax enforcement has stronger effects on irregularities than on simple accounting errors by comparing how irregularities-firms and error-firms are differently affected by tax enforcement.

My hypotheses are developed based on two conflicting arguments as to whether tax enforcement can affect accounting quality of a firm. The arguments for positive influence of tax enforcement start from an idea that financial transactions, in spite of book-tax difference, influence both taxable and book income. Hence, monitoring such transactions that affect taxable income might also increase the quality of accounting income. Desai et al (2007) suggest that the design of corporate taxation affects the magnitude of managerial diversion because tax enforcement plays a role of corporate governance by alertly monitoring corporate insiders. Dyck and Zingales (2004), by providing an example of firms using transfer pricing for secretly funneling firms' value out to the related companies, also imply that private benefits of control can be prevented by effective implementation of tax enforcement. They indicate that the higher the quality of tax enforcement gets, the less private benefits can be enjoyed by managers because tax enforcement has disciplining power against managerial diversion. The findings of Hennes et

al (2008) further suggest that tax enforcement can have stronger regulatory effects on irregularities than on simple accounting errors because accounting irregularities tend to bring more devastating consequences to managers than simple accounting errors do. All of the arguments for positive influence of tax enforcement postulate that tax enforcement plays a role of corporate governance and managers perceive IRS audit as a big threat to their GAAP-violating decision. If this is the case, IRS audit will work as an effective preventive mechanism against accounting misstatements, and earnings quality will increase accordingly.

As opposed to above argument, it is also claimed outside the mainstream that tax enforcement may have no significant effects on accounting quality. A 1998 cover story by Novack and Saunders in Forbes magazine suggests that neither the tax law nor tax authority is capable of tackling sophisticated corporate finance of tax hustlers[1] due to IRS's relatively limited resources in terms of its staff, budget, and talent. They imply that a new breed of business providing tax shelters for corporations is booming recently because it involves astonishingly large amount of fees. The problem, they claim, is that IRS is not only outnumbered, but also outsmarted by tax hustlers, and cannot adequately prevent the spread of tax shelters. They also point out that the current rule-based tax code system in the U.S. cannot catch up with all the latest quirky transactions used by tax hustlers. This indicates that the legislature of new tax code against tax hustlers' latest scheme always comes one step behind after the loopholes in tax code have been taken advantage of by tax hustlers. The court's ruling against tax shelter case also lags behind because it takes a while for IRS to prove that tax hustlers abuse the weaknesses of tax system. This story suggests that tax enforcement is not strong enough to deal with severe cases of managerial diversion due to its limited resources. It further implies that corporate governance mechanism of tax enforcement exerts no regulatory effect on managers' decision-making process if managers are seriously committed to violating the regulation. The argument for ineffective tax enforcement is also connected with large book-tax difference in the U.S. (Guenther and Young, 2000) which limits IRS's monitoring power only to tax-related issues. Thus, IRS personnel do not care about accounting misstatements in the course of tax inspection as long as firms' tax base is correctly calculated. Besides, IRS has no authorized power to either penalize firms for

[1] Novack and Saunders (1998) describe Big Five accounting firms, law firms, and investment banks as tax hustlers since they earn profit by providing tax shelters for corporations using the loopholes of tax code.

accounting misstatements or urge firms to remedy GAAP-violating issues. Under these arguments, IRS audit does not pose a substantial threat to managers' GAAP-violating decisions, and tax enforcement may have no significant impact on accounting quality.

My paper is especially interesting in several respects. First, it measures tax enforcement by IRS audit probabilities from Transactional Records Access Clearinghouse (TRAC), a private data research organization. TRAC obtains this information directly from IRS's Audit Management Information Reporting System (=AIMS) from which IRS itself also generates official reports for the public and Congress. The use of IRS audit probabilities from TRAC as a proxy for tax enforcement is quite new in this research field, and largely contributes to quantifying unobservable tax enforcement level. Before the introduction of TRAC data, the effect of change in tax enforcement was only examined through an event study (e.g. Desai et al, 2007) in which the election of Vladimir Putin and his introduction of unprecedentedly strict tax regulation was used as an event and the change in the behaviors of firms before and after the event was measured to study the effect of tax enforcement. Second, my study uses restatements, one of the most widely used external indicators of accounting misstatements, as a proxy for earnings quality in contrast to previous studies in which mostly accruals have been used. In spite of its popularity among researchers as a proxy for earnings quality, accruals-based metric largely depend on firms' fundamental performances, and cause distortions if not correctly modeled (Dechow et al, 2010). On the other hand, external indicators do not rely on a complex model to isolate discretionary components of misstatements because accounting misstatements of restatement firms will be identified by either outside sources or firm itself (low Type I error). Third, I use restatement data provided by Hennes et al (2008). They classify the causes of restatements as either errors (=unintentional misstatement) or irregularities (=intentional misstatement). This restatement data provide me with a perfect tool to examine whether tax enforcement has stronger effects on irregularities than on simple accounting errors.

My results indicate that IRS audit probabilities are negatively associated with the likelihoods of restatements suggesting that high degree of tax enforcement has positive externalities on earnings quality. However, when irregularities are regressed on IRS audit probabilities, it shows no significant relationship between tax enforcement and the likelihood of restatements. This implies that tax enforcement does not function effectively when extreme cases

of accounting irregularities are concerned. Collectively, these results suggest that if IRS increases the level of tax enforcement and monitoring, overall accounting quality of firms' financial statements will increase accordingly. This is because IRS audit works as corporate governance mechanism which has preventive forces against accounting misstatements. However, corporate governance mechanism of IRS is not strong enough to prevent extreme cases of accounting frauds.

My study contributes to the previous literature on restatements in several perspectives. First, my research adds to the collection of prior literature on the relationship between tax enforcement and corporate governance. Second, this study makes first attempt to show how tax enforcement differently affects irregularities-driven restatements and errors-driven restatements, and suggests that tax enforcement, despite its generally accepted corporate governance function, has no noticeably strong regulatory effects on accounting irregularities. This provides an insight into why and how IRS and SEC should jointly collaborate if they are willing to properly regulate managerial diversion of taxable income as well as accounting profits.

The remainder of this paper proceeds as follows. In section 2, prior research about restatement and tax enforcement will be mentioned, followed by developing my hypothesis as to whether the change in IRS audit probability has any effect on the likelihoods of restatements. Section 3 describes my sample, variables, and regression model. Section 4 presents the main results about whether and how much the level of tax enforcement and the likelihood of restatement are associated. Section 5 concludes.

2. Prior research and hypotheses development

2.1. Corporate Governance and Managerial Diversion

La Porta et al (2000) describe corporate governance as "a set of mechanisms through which outside investors protect themselves against expropriation by the insiders". They suggest that stronger protection of outside investors with well-established legal system can be a very effective way of building up good corporate governance which will eventually diminish expropriation by the insiders. Regarding how investor protection can reduce managerial

diversion, their explanation is as follows. When the level of investor protection is extremely low, it is downright easy for the insiders to steal a firm's profits. It can be done very efficiently without any difficulty. As the level of investor protection increases, it is inevitable that the insiders must come up with more twisted and costly diversion techniques such as establishing paper companies into which they funnel their profits. As the expropriation process less efficient and more costly, the insiders have less incentive to divert firms' profits, and their private benefits of control decline.

Based on the findings of La Porta et al (2000), Leuz et al (2003) explore the relation of legal investor protection and firms' earnings management practices. They suggest that incentives to misrepresent firm performance through earnings management mainly arise from insiders' need to cover up their expropriation of firm profits. They explain that insiders, after they expropriate firms' profits for private benefits, have great incentives to obscure firm performance because their private control benefits will be easily detected by outsiders if they do not disguise firm performance. However, good corporate governance supported by high level of legal investor protection makes expropriation process more costly, leads to relatively minimal private benefits of control, and eventually reduces the incentives of managers to conceal firm performance.

2.2. Corporate Governance and Restatements

Literatures on corporate governance as well as managerial diversion are very closely related with earnings quality metrics because earnings quality is a by-product of interaction between earnings management and corporate governance. In other words, earnings management caused by managerial diversion under poor corporate governance clearly leads to poor earnings quality. As former SEC chairman, Arthur Levitt, once described, the quality of financial statements is constantly being compromised as a consequence of rampant earnings management practice which is defined as:

"the grey area between legitimacy and outright fraud… where the accounting is being perverted; where managers are cutting corners; and, where earnings reports reflect the desires of management rather than the underlying financial performance of the company".

Restatements, by prior research, have been largely associated with poor corporate governance such as weak internal control system, non-existence of audit committee, and low independence of the board of directors. (Burns and Kedia, 2006; Larcker et al, 2007). Restatements also have been frequently used as a proxy for measuring unobservable quality of accounting earnings which is largely affected by earnings management practice. As restatement of firms' financial statements means *de facto* acknowledgment of firms misstating their regular financial statements or detection of material accounting problems by outside sources, the likelihoods of restatements is widely considered as a good external proxy for the quality of financial reporting in terms of its low type I errors.

Extensive studies on restatements for the last decade mostly focus on determinants or consequences of restatements. When examining those studies, we can clearly see that financial restatements is highly associated with corporate governance since many factors affecting the quality of corporate governance are also claimed to have an effect on the likelihoods of restatements. Dechow et al (1996) implies that poor governance mechanism such as the board of directors with low independence or non-existence of audit committee is largely associated with earnings management. Agrawal and Chadha (2005) suggest that restating firms have a tendency to have independent directors with high-level of proficiency in accounting who provide monitoring of firms' financial reporting practices. The design of managerial compensation scheme has been also claimed to affect managers' misreporting motive. Burns and Kedia (2006) suggest that managers are more prone to misreport accounting figures when their compensations are largely tied to the stock price. Similarly, Efendi et al (2007) imply that the amount of in-the-money options held by managers significantly affects the likelihood of restatements. With respect to repercussions of restatements, it is worth noting that CEOs/CFOs turnover rate (Hennes et al., 2008) and litigation risk (Palmrose and Scholz, 2004) substantially increases after restatements suggesting that restatements can have significant consequences with managers' careers as well as firm value. It should be also noted that litigation risk regarding restatements depends highly on both magnitude (the size of negative impact on earnings) and the sources (simple accounting errors vs. irregularities) of restatements (Palmrose and Scholz, 2004; Hennes et al, 2008), which may imply that corporate governance has a stronger negative association with irregularities than simple accounting errors.

2.3. Tax Enforcement and Corporate Governance

Even though, Leuz et al (2003) as well as La porta et al (2000) contributed to the collection of the literature both on determinants of corporate governance and on the relationship of corporate governance and earnings management, tax enforcement was not widely and explicitly considered as one of the components that constitutes and reinforces corporate governance mechanism despite its supposedly significant impacts on the earnings management practice.

Desai et al (2007) made a trail-blazing attempt to examine whether tax enforcement plays a corporate governance mechanism and curbs managerial diversion as other corporate governance mechanism does. They hypothesize that the level of managerial diversion and the amount of tax paid is determined by the dynamics in a game with three players, namely - the state, insiders (managers or controlling shareholders), and outside shareholders. The dynamics of three relationships are: First, shareholders, whether insiders or outsiders, can act together in alliance against the state with a mutual objective of decreasing tax liability, which benefits both of them. Second, the state, as *de facto* one of the largest minority shareholders, has the incentive to monitor financial transactions for the purpose of preventing insiders from diverting taxable income for private benefits, which would have positive externalities for outside shareholders since the monitoring of taxable income might also increase the quality of book income as well. Third, in a rare case yet, insiders and tax authorities can have a backroom agreement where insiders agree to pay more taxes and the state overlooks their private diversion at the expense of outside shareholders. Desai et al (2007) focus on the second relationship in a setting where ownership is concentrated, and suggest that the design of the corporate tax system affects the amount of private benefits diverted by insiders and the effects of tax system are stronger when other corporate governances are weak. Their experiment in Russian setting when Vladimir Putin substantially increased tax enforcement after the 2000 election, suggests that stronger tax enforcement leads to less obfuscation, less managerial diversion, and increased stock price.

Guedhami & Pittman (2008) also added to the collection of literatures on the association between tax enforcement and corporate governance by providing a new metric for the level of

tax enforcement. In their study to test the effects of tax enforcement on the cost of debt, they used IRS audit probability collected by Transactional Records Access Clearinghouse (TRAC) - a private data research organization associated with Syracuse University, as a proxy for tax enforcement and reveal that IRS audit probability is negatively associated with cost of debt. Ghoul et al (2011) further extend the theory of Guedhami & Pittman (2008) and suggest that cost of equity is also negatively associated with tax enforcement level. They explain that tax enforcement of IRS acts as corporate governance, reduces information asymmetry, and leads to lower financing costs.

Contemporaneous research by Hanlon et al (2012) provides further insight into the consequences of tax enforcement, specifically focusing on the effects of tax enforcement on the financial reporting quality. Their main hypothesis that IRS monitoring is positively associated with earnings quality is built up in the course of searching for an understandable mechanism behind the findings of both Guedhami and Pittman (2008) and Ghoul et al (2011) that higher level of tax enforcement are associated with lower information asymmetry and lower cost of capital. In an effort to find a missing link between IRS monitoring and alleviation of information asymmetry, they hypothesize that IRS monitoring increases financial reporting quality of a firm, and the increased financial reporting quality effectively works as a force to mitigate information asymmetry, and this alleviated information asymmetry again pushes down firms' cost of capital. They provide three potential answers to how the increased tax enforcement works towards the increased accounting quality. First, in spite of a number of discrepancies between GAAP and tax code, the two systems are basically in line. Hence, to the extent that GAAP and tax code is in conformity, tax enforcement not only affects taxable income but accounting profits as well. First explanation is also consistent with Shackelford and Shevlin (2001) that although tax code and GAAP often differ in a number of important concerns, tax plans often end up with smaller accounting income implying that tax accounting and financial accounting are not independent enough. Second, if tax enforcement deters managerial diversion by making expropriation process more costly and inefficient, it will reduce the managers' incentives to obfuscate firms' profits as indicated by Desai et al (2007) which eventually increase financial reporting quality. Third, similar to outside observers (e.g. investors and analysts) and accounting regulatory authority (e.g. SEC), IRS increases the detection risk of financial misreporting because IRS is equipped with a

powerful weapon called Internal Revenue Code entitling IRS to a right to ask for classified information of firms if needed. Based on these three conjectures, they run a regression of discretionary accruals of firms on IRS audit probabilities, and draw a conclusion that there is a positive association between tax enforcement and earnings quality. They also suggest that this positive association is reinforced when other governance systems are weak.

All of the above literatures directly or indirectly imply that tax enforcement has positive externalities on accounting quality as it provides additional monitoring of corporate insiders just like other governance mechanisms. Especially, the findings of Hanlon et al (2012) directly associates tax enforcement with overall earnings quality using IRS audit probabilities as a proxy for tax enforcement. Based on the reasoning of previous studies by Desai et al (2007), Guedhami and Pittman (2008), Ghoul et al (2011), and Hanlon et al (2012), I first conjecture the following:

H1: Restatements as a whole (including both intentional and unintentional misstatements) are negatively associated with IRS audit probability.

The basic intuition of previous studies supporting hypothesis 1 is that tax enforcement of IRS functions very effectively. Here, effective functioning means that tax enforcement poses an ex-ante threat to accounting decision-making process, and plays a function of corporate governance, which would have a positive externalities on accounting quality even though the intended purpose of tax enforcement is purely to prevent avoidance of taxable income, not accounting profit.

2.4. Irregularities vs. Errors

In spite of Hanlon et al (2012)'s contribution to providing some evidence that tax enforcement is associated with financial reporting quality, their research mainly aims at just uncovering the general link between IRS monitoring and overall misstatements in representing the firm's fundamental earnings process. Consequently, their research findings does not distinguish the extent to which tax enforcement affects the level of irregularities from how much it affects pure accounting errors occurring in the process of applying the GAAP.

Hennes et al (2008) stress the importance of distinguishing error-driven restatements from irregularities-driven restatements. They suggest that research tests based on a conventional assumption that restatements are primarily caused by fraudulent behavior rather than simple misapplication of GAAP are likely to draw misleading conclusions because recently frequency of restatement due to unintentional errors has increased considerably. In the course of substantiating their criteria by which they distinguish errors from irregularities, they find that cumulative abnormal returns (=CARs) of irregularities firms on the date of restatement announcement are significantly more negative than for error firms and that class action law suit is most likely to occur in irregularities firm with only one class action law suit found in error firm. They also demonstrated that turnover rate of CEO/CFO is much higher in irregularities firm than error firm. Their findings suggest that restatements caused by irregularities can have more fatal consequences to managers' career, for instance, by costing their jobs in good cases, or by costing their reputation even in bad cases whereas restatements caused by simple errors have no severe impact on their careers.

Palmrose et al (2004) also suggest that research tests with restatement firms can be more powerful and draw more reliable conclusion if the sample can be distinguished based on its type of restatement (irregularity vs. error) since irregularities and errors differently affects restatements, and restatements caused by different type of misstatements can have different consequences. They find that more negative stock return is associated with restatement resulting from fraudulent misstatements because fraud-driven restatements can inflict unrecoverable damages to the trustworthiness and creditability of a firm, which inevitably increases litigation risks, CEO turnover-rate, and regulatory inspection by government. The findings of Hennes et al (2008) and Palmrose et al (2004), combined together with Dyck and Zingales (2004) and Desai et al (2007), imply that the likelihood of restatements caused by irregularities will be more negatively associated with IRS audit probabilities because IRS audit increases the detection risk of earnings management, and irregularities-driven restatements, if detected, tend to bring more devastating consequences to managers than error-driven restatements.

However, there are other indications outside the mainstream which also imply that tax enforcement can be very ineffective sometimes, especially towards irregularities. First, a 1998 cover story by Novack and Saunders in Forbes magazine turns the spotlight on a newly thriving

business in the U.S. where tax hustlers such as big accounting firms and law firms provide tax shelters to corporations in return for astronomical amount of contingency fee, which is usually 30% of the tax saved by tax shelter. In an article titled "A Hustling of X-rated tax shelters", they claim that today's tax hustlers mass produce tax-saving products by capitalizing on the fact that there are always some loopholes in tax code and IRS cannot regulate any transactions which take advantage of that loophole suggesting that tax authority as well as tax code always lags behind. They suggest that IRS, compared with tax hustlers, has relatively limited budget, personnel, knowledge, and talent to be able to properly monitor and regulate the evasion of taxable income, especially when large amount of tax avoidance is planned with big tax shelter deal, in which case tax enforcement of IRS can be perceived as no threat to corporations.

In addition, Guenther and Young (2000) suggest that the gap between tax rules and financial accounting standards can still be considerably large because they have different objectives to achieve. They imply that the U.S. is one of the countries where book-tax conformity is the lowest while informativeness of earnings is very high. This considerable book-tax difference in the U.S. can have significant implications with actual tax audit. First of all, IRS personnel mostly focus only on the items that violate tax code while performing tax audit. Hence, if intentional misstatements of a firm, though detected during tax inspection, turn out to be mainly due to the violation of accounting standards, but have no negative impact on tax base, IRS personnel either have no interest or have no power to effectively remedy them. At the same time, it also implies that intentional misstatement, even if detected by tax authority, cause relatively light penalty or do not cause any significant damage to firms' reputation compared with when it is detected by SEC. Consequently, the bigger book-tax difference gets, the weaker effects tax enforcement has on firms' intentional misstatements. Above two indications jointly suggest that tax enforcement can no longer play a role of corporate governance when extreme cases of accounting misstatements are concerned. Under these opposing arguments, tax enforcement has almost no regulatory power against intentional misstatements. Therefore, I set up two conflicting hypotheses with regard to the relationship between intentional misstatements and IRS audit probability:

H.2-a. Intentional misstatements have stronger negative association with IRS audit probability than unintentional misstatements.

H.2-b. Intentional misstatements have less strong negative association with IRS audit probability than unintentional misstatements.

Hypothesis 2-a is consistent with the findings of Hennes et al (2008) and Palmrose et al (2004) that irregularities-driven restatement, when detected by tax enforcement, can be more detrimental to managers' career and firms' reputation, leading managers to perceive IRS audit as a bigger threat when they are planning fraudulent misreporting. Hypothesis 2-b is consistent with Novack and Saunders (1998) that IRS is not only outnumbered but also outsmarted by corporations, and that IRS cannot adequately monitor or regulate fraudulent activities of firms. The above argument by Novack and Saudners (1998), coupled with large book-tax gap indicated by Guenther and Young (2000), suggest that if managers are seriously committed to extreme cases of accounting misreporting, they can either be undetected by IRS personnel (due to book-tax gap or being outnumbered) or be detected but treated with no interests (due to book-tax gap) or be detected but not punishable (being outsmarted). If this is the case, tax enforcement will pose no threat to accounting decision, and consequently have no impacts on earnings quality of a firm especially when irregularities are concerned. Although hypothesis 2-a is consistent with predominant findings of mainstream research and widely accepted as unquestionable consequences of tax enforcement, hypothesis 2-b is also supported by a number of practitioners as well as non-main stream reports.

3. Sample Selection, Variables, and Methodology

3.1. Sample Selection

A. Restatements data

Restatement data sample used in this research is obtained and readily available at http://sbaleone.bus.miami.edu provided by Hennes et al (2008). They compile restatement data of all firms in GAO databases between 1997 and 2006, and classify the causes of restatements as either by errors (=unintentional misstatement) or by irregularities (=intentional misstatement) based on several criteria elaborately specified in their 2008 paper. This dataset is especially well-suited for my research topic on how tax enforcement affects intentional and unintentional

misstatements differently. One minor drawback of this data sample, however, is that it is based on GAO database which only provides the disclosure date of restatement while my research needs fiscal years in which firms' financial statements were restated. For this matter, Audit Analytics' restatement data are additionally used to find out restated period since it provides restated period as well as disclosure date of restatement. As Audit Analytics only provides restatement data from 2000, the irregularities vs. errors sample by Hennes et al (2008) are also further restricted to between 1998 and 2006. Three criteria by which Hennes et al (2008) distinguish errors from irregularities are as follows. First, they classify restatement as caused by irregularities if the firm explicitly uses variants of "fraud" or "irregularities" in their restatements. Second, if there is a related SEC or DOJ (=Department of Justice) investigation regarding the restatement, it is classified as caused by irregularities as well. Finally, the existence of an (non-SEC) independent investigation into the misstatement is also considered as an indication of irregularities-triggered restatement.

B. Basic F/S data

Basic financial Statement data of all the listed firms in the U.S. was collected from Compustat. I start with all firm-year observations in Compustat between 1998 and 2006 due to the limitations of restatement dataset provided by Hennes et al (2008). Furthermore, firms which are not C-corporation, utilities firms, and financial institutions have been eliminated following Hanlon et al (2012) because these types of firms are usually treated differently by IRS in terms of their enforcement level or have different incentives from ordinary firms because of their special circumstances regarding government regulation. Finally, accessibilities of other control variables forced me to eliminate additional data from Compustat. Detailed sample selection process is as follows. First, I collect all firm-year observations between 1998 and 2006 from Compustat North America, and then all observations that have no data on total assets are deleted. Also, firms not incorporated or headquartered in U.S. are excluded since these firms usually experience less frequent and weaker enforcement compared with firms headquartered or

incorporated in the U.S. Second, firms that do not meet the requirements of C-corporations[2] are eliminated because IRS audit probability is based on C-corporations and other types of firms (e.g. S-corporations, partnership, and trusts) are separately managed in different IRS statistics. Third, I filtered out utilities and financial firms because these firms have different incentives from ordinary firms, and these firms are strictly regulated by government because of their special implications with the public. Finally, firms without data for control variables are also eliminated. Matching restatement data from Hennes et al (2008) with Compustat data is performed based on GVKEY and I use the original, unrestaed values of restating firms for controlling purposes because of high variability among firms in terms of magnitude and direction of restatement.

C. IRS Audit Probability data

To empirically test the effect of Tax enforcement on the earnings quality, IRS audit probability compiled by TRAC was used as a proxy for the level of tax enforcement. TRAC is a private research institute affiliated with Syracuse University. It obtains information directly from IRS's Audit Management Information Reporting System (=AIMS) database from which IRS itself also generates official reports for the public and Congress. IRS Audit probability is measured by the number of corporate income tax returns examined in IRS fiscal year t (running from October 1st until September 30th) divided by the total number of corporate income tax returns filed in calendar year t-1 (Hanlon et al, 2012). This statistics is further divided into asset size group based on total asset sizes of the firms. Two important caveats are in order with respect to using TRAC data as a proxy for tax monitoring. First, it can be a noisy proxy for tax monitoring to the extent that it violates its implicit assumption that IRS inspects tax returns within a year of filing because, as evidenced by Gleason and Mills (2002), IRS audit for the very large companies takes more than three years on average. Second, IRS audit probability from TRAC is an actual audit probability that has been compiled after firms had received actual audits. However, in light of the fact that my test variable should capture the extent to which managers' behaviors are affected by the likely future threat of IRS audit, ex-ante audit probability should be

[2] Hanlon et al (2012) described C-corporations as firms which meet the following requirements: 1) In company name, it does not have "LP" or "TRUST", 2) its sixth digit of CUSIP is not "Y" or "Z".

used instead of ex-post audit probability. This is because ex-ante audit probability measures perceived threat of a face-to-face IRS audit before audit actually begins and managers act based on this perceived, likely audit probability rather than actual probability that ensues. Thus, in the main regression model, I use ex-post likelihood of an IRS audit (=actual audit probability) as a proxy for ex-ante threat of IRS audit on an assumption that managers form rational expectations about the audit rates based on a variety of media coverage (Hanlon et al, 2012). In an untabulated test, however, I relax this assumption and use the lagged audit probability as a proxy for an ex-ante threat of tax audit. The result shows that my findings are still robust.

One complexity with using IRS audit probability as a proxy for the level of tax enforcement is that the very largest firms in the U.S. classified as so-called CIC (=Coordinated Industry Case) get IRS tax inspection almost every year, and their audit probabilities rise up to near 1. Gleason & Mills (2011) suggests that approximately 1,000 corporations are included in the CIC program each year. To make sure that my findings are still robust even after taking into account any effects that arise from CIC program, I followed both Gleason & Mills (2011) and Hanlon et al (2012) by running the regression after coding 1,000 largest firms in their asset sizes as having IRS audit probabilities of 100 percent. This asset size of $250 million is estimated to be an approximate cut-off amount that distinguishes CIC program participants from non-participants according to Hanlon et al (2012). Hanlon et al (2012) also suggest that firms with asset sizes beyond $250 million account for approximately 94.1% of the CIC program participants.

3.2. Research Methodology

This paper uses restatement data, one of the most widely used external factors, as an earnings quality metric with a two-folded objective. First, restatement is *de facto* evidence of companies admitting that they have misstated financial statements in the past. Unlike accruals-based earnings quality measures which largely rely on artificial models created by researchers, restatement is a clear signal that firms significantly violated accounting rules. Thus, restatements data is not susceptible to the distortions frequently caused by the effects which fundamental firm performance (=business operation) might have on earnings quality. As a result of using

restatements instead of accruals, this study keeps Type I error to the minimum and accurately capture only accounting measurement problems. Besides, restatements data provided by Hennes et al (2008) distinguish irregularities-triggered restatements from errors-triggered restatements. This facilitates a further study on how tax enforcement differently affects two types of restatement – irregularities vs. errors. First, I investigate the empirical association between tax enforcement and earnings quality by running a binary logistic regression of restatements on IRS audit probability. Then, I further examine how tax enforcement differently affects irregularities vs. errors by running another logistic regression, this time with error-sample coded as "0" as if they had not restated leaving only irregularities-sample as restatement firms. The following OLS regression models are used.

3.3. Regression Model

I used the following binary logistic regression model in order to test my first hypothesis that the likelihood of restatements is a negative function of IRS audit probability after controlling for firm characteristics and other factors that might affect the likelihood of restatement.

My basic model for H1 can be presented as:

Restatements = $\beta 0 + \beta 1$.IRS Audit Probability (Size/Time) + $\beta 2\text{-}7$.Control Variables + ε

Above model can be further discomposed based on what effects each control variables are supposed to control for.

Restatements = $\beta 0 + \beta 1$.IRS Audit Probability (Size/Time) + $\beta 2\text{-}6$.Control Variables (Firm Characteristics) + Categorical Variable (Year) + Categorical Variable (Industry) + ε

Control variables for firm characteristics can be further divided into 5 different independent variables.

Restatements = $\beta 0 + \beta 1$.IRS Audit Probability (Size/Time) + $\beta 2$.FirmSize + $\beta 3$.ExternalFinance + $\beta 4$.Growth + $\beta 5$.Profitability + $\beta 6$.Leverage + Categorical Variable (Year) + Categorical Variable (Industry) + ε

The dependent variable "Restatements" is a dichotomous variable, so if an individual firm '*i*' restates its financial statement for year t, its value is equal to '1' and '0' otherwise.

By the same logic as above, I design my second model for H2 as following:

Irregularities = β0 + β1.IRS Audit Probability (Size/Time) + β2.FirmSize + β3.ExternalFinance + β4.Growth + β5.Profitability + β6.Leverage + Categorical Variable (Year) + Categorical Variable (Industry) + ε

The dependent variable "Irregularities" is a dichotomous variable, so if an individual firm '*i*' restates its financial statement for year t due to irregularities, its value is equal to '1' and '0' otherwise.

3.4. Control Variables

The control variables in this model have all been identified in prior restatement literatures as important factors that would affect the incidence of restatements. Five control variables are used in this study in an effort to control firm-specific characteristics (Richardson et al, 2002; Kinney and Mcdaniel, 1989; Defond and Jiambalvo, 1991).

First, firm size measured by the natural log of total assets is controlled since regulatory institutions (e.g. SEC and IRS) put more time and efforts into monitoring and investigating larger firms. Besides, auditing firms also apply accounting rules more strictly to larger firms because any accounting scandals, when detected in larger firms, might have more serious consequences on the public. Based on these ideas, I expect a positive association between firm size and the likelihoods of restatements.

Second, it has been claimed that manipulation of accounting numbers and the ensuing restatements of financial reporting have significant association with external financing of the firms. Dechow et al (1996) suggest that the strong wish to finance outside capital at a low price is the main motive that affects managers' earnings management incentive. They test four potential motivations for earnings management (e.g. external financing, executive compensation, insider trading, and debt-covenant violation) and find that only external financing is significantly

associated with earnings management. Richardson et al (2002) also claims that firms with more frequent and larger external financing tend to use more aggressive accounting. They imply that these firms misreport financial statements to make them look more attractive to investors in an attempt to finance cheaper capital. Their research specifically shows that restatement firms attract additional fund from capital markets around the time they allegedly manipulate earnings. The following two variables are adopted from Richardson et al (2002) to control for external financing of firms. First, Fin-Raised represents the actual amount of finance raised during the restatement year. This proxy captures the extent to which firms need external financing during the restated period. It indicates how actively firms engage in financing activity during the restated period. So, this variable measures financing needs of firms in the current period. On the other hand, Ex-Ante captures how much external financing firms will be in need in the future. The use of Ex-ante comes from an idea that firms sometimes start earnings management process long before they access capital markets. It is an indicator variable, so if the free cash flow of the firm is less than -0.1, it will be assigned "1" and "0" otherwise. Each variable is measured as following.

A. Fin-Raised (Need for external financing for current year): [(Issuance of Long-Term Debt + Issuance of Common and Preferred Stock) / Total Assets].

B. Ex-Ante (Need for external financing in the future): Indicator Variable, If FCF < -0.1, then "1", and "0" otherwise where FCF is [(Net Income – Accruals) / Average Capital Expenditure]

Third, growth factors are controlled because firms with consecutive earnings growth will be under considerable capital market pressures to continue their growth trend. If this continuous growth in EPS does not persist as capital market expects or as analysts forecast, firms would experience significantly negative market response (Skinner and Sloan, 2002). Alternative explanation of why growth factors should be controlled for can be found from the close association between executive compensation and accounting earnings. CEOs/CFOs have high incentives for earnings management because their compensation is largely dependent upon how much accounting profit they increase compared with last year's figure. Collectively, these ideas suggest that firms with longer consecutive growth in EPS would have more incentive to manipulate earnings. The two main control variables for growth factor also come from

Richardson et al (2002). GROWTH1, an indicator variable, identifies whether the firm has reported consecutive EPS growth for the last four quarters. So, GROWTH1 will be coded as either yes (1) if firm reported more than 4 consecutive quarters of increase in EPS or as no (0) otherwise. GROWTH2, as compared with first control variable, measures the intensity of consecutive growth in EPS on a scale of 1 to 8. So, if a firm's consecutive growth in EPS is more than 4 quarters before the first quarter of restated periods, GROWTH1 stays at 1 but GROWHT2 increases to 5, 6, 7, or 8 depending on how long firm continued its growth in EPS. As indicated by Richardson et al (2002), the second measure "has more variation and will generate more powerful test" because it captures even the smallest growth difference among firms. I use only the second measure because both measures capture the same firm characteristics.

Fourth, profitability of a firm is also taken into account. Ferguson et al (2004) suggest that firms with poor accounting performance are more likely to engage in earnings management for window-dressing purposes while firms with already good earnings performance have less incentive for earnings management. Based on this, I use return on assets (ROA) as a measure of accounting performance. I anticipate that the likelihoods of restatements are negatively associated with ROA (= Net Income / Total Assets).

Fifth, leverage is used to control for debt covenants hypothesis. It is measured as short-term plus long-term debt divided by total assets. Numerous prior papers suggest that debt-covenant provides managers with incentive to manage accounting figures when violation of debt covenant is imminent. This incentive is stronger when financial distress cost of debt covenant violation is enormous (Richardson et al., 2002; Dichev and Skinner, 2002). In this study, I use leverage as a proxy for how close firms are to debt-covenant violation. Although some papers suggest that leverage is a noisy proxy for closeness to debt covenant violation (Dichev and Skinner, 2002), it is still one of the most widely used proxy for closeness to debt covenant violation. I expect that leverage is positively associated with the likelihoods of restatements.

Finally, in order to control for other factors than firm characteristics, for example, unobservable year-fixed effects and industry-specific effects that might affect my regression, I include fiscal year and industry (first digit of SIC code) as categorical variables.

4. The Results of Study

4.1. Descriptive Statistics

Panel A through Panel C of Table 2 present restatement firms based on fiscal year, size, and industry. First, the number of restatement is increasing until 2002 when it starts declining. This is not consistent with restatement statistics in Audit Analytics report where it indicates that the number of restatement increases steadily until 2006 and then decreases. This inconsistency can be largely explained by elimination of restatement firms that have no impact on net income (Hennes et al, 2008), given that restatements with no income effects have increased significantly according to Audit Analytics' 2010 report. Small number of restatement samples in 2006 is attributable to the fact that the last disclosure date in Hennes et al (2008) data ends in the first half of 2006. Approximately half of restatement firms have asset size above 250 million, which means large part of restatement firms are classified as CIC firms and coded as having audit probabilities of almost 1. Besides, firms with total asset below 10 million take up only 5.67% of all restatement firms. These statistics indicates that there is a systematic difference in size between restatement firms and non-restatement firms. Comparison between Panel E and Panel F of Table 2 also indicates that the mean of asset size is significantly smaller in non-restatement firms. Regarding industry, manufacturing industry (SIC first digit 3) ranked first taking up 26.65%. Service industry was the second taking up 20.87% (SIC first digit 7) followed by retail industry (SIC first digit 5) which has 18.95% of restatement firms.

Panel D of Table 2 presents Pearson correlation, and it indicates that the likelihood of restatement is highly correlated with audit probabilities, size, and the number of consecutive growth in EPS. It is worth noting that there exists significant correlation between AUDITRATE, my main explanatory variable, and control variables except for leverage. Also, all the correlation between AUDITRATE and control variables is less than 25% except for the AUDITRATE and SIZE. Panel E and Panel F of Table 2 display the means, standard deviation, minimum, and maximum of all the variables for restatement firms and un-restatement firms. These panels just provide descriptive statistics of both samples without controlling firm size, year-fixed effects, and industry-fixed effects, so it might be misleading if any inference is made from these

descriptive statistics without taking into account the effects of those factors. Results of binary logistic regression with above effects adjusted will be presented in the next section.

4.2. Binary Logistic Regression Results

My first regression is to test whether tax enforcement has any effects on overall earnings quality. Panel A. of Table 3 provides the results of binary logistic regression of the likelihoods of restatements on IRS audit probabilities after firm characteristics, year-fixed effects, and industry-fixed effects have been controlled. The results show negative coefficient estimate on my primary explanatory variable, AUDITRATE, suggesting that IRS audit has an effect on earnings quality in a positive manner. These results support the findings of previous studies that IRS audit, at a basic level, functions as corporate governance mechanism, reduces the likelihoods of restatements, and leads to a higher financial reporting quality. It should be noted that firm size significantly affects the likelihoods of restatements while it also influences IRS audit probabilities. As hypothesized, EX-ANTE presents the positive coefficient with p-value of 0.001, and reinforces the findings of Richardson et al (2002) that firms planning to finance a large capital in the future have enormous incentives to manipulate earnings for window-dressing purposes. EPSGROWTH, marginally significant with p-value of 0.075, also indicates that firms with longer consecutive growth in EPS are under great market pressure to continue their growth trend. This forces managers to manage earnings to meet market expectation. This is also consistent with Skinner and Sloan (2002) that investors have overly optimistic expectation for growth firms, so stock price of growth firm will drop more if that expectation is not met. The results of some control variables are statistically insignificant, which is inconsistent with previous research such as Richardson et al (2002). One explanation can be that this study, in order to make data align with tax enforcement purpose, eliminated a number of firms to which IRS enforcements are not properly applicable. Those firms include firms incorporated, or headquartered outside of the U.S., utilities firms, and firms do not meet the requirements of C-corporation. This elimination was done following Hanlon et al (2012) on an assumption that this elimination will show the impact of IRS audit on earnings quality in striking contrast. However, it is not unlikely that this elimination could violate natural sampling process used in Richardson

et al (2002), and slightly misrepresents statistics of restatement sample. ROA, statistically insignificant, showed positive coefficient estimate that is the opposite of previous findings. It is highly likely that unnaturally big standard deviation of ROA in un-restatement firms got in the way of correctly reflecting the difference between two samples. The results of first regression collectively indicate that firms' size, future financing need, and consecutive growth in EPS increases the likelihood of restatement significantly while tax enforcement is keeping it down to some extent. The implications of this result are that tax enforcement, at a basic level, can be very effective in preventing overall accounting misstatements while its main purpose is to just regulate the compliance with tax code. These results are consistent with the findings of Desai et al (2007) and Hanlon et al (2012) since their results also show that tax enforcement works as a corporate governance mechanism and then increases accounting quality. Additionally, these results also corroborate Guedhami and Pittman (2008) and Ghoul et al (2011) that tax enforcement, as a result of its positive regulatory effects on accounting quality, decreases information risk between investors and firms, eventually diminishing firms' overall cost of capital.

In the second part of my regression, I further investigate the difference between the effects of tax enforcement on irregularities-triggered restatements and error-triggered restatements. I examine whether IRS audit is more strongly associated with irregularities-driven misstatements than with error-driven restatements. First, I run a regression of IRREGUL on AUDITRATE with the whole sample after coding IRREGUL as '1' if restatements are caused by irregularities and as '0' otherwise. So, in this regression, error-driven restatement samples and un-restatement samples are coded as 0. Panel B. of Table 3 presents the coefficient estimates and p-value of independent variable and control variables. SIZE, EX-ANTE, and EPSGROWTH still indicate that the likelihoods of restatement are positively associated with firms' size, future financing needs, and consecutive growth in EPS with p-value of 0.000 for all of each variable. However, the p-value of AUDITRATE indicates that IRS audit does not have significant effects on irregularities-driven restatement. This can be interpreted as that IRS tax monitoring is less effective when irregularities are concerned. For robustness check, I run a regression of IRREGUL on AUDITRATE again, this time with only restatement samples, to support the findings of first regression. So, in this regression, error-driven restatements are coded as 0, and

irregularities-driven restatements are coded as 1. Panel C. of Table 3 presents almost the same results as the first regression of irregularities with whole sample. Again, SIZE, EX-ANTE, and EPSGROWTH are positively associated with the likelihood of restatements with p-value of 0.001, 0.006, and 0.000 each while AUDITRATE has no significant association with IRREGUL. The results corroborate Novack and Saunders (1998) that tax enforcement can be very ineffective when irregularities are concerned because IRS has relatively limited resources compared with corporations. These results are also consistent with the fact that the U.S has relatively low book-tax conformity. Under low book-tax conformity, tax inspectors tend to show less interest in accounting issues. One practical explanation about this somewhat unorthodox result is that main stream research is usually done with only observable, standardized data while unobservable, under-the-counter factors plays a significant role when irregularities are concerned. To both policymakers and regulators of GAAP and tax law, these results may present important implications that tax enforcement plays effective role of corporate governance mechanism when slight level of error or GAAP violation is concerned. However, tax enforcement cannot effectively regulate severe cases of irregularities when corporations make strong commitment to fraudulent GAAP-violation. This is not just because IRS has limited resources, but because IRS has different realm and objective of regulation from GAAP.

5. Conclusion

This study examines the association between IRS audit probability and the likelihoods of financial restatement. Firstly, based on previous literatures, I hypothesize that the likelihoods of overall restatement is negatively associated with tax enforcement. This hypothesis implies that tax enforcement, at a basic level, works as a preventive mechanism against accounting misstatements no matter intentional or unintentional. With regard to my first hypothesis, the result shows that IRS audit probabilities have significant effects on the likelihoods of restatements. This is consistent with the findings of previous studies such as Desai et al (2007) and Hanlon et al (2012) that tax enforcement functions as corporate governance mechanism and increases accounting quality as a whole while the primary purpose of tax enforcement is just to inspect firm's compliance with tax code rather than to detect accounting misstatements of a firm.

I also examined whether tax enforcement has sufficiently strong regulatory effects on managers' decision-making process as to prevent extreme cases of accounting misreporting. With regard to my second hypothesis, the regression result does not indicate any significant association between irregularities and IRS audit probabilities. My findings collectively suggests that tax enforcement, effectively functioning as corporate governance in relatively immaterial or nonfraudulent misstatements, does not have powerful regulatory effects when managers are recklessly determined to commit accounting fraud. From accounting policymaker's perspective, this indicates that tax enforcement, in spite of its positive externalities on overall accounting quality, has its fundamental limitations. The reason is not only that its realm and objective of oversight is largely different from that of accounting standards, but also that IRS has limited resources compared with corporations. My findings imply that regulatory effects of tax enforcement on intentional accounting misstatements are not powerful enough to provide a sufficient back-up to accounting regulator's task.

My thesis contributes to a stream of literature about the determinants of earnings quality by showing that the likelihoods of restatements depend on the level of tax enforcement. This study also adds to the collection of literature on the factors affecting corporate governance by suggesting that tax enforcement, at basic level, can play a role of corporate governance mechanism. Finally, this study adds a new finding to the literature on the relationship between tax enforcement and earnings quality. This new finding suggests that tax enforcement affects accounting quality differently depending on the severity of misstatements.

I have to admit that there are some limitations in my research. First of all, collected form GAO database, restatement data by Hennes et al (2008) do not have any information about restated fiscal years. So, elimination of large number of samples that do not match with Audit Analytics was inevitable. However, this elimination can violate the natural sample selection process, which means some part of my conclusion might be attributed to sample selection bias. Secondly, in the course of combining two streams of literature, namely, tax enforcement and restatement, I eliminated some data following Hanlon et al (2012) in order to make my data to be consistent with tax enforcement. Again, this elimination may not be appropriate with research on the restatement. Third, IRS audit probabilities used in this research is just based on firm-size and year while IRS audit probabilities also vary depending on the districts firms are located in. I

could not use IRS audit probabilities based on size, year, and district because IRS only provides it until 2000. Fourth, this study only focuses on the U.S. firms, and the results might have been affected by country-specific factors that are only applicable to the U.S. companies. This makes it difficult to generalize the results in different countries. With regard to fourth limitation, future research is strongly needed. Cross-sectional analysis can be done with multi-national samples with country-specific factors (e.g. legal system, accounting policy, and corporate governance level) included as control variables. Fifth, there can be omitted variable bias as the likelihoods of restatements can be affected by a myriad of factors.

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APPENDIX

Definition of Variables

RESTATE	Dichotomous variable, if a firm restate its financial statement, 1, and 0 otherwise
IRREGUL	Dichotomous variable, if a restatement is caused by irregularities, 1, and 0 otherwise
AUDITRATE	IRS audit probability (size/year) from TRAC. If a firm's total asset is above 250 million and that firm is within 1,000 largest firms each year, then it is coded as 1 assuming this firm is classified as so-called CIC firm.
EX-ANTE	Ex-ante need for financing in the future – indicator variable. If a firm's free cash flow is less than -0.1, 1 and 0 otherwise. Free cash flow is net income (Compustat 172) minus accruals divided by last two years capital expenditures (Compustat 128). Calculation of accruals is done based on Richardson et al (2002). ** Accruals = Change in working capital + Change in non-current operating assets + Change in net financial assets*
FIN-RAISED	Financing raised in the restated period. Sum of finance raised by (a) issuance of long-term debt (Compustat 9) and (b) issuance of common and preferred stock (Compustat 108) divided by total assets (Compustat 6)
EPSGROWTH	Number of consecutive EPS growth in the previous eight quarters prior to the restatement period
ROA	Return on assets. Net income (Compustat 172) divided by total assets (Compustat 6) in the restated period
LEV	Leverage. Sum of short-term debt (Compustat 34) and long-term debt (Compustat 9) divided by total assets (Compustat 6)
SIZE	The natural logarithm of total assets (Compustat 6)

Table 1: Sample Selection Process

Panel A: Financial Statement Data from Compustat

	Number
Total number of firm-year observation between 1998 and 2006	104,581
Less: Firms with no data on total assets	(10,378)
Less: Firms not incorporated in the U.S.	(20,013)
Less: Firms whose headquarter are not located in the U.S.	(756)
Less: Utilities firms	(3,089)
Less: Financial institutions	(14,856)
Less: Firms that are not C-corporation	(1,800)
Less: Data without control variables	(9,098)
Total Sample from Compustat	44,591

Panel B: Restatement Sample from Hennes et al (2008)

	Number
Total number of restatement data between 1997 and 2006 provided by Hennes et al (2008)	2,705
Less: Restatement data between 1997 and 1999	(369)
Less: Data that do not match Audit Analytics	(1,480)
Add: Multiple restatement	771
Less: Data that do not match Compustat	(640)
Total restatement observation	987

Table 2: Descriptive Statistics

Panel A: Restatement firms by fiscal year:

Fiscal Year	Number	Percentage	Fiscal Year	Number	Percentage
1998	47	4.76	2003	142	14.39
1999	107	10.84	2004	119	12.05
2000	142	14.39	2005	66	6.70
2001	181	18.34	2006	4	0.40
2002	179	18.13			

Panel B: Restatement firms by asset size:

Asset Size	Number	Percentage	Asset Size	Number	Percentage
~0.25 million	0	0.00	10~50 million	170	17.22
0.25~1 million	1	0.10	50~100 million	118	11.95
1~5 million	24	2.43	100~250 million	157	15.90
5~10 million	31	3.14	250 million ~	486	49.24

Panel C: Restatement firms by Industry:

SIC first digit	Number	Percentage	SIC first digit	Number	Percentage
0	2	0.20	5	187	18.95
1	57	5.77	6	0	0.00
2	118	11.95	7	206	20.87
3	263	26.65	8	56	5.67
4	91	9.22	9	7	0.70

Panel D: Pearson Correlation

	RESTATE	*EX-ANTE*	*FIN-RAISED*	*ROA*	*SIZE*	*LEV*	*EPSGROWTH*	*AUDITRATE*
RESTATE	1							
EX-ANTE	0.002	1						
	(0.700)							
FIN-RAISED	-0.004	0.039	1					
	(0.397)	(0.000)						
ROA	0.002	-0.012	-0.260	1				
	(0.670)	(0.013)	(0.000)					
SIZE	0.047	-0.283	-0.108	0.055	1			
	(0.000)	(0.000)	(.000)	(0.000)				
LEV	-0.001	0.005	0.008	-0.393	-0.028	1		
	(0.856)	(0.332)	(0.078)	(0.000)	(0.000)			
EPSGROWTH	0.014	-0.035	-0.017	0.008	0.127	-0.007	1	
	(0.003)	(0.000)	(0.000)	(0.108)	(0.000)	(0.157)		
AUDITRATE	0.030	-0.246	-0.036	0.013	0.814	-0.002	0.076	1
	(0.000)	(0.000)	(0.000)	(0.006)	(0.000)	(0.652)	(0.000)	

This table presents the correlation for all variables in the regression. Correlation coefficients are shown in the upper half while the p-value is shown in the lower half in parentheses.

Panel E: Descriptive statistics of Restatement Firms

Variable	MEAN	STD	MIN	MAX	N
Audit Probabilities	0.40	0.37	0.01	1.00	987
Ex-ante Financing Need	0.58	0.49	0.00	1.00	987
Financing raised	0.22	0.44	0.00	7.40	987
EPS growth	0.88	1.19	0.00	8.00	987
Return on Assets	-0.10	0.45	-4.19	2.69	987
Leverage	0.20	0.29	0.00	5.59	987
Assets (in millions)	2.02	16.73	0.98	495	987

Panel F: Descriptive statistics of Non-Restatement Firms

Variable	MEAN	STD	MIN	MAX	N
Audit Probabilities	0.33	0.35	0.00	1.00	43,604
Ex-ante Financing Need	0.57	0.49	0.00	1.00	43,604
Financing raised	0.34	4.31	-0.05	694.00	43,604
EPS growth	0.77	1.16	0.00	8.00	43,604
Return on Assets	-1.90	132.27	-24,357.50	701.8	43,604
Leverage	0.25	8.07	0.00	1673.00	43,604
Assets (in millions)	1.66	12.57	0.00	750.5	43,604

Table 3: Regression Results

Panel A: Logistic Regression of Restatement on IRS Audit Probability

Regression Model:

RESTATE = β0 + β1.AUDITRATE + β2.EX-ANTE + β3. Fin-RAISED + β4.EPSGROWTH + β5.ROA + β6.LEV + β7.SIZE + β8.Industry Dummy + β8.Year Dummy + ε

Independent Variable	Coefficient Estimate	Wald	P-value
AUDITRATE	-0.522	10.377	0.001
EX-ANTE	0.235	11.777	0.001
FIN-RAISED	0.009	0.035	0.851
EPSGROWTH	0.047	3.176	0.075
ROA	0.005	1.898	0.168
LEV	0.011	0.053	0.818
SIZE	0.215	63.072	0.000

Nagelkerke (1991) Psuedo-R^2: 0.063
Hosmer and Lemeshow χ^2: 6.301 (P-value: 0.614)

Panel B: Logistic Regression of Restatement on IRS Audit Probability (With the whole observations after recoding restatement caused by errors as 0)

Regression Model:

IRREGUL = β0 + β1.AUDITRATE + β2.EX-ANTE + β3. Fin-RAISED + β4.EPSGROWTH + β5.ROA + β6.LEV + β7.SIZE + β8.Industry Dummy + β8.Year Dummy + ε

Independent Variable	Coefficient Estimate	Wald	P-value
AUDITRATE	-0.327	1.076	0.300
EX-ANTE	0.528	14.664	0.000
FIN-RAISED	0.039	1.763	0.184
EPSGROWTH	0.185	19.619	0.000
ROA	0.007	1.635	0.201
LEV	0.019	0.042	0.838
SIZE	0.317	33.677	0.000

Nagelkerke (1991) Psuedo-R^2: 0.074
Hosmer and Lemeshow χ^2: 5.525 (P-value: 0.700)

Panel C: Logistic Regression of Irregularities on IRS Audit Probability (With restatement observations only)

Regression Model:

IRREGUL = β0 + β1.AUDITRATE + β2.EX-ANTE + β3. Fin-RAISED + β4.EPSGROWTH + β5.ROA + β6.LEV + β7.SIZE + β8.Industry Dummy + β8.Year Dummy + ε

Independent Variable	Coefficient Estimate	Wald	P-value
AUDITRATE	-0.419	1.013	0.314
EX-ANTE	0.471	7.598	0.006
FIN-RAISED	0.251	1.802	0.179
EPSGROWTH	0.267	17.667	0.000
ROA	-0.098	0.259	0.611
LEV	-0.200	0.365	0.546
SIZE	0.285	11.786	0.001

Nagelkerke (1991) Psuedo-R^2 : 0.182
Hosmer and Lemeshow χ^2: 7.899 (P-value: 0.443)

Graph 1: IRS Audit Probabilities