

Theories and Empirical Proxies for Corporate Tax Avoidance

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This study critically reviews the accounting literature of tax avoidance with an emphasis on theories of corporate tax avoidance as well as empirical proxies for tax avoidance. The agency theory should be one of the relevant analytical bases to improve the understanding of the interactions between managers and shareholders with respect to corporate tax avoidance strategies. A number of empirical proxies for corporate tax avoidance are computed using financial statement variables, but their relevance is limited for firms that engage in conforming tax avoidance that reduce both book and taxable income. Alternatively, tax shelters and uncertain tax benefits can be used as proxies for aggressive tax avoidance.

INTRODUCTION

Tax avoidance represents a firm's deliberate efforts to reduce its tax liabilities through either legal or illegal means or strategies. Since the boundary between legal and illegal acts is not clear, the legality of a firm's tax position is determined by the authoritative bodies after the fact. Thus, there is no clear *ex ante* distinction between legal tax avoidance and illegal tax evasion. Hanlon and Heitzman (2010) depict the types of tax avoidance behavior on the continuum ranging from a common tax saving strategy of municipal bond investments (legal tax avoidance) up to aggressive tax strategies including tax shelters (illegal tax evasion). Using this model, a firm's tax avoidance strategy can be placed anywhere on the continuum depending upon the degree of aggressiveness the firm pursues in the course of reducing its tax liabilities. In this paper, we address the two terms, tax avoidance and tax evasion with primary interests in corporate tax evasion strategies.

A firm's tax strategy and practice are proprietary information as its tax return is not public information. Tax researchers try to develop inference about a firm's tax policy using proxies that are selected from its financial statements. For example, Lisowsky et al. (2013) illustrate five empirical proxies over the continuum from the legal tax avoidance to the illegal tax evasion, such as a Generally Accepted Accounting Principles (GAAP) effective tax rate, a cash effective tax rate, total book-tax differences, permanent book-tax differences, discretionary permanent book-tax differences, and reportable transactions. As the reportable transactions represent business transactions that are crafted solely to evade taxes without business purposes, the Internal Revenue Service (IRS) requires tax payers to

disclose all reportable transactions in a corporation's income tax returns. Accordingly, the reportable transactions are placed at the right end of the continuum as a proxy for the most aggressive tax avoidance strategy while the GAAP effective tax rate at the left end to capture all types of tax avoidance strategies. Further, as more than one party is involved in developing corporate tax strategies, analytical studies in corporate tax research are sparse. Rather the deterrence model of tax evasion by Allingham and Sandmo (1972) for individual taxpayers has served as the theoretical guidelines for corporate tax avoidance studies.

This study reviews theories of tax evasion and empirical proxies for corporate tax avoidance to assist researchers in conducting efficient and effective empirical studies in tax research. We review the deterrence model of Allingham and Sandmo and analytical studies based on the agency theory (Chen and Chu 2005; Crocker and Slemrod 2005; Desai and Dharmapala 2006; Desai et al. 2007). The studies of the agency theory assume that tax evasion is a firm's strategic choice that is defined by an employment contract (actual or implied) between shareholders and tax managers. Chen and Chu (2005) indicate the suboptimal level of employment contracts resulting from a firm's tax avoidance strategy for two reasons. First, managers should be assured with *ex ante* compensations for future efforts to reduce tax liabilities. Thus, the level of compensation is not tied with the level of managers' actual effort. Second, managers' attempt to reduce a firm's tax liabilities would compromise the integrity of its internal control systems as any illicit tax evasion plans should be executed in a clandestine manner. Thus, managers could create on purpose and take advantage of the opaque internal control function for their own personal gains at the expense of shareholders. Their analysis is consistent with Desai and Dharmapala (2006) and Desai et al. (2007).

Desai and Dharmapala (2006) propose a complementary association between rent extraction and tax shelters as managers experience reduced costs for rent extraction under the environment of tax sheltering. Even though shareholders would like to achieve an increase in after-tax firm value through providing incentives to managers, they do not want the managers to use tax shelters, which would serve as tools for rent extraction as well. Nonetheless, the complementary association is not held for well-governed firms as managers can be kept in check. Thus, tax shelters can improve the value of firms with strong corporate governance. Desai et al. (2007) further extend an interaction between corporate taxes and corporate governance among three parties: the tax authorities, insiders, and shareholders. Insiders would perceive an increase in marginal benefits from rent extraction in the high-tax regime because of high before-taxable income. Strengthened tax enforcement, however, would discourage insiders from engaging in rent extraction and thus help a firm's value appreciation. Tax revenues would increase through raising a tax rate under the environment of strong corporate governance.

On the other hand, under the environment of weak or ineffective corporate governance, raised tax rates would backfire. Crocker and Slemrod (2005) also use the agency theory to analyze how penalties for tax evasion should be structured to achieve desirable results. Penalties for tax evasion can be imposed on either tax managers or a corporation but the higher deterrence of tax evasion can be achieved through penalizing tax managers instead of the corporation. The penalty on the corporation reduces the wealth of its shareholders. The penalties on tax managers who attempted to lower tax liabilities through illicit tax evasion methods should be reimbursed and thus create increased uncertainty in determining the optimal level of employment contracts. As high uncertainty in employment contracts would lower incentives for managers to take risky strategies, such as aggressive tax avoidance, penalties on managers should be more effective than on the corporation.

We evaluate the relevance of each empirical proxy for tax avoidance. Most proxies, such as effective rates and book-tax differences are based on the assumption of non-conforming tax avoidance that managers would reduce taxable income only. Thus, these proxies are not effective for corporations that choose conforming tax avoidance that reduce both book and taxable incomes together. Alternatively, researchers identify corporations that were publicly accused of tax sheltering by receiving a Notice of Deficiency. This methodology could avoid the shortcoming of the financial statement proxies above. Nonetheless, corporations have plenty of latitude in implementing tax avoidance strategies in addition to tax shelters. Corporations that exhausted all other options of tax avoidance would rely on tax shelters and

thus the number of these corporations is small. The findings using the corporations that were accused of using tax shelters may not be generalized.

Finally, unrecognized tax benefits are chosen as a proxy for aggressive tax avoidance. Managers should recognize tax benefits, which will be able to sustain during tax audits by the tax authorities. Otherwise, tax benefits claimed should be recorded as unrecognized tax benefits, i.e., contingent liabilities. Thus, the balance of unrecognized tax benefits could represent the level of tax evasion managers have tried. As corporations are required to disclose unrecognized tax benefits on financial statements, unrecognized tax benefits could serve as a plausible proxy for aggressive tax avoidance.

This paper contributes to accounting literature by evaluating analytical studies of corporate taxes and alternative proxies for tax avoidance. The agency theory would be an appropriate theoretical basis to explain how multiple parties within a corporation cooperate to reduce tax liabilities. Further, managers' strategy to reduce tax liabilities could create an opaque internal control system where managers could enjoy reduced costs for managing earnings. Thus, corporate governance could play a key role to keep managers in check and increase firm value when tax avoidance takes place. Multiple proxies for tax avoidance are available. Researchers should choose proxies that are relevant to their research topics. For example, if conforming tax avoidance is expected, then tax shelters and unrecognized tax benefits are appropriate proxies for tax avoidance. If studies examine a broad range of tax avoidance, they could choose proxies from financial statements, such as effective tax rates or differences between book and taxable incomes.

This study is organized as follows: Section II reviews tax avoidance theories. Section III presents empirical proxies for tax avoidance and Section IV provides conclusions.

TAX AVOIDANCE THEORIES

The deterrence model of tax evasion by Allingham and Sandmo (1972) portrays that individual tax payers try to maximize the utility of tax evasion by taking into consideration three main factors: the chance of being caught, the size of penalty, and the degree of their risk aversion. Under this model, individuals are assumed to have neither moral judgment nor civic duties for tax payments. Rather they choose the optimal level of tax evasion to maximize their expected utility. Tax evasion is a risky choice. A high payoff resulting from tax evasion would be offset by penalties that would be imposed by the tax authority if it is caught. Thus, individuals should be in favor of tax evasion as long as potential gains are expected to be greater than potential losses, but their choice of tax evasion would be moderated by the degree of their risk aversion. As indicated in the prospect theory, individuals might value incremental losses more than incremental gains. The asymmetry between utility cost and benefit could restrict individual taxpayers from achieving the optimal level of tax evasion.

The deterrence theory may not be applicable to business tax payers, in particular, large publicly traded firms, which are owned by shareholders, but operated by managers (Slemrod 2004; Slemrod 2007). In the context of tax evasion, risk-averse managers can be assumed to carry out detailed plans on behalf of risk-neutral owners (Chen and Chu 2005). Because of complexity arising from multiple parties involved in corporate tax evasion, the deterrence theory for individual tax payers may not be transferred to corporate tax payers. Several studies provide analytical insights into corporate tax evasion based on the agency theory (Chen and Chu 2005; Crocker and Slemrod 2005; Desai and Dharmapala 2006; Desai et al. 2007).

Chen and Chu (2005) focus on how influential or key shareholders could induce managers to engage in tax evasion, which could be an illegal act. In the optimal contract, compensations for managers are associated with positive business outcomes including reduced tax liabilities. However, since any agreement about tax evasion cannot be enforced in court, managers would like to have *ex ante* compensations for promised future tax evasion. This arrangement leads to an incomplete labor contract as the compensation should be made in advance regardless of outcomes. Furthermore, such agreement for managers to perform an illegal act could compromise the quality of a firm's internal control system as its formal records, financial statements, would not represent true business outcomes. Rather, managers would

create an internal control system that is opaque enough to hide their illicit methods to reduce tax liabilities. Managers could take advantage of such an opaque internal control system for rent extractions. Accordingly, under the deterrence theory, individual tax payers would choose tax evasion as long as the expected marginal utility of tax evasion is greater than the expected marginal utility of penalty if caught. On the other hand, corporate shareholders need to have the expected marginal benefits of tax evasion large enough to offset both the expected marginal utility of penalty and efficiency loss in the internal control system.

Desai and Dharmapala (2006) and Desai et al. (2007) analyze the role of corporate governance in corporate tax. Desai and Dharmapala (2006) propose an association between tax shelters and corporate governance. Managers' attempt to reduce tax liabilities through tax shelters would lead to an opaque internal control system, which does not reveal illicit transactions employed. Thus, a corporation's financial statements do not necessarily represent what it has achieved, but rather what it wants to report. Accordingly, shareholders would not consider tax avoidance as the best option to improve firm value unless strong corporate governance is in place. Desai and Dharmapala (2006) incorporate corporate governance into how managers' discretion over reporting tax and book incomes affects firm value. Managers' discretion, which is kept in check through strong corporate governance, could benefit a corporation.

Desai et al. (2007) extend Desai and Dharmapala (2006) by analyzing the interaction between corporate tax and corporate governance using three stakeholders: tax authorities, insiders, and shareholders. In the higher tax regime, insiders should be more motivated to engage in tax avoidance because a larger amount of before-taxable income can be diverted. The diversion would decline with increased tax enforcement. The effect of tax rate increases on government tax revenues would vary depending upon the strength of corporate governance. In a country with weak corporate governance, an increase in the tax rate might reduce tax revenues because of increased rent extractions.

Crocker and Slemrod (2005) analyze who should be penalized for tax evasion to maximize the corporate tax compliance. As two major parties, shareholders as principals and managers as agents, are involved in tax evasion, the tax authorities could assess penalties on either of them or both. Crocker and Slemrod (2005) demonstrate that penalties assessed on managers are more effective than a corporation to improve its tax compliance. Tax evasion is carried out by managers on behalf of shareholders and thus the former would like to be shielded by the latter from potential adverse legal actions through adjusted employment contracts. Penalties assessed on managers would aggravate conflicts between the two related parties about how to deal with the potential financial and legal damages in employment contracts and result in reduced efficiency in tax evasion compared to those on the corporation.

Overall, the deterrence model of tax evasion provides a basis to understand the corporate tax avoidance strategy. In the presence of multiple parties in the corporate tax reporting process, the principal and agent framework would offer an insight into the incentives of the related parties, such as managers, shareholders, and tax authorities (Hanlon and Heitzman 2010). In addition, the strengths of tax enforcement and corporate governance would have an inverse association with managers' tendency of tax evasion.

EMPIRICAL PROXIES FOR TAX AVOIDANCE

Total Difference Between Book and Taxable Incomes

A total book to tax difference (Total BTD) is computed as a difference between book and taxable incomes (Manzon and Plesko 2001; Wilson 2009; Frank et al. 2009; Chen et al. 2010; Chen et al. 2012; Cheng et al. 2012). Book income is defined as pre-tax book income minus minority interest. Taxable income is estimated by grossing up the total income tax expense minus a change in net operating loss carryforward. The Total BTD reflects both permanent and temporary differences and is used as a proxy for a broad range of tax avoidance, assuming that managers are motivated to reduce taxable income, but increase book income—non-conforming tax avoidance. Accordingly, the Total BTD does not represent tax avoidance only, but rather reflects confounding effects of tax avoidance (tax reporting aggressiveness)

as well as earnings management (financial reporting aggressiveness) as managers are motivated to achieve multiple purposes through managing financial statement items. Alternatively, Chen et al. (2012) compute the consistency of Total BTDs to evaluate information content of earnings based on an assumption that the persistent practice of earnings measurement and tax planning activities would increase the quality of earnings. Nonetheless, the Total BTD is not effective to identify tax avoidance for corporations where managers are willing to reduce both book and taxable incomes to save a tax liability—conforming tax avoidance.

The unavailability of a corporation's taxable income in public records is another impediment. Thus, accounting researchers estimate a corporation's taxable income from its financial statements by grossing up the current tax expense using a statutory tax rate. This calculation is done based on an assumption that a corporation's current tax expense represents its tax liability for a given period. This assumption may not be true for most corporations as noted in Hanlon (2003).

Hanlon (2003) highlights three major sources for the discrepancy between the current tax expense and the amount of tax liability owed to the IRS. The first group includes (1) stock options, (2) the tax cushion or reserve for a corporation's uncertain tax positions, and (3) intra-period tax allocation. These items are not accounted for in the same way when book and taxable incomes are computed. The current tax expense does not represent tax benefits arising from nonqualified stock options for which a corporation does not account. The corporation can reduce its tax liability by the difference between the market value of the stock and the option price when the options are exercised by its employees. However, the corporation adjusts the difference to equity rather than the tax expense. Thus, the tax expense becomes overstated. Furthermore, the total tax expense is affected by certain items including changes in the valuation allowance for an uncertain tax position. The actual payment of the tax liability associated with the valuation allowance may not take place in current or future years. Thus, the tax expense could be overstated. Finally, the intra-period tax allocation represents that the current tax expense is computed based on a corporation's income from its continuing operations except below-the-line items, such as gains or losses from discontinued operations or extra-ordinary items; its tax expense for below-the-line items is computed and disclosed on separate places. On the other hand, a corporation's tax liability is computed based on all income, i.e. below- and above-the-line items. The tax expense on the financial statements is computed based on income from continuing operations, which is different from all income that is used to compute a tax liability.

Another source of error associated with estimating the taxable income arises from two components, the current tax expense and the statutory tax rate in the gross-up process. Corporations are allowed to claim tax credits for certain items, such as research and development costs, foreign earnings, alternative minimum taxes, and others. As they reduce the tax expense by the amount of tax credit, grossing up the current tax expense would understate their taxable income. Moreover, corporations with foreign operations are subject to more than one statutory tax rate for their U.S.-sourced and foreign-sourced incomes. Thus, the U.S. statutory tax rate alone may not properly represent actual tax rates that were employed in computing the tax expense.

Finally, the difference in consolidated rules between financial accounting and tax purposes leads to errors in the estimated taxable income. For the financial reporting purpose, corporations are required to combine financial statements of their subsidiaries with more than 50% ownership. For subsidiaries between 20% and 50% ownership, they use the equity method for the investment. However, for the tax reporting purpose, corporations may elect to combine income from their domestic subsidiaries with at least 80% ownership. Thus, parent corporations' consolidated taxable income does not include (1) net income from their foreign subsidiaries with more than 50% ownership and (2) net income from their domestic subsidiaries with greater than 20% and less than 80% ownership. On the other hand, parent corporations may report a proportion of any dividends received from their subsidiaries in their taxable income. However, the proportion of the dividend being reported is relatively small and varies based on the degree of ownership of the subsidiary.

In the absence of better alternatives to measure taxable income, financial statements should be a convenient source for researchers to estimate taxable income. Nonetheless, the empirical findings using the estimated Total BTD should be interpreted with caution.

Annual Effective Tax Rates

The GAAP effective tax rate (ETR) is computed by dividing total income tax expense by total pretax accounting income to measure an average tax rate per dollar of income earned (Frank et al. 2009; Chen et al. 2010; Dyreng et al. 2010). The GAAP ETR is compared to a corporate statutory rate or the rate of a control group to gauge a degree of tax avoidance by knowing how much a corporation pays taxes for one dollar of income. The GAAP ETR reflects permanent differences between book and taxable incomes with statutory adjustments as the total income tax expense includes both current and deferred tax expenses. Thus, a corporation's tax strategy to defer tax payments does not alter the GAAP ETR. The total income tax expense does not necessarily represent a tax liability. As discussed above, certain accrual adjustments, such as changes in the valuation accounts affect book income, not taxable income. Furthermore, since managers could manage book income for the financial statement purpose, the GAAP ETR is subject to a confounding effect of tax avoidance and earnings management. For example, Frank et al. (2009) report an insignificant association between the GAAP ETR and tax shelters.

The GAAP ETR can be converted into the Current ETR by including the current tax expense only in the numerator (Hanlon and Shevlin 2002; Chen et al. 2012; Cheng et al. 2012). The current ETR can control the effect of the tax deferred strategy. The Current ETR is also subject to several shortcomings as discussed under the GAAP ETR, including certain accrual adjustments, the non-qualified stock options, below-the-line items, etc. Note: the study of earnings management may focus on the deferred tax expense, which is subject to managerial discretion (Phillips et al. 2003).

Alternatively, the Cash ETR can be computed by dividing cash taxes paid by total pre-taxable income; the Cash ETR shows the taxes paid rate per dollar of income earned (Chen et al. 2010; Dyreng et al. 2010; Chen et al. 2012; Cheng et al. 2012). In contrast to the GAAP ETR, the Cash ETR is not affected by accrual adjustments, but the tax deferred strategy. In addition, time periods associated with taxes paid (the numerator) and pretax book income (the denominator) may not be consistent. The taxes paid could arise from income earned in current as well as past years while book income should be earned in the current year. The Cash ETR is subject to a conflict of tax avoidance and earnings management.

ETR methods can measure a degree of non-conforming tax avoidance assuming that managers are motivated to reduce a tax liability while increasing book income. Thus, the ETR should be lower for corporations with tax avoidance than for the controlling sample. Nevertheless, if managers are not much concerned about the market reactions to book income, they would not mind reducing both book and taxable incomes. Then, the relevance of the ETR methods would decline for these corporations with conforming tax avoidance strategies. Furthermore, the lowered ETR might result from inflated book income through earnings management rather than suppressed taxable income. Thus, the study of tax avoidance may employ the ETR methods in conjunction with proxies for earnings management.

Long-Run Cash ETR

The Cash ETR is extended by widening the window of measurement (Dyreng et al. 2008; Blaylock et al. 2012; Gupta et al. 2011). One primary shortcoming of the Cash ETR arises from timing differences between the years in which income was earned and related taxes were paid. For example, in the case of the IRS audit, the corporation would pay taxes on income incurred in several years in the past. The Long-run Cash ETR is designed to mitigate this shortcoming by combining cash tax paid over a number of years, e.g., up to ten years. Thus, the Long-run Cash ETR is computed by dividing a sum of cash taxes paid over years by a sum of pre-taxable incomes during the same period. Furthermore, an aggregation of cash taxes paid over years could extenuate the effect of accrual management on pre-taxable income.

As noted by Hanlon and Heitzman (2010), all the ETR methods are subject to several shortcomings as a proxy for tax avoidance. First, ETR analysis is conducted on the assumption that taxable income only is lowered, i.e., non-conforming tax evasion. Thus, the ETR methods are not effective for corporations that

employ conforming tax evasion. Second, ETRs should be affected by implicit taxes as investments in non-taxable securities yield lower returns than do their fully-taxable counterparts of identical risk. Finally, they cannot distinguish between several confounding effects, including a corporation's legitimate tax-favored strategy, tax evasion, and earnings management.

Dyreng et al. (2008) suggest the use of cash flows from operations (CFO) as the ETR denominator to alleviate the confounding effect resulting from accrual management. CFO could control over accrual earnings management, but would not be helpful for real earnings management in which cash flows are affected.

Discretionary Total and Permanent BTDs

The Total BTD reflects the confounding effects of tax avoidance and earnings management activities. The Discretionary Total BTD is computed in the similar way as discretionary accruals are computed in the Jones model (Desai and Dharmapala 2006; Frank et al. 2009; Chen et al. 2010; Cheng et al. 2012). The Jones model assumes a corporation's accruals as a function of assets, revenues, and the gross amount of plant, property, and equipment (PP&E) (Jones 1991). The cross-sectional Jones model estimates the discretionary portion of accruals by regressing accruals on assets, revenues, and PP&E within each industry and isolating a residual as discretionary accruals. The residual represents a portion of accruals, which cannot be explained by these industry-level variables. Desai and Dharmapala (2006) regress the Total BTD on total accruals within each industry and isolating a residual as a proxy for tax avoidance. Total accruals are used as a proxy for earnings management. The residual as a portion of BTD, which is not explained by earnings management, is used as a proxy for tax avoidance. Note: see the detailed discussion of computing the Discretionary Total BTD in Desai and Dharmapala (2006).

Frank et al. (2009) extend the method of Desai and Dharmapala (2006) by focusing on an ETR differential. They gross up total tax expenses by a statutory tax rate and subtract the result from book income to compute the Permanent BTD. This same amount can be computed by an ETR differential (a statutory rate less a GAAP ETR) times pre-tax net income. They regress the Permanent BTD on intangible assets, income or loss under the equity method, income or loss for minority interest, the current state income tax expense, a change in net operating loss carryforward, and a lagged Permanent BTD and then isolate a residual as a Discretionary Permanent BTD. Both the Discretionary Total BTD of Desai and Dharmapala (2006) and the Discretionary Permanent BTD of Frank et al. (2009) are theoretically sound to estimate managerial discretion over book and taxable income measurements after controlling over the known determinants of the both incomes. Nonetheless, as experienced in the Jones model, these models would be subject to model misspecification problems. For example, Frank et al. (2009) fail to prove an empirical association between the Discretionary Total BTD and tax shelters. It is not clear whether such findings result from the inadequacy of the Discretionary Total BTD as a proxy for tax shelters or model misspecification errors associated with the Discretionary Total BTD.

Like the ETR methods, both models rely on a difference between book and taxable incomes and thus would not be useful for conforming tax avoidance. In particular, if the sample includes corporations that adopt a varying degree of conforming and non-conforming tax strategies, these models may not be able properly to capture their tax avoidance practice.

Furthermore, both models assume the Permanent BTD as an indication of aggressive tax avoidance as managers are known to prefer the Permanent BTD to the Temporary BTD. The Temporary BTD reflects managerial discretion over accruals and thus offers inference about earnings management. Nonetheless, a corporation's tax avoidance strategy does not necessarily affect the Permanent BTD only. Rather, tax avoidance is reflected in other proxies as well.

Temporary BTD

The Temporary BTD is equal to the deferred tax expense grossed-up by an applicable statutory rate (Blaylock et al. 2012). The total tax expense is comprised of two main components, current and deferred tax expenses. The deferred tax expense results from managerial discretion over accruals and thus affects the Temporary BTD (Phillips et al. 2003). The Temporary BTD is adopted as a proxy to assess the degree

of managerial discretion over accruals. Nonetheless, as discussed above, the Temporary BTB is mostly associated with earnings management. Rather, managers would manage available resources to accomplish their goals, which may lead to Permanent or Temporary BTBs.

Tax Shelter

A tax shelter is any method taxpayers create to reduce their taxable income without valid business purposes. Thus, it is regarded as the most aggressive strategy of tax avoidance and draws close scrutiny from the IRS for its legitimacy (TREASURY 1999). Graham and Tucker (2006) illustrate mechanics of tax shelters corporations that adopted to reduce taxable income, such as (1) lease-in lease out, (2) accelerated transfer of contested liability, (3) corporate-owned life insurance, (4) transfer pricing, (5) cross-border dividend capture, (6) contingent-payment installment sales, (7) liquidation and re-contribution, and (8) offshore intellectual property havens. A corporation takes advantage of time-value money through strategies of lease-in lease-out and accelerated transfer of contest liability with early recognition of tax deductible expenses. The corporation-owned life insurance strategy creates tax deductible interest expenses even though the payout from the insurance policy is tax exempt. The remaining five strategies are developed and implemented through foreign subsidiaries. For example, a corporation creates a paper company in a tax heaven country, like Cayman Islands where there is no corporate income tax. Products that are manufactured in a third country are sold to the subsidiary in Cayman Islands, which resell them to the parent corporation in the U.S. by charging their fair market value. The subsidiary in Cayman Islands pays no tax. Neither does the parent corporation in the U.S. pay taxes on the products that are sold to clients without a markup.

The government adopts five judicial doctrines to repress a corporation's tax shelter activities, including (1) the substance over form doctrine, (2) the sham transaction doctrine, (3) the business purpose doctrine, (4) the economic substance doctrine, and (5) the step transaction doctrine. The primary spirit underlying these doctrines is based on whether given transactions are triggered by business needs or purely tax reduction. For example, as shown in the example above, the corporation creates multiple transactions to reduce a tax liability even though a single transaction would suffice. Based on the step transaction doctrine, the tax authorities may disallow the unnecessary transactions with the subsidiary. (See Graham and Tucker 2006 for more detail about the doctrines).

Tax shelter activities cannot be observed by outsiders. Thus, researchers have adopted proxies for these activities. For example, Desai (2003) and Schallheim and Wells (2004) use BTBs and the difference between taxes paid and financial statement tax expense to evaluate tax shelter activities. Several studies gather sample corporations that are formally accused of tax sheltering activities (Graham and Tucker 2006; Wilson 2009; Lisowsky 2010).

Graham and Tucker (2006) search two sources to identify sheltering corporations: (1) the dockets of Tax Courts and other courts for litigation in which public corporations were accused of a tax shelter and (2) the popular press that reported public corporations with a Notice of Deficiency from the IRS regarding tax shelters. They illustrate search key words, such as tax shelter, transfer pricing, sham transaction doctrine, Notice of Deficiency, etc. Finally, they confirm tax shelter accusations using the SEC filings of each corporation identified. They produce 43 public corporations with 44 total tax sheltering cases from 1975 to 2000. Graham and Tucker (2006) report that tax sheltering corporations rely on less debt than do control corporations as the former is inclined to substitute debt financing with tax shelters.

Wilson (2009) expanded the tax shelter dataset of Graham and Tucker (2006) by adding observations from the Factiva Database. Additional 18 sheltering cases were selected from the database between January 1, 1990 and May 31, 2006, using key words, such as tax shelter, corporat.*, etc. Wilson has 61 tax sheltering cases for 59 public firms in the combined sample. Wilson reports that tax sheltering firms have a positive association with firm size, BTBs, foreign-source income, and the aggressiveness of financial reporting practice. Also, tax sheltering corporations show a positive association between the strength of corporate governance and their stock performance. Thus, well-governed corporations could generate wealth through tax shelters, consistent with Desai and Dharmapala (2006). Also, tax sheltering corporations may use non-conforming methods of tax avoidance.

Frank et al. (2009) evaluate alternative measures of tax avoidance, such as the Discretionary Permanent BTM, the Discretionary Total BTM, the BTM, and the GAAP ETR, using the tax shelter sample of Graham and Tucker (2006). They use multi-variable regression models based on the sample that includes both tax shelter corporations and control corporations. There is a significant positive association of tax sheltering activities with Discretionary Permanent BTMs and Total BTMs. However, tax sheltering activities are not significantly associated with BTMs and GAAP ETRs. Thus, the ability of BTMs as a proxy for tax avoidance is inconsistent between Wilson (2009) and Frank et al. (2009).

Hanlon and Slemrod (2009) identify 108 tax sheltering cases for 97 firms from the Factiva Database during the period from January 1, 1990 to September 1, 2004. They use the event study methodology to examine the market response to the press news of tax shelters. Investors show negative responses to tax shelters with a variation across the industry, for example, more negative reactions to corporations in the retail sector while less negative reactions to corporations with a high Cash ETR. These results can be interpreted that investors might be concerned about the potential relation from consumers for the image of unscrupulous corporate citizenship of corporations with tax shelters. However, investors are less concerned about the aggressive tax strategy for corporations with a high Cash ETR than those with a low Cash ETR. The moderating effect of corporate governance on the reaction of investors to the press news of tax shelters is mixed as its effect varies depending upon proxies chosen. This observation is in contrast to what Wilson (2009) reports. The inconsistent results might arise from the difference in the methodologies of the both studies. Wilson (2009) employ monthly stock returns using the Fama-French regressions while Hanlon and Slemrod (2009) adopt an event study based on three day window around the press news about tax shelters.

Lisowsky (2010) constructed a large tax shelter dataset using three major databases, Compustat, IRS corporate tax return data, and the IRS Office of Tax Shelter Analysis Application (OTSA) between 2000 and 2004. The OTSA is a database system that stores data on the Reportable Transaction Disclosure Statement form (Form 8886), which tax payers submit. Regulations under Internal Revenue Code § 1.6011-4 defines five broad types of Reportable Transactions including the Listed Transactions on Form 8886. Listed Transactions are a special type of Reportable Transactions of which categories in detail are identified and published in Revenue Rulings, Treasury Regulations, and Notices that were issued by the Treasury Department and IRS. Lisowsky (2010) reports 19 categories of Listed Transactions. Note: 34 categories of recognized abusive and listed transactions have been posted as of February 2015 at the website (<http://www.irs.gov/Businesses/Corporations/Listed-Transactions>). Other Reportable Transactions are broadly categorized in four types: (1) Confidential Transactions, (2) Transactions with Contractual Protection, (3) Loss Transactions, and (4) Transactions of Interest. Lisowsky (2010) reports 267 Reportable Transactions in 45 categories.

Lisowsky (2010) shows that tax shelter usage has a positive relationship with both Total BTMs and the contingent tax liability, while a negative association with either Discretionary Permanent BTMs or Long-run ETRs. In addition, the tax shelter usage has a positive association with corporate subsidiaries in tax heavens, income from foreign countries, profitability, size, inconsistency between book and taxable income, litigation losses, and the use of tax shelter promoters. On the other hand, the tax shelter usage has a negative association with leverage. Lisowsky (2010) extends the two prior studies (Graham and Tucker 2006 and Wilson 2009) by broadening the sample of tax shelters by including corporations, which are never formally charged by the tax authorities.

The methodology using sample corporations that are involved in tax sheltering activities can avoid the inference of tax sheltering activities based on proxies using financial statement variables. As financial statement variables typically represent multiple dimensions of corporate characteristics, empirical results using these proxies should be interpreted with caution. Thus, identifying corporations that are known to have used tax shelters should be an alternative choice for tax shelter research. This methodology, however, is subject to other criticisms. These sample corporations may not represent the population of corporations that have engaged in tax evasion. Firms would access many options to reduce tax liabilities. Firms that have exhausted all other options of tax avoidance would rely on tax shelters and thus represent an extreme example of tax avoidance. Most corporations may have successfully reduced tax liabilities

using illicit methods, but have been lucky enough to escape legal sanctions. Thus, empirical findings based on corporations that adopted tax shelters and then were caught by the tax authorities may not be generalized. Furthermore, there are inconsistent findings about an association of tax sheltering activities with financial statement proxies for tax avoidance. For example, Wilson (2009) and Lisowsky (2010) reports a positive association of tax shelters with BTDs while Frank et al. (2009) report no association of tax shelters with BTDs. Since the BTD is one of the financial statement proxies for tax avoidance that have been widely used, the relevance of BTDs to tax shelters deserves further investigation.

Unrecognized Tax Benefit

Firms are required to record a contingent liability if two conditions are met: (1) it is probable (greater than 50% likely) for them to have a liability and (2) the amount of the liability can be reasonably estimated (Statement of Financial Accounting Standards No. 5 “*Accounting for Contingencies*”) (FAS No. 5). The income tax expense includes both current and future tax payments. The latter represents taxes that would be assessed during audits of the current year’s tax returns in the future if a corporation’s tax positions are overturned by the tax authorities (Blouin and Tuna 2007). Thus, future tax payments would arise from uncertain tax positions that taxpayers have taken.

Taxpayers show how tax liabilities are determined in their tax returns. These self-assessments in determining a tax liability is known as tax positions, which lead to the determination of the financial statement account balances, including income taxes payable, deferred income taxes, etc. Thus, the term of tax position encompasses, but is not limited to:

- a. A decision not to file a tax return,
- b. An allocation or a shift of income between jurisdictions,
- c. The characterization of income or a decision to exclude reporting taxable income in a tax return,
- d. A decision to classify a transaction, entity, or other position in a tax return as tax exempt, or
- e. An entity’s status, including its status as a pass-through entity or a tax exempt not-for-profit entity. (FASB 2009, p. 5)

When taxpayers apply dubious tax law to complicate business transactions to reduce tax liabilities, their tax positions might be challenged and rescinded by the tax authorities during tax audits in the future. In anticipation of future tax payments resulting from the uncertain tax position, taxpayers are required to accrue a potential tax liability or unrecognized tax benefit, which is known as tax contingencies or tax cushion in the past. Managers had discretion over measuring contingent liabilities and thus rarely disclosed tax cushions in detail. For example, Gleason and Mills (2002) have access to the IRS’s Coordinated Industry Cases (a confidential database that includes tax information about large corporations that are frequently audited by the tax authorities). They find that only 27% of the corporations with potential tax deficiency disclosed a tax contingency; only 30% of these corporations disclosed the level of information specified by GAAP. In other words, most firms did not disclose tax contingencies even though potential contingent tax liabilities would have a material impact on financial statements. Thus, users of financial statements had very little knowledge about firms’ tax cushions. In the absence of relevant disclosures about tax contingencies, accounting researchers estimated these potential liabilities by taking a difference between domestic current tax expense and the total tax liability (Graham et al. 2012).

The Public Company Accounting Oversight Board (PCAOB) raised a concern about the practice of income taxes, which has a material impact on a corporation’s financial position. In 2006, the Financial Accounting Standards Board (FASB) issued Interpretation No. 48 of Financial Accounting Standard 109, “Accounting for Uncertainty in Income Taxes” (codified at Accounting Standards Codification 740-10) (FASB 2009). This interpretation, known as “FIN 48”, is to ensure consistent accounting for uncertain tax positions across corporations. In FIN 48, the term “unrecognized tax benefit” is used to replace old terms, such as “tax cushion” or “tax contingency”.

Under FIN 48, a corporation's tax position is evaluated by following two steps: recognition threshold and measurement attribute. First, the corporation should recognize financial statement benefits (i.e., reducing tax liabilities) arising from a transaction only if its tax position will be sustained more-likely-than-not (more than 50%) by the tax authority during tax audits. The threshold is based on assumptions that the tax authorities have access to all relevant information about a corporation's tax positions and thus would conduct tax audits for any unsustainable tax positions. Second, a recognized amount should be measured as the largest amount of financial statement benefits, which is greater than 50% likely to be settled with the tax authorities. The amount of unrecognized tax benefit (UTB) becomes a tax contingent liability (Frischmann et al. 2008).

Suppose that Firm U48 claims research credit (\$500,000) for five projects at \$100,000 each. For the first step of recognition threshold, each of the five projects should be evaluated based on the more-likely-than-not threshold. Suppose that four projects meet the threshold. The potential amount for recognition is \$400,000 (4*\$100,000). For the second step of measurement, the largest settlement more than 50% likely is \$100,000 for project 1 and \$60,000 for three other projects. A recognized amount is measured as \$280,000 (\$100,000 + \$60,000 * 3). Finally, the UTB of \$220,000 is recorded in a journal entry as follows:

Dr.	Taxes receivable	\$500,000	
	Cr.	Income tax expense	\$280,000
		Income tax payable	\$220,000

Firm U48 saves \$500,000 in tax payment by claiming the research credit. However, its income tax expense is reduced by only \$280,000 as the remaining balance (\$220,000) may not be sustained during the future tax audit. Prior to FIN 48, managers have great discretion over measuring the UTB (e.g., the \$220,000), which is rarely disclosed. The higher balance of UTBs is, the greater is a firm's uncertain tax position.

If the research credit is later settled at \$220,000 as estimated during a tax audit that takes place in the future, the journal entry should be recorded as follows:

Dr.	Income tax payable	\$220,000	
	Cr.	Cash	\$220,000

In addition, FIN 48 requires firms to disclose (1) a tabular reconciliation of the UTBs, (2) expected future changes in UTBs, (3) the amount of UTBs that would affect net income if recognized, (4) the amount of interest and penalties recorded in financial statements, and others.

Lisowsky et al (2013) report a positive association between tax shelters and UTBs under FIN 48. They create sample data from three sources: (1) UTB data from the IRS Large Business & International Division (LB&I), (2) financial data from Compustat and (3) reportable transactions from OTSA during the period of 2006 through 2009. Note: Firms are required to report under FIN 48 in fiscal years beginning after December 15, 2006. UTB data are also available from Compustat but Lisowsky et al. (2013) discuss a couple of shortcomings about UTB data on Compustat: (1) a lot of missing data and (2) errors in dollar units, e.g., billions in place of millions.

Lisowsky et al. (2013) use a logistic regression model of a dummy variable for reportable transactions on the UTB ending balance, proxies for tax avoidance, and other controlling variables. They employ five proxies for tax avoidance: the GAAP ETR, the Cash ETR, the BTB, the Permanent BTB, and the Discretionary Permanent BTB. The dummy variable has a significant positive association with the UTB ending balance, i.e., firms with reportable transactions show a higher ending balance of UTB than do their counterparts without reportable transactions. However, none of the proxies for tax avoidance has a significant association with the dummy variable. As a result, they conclude the UTB that is reported under FIN 48 could serve as a summary measure for tax shelters.

Song and Tucker (2008) report a positive association of UTBs with firm value. As firms with large UTBs demonstrate characteristics that are similar to those of firms with tax shelters, UTBs would likely arise from tax sheltering activities. Furthermore, Song and Tucker (2008) report a substitution of tax shelters for debt by confirming the findings of Graham and Tucker (2006). Nonetheless, Song and Tucker

(2008) indicate that investors do not distinguish between UTBs and other retained earnings as both figures are positively correlated with firm value.

Overall, researchers in tax accounting could use UTBs as a proxy for tax shelters as these variables are publicly available under FIN 48. UTBs can avoid the major criticism on most proxies, such as ETRs and BTDs, which are not appropriate for conforming tax avoidance. Since UTBs represent the amount of future liabilities resulting from uncertain tax positions that were taken by managers for transactions under concern, they would be applicable to both conforming and non-conforming tax avoidance strategies.

CONCLUSIONS

Outsiders can hardly observe how managers reduce tax liabilities as public corporations are not required to release their tax returns to the public. Book income and taxable income are computed by following different sets of rules. As managers have less discretion in measuring taxable income than accounting income, the former can be used as a benchmark for the latter. In general, managers may be motivated to understate or minimize taxable income, but maximize or overstate book income. The understatement of taxable income leads to an increase in after-taxable income, which is tied to firm value. Shareholders design compensation methods to encourage managers to work for their benefits, i.e., an increase in firm value. A reduction in tax liabilities could be accomplished by managers who expect rewards corresponding to their efforts, but their efforts to take aggressive tax avoidance would compromise the integrity of an internal control system. The opaque internal control system offers an opportunity to managers to pursue personal gains. Thus, shareholders need to ensure that gains from the tax avoidance strategies should be large enough to offset losses arising from the eroded internal control system. Furthermore, shareholders' confidence in managers increases in proportion to the strength of corporate governance. Under the environment of strong corporate governance, tax avoidance could be perceived as a means to improve firm value. Accordingly, future research needs to focus on the principal and agent relationship to have a better understanding of how tax avoidance is arranged within a firm. Also, future studies could examine the role of the tax authorities in protecting the interests of non-controlling shareholders. Firms with aggressive tax avoidance are inclined to have aggressive earnings management. The efforts of the tax authorities to close the loopholes of tax avoidance by strengthening regulations and increasing enforcement would improve the quality of financial statement items as well.

Tax avoidance has been evaluated by comparing two variables, book and taxable income. The comparison is done in either ratios, i.e., efficient tax rates or differences, i.e., book-to-tax differences. This research methodology should be a convenient tool for researchers because these variables are available from financial statements. Nonetheless, there are several shortcomings of this methodology. First, taxable income should be estimated using variables on financial statements and is subject to estimation errors. Second, the comparison is conducted based on an assumption of non-conforming tax avoidance that managers are motivated to lower taxable income, but inflate book income. This approach, however, would not be valid for firms that lower both book and taxable incomes together. Finally, the comparison methodology is subject to confounding effects as managers could engage in both tax avoidance and earnings management. Therefore, empirical findings of tax avoidance should be interpreted with caution.

Identifying firms that were accused of tax sheltering activities should be an alternative method to circumvent these criticisms arising from the comparison methodology using financial statement variables. No inference about tax avoidance of firms under examination is needed. Nonetheless, this methodology is subject to other criticisms, such as the limited generalizability of findings. Tax avoidance can take place in many different forms from legitimate tax avoidance, such as the purchase of tax-exempt municipal bonds to illegal tax evasion. These firms that were accused of tax sheltering activities represent an extreme case of tax evasion. Also, the sample size is typically small. As a result, the empirical results from this methodology may not be applied to corporations that engage in a variety of tax avoidance strategies.

Uncertain tax benefits that are disclosed under FIN 48 could serve as a proxy for tax avoidance by mitigating the criticisms that are associated with other proxies discussed. Uncertain tax benefits incur when taxpayers expected their tax positions would not be sustainable during tax audits in the future. In other words, tax benefits were claimed in the absence of solid grounds and would be possibly rescinded by the tax authorities in the future. Thus, the balance of uncertain tax benefits could represent the degree of aggressiveness in measuring taxable income. Neither is the assumption of non-conforming tax avoidance nor the estimation of taxable income is needed. Moreover, as corporations are required to disclose uncertain tax benefits, a sample size could be large enough to generalize empirical findings obtained. Future studies could further evaluate the validity of inference proxies for tax avoidance using the sample of corporations with the balance of uncertain tax benefits.

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