

# Book-Tax Income Differences and Major Determining Factors

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## Abstract

Book-tax income differences frequently serve as a key proxy in studies investigating earnings management and tax sheltering activities. This is reasonable because managers can manage either book income or tax income to accomplish their personal agendas. However, because a substantial portion of the book-tax differences are affected by unidentified factors, researchers should use them with caution and include additional relevant variables that could augment their findings.

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## 1. Introduction

Book-tax income differences (BTDs) have been used as a proxy for both “earnings management” and “tax sheltering behavior.” Financial accounting (“book”) and tax income are computed using different systems of measurement. Book income is determined using standardized accounting rules, such as generally accepted accounting principles (GAAP). The intended goal of book accounting rules is to produce an objective, accurate description of the company’s financial operations and results. In contrast, federal income tax accounting rules are established by a combination of the Internal Revenue Code (IRC), related Treasury Department regulations (Reg.), and court decisions. Tax accounting reflects the multiple goals of the federal tax laws, such as producing federal tax revenue, and encouraging politically selected economic and social goals and activities.

Because managerial discretion over book income measurement is greater than it is with respect to tax income measurement, a number of studies employ BTDs as a proxy for earnings management (Lev and Nissim 2004; Hanlon 2005; Phillips et al. 2003). In addition, a firm’s tax department operates as a profit center committed to reducing tax costs (McGill and Outslay 2004). Therefore, a number of studies employ BTDs as a proxy for tax sheltering activities (Heltzer 2009; Wilson 2009; Frank et al. 2009; Lisowsky 2010; Seidman 2010).

This study reviews the income measurement processes under the two different regimes, GAAP and the IRC and major factors that contribute to BTDs. This study then critically examines empirical studies that attempt to characterize BTDs as a proxy for either earnings management or tax sheltering activities. There is no consensus about how BTDs should be characterized because researchers cannot still identify factors that are attributed to a substantial portion of BTDs (Desai 2003). It appears that BTDs can serve as a proxy for either earnings management or tax sheltering activities depending upon research issues under investigation. This study contributes to accounting literature by critically evaluating prior studies in BTDs, which are one of the key variables in tax research in accounting.

This paper is organized as follows: Section II discusses the two income measurement systems, i.e. tax and GAAP. Section III covers items that are attributed to BTDs, Section IV discusses empirical studies that evaluate factors that contribute to BTDs, and Section V provides conclusions.

## 2. Two Income Measurement Systems

The two systems do not use the term “income” in the same way. Under GAAP, “income” is a net figure, roughly equaling revenues less expenses. In this article, “book income” will be used with that meaning. In contrast, in IRC terms, “income” essentially means all positive economic gain, realized or not. IRC “gross income” is essentially equal to all realized income (IRC § 61), which is a subset of “income”. In the taxation of corporations, the item/term parallel to “book income” is “taxable income” (2014 Form 1120, line 30). For consistency, this article will use “book

income” for a company’s income as determined/reported for financial purposes, and “tax income” for a company’s taxable income reported for U.S. federal income tax purposes.

### *2.1 Book income*

Book income is intended to assist investors and others in making decisions about a firm in the capital market. The SEC requires publicly traded firms to file audited financial statements, prepared in conformity with GAAP. Creditors, investors, and government agencies (other than tax departments) expect or require companies to provide financial statements and information prepared in the same manner.

The Financial Accounting Standards Board (FASB) adopted the conceptual framework providing the theoretical basis for creating, maintaining, and updating accounting standards in GAAP. Statement of Financial Accounting Concepts, Statement No. 1 (1978) outlined the objectives of financial reporting. Statement No. 2 (1980) defined qualitative characteristics underlying useful accounting information. Both Statements were replaced by Statement No. 8 (2010), which will be referred to in this article.

Statement No. 8 establishes that the objective of financial reporting “is to provide financial information about the reporting entity that is useful to existing and potential investors, lenders, and other creditors in making decisions about providing resources to the entity” (OB2). This generates accounting information that “is useful in making economic decisions as the fundamental objective of financial reporting. Those frameworks also state that financial information that is useful in making economic decisions would also be helpful in assessing how management has fulfilled its stewardship responsibility” (BC1.24).

Statement No. 8 further describes qualitative characteristics of useful financial information as follows:

If financial information is to be useful, it must be relevant and faithfully represent what it purports to represent. The usefulness of financial information is enhanced if it is comparable, verifiable, timely, and understandable. (QC4)

Financial reports represent economic phenomena in words and numbers. To be useful, financial information not only must represent relevant phenomena, but it also must faithfully represent the phenomena that it purports to represent. To be a perfectly faithful representation, a depiction would have three characteristics. It would be complete, neutral, and free from error. (QC12)

Statement No. 2 (1980) included “relevance” and “reliability” as key qualitative characteristics, but “reliability” was replaced by “faithful representation” in Statement No. 8 (2010). That change highlights the importance of accounting numbers as a proxy for a firm’s underlying economic value. While each firm operates in a unique environment, all are required to measure book income using the same principles, i.e., GAAP. However, if GAAP allowed only one method of income measurement in every detail, i.e., rigid uniformity, the results may not faithfully represent underlying value of each firm. For example, Manzon and Plesko (2002) discuss differences in accounting measurement under SFAS 86 “Accounting for the Costs of Computer Software to Be Sold, Leased, or Otherwise Marketed”. To accommodate their firm’s unique environment, managers are allowed to choose an alternative measurement for some accounting items, such as the investment tax credit, depreciation methods, and inventory methods (Wolk et al. 2013). When managers apply accounting methods appropriate to their firm’s environment and operations, the resulting book income will more likely represent the individual firm’s underlying economic value. Thus, the flexibility in GAAP, properly applied, can improve the quality of reported book income (Palepu et al. 2012).

### *2.2 Tax income*

The fundamental objective of tax law is to fix and collect government revenues (Manzon and Plesko 2002), theoretically, at least, producing sufficient government operational funds in an efficient and equitable manner. However, tax law is also used for economic, social or political purposes, such as implementing general economic policies and encouraging/discouraging selected economic activities. Since revenue needs and political agenda constantly change, tax law is periodically amended to react to or initiate such changes (Plesko 2002). For example, IRC §179 and bonus first year depreciation (IRC §168(k)) encourage firms to accelerate capital investment by allowing current deduction of significant portions of investments in long term assets in the first year, rather than over the multi-year period allowed by standard tax and book depreciation methods. This effectively accelerates years’ tax benefits (deductions) to the current year. The accelerated depreciation, at least in theory, motivates firms to make capital investment which lead to new-job creation and more favorable general economic results. The accelerated tax deduction also reduces the investors’ taxable income, but not book income. Obviously, income tax rules are not principally designed to produce an accurate picture of a firm’s financial performance or status.

GAAP rules emphasize producing an accurate picture of a firm's current financial status and performance by mandating an accrual accounting system based on performance, not cash accumulation. However, tax law – concerned about revenue collection – modifies accrual rules so that cash events may require that a taxpayer realize income earlier than allowed by GAAP accrual rules. The IRC accounting rules (e.g., IRC §§ 451 to 460) provide special rules for particular situations, fixing the period for including income or expenses for tax purposes. Thus, managers have less discretion in computing taxable income than in computing book income.

### **3. Items Attributed to Book-Tax Income Differences**

Based on book-tax reconciliation on Form 1120, Schedule M-1, Mills and Plesko (2003) present two broad categories of causes for BTDs: reporting entity and income measurement. The former results from the differing GAAP and tax-law rules governing the consolidation of multiple business units, while the latter focuses on the differing rules on measuring income, which produce either permanent or temporary differences.

#### *3.1 Reporting entity*

A typical multinational firm owns multiple subsidiaries in the U.S. or foreign countries and produces its consolidated financial statements for either financial reporting purpose or tax reporting purpose. GAAP and the tax law differ about how the firm should consolidate its multiple subsidiaries. Unless the firm owns 100 percent of its U.S. subsidiaries only, the consolidated reporting entity for financial reporting is not the same as that for tax reporting.

A large firm with domestic and foreign subsidiaries consolidates its financial statements under Statement of Financial Accounting Standards (SFAS) No. 94 for subsidiaries of which the parent owns more than 50%. IRC § 1501 governing tax consolidation allows a firm to elect a single consolidated tax return including its domestic subsidiaries in which it has 80% or more ownership interest. Thus, if a firm has foreign subsidiaries or less-than-80%-owned domestic subsidiaries, the firm's consolidated financial reporting entity would be different from its consolidated tax reporting entity. In general, the firm's financial reporting entity will be more comprehensive than its tax reporting entity as the former includes foreign subsidiaries and domestic subsidiaries of which ownership is greater than 50%.

#### *3.2 Income measurement*

Even though IRC § 446 indicates that “taxable income shall be computed under the method of accounting on the basis of which the taxpayer regularly computes his income in keeping his books”, GAAP and the tax law produce a significant number of discrepancies in income. These discrepancies can be classified into two groups: temporary and permanent differences.

##### *3.2.1 Temporary differences*

Temporary differences result from timing differences between book and tax income based on when revenue or expense items are recognized. Under GAAP, book income is computed based on two major principles: recognition and matching. The recognition principle indicates that revenue should be recognized when a reasonable assurance payment comes into existence. The matching principle requires revenues and related expenses be recorded in the same accounting period, which produces a faithful representation of net earnings arising from a given income-generating business activity. Actual cash flows do not affect the recognition of revenues or expenses.

In contrast, tax law leans towards a cash-based accounting method in recognizing some types of revenue and expense. For example, a firm is required to recognize tax income when an advance payment is received or under its control even if the income is not yet recognizable under accrual principles (see examples in Mills and Plesko 2003). Further, under the tax law, not all expenses can be deducted when they become accruable under general principles. To be deductible, an expense must meet (a) an accrual-type all-events test and (b) an economic performance test (Spilker et al. 2014). The all-events test requires (1) all events occurred to fix a liability and (2) the amount of the firm's liability to be determined with reasonable accuracy. The economic performance test requires, in addition, that the related economic performance has taken place, i.e. the related properties or services have been provided (IRC § 461). Thus, under the tax rules, revenues are recognized based only on the all-events (IRC § 451) while the additional economic performance test is required for recognition of expenses.

A temporary BTD in one period automatically produces an equal and opposite BTD in one or more later periods. A temporary BTD that leads to a future tax liability creates a deferred tax liability (for financial accounting purposes). A temporary BTD that leads to a future tax-deduction produces a deferred tax asset (for financial accounting purposes). Changes in both deferred tax liabilities and assets are recorded through a deferred tax expense. There are two major items that contribute to temporary differences, depreciable tangible assets and intangible assets.

### 3.2.1.1 Depreciable tangible assets

Depreciation expenses account for a substantial portion of temporary differences between book and tax income. Based on GAAP, costs incurred for a capital asset (either tangible or intangible) are systematically allocated over the asset's useful life. Its beginning depreciable basis is computed by subtracting estimated residual value from the acquisition cost. That amount is expensed over the item's estimated useful life, with the non-deducted residual value remaining. GAAP rules allow a firm the choice of several alternative depreciation methods, such as straight-line, activity-based, sum-of-years-digits, or declining balance. The different depreciation methods produce differing expense deductions in any particular year. Generally, depreciation methods other than either straight-line or activity-based produce greater deductions in the earlier years and lesser deductions in the later years (often referred to as "accelerated" depreciation). Straight-line produces the same deduction amount for all years.

On the other hand, the default tax law depreciation method is an accelerated depreciation method theoretically intended to encourage firms to increase their investment in long-term assets. Firms experience a benefit from using the tax law's accelerated depreciation method in terms of time value of money. The tax law's "Modified Accelerated Cost Recovery System" (MACRS) establishes eight major "class life" periods. Assets are, by regulation, assigned to one of those class-life periods, which may differ from the "useful life" fixed for financial accounting. Under MACRS, long term assets are fully depreciated over three, five, seven or more years based on their assigned class life, leaving no non-deducted residual. In addition, the tax law allows special first-year deduction for depreciable assets. IRC § 179 allows a year-of-purchase depreciation-like deduction up to 100% of the item's cost. Since this is intended to encourage "small businesses" to invest, the total amount that can be deducted is limited. That amount varies from year to year. For 2013, the maximum section 179 deduction is \$500,000 and that is phased out if the taxpayer purchases more than \$2 million in "section 179" assets. There are a number of other qualifications intended to limit the benefit of section 179 to small businesses. In addition to section 179, qualified small businesses can deduct an additional amount (up to 50% of the purchase cost remaining after applying section 179) as "bonus first-year depreciation" under IRC sec. 168(k). [NOTE: The allowable deductions under sec. 179 and the bonus depreciation deduction are up for annual expiration/renewal subject to the year-to-year squabbles of the federal legislative branch.]

Suppose that on July 1, 2013, the firm purchased a new asset with a MACRS 5-year class life \$750,000. Since the firm's 2013 purchases of Section 179 totaled less than the limit of \$2,000,000, under section 179 the firm can deduct, for tax purposes, \$500,000 in 2013. That reduces the asset's initial tax basis to \$250,000, 50% of which can be deducted under the bonus depreciation rule. The then-remaining basis (\$125,000) is depreciated (starting in the purchase year) under normal MACRS rules. The first year deduction under MACRS for 5-year property is 20%. Therefore, for tax purposes, the firm could deduct a total of \$650,000 ( $\$500,000 + \$125,000 + (\$125,000 * 0.20)$ ). A firm with a 35% marginal rate would reduce its tax payment by \$218,750 ( $\$620,000 * 35\%$ ). This is distinctly more than depreciation allowable under GAAP. If the firm depreciates the same asset over 10 years with a residual value of \$50,000, the depreciation in the first year would be \$35,000 (its annual depreciation is  $\$70,000 ((\$750,000 - \$50,000) / 10 \text{ years})$ ). Thus, the firm reports \$650,000 as depreciation expense on its tax return but only \$35,000 for book depreciation. Since the difference of \$615,000 will be reversed in the future (over its book useful life), the firm's accounting includes its future tax liability, \$215,250 ( $\$615,000 * 35\%$ ) as a deferred tax expense and a deferred tax liability.

Thus, temporary BTDs are more complicated than permanent BTDs because of their lagged effects on accounting books, and significant year-to-year variations. The unfavorable effect of the reversal of these temporary differences may be reduced or eliminated by later events. For example, as growing firms continue to expand and acquire new assets, new deferred tax liabilities are continuously generated, offsetting the effect of the reversal of earlier deferrals. As a result, the balance of deferred tax liability could continue to increase.

### 3.2.1.2 Intangible assets

For book accounting purposes, goodwill, an intangible asset, was, in the past, amortized over a maximum of 40 years. The amortization of goodwill for book purposes was discontinued in 2001. Since then, goodwill is subject to an impairment method. If its value declines in a given year, the reduction in value is written off.

The tax treatment of goodwill has been entirely different. Until 1993, goodwill could not be amortized or deducted in any manner. After 1993, most intangible assets purchased as part of a business acquisition, including goodwill, have been amortizable over 15 years under IRC sec. 197. Due to these changes, the nature of BTDs relating to intangible assets varies depending on acquisition year. Intangible assets acquired before 1993 created permanent BTDs. Assets acquired from 1994 through 2001 created temporary BTD differences. For assets acquired after 2001, the impairment

method introduces uncertainty because goodwill is written off by the amount of a decrease in its value. If it is assumed that all intangible assets are eventually amortized for book accounting purposes, post-2001 acquisitions create temporary BTDs.

McGill and Outslay (2004) documents how firms manipulate accounting and tax rules associated with these temporary differences to save tax payments. Lease-in/lease-out (LILO) or sale-in/lease-out (SILO) transactions are an example to create favorable BTDs. Firms leased or purchased public facilities from municipal governments with lease-back contracts, i.e. the purchasing/leasing firm leases the subject property back to the selling/leasing public entity. Banks, like Wachovia, engaged in this kind of transaction to obtain and recognize the depreciation expense on the subject asset. The subject asset was depreciated for tax purposes based on the length of the lease, e.g., over five years, but depreciated over forty years for book income purposes. The firm could realize substantial, real benefits in terms of time value of money because the created temporary differences extend over a long period.

### 3.2.2 Permanent differences

Some revenue or expense items are recognized by one of the systems under discussion but not the other. For instance, criminal penalties, fines, bribes, life insurance proceeds, and interest on municipal bonds are denied recognition for income tax purposes but are included in book accounting. A “dividends received deduction” is allowed for tax purposes but is not included in book accounting. Beyond those, there are two major items that produce permanent BTDs, employee non-qualified stock options and permanently reinvested foreign income.

#### 3.2.2.1 Employee stock options

Bickley (2012) summarizes two types of employee options: qualified and non-qualified. Qualified options include incentive stock options and employee stock purchase plans. The former is limited to \$100,000 while the latter to \$25,000 per employee for a year. There is no tax liability for employees when qualified options are granted or exercised. Rather, tax liabilities for employees incur when the stock is sold. The employer has no deductible expense regarding these options. Thus, qualified stock options have no effect on BTDs.

Non-qualified options (NQOs) are governed by IRC § 83 (“Property transferred in connection with performance of services”). These options can be given to selected employees. There is no maximum dollar limitation. When stock options are granted, the exercise price is usually equal to the stock price on the grant date. Thus, there is no intrinsic value for the stock option and compensation expense is zero on the option date.

For tax purposes, when the stock options are exercised, employees recognize ordinary income equal to the difference between the exercise price and the related stock’s market price on the exercise day. The granting firm has an employment expense tax deduction equal to the amount of ordinary income reported by the employee. In contrast, under Accounting Principles Board Opinion No. 25, “Accounting for Stock Issued to Employees” (APB 25), the option-issuing firm has no employment expense, at any time, for financial reporting purposes. Instead, the employment expense tax deduction is credited directly to additional paid-in-capital and the same amount is debited to the income tax payable account (Hanlon and Shevlin 2002). Accordingly, the current tax expense on a firm’s financial statements overstates its tax liability by the amount of tax deduction resulting from the exercised NQOs.

#### 3.2.2.2 Permanently reinvested foreign income

Foreign income that a U.S. multinational corporation includes in its consolidated financial statements is not reported in the computation of its U.S. taxable income until the distribution of foreign income is made to the U.S. parent. Thus, the temporary difference of deferred taxes takes place to account for the difference between the two incomes, book and tax. For the financial reporting purpose, the tax liability is computed by multiplying foreign pre-tax income by the difference between the U.S. and foreign tax rates and recorded as deferred taxes.

Nonetheless, Accounting Principles Board No. 23, “Accounting for Income Taxes – Special areas” (APB 23) provides an exception to this requirement when the U.S. parent demonstrates that its foreign subsidiary has invested or will invest the undistributed foreign income for the indefinite period or the income will be repatriated in tax-free liquidation. Thus, the permanently reinvested foreign income is not included in the U.S. parent’s book income, but income taxes that are paid to the government in a local country can be used as tax credits to offset the tax owed to the IRS. Thus, its current tax expense is reduced by the amount of foreign tax credits. As researchers estimate tax income by grossing up the current tax expense by the statutory tax rate, a reduced current tax expense lowers the tax income estimated and thus creates permanent BTDs.

#### 4. Empirical Evaluation of the Factors Attributed to Book-Tax Income Differences

Because book and tax incomes are computed using different rule sets, BTDs are expected. However, studies show a growing trend in BTDs, particularly in the late 1990's. For example, Plesko (2002) analyzed data in Form 1120, Schedule M-1 reconciliation on tax returns during tax years, 1996 and 1998. Book income grew from \$752.7 billion in 1996 to \$816.7 billion in 1998 while tax income decreased from \$660.2 billion in 1996 to \$657.7 billion in 1998. Thus, the BTD grew from \$92.5 billion in 1996 to \$159.0 billion in 1998, i.e., by 71.9%.

A stream of studies investigated BTDs to identify the source of the divergence between book and tax income. However, BTDs are affected by multiple factors including (a) temporary and permanent differences between GAAP and the tax law, (b) differences in the definitions of combined reporting entities between the two systems, (c) macroeconomic effects, (d) differing levels of discretion with respect to book and tax items, and (e) tax sheltering activities (Plesko 2000). As a result, it is difficult to isolate discrete causal relationships of BTDs with specific factors. Seidman (2010) is one of the few studies to quantify a relative weight for each factor on BTDs. Seidman examines how BTDs are affected by changes to GAAP, macroeconomic conditions, and managers' discretion between 1993 and 2004. But the combination of these three factors only explains about 55% of the variation in BTDs, leaving 45% presumed to be associated with variations in the tax law during the study period. Thus, Seidman's findings support tax aggressiveness as one of the major causes for BTDs, consistent with other studies, such as Heltzer (2009), Desai (2003), and Lisowsky (2010). However, another stream of accounting studies report earnings management as an additional key explaining factor for BTDs (Phillips et al. 2003; Desai 2003; Lev and Nissim 2004; Hanlon 2005; and Lisowsky 2010). Accordingly, we need to evaluate prior studies in BTDs with a critical eye to have a better understanding of BTDs.

Desai (2003) examines BTDs and reports a growing gap in 1990s, attributing it to three identified factors: (a) different depreciation methods on tax and accounting income, (b) reinvestment of income earned in foreign countries, and (3) timing differences in recognizing tax benefits arising from the exercise of non-qualified stock options.

Those three factors do not, however, explain a substantial portion of the reported BTD gap. For example, in 1998, more than half of the difference between tax and book income (i.e., 33.7% of tax income) is not traceable to those factors. The reasonable conclusion is that the unrelated BTD gap can be attributed to either tax shelters or earnings management. Sheltering activities become more plausible as U.S. firms have increased operations in foreign countries and have access to a variety of accounting and financial innovations. Earnings management could be an important factor in the BTD gap since managers can effectively increase book value without increasing tax income. Desai (2003), however, quantifies neither tax shelters nor earnings management.

Accounting researchers developed an interest in investigating managers' use of tax sheltering and earnings management techniques to expand BTDs as they would be motivated to increase book income while reducing tax income (Mills 1998; Revsine et al. 2011; Desai 2003; Phillips et al. 2003; Hanlon 2005; Wilson 2009; Lisowsky 2010; Palepu et al. 2012; Penman 2012). Revsine et al. (2011) indicate a firm's accounting aggressiveness can be measured by the ratio of pre-tax book income to taxable income. Penman (2012) suggests that BTDs would be useful to detect the manipulation of a firm's major expenses. Phillips et al. (2003) empirically examine how deferred tax expense is used to exceed heuristic benchmarks, such as prior year's earnings or negative net income.

Phillips et al. (2003) use the probit regression model that includes an indicator variable for earnings management and several independent variables, such as deferred tax expense, discretionary accruals, changes in cash flows from continuing operations, and a unit variable to control over industry effect. Phillips et al. adopt deferred tax expense instead of current tax expense. Since current tax expense is governed by the tax law, managers do not have much discretion over how tax income is measured. On the other hand, deferred tax expense is associated with discretionary accruals, which create the difference between a tax liability between GAAP and the tax law. Exercising their GAAP-approved discretion, managers could create temporary BTDs, increasing book income without affecting taxable income to beat these heuristic benchmarks. Phillips et al. (2003) indicate that both deferred tax expense and discretionary accruals have incremental information content to identify firms that managed earnings to beat prior year's earnings or eliminate negative net income. This study offers important empirical findings that a firm uses tax income to manage earnings.

Hanlon (2005) evaluates how BTDs influence the persistency of earnings. Firms with large BTDs (book income greater than tax income) show reduced persistence of their earnings, compared to their counterparts with small BTDs. Investors are concerned about potential temporary components in large BTDs and thus expect that the persistence of future earnings of firms with large BTDs would decline.

Lev and Nissim (2004) propose that the ratio of tax-to-book income could predict future earnings growth for three reasons: (1) the ratio indicates earnings management activities that are temporary, (2) the ratio identifies a deviation of reported earnings from its permanent value, and (3) the ratio reflects differences between GAAP and the tax law, which do not result from either earnings or tax management. Their results show that the ratio can predict future earnings growth up to five years. Also, they report that investors use the tax-based information to predict stock prices in the following year. Thus, the findings of Lev and Nissim (2004) demonstrate tax income as the benchmark for investors to evaluate the quality of the book income.

These studies focus on non-conforming earnings management, which is assumed to increase book income without affecting current tax income (Phillips et al. 2003; Hanlon 2005; Lev and Nissim 2004). Thus, BTDs are created. On the other hand, managers could employ conforming earnings management techniques that affect both book and tax income and thus does not alter BTDs (Erickson et al. 2004). Thus, these studies based on BTDs would not be an effective method to evaluate firms that employ conforming earnings management techniques. Further, even though these studies report an association between BTDs and earnings management, they do not demonstrate whether BTDs can be used as a proxy for earnings management in the presence of many other implications arising from BTDs. For example, Heltzer (2009) reports that positive BTDs do not necessarily represent the level of a firm's financial statement conservatism. The accounting conservatism represents accountants' tendency to recognize losses more quickly than profits and is measured using the Basu method (1997). Heltzer shows that there is no difference in financial statement conservatism between firms with large positive BTDs and other sample firms. Nonetheless, when conservatism in taxable income is measured, firms with large positive BTDs indicate increased conservatism in taxable income. Thus, Heltzer's results support using large positive BTDs as a proxy for tax reporting aggressiveness, but not financial reporting aggressiveness.

Researchers cannot directly observe a firm's tax sheltering activities and earnings management, because it is, naturally, done clandestinely. Thus, Wilson (2009) and Lisowsky (2010) examine firms that were accused of tax sheltering to characterize their attributes. Wilson (2009) identified 193 firm-year observations, which were involved in tax sheltering. Wilson includes two groups in the sample: (1) tax sheltering firms, and (2) control firms. The control sample was selected based on three criteria: (a) fiscal year, (b) two-digit SIC code, and (3) total assets. For each tax sheltering firm, a matched control firm would have the same fiscal year, two-digit SIC code and similar total assets. A logistic regression model includes an indicator variable as a dependent variable by assigning a unit for the sheltering firms and setting 0 for controlling firms. Wilson includes independent variables, such as the difference between book and tax income, the average absolute value of discretionary accruals (a proxy for earnings management), and other controlling variables. Wilson deflates the difference between book and tax income by lagged total assets. The average absolute variable of discretionary accruals is estimated using the performance-adjusted modified cross-sectional Jones model over the past five years. Wilson's empirical result shows that both variables (i.e., the difference between book and tax income and the average absolute value of discretionary accruals) are statistically significant in explaining the difference between the two groups. Thus, BTDs are an important variable to identify firms engaging in tax sheltering activities. Sheltering firms also tend to take aggressive strategies in their financial reporting. Thus, Wilson concludes that firms with aggressive corporate strategies are inclined to choose aggressive reporting for both book and tax income.

Lisowsky (2010) expands the sample size by identifying 267 tax shelter observations reported from 2000 to 2004 in order to evaluate the relevance of four alternative proxies for tax sheltering activities. Lisowsky examines the association of tax sheltering behavior with four alternative proxies for tax avoidance, such as discretionary permanent BTDs (Frank et al. 2009), long-run cash effective tax rates (Dyreg et al. 2008), total BTDs (Mills 1998), and the tax cushion (Gleason and Mills 2002). Lisowsky reports a strong positive association of tax sheltering behavior with both total BTDs and the tax cushion. Lisowsky reports there is no significant association of tax sheltering behavior with either discretionary permanent BTDs or long-run effective tax rates.

Wilson (2009) and Lisowsky (2010) have a methodological advantage by identifying firms that were known to commit tax sheltering activities and thus could evaluate the relevance of proxies for tax sheltering, which are estimated from financial statements. However, these firms do not necessarily represent the population of tax sheltering firms as most of them might not be caught by the IRS. Alternatively, their tax sheltering activities may not be completely illegal to be prosecuted by the federal government agency. Thus, the interpretation of their findings should be done with caution.

Frank et al. (2009) examined the relation between financial and tax reporting aggressiveness. They estimate permanent book-tax income differences as a function of intangible assets, income under the equity method, income

assigned to minority interest, current state income tax expense, change in net operating loss carry forwards, and lagged permanent book-tax income differences. As discussed above, intangible assets create permanent BTDs. When a firm uses the equity method to account for investment, its book income includes its ownership percentage of net income that is earned by its subsidiary while its taxable income includes dividends received. Minority interest is not included in a firm's tax income. State income tax expense reduces federal taxable income, not book income. Changes in net operating loss carry forwards are associated with the valuation allowance account and thus are not related to tax planning. The inclusion of lagged permanent book-tax differences is to control for their persistent component over time. Permanent BTDs are computed by subtracting temporary BTDs from total BTDs. Total BTDs are computed as differences between pre-tax book income and a sum of federal tax expense and foreign tax expense grossed up by a statutory tax rate. Temporary BTDs are computed by grossing up deferred tax expense by a statutory tax rate. Then, a permanent BTDs variable is regressed on the independent variables and the residuals are chosen as discretionary permanent BTDs, which are a proxy for tax reporting aggressiveness.

Frank et al. (2009) compute performance-matched discretionary accruals as a proxy for financial reporting aggressiveness (Kothari et al. 2005) by following three steps. First, they compute discretionary accruals based on the modified-Jones model (Dechow et al. 1995) by regressing total accruals on the difference between changes in revenues and changes in accounts receivable and the gross amount of plants, property, and equipment. They use the residuals as discretionary accruals. Second, they chose a matching firm-year observation for each sample firm-year observation based on industry membership and by decile of pre-tax income over lagged total assets. Finally, performance-adjusted discretionary accruals are computed as the difference between each observation's discretionary accrual and the median discretionary accrual in a group that is jointly formed in terms of industry and a decile of pre-tax income over lagged total assets.

Frank et al. (2009) report a strong, positive association between the two proxies for financial and tax reporting aggressiveness. Thus, managers manage book income upward while tax income downward in the same reporting period.

Seidman (2010) extends prior studies by quantifying the effect of earnings management and tax sheltering activities on BTDs. Since accurate measurement of tax sheltering is elusive, Seidman develops a functional relationship of BTDs with (1) changes in GAAP, (2) economic conditions, and (3) earnings management. The unexplained portion of the model is then attributed to tax sheltering use. Seidman computes book income by subtracting state income taxes, other income taxes, and earnings equity from domestic pre-tax income. Earnings equity is attributed to minority interest, which is not included in a firm's taxable income. Taxable income is computed by grossing up income tax expense by the 35% maximum federal statutory rate.

Seidman accounts for changes in GAAP in four ways. First, changes in Postretirement Benefit Assets result from Statement of Financial Accounting Standards (SFAS) No. 106 in 1993. Second, long-term assets and goodwill impairments during periods (i) prior to 2000, (ii) 2000-2001, and (iii) 2002-2004 are used as a proxy for the effect of SFAS No. 121 and SFAS No. 144. Third, impairment of goodwill for 2002-2004 is used as a proxy for the effect of SFAS 142. Finally, changes in non-goodwill intangibles are used as a proxy for the effect of SFAS No. 142.

Economic conditions are measured in three ways. First, averaged change in net sales per industry (two-digit SIC) is multiplied by lagged net sales per firm to measure a change in sales for each firm. Second, the cost of debt is computed by multiplying industry-averaged annual interest rate by interest-bearing debt for each firm. Third, capital expenditure is computed by multiplying averaged capital expenditure rate per industry by the gross balance of property, plant and equipment for each firm.

Discretionary accruals are used as a proxy for earnings management using the standard Jones model. Seidman reports that the three identified variables (changes in GAAP, economic conditions and earnings management) explain around 55% of the variance in the BTDs from 1993-2004. (The four changes in GAAP alone explain over 50% of the variance.) The remaining 45% of the variance in the BTDs must be attributed to other factors, such as tax law changes and tax sheltering behavior. Even though the proxy for earnings management is not a significant factor in explaining the variance in the BTDs, the presence of earnings management significantly reduces the persistence of pre-tax book income. Thus, Seidman supports the findings of Hanlon (2005) that the earnings persistence of firms with large BTDs declines.

Frank et al. (2009) and Seidman (2010) explore the implication of BTDs from the two perspectives, tax sheltering activities and earnings management. As both Frank et al. and Seidman use listed firms, they could avoid the methodological issues resulting from Wilson (2009) and Lisowsky (2010), which focus on firms that were known for involving in tax sheltering activities and thus may not generalize their findings. Frank et al. (2009) empirically

support non-conforming earnings management, the best of both worlds, for managers who take aggressive positions to increase book income while reducing taxable income. Seidman (2010) report similar results even though earnings management is not a significant variable to explain BTDs.

The findings of the both studies, however, should be interpreted with caution as BTDs may result from more than the variables that are identified. For example, Desai (2013), BTDs are attributed to other key factors, such as stock options, foreign operations, and depreciation methods. Further, as discussed above, BTDs might arise from how incomes from subsidiaries are consolidated for tax and financial reporting purposes. In particular, if a firm has foreign subsidiaries, permanently reinvested earnings of its subsidiaries would contribute to BTDs.

Frank et al. (2009) estimate discretionary portions for both permanent BTDs and accruals using econometrics models. The omitted-variable problems in the models might cause spurious relationships. In addition, the unexplained portion of the BTDs (45%) in Seidman (2010) is associated with these omitted variables in addition to tax law changes and tax sheltering behavior. Furthermore, the weak evidence of discretionary accruals in Seidman (2010) may result from noise in the total BTDs, which include both temporary and permanent differences. Permanent differences are not associated with accrual management. Thus, Seidman may use temporary BTDs to examine the effect of earnings management (Hanlon and Heitzman 2010). Appendix includes a summary of studies on BTDs.

## 5. Conclusions

Book and tax incomes are computed following different rules and serve different purposes. Book income is measured based on GAAP, which are intended to fairly represent a firm's value. GAAP allow managers some flexibility in measuring book income. On the other hand, the Internal Revenue Code is designed to collect taxes to fund government operations and, *inter alia*, support government economic and political policies by providing tax incentives to encourage taxpayers to invest in selected areas. Managerial discretion allowed in measuring both types of income can function to widen BTDs. As a result, BTDs are primarily attributed to two major categories: (1) different rules of computing income for book and tax incomes, and (2) differentiated income strategies adopted by managers to increase book income while suppressing tax income. Thus, BTDs could represent outcomes from either earnings management or tax sheltering activities or both. There is no consensus among empirical studies on how to correctly characterize BTDs. This may partially result from the fact that almost 50% of BTDs arise from unidentified factors. Since earnings management and tax sheltering activities are carried out clandestinely, identifying all attributes of BTDs is a challenging task.

Nonetheless, BTDs could serve as a key proxy for earnings management as well and tax sheltering activities as managers try to have the best of two worlds. As reported by Frank et al. (2009), firms that are aggressive in reporting book income also adopt an aggressive tax reporting strategy. However, when firms over- or under-state both book and tax incomes through coordinated strategies, BTDs do not properly serve as a proxy for earnings management.

As reported in prior studies, a large portion of BTDs has not been properly explained. Accordingly, an increase in public disclosure about BTDs can assist users of financial statements in their investment decisions (Lenter et al. 2003). The IRS has adopted several mechanisms to deal with an increase in BTDs, such as Form 1120's Schedules M-1 and M-3. Schedule M-1 is completed by a corporation with assets between \$25,000 and \$10 million while Schedule M-3 is required for a corporation with more than \$10 million in assets. Both Schedules M-1 and M-3 are designed to reconcile book and taxable incomes. In addition, Reg. §1.6011-4 includes 'transactions with a significant book-tax difference' as one of the reportable transactions. This requirement applies to corporations with \$250 million or more in gross assets that engage in a transaction that results in a difference of more than \$10 million between taxable and book amounts of income, gain, expense or loss. Examples 3 and 4 in Reg. §1.6011-4 demonstrate cases that require the filing of Form 8886 "Reportable Transaction Disclosure Statement".

Unfortunately, the IRC-required disclosures are not available to the public so that investors cannot use them in assessing the quality of book income. Even though investors might approximate taxable income using variables on financial statements, they cannot do so with accuracy sufficient to reconcile tax and book income differences. BTDs arise from a variety of sources. Public disclosures of BTD's major components would assist investors in reaching a better understanding of the nature of BTDs and evaluating the information content of book income.

## References

- Basu, S. (1997). The conservatism principle and the asymmetric timeliness of earnings. *Journal of Accounting and Economics*, 24, 3-37. [http://dx.doi.org/10.1016/S0165-4101\(97\)00014-1](http://dx.doi.org/10.1016/S0165-4101(97)00014-1)
- Bickley, J.M. (2012). *Employee stock options: tax treatment and tax issues*. Washington, CD: Congress Research Service.

- Blouin, J., Krull, L., & Robinson, L. (2014). The location, composition, and investment implications of permanently reinvested earnings. Working paper, University of Pennsylvania
- Dechow, P., Sloan, R., & Sweeney, A. (1995). Detecting earnings management. *The Accounting Review*, 70(2), 193-226.
- Desai, M. (2003). The divergence between book income and tax income. In *Tax Policy and the Economy* (17), edited by James Poterba, MIT Press (2003), 169-206.
- Dyregang, S., Hanlon, M., & Maydew, E. (2008). Long-run corporate tax avoidance. *The Accounting Review*, 83(1), 61-82. <http://dx.doi.org/10.2308/accr.2008.83.1.61>
- Erickson, M., Hanlon, M., & Maydew, E. (2004). How much will firms pay for earnings that do not exist? Evidence of taxes paid on allegedly fraudulent earnings. *The Accounting Review*, 79 (2), 387-408. <http://dx.doi.org/10.2308/accr.2004.79.2.387>
- Financial Accounting Standards Board (FASB). (2010). Statement of Financial Accounting Concepts No. 8. (Stamford, CT: FASB), October.
- Frank, M.M., Lynch, L.J., & Rego, S.O. (2009). Tax reporting aggressiveness and its relation to aggressive financial reporting. *The Accounting Review*, 84(2), 467-496. <http://dx.doi.org/10.2308/accr.2009.84.2.467>
- Gleason, C. & Mills, L. (2002). Materiality and contingent tax liability reporting. *The Accounting Review*, 77(2), 317-342. <http://dx.doi.org/10.2308/accr.2002.77.2.317>
- Hanlon, M. (2003). What can we infer about a firm's taxable income from its financial statements? *National Tax Journal* 56, 831-863. <http://dx.doi.org/10.2139/ssrn.419741>
- Hanlon, M. (2005). The persistence and pricing of earnings, accruals, and cash flows when firms have large book-tax differences. *The Accounting Review*, 80, 137-166. <http://dx.doi.org/10.2308/accr.2005.80.1.137>
- Hanlon, M. & Heitzman, S. (2010). A review of tax research. *Journal of Accounting and Economics*, 50, 127-178. <http://dx.doi.org/10.1016/j.jacceco.2010.09.002>
- Hanlon, M. and Shevlin, T. (2002). Accounting for tax benefits of employee stock options and implication for research. *Accounting Horizons*, 16, 1-16. <http://dx.doi.org/10.2308/acch.2002.16.1.1>
- Heltzer, W. (2009). Conservatism and book-tax differences. *Journal of Accounting, Auditing & Finance*, 24(3), 469-504.
- Kothari, S. P., Leone, A., & Wasley, C. (2005). Performance matched discretionary accrual measures. *Journal of Accounting and Economics*, 39 (1), 163-197. <http://dx.doi.org/10.1016/j.jacceco.2004.11.002>
- Lenter, D., Slemrod, J., & Shackelford, D. (2003). Public disclosure of corporate tax return information: accounting, economics, and legal perspectives. *National Tax Journal*, 56(4), 803-830.
- Lev, B. and Nissim, D. (2004). Taxable income, future earnings, and equity values. *The Accounting Review*, 79 (4), 1039-1074. <http://dx.doi.org/10.2308/accr.2004.79.4.1039>
- Lisowsky, P. (2010). Seeking shelter: Empirically modeling tax shelters using financial statement information. *The Accounting Review*, 85, 1693-720. <http://dx.doi.org/10.2308/accr.2010.85.5.1693>
- Manzon, G. B. and Plesko, G.A. (2002). The relation between financial and tax reporting measures of income. *Tax Law Review*, 55, 175-214.
- McGill, G. and Outslay, E. (2004). Lost in translation: Detecting tax shelter activity in financial statements. *National Tax Journal*, 57, 739-756.
- Mills, L. (1998). Book-tax differences and Internal Revenue Service adjustments. *Journal of Accounting Research*, 36 (2), 343-356. <http://dx.doi.org/10.2307/2491481>
- Mills, L.F. and Plesko, G.A. (2003). Bridging the reporting gap: a proposal for more informative reconciling of book and tax income. *National Tax Journal*, 56(4), 865-893.
- Palepu, K.G., Healy, P.M., & Bernard, V.L. (2012). *Business Analysis & Valuation: Using Financial Statement*, 5<sup>th</sup> edition. New York, NY: Cengage Learning.
- Penman, S. (2012). *Financial Statement Analysis and Security Valuation* 5<sup>th</sup> edition. New York, NY: McGraw-Hill Irwin.

- Phillips, J., Pincus, M., & Rego, S.O. (2003). Earnings management: new evidence based on deferred tax expense. *The Accounting Review*, 78(2), 491-521. <http://dx.doi.org/10.2308/accr.2003.78.2.491>
- Plesko, G. (2000). Evidence and theory on corporate tax shelters. *National Tax Association Proceedings from the 92<sup>nd</sup> Annual Conference on Taxation*, 367-371.
- Plesko, G. (2002). *Reconciling corporate book and tax net income, tax years 1996-1998*, SOI Bulletin, U.S. Government Printing Office, Washington, D.C. 111-132.
- Revsine, L., Collins, D., & Johnson, W.B. (2011). *Financial Reporting and Analysis* 5<sup>th</sup> edition. Upper Saddle River, NJ: Prentice Hall.
- Seidman, J. K. (2010). Interpreting the book-tax income gap as earnings management or tax sheltering. Working paper, the University of Texas at Austin. <http://dx.doi.org/10.2139/ssrn.1564253>
- Spilker, B., Ayers, B., Robinson, J., Outslay, E., Worsham, R., Barrick, J., & Weaver, C. (2014). *Taxation of Individuals and Business Entities*. 2014 ed. New York, NY: McGraw-Hill
- Wilson, R. (2009). An examination of corporate tax shelter participants. *The Accounting Review*, 84, 969-999. <http://dx.doi.org/10.2308/accr.2009.84.3.969>
- Wolk, H. I., Dodd, J.L., & Rozycki, J.J. (2013). *Accounting Theory* 8<sup>th</sup> ed. Los Angeles, CA: Sage.

### Appendix

Studies that Identify Factors Contributing to Book-Tax Income Differences

Study	Motivation	Methodology	Findings and implications
Desai (2003)	Identifying attributes to BTDs	Depreciation methods, foreign income, and non-qualified stock options used to explain BTDs	These three attributes explain less than 50% of BTDs; the rest may be associated with either earnings management or tax shelters
Hanlon (2005)	The effect of BTDs on earnings persistence	Association between BTDs and the persistence of pre-tax financial reporting income and earnings accruals	BTDs inversely influence both pre-tax financial reporting income and earnings accruals; BTDs may result from earnings management
Lev and Nissim (2004)	Prediction of future earnings growth using the ratio of tax-to-book income	Prediction of subsequent earnings growth, using three fundamentals: the ratio of tax-to-book income, deferred taxes, and cash flows.	The ratio of tax-to-book income predicts earnings growth up to five years ahead. Being aware of earnings management, investors use tax income as the benchmark.
Heltzer (2009)	The effect of conservatism on BTDs	BTDs resulting from either financial statement conservatism or taxable income conservation	BTDs are primarily associated with taxable income conservatism.
Wilson (2009)	Identification of attributes to tax sheltering firms	The sample of 193 tax sheltering firm-year observations	BTDs and discretionary accruals are the key attributes to identify tax sheltering firms.
Lisowsky (2010)	Identification of attributes to tax sheltering firms	The sample of 267 tax sheltering firm-year observations	BTDs and the tax cushion show a positive association with tax sheltering behavior
Frank et al. (2009)	Relation between financial and tax reporting aggressiveness	Discretionary permanent BTDs as a proxy for tax reporting aggressiveness but performance-matched discretionary accruals as a proxy for financial reporting aggressiveness	Positive association exists between the proxies for financial and tax reporting aggressiveness: upward management of book income but downward management of tax income.
Seidman (2010)	Quantifying the effect of earnings management and tax sheltering activities on BTDs	Changes in GAAP, economic conditions, and discretionary accruals used to explain BTDs	These three identified variables explain about 55% of the variance in the BTDs. The remaining 45% of the variance in the BTDs is attributed to other factors, such as tax law changes and tax sheltering behavior.