

# The Relation Between Financial and Tax Reporting Measures of Income

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\* Carroll School of Management, Boston College. The American Tax Policy Institute provided financial support for this Article. Views expressed in this Article are those of the authors, and do not necessarily represent those of the ATPI or any of its members. We have benefited from discussions with or comments from Jackie Levinson, Deborah Schenk, Terry Shevlin, Janet Spragens, Marty Sullivan, Roger Wheeler, G. Peter Wilson, George Yin, and participants at the January 2001 American Tax Policy Institute Roundtable. We would like to thank Rebecca Zarutskie and Xu Li for exceptional research support. Any errors are the responsibility of the authors.

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## I. INTRODUCTION

Publicly-traded firms are subject to separate accounting rules for tax and financial reporting purposes. As a result, the amount of income reported under each set of rules differs. Under each set of rules, however, firms provide information about income reported under the other. For tax purposes, firms reconcile the differences between their book income and their taxable income on Schedule M-1. In Securities and Exchange Commission (SEC) filings, firms delineate the portion of their tax expense currently owed from that deferred because of differences in the timing of revenues or expenses. Permanent differences between tax and financial reporting income are separately identified.

Treasury, in both its report on tax shelters<sup>1</sup> and in testimony,<sup>2</sup> has suggested the disparity in both the levels and growth rates between book and taxable income as reported in Schedule M-1 is partial evidence of the growth in tax shelters. Yet, as Martin Sullivan<sup>3</sup> and

<sup>1</sup> Treasury Dep't, *The Problem of Corporate Tax Shelters: Discussion, Analysis and Legislative Proposals* 21 (1999), 1999 TNT 127-12, July 2, 1999, available at LEXIS, Tax Analysis File [hereinafter *Treasury Tax Shelter Study*].

<sup>2</sup> Prepared Testimony of Jonathan Talisman, Acting Asst. Treas. Sec'y (Tax Policy), Before the Senate Finance Comm., pt. I.C, (Mar. 8, 2000), 2000 TNT 47-63, Mar. 9, 2000, available at LEXIS, Tax Analysts File [hereinafter *Talisman Statement*].

<sup>3</sup> Martin A. Sullivan, *Shelter Fallout? Corporate Taxes Down, Profits Up*, 84 *Tax Notes*

George Plesko<sup>4</sup> have pointed out, there has not yet been a thorough analysis of either tax return or publicly available data for alternative explanations of the differences between tax and financial reporting income.

In this Article we explore the magnitude and source of differences between book and taxable income. We examine the financial statements of firms from 1988 to 1999 to infer their taxable income and to calculate the difference between the amounts of income reported under each set of accounting rules. From this set of data, we examine the trends in reported income under the two systems and estimate the amount of variation between the two measures that can be explained by different tax and accounting rules and the amount of variation that can be explained by economic factors. Our goal is both to estimate the effects of these various factors on book-tax differences, and to quantify the extent to which book-tax differences can be explained by these structural factors. We interpret any unexplained residual as attributable to other factors, one of which may be tax shelter activity.

We find evidence that the difference between book and taxable income generally has increased over time, but that a relatively small set of accounting-based variables are able to explain this increase, and explain a large percentage of the variation in the book-tax difference across firms. While neither supporting, nor disproving the existence and growth in tax sheltering behavior, the results do suggest that financial statement-based measures of income have become less representative of firms' taxable income, but in predictable ways.

In the next Section we describe the objectives influencing the determination of tax and financial accounting rules. In Section III we discuss the financial reporting rules that make it possible to estimate taxable income using publicly available financial information. In Section IV we explore the advantages and disadvantages of various data sources used to estimate book-tax differences, and explain our approach to estimating taxable income. In Section V we present estimates of book-tax difference over time for samples identified using several different data screens. In Section VI we detail the empirical approach we take in estimating the sources of the book-tax income SPREAD,<sup>5</sup> and present the results of the estimation. In the final Section we present preliminary conclusions and suggestions for future work.

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653, 655-56 (Aug 2, 1999) [hereinafter Shelter Fallout].

<sup>4</sup> George A. Plesko, Evidence and Theory on Corporate Tax Shelters, in Nat'l Tax Ass'n, Proceedings of the 92d Ann. Conf. on Tax'n 367, 371 (Daphne A. Kenyon ed., 2000) [hereinafter Proceedings].

<sup>5</sup> See Section IV.B.2 for the methodology used in calculating this variable, which we label SPREAD.

## II. FOUNDATIONS OF INCOME MEASUREMENT

### A. *Financial Accounting*

Statement of Financial Accounting Concepts No. 1 (CON1),<sup>6</sup> issued in 1978, outlines the objectives of financial reporting. Its essential elements are that financial accounting provide information useful to investors and creditors in making investment and other decisions about firms. Concept No. 2 (CON2), *Qualitative Characteristics of Accounting Information*, issued in 1980,<sup>7</sup> describes the characteristics of accounting information that make it useful. Of the five qualities outlined, the first two, relevance and reliability, are considered the primary qualities. By relevant, the information provided should be helpful to external users in making their decisions. Reliability, in the context of CON2, merely implies the data presented “represents what it purports to represent.”<sup>8</sup> To be considered useful, it is assumed financial information must be both relevant and reliable.

The other three characteristics of quality financial accounting information are comparability and consistency, materiality, and the extent to which the benefits generated from the information’s use exceed the costs associated with supplying the information.<sup>9</sup> The standards of comparability and consistency suggest financial accounting information provided by firms be similar to the information provided by other firms and that firms use accounting methods consistently over time. Importantly, these criteria do not require the financial accounting rules used by different firms to be implemented uniformly. This is in contrast to the approach taken in much of the tax law where uniformity in the accounting for economic events is required.<sup>10</sup>

Materiality is an issue on which the SEC has recently provided guidance,<sup>11</sup> but generally refers to whether information, regardless of its relevance or reliability, is of sufficient magnitude to affect users’ decisions. Similarly, CON2 recognizes that the collection and dissemination of information is not costless, and that “[i]n order to justify requiring a particular disclosure, the perceived benefits to be derived from that disclosure must exceed the perceived costs associated with it.”<sup>12</sup>

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<sup>6</sup> Objectives of Financial Reporting by Business Enterprises, Statement of Financial Accounting Concepts No. 1 (Financial Accounting Standards Bd. 1978) [hereinafter CON1].

<sup>7</sup> Qualitative Characteristics of Accounting Information, Statement of Financial Accounting Concepts No. 2 (Financial Accounting Standards Bd. 1980) [hereinafter CON2].

<sup>8</sup> CON2, note 7, ¶ 59.

<sup>9</sup> Id. ¶ 33.

<sup>10</sup> See, e.g., IRC § 461 and the regulations thereunder (providing uniform accounting for income and expenses).

<sup>11</sup> SEC, SEC Staff Accounting Bull.: No. 99 – Materiality (1999).

<sup>12</sup> CON2, note 7, at xiii.

Because financial statements are designed to provide information to shareholders and others to evaluate firm performance, the accounting system places great weight on consistency over time within the firm, but less weight on uniformity of all firms to identical assumptions regarding their businesses' accounting rules. Indeed, the discretion left by accounting standards for firm managers to differ in their application of the accounting rules is viewed as a virtue of the system. Specifically, it generally is assumed that allowing managers financial reporting discretion can increase the quality of the information they provide.<sup>13</sup> As a result of this discretion, managers of firms within the same industry can make different determinations about the amounts of revenue or expense to recognize in any given period to provide more complete information on their firms' unique circumstances to their respective shareholders.<sup>14</sup>

Worth noting within CON1 is the explicit recognition that tax authorities and others may have informational needs beyond those of the general user, but also the authority to obtain necessary information on their own:

[B]oth the information needed to enforce tax laws and regulations and the information needed to set rates for public utilities are specialized needs. However, although both taxing authorities and rate-making bodies often use the information in financial statements for their purposes, both also have the statutory authority to require the specific information they need to fulfill their functions and do not need to rely on information provided to other groups.<sup>15</sup>

Continuing, CON1 makes explicit that the goals of financial accounting are not based on assisting regulatory authorities:

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<sup>13</sup> See, e.g., Krishna G. Palepu, Victor L. Bernard & Paul M. Healy, *Business Analysis & Valuation: Using Financial Statements* 3-8 (2000).

<sup>14</sup> An example of these differences can be seen in the application of Accounting for the Costs of Computer Software to Be Sold, Leased, or Otherwise Marketed, Statement of Financial Accounting Standards No. 86 (Financial Accounting Standards Bd. 1985). A series of Harvard Business School cases show that the percentage of software development costs capitalized by Sierra (and therefore not recognized as an expense in the current year) was dramatically higher than other firms in the industry. Further examination of the company's business model, coupled with the insight of the company's president and lead software designer, suggest its operations were sufficiently unique in the industry to justify its deviation from industry norms. See *Sierra On-Line, Inc. (A)*, (Harv. Bus. School, Boston, MA), Mar. 28, 1994; *Sierra On-Line (B): An Analyst's Perspective*, (Harv. Bus. School, Boston, MA), Mar. 15, 1994; and *Sierra On-Line (C): The Insiders' Perspective: An Interview With Ken and Roberta Williams*, (Harv. Bus. School, Boston, MA), Nov. 4, 1993.

<sup>15</sup> CON1, note 6, ¶ 26.

The objectives in this Statement are those of general purpose external financial reporting by business enterprises. The objectives stem primarily from the informational needs of external users who lack the authority to prescribe the financial information they want from an enterprise and therefore must use the information that management communicates to them.<sup>16</sup>

### *B. Tax Accounting*

The primary objective of the Code is to provide a framework for the efficient and equitable determination of tax liabilities and the subsequent collection of revenue to fund governmental operations. To more effectively monitor compliance and collection, the Code allows fewer choices in the application of accounting methods to determine taxable income than are available to determine financial reporting income.<sup>17</sup> A secondary objective is to provide incentives for firms to engage in particular activities. Such incentives are manifest in the reduction of the present value of taxes payable.

Tax accounting does not allow certain approaches to income and expense recognition that are mandatory for financial accounting, such as reserves for warranty claims,<sup>18</sup> or the deferral of income on certain types of sales that have a right-to-return or price protection.<sup>19</sup> Even

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<sup>16</sup> *Id.* ¶ 28.

<sup>17</sup> While taxable income is to be computed under the method of accounting employed by the taxpayer for financial purposes, IRC § 446(a), if such method does not clearly reflect income, then the computation of taxable income shall be made under the method which, in the opinion of the Secretary, does clearly reflect income, IRC § 446(b). The Service has broad powers in determining whether the taxpayer's accounting method clearly reflects income, and the Service's determination is entitled to more than the usual presumption of correctness. See *Commissioner v. Hansen*, 360 U.S. 446, 467 (1959); *Ansley-Sheppard-Burgess Co. v. Commissioner*, 104 T.C. 367 (1995).

<sup>18</sup> Generally accepted accounting principles treat product or service warranty obligations as contingencies for which an accrual for the estimated liability must be made if the contingency is probable and can be reasonably estimated. *Accounting for Contingencies*, Statement of Financial Accounting Standards No. 5, app. A ¶ 24 (Financial Accounting Standards Bd. 1975). For tax purposes, however, product or service warranty obligations can be accrued only when all events have occurred to fix the taxpayer's liability and the liability can be ascertained with reasonable accuracy. IRC § 461(h).

<sup>19</sup> Generally accepted accounting principles permit revenue recognition for companies selling products with a right to return the product only if all of the following conditions are met:

- (1) The seller's price to the buyer is substantially fixed or determinable at the date of sale;
- (2) The buyer has paid the seller, or the buyer is obligated to pay the seller and the obligation is not contingent on the resale of the product;
- (3) The buyer's obligation to the seller would not be changed in the event of theft or physical destruction or damage of the product;

when both systems allow for the same expense, the measurement rules may be very different. For example, for financial reporting purposes firms can calculate depreciation based on idiosyncratic determinations of specific asset lives and residual values that reflect their economic value.<sup>20</sup> In contrast, for tax purposes, depreciation is based on explicit asset classifications that, on average, appear to allow faster recovery deductions than implied by economic depreciation.<sup>21</sup> In contrast to the rulemaking process for financial reporting, the rules governing the determination of taxable income and the amount of taxes to be paid on taxable income are subject to relatively frequent changes by legislative action. Over our study period, the number of changes made to accounting practices applicable to the determination of taxable income was far greater than the number of changes made to accounting practices applicable to the determination of income for financial reporting purposes.<sup>22</sup>

### *C. Sources of Differences and Related Accounting Issues*

Beyond the differing objectives of financial reporting and tax rulemakers, the incentives of preparers likely differ with respect to financial reporting and tax reporting. Specifically, managers of firms may have incentives to make choices that increase income reported to shareholders while at the same time making choices that minimize re-

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(4) The buyer acquiring the product for sale has economic substance apart from that provided by the seller;

(5) The seller does not have significant obligations for future performance to directly bring about resale of the product by the buyer; and

(6) The amount of future returns can be reasonably estimated.

Revenue Recognition When Right of Return Exists, Statement of Financial Accounting Standards No. 48, ¶ 6 (Financial Accounting Standards Bd. 1981). Tax accounting rules, however, generally do not permit gross income to be reduced for returns until the returned items are received. See, e.g., *Hachette USA, Inc. v. Commissioner*, 105 T.C. 234, 238 (1995).

<sup>20</sup> See generally Jan R. Williams, 2000 Miller GAAP Guide ¶¶ 12.02-12.06 (2000).

<sup>21</sup> IRC § 168(c), (e). For a discussion and review of depreciation policy, see Treasury Dep't, Report to the Congress on Depreciation Recovery Periods and Methods (2000), 2000 TNT 149-6, Aug. 2, 2000, available at LEXIS, Tax Analysts File.

<sup>22</sup> Between 1988 and 1999 FASB issued 40 statements (numbers 98 to 137). See Financial Accounting Standards Bd., Summaries & Status of all FASB Statements, available at <http://www.fasb.org/st/stpg.htm>. Three were rescissions of all or part of earlier statements (numbers 98, 111, and 135) and 16 involved amendments to earlier rules. Of the remaining statements, a number required additional disclosures, but did affect the calculation of net income. In contrast, the Taxpayer's Relief Act of 1997, Pub. L. No. 105-34, 111 Stat. 788, made over 800 amendments to the Code and added 300 new provisions. CCH, 1997 Tax Legislation Law, Explanation and Analysis, Taxpayer Relief Act of 1997, at i (1997). While not all of these provisions entailed changes to the corporate income tax, a quick survey of the headings provides numerous examples of changes that would affect the calculation of corporate taxable income.

ported taxable income. An extensive empirical literature has explored the interaction of tax and financial reporting incentives.<sup>23</sup> It is apparent from this literature that neither tax nor financial reporting considerations consistently dominates the other.

The conflicting objectives guiding the development of rules for financial reporting and tax reporting and the differing incentives of preparers with respect to the two different measurements ultimately result in differences between financial reporting income and taxable income.

### III. FINANCIAL REPORTING OF TAXES UNDER SFAS 109

Financial accounting standard-setters recognize the amount of income calculated under each method is different, and have adopted various mechanisms over time so that users of financial reports can infer current taxable income and project taxable income that may result from the application of different accounting standards to past transactions. Under SFAS 109<sup>24</sup> firms report a tax expense calculated from current year financial reporting income, delineating the portion currently owed from that deferred due to differences in the measurement of income under each system.

By definition:

$$\text{Total Tax Expense} = \text{Pretax "Taxable" Financial Income} \times \text{Statutory Rate} \quad (1)$$

$$\text{Total Tax Expense} = \text{Current Tax Expense} + \text{Deferred Tax Expense} \quad (2)$$

There are two sources of difference between financial reporting and taxable income. First, tax and financial reporting rules may allow for differences in the timing of revenue and expense recognition. These timing differences result in differences in the amount of income recognized for financial reporting and tax purposes for a given period of time, but net to zero over time. For example, consider depreciation of tangible assets. For financial reporting purposes, depreciation generally is calculated on a straight line basis over an estimate of an asset's expected useful life (to some residual value).<sup>25</sup> For tax purposes, depreciation is generally calculated using an accelerated method (to no residual value).<sup>26</sup> In the early years of an asset's life, accelerated de-

<sup>23</sup> Douglas A. Shackelford & Terry J. Shevlin, *Empirical Tax Research in Accounting*, 31 *J. Acct. & Econ.* 321, 326-27 (2001) (discussing the interaction of financial accounting and tax accounting).

<sup>24</sup> *Accounting for Income Taxes*, Statement of Financial Accounting Standards No. 109 (Financial Accounting Standards Bd. 1992).

<sup>25</sup> Williams, note 20, ¶¶ 12.09-12.10.

<sup>26</sup> IRC ¶ 168(b), (c).



preciation for tax purposes results in taxable income lower than income for financial reporting purposes. Since total depreciation over an asset's life can sum to no more than the asset's cost, depreciation taken in the later years of an asset's life will be lower for tax purposes than for financial reporting purposes. In the early years of an asset's life, firms will record deferred tax liabilities (and reduce reported income by deferred tax expenses) to reflect the expectation that future tax liabilities will be higher than current tax liabilities since, all else equal, future depreciation for tax purposes will be lower than current depreciation for tax purposes. As depreciation for tax purposes declines in future years to a level below that reported for financial reporting purposes, taxable income will become greater than income for financial reporting purposes and deferred tax liabilities will become "payable." The benefit to the firm from using accelerated depreciation for tax purposes is equal to the present value of the accelerated deductions versus those that would result from the use of straight line depreciation.

The second source of difference between financial reporting and taxable income arises when revenue or expense is recognized under one system but not the other. For example, interest on municipal bonds<sup>27</sup> and a portion of dividends received from other corporations generally are excluded from the calculation of a corporation's taxable income,<sup>28</sup> but considered income for financial reporting purposes.<sup>29</sup> Unlike timing differences discussed above, these differences do not reverse (and thus are referred to as permanent differences) and do not give rise to deferred tax assets or liabilities and related expenses. Firms are required to quantify permanent differences in a reconciliation of the firm's effective tax rate (defined as tax expense divided by pretax income) to the federal statutory tax rate.

In addition to these measurement differences, it also is worth noting that the entity encompassed by financial reports generally will be more inclusive than the one for tax purposes. For financial reporting purposes, firms are required to file consolidated financial statements for all operations in which the parent has at least a 50% interest.<sup>30</sup> For tax purposes, consolidation is voluntary and not permitted unless there is at least 80% ownership.<sup>31</sup> As a result, an observed set of con-

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<sup>27</sup> IRC § 103.

<sup>28</sup> IRC § 243.

<sup>29</sup> See Roger H. Hermanson & James Don Edwards, *Financial Accounting: a Business Perspective* 112, 502 (6th ed. 1995).

<sup>30</sup> Consolidation of All Majority-Owned Subsidiaries, *Statement of Financial Accounting Standards No. 94* (Financial Accounting Standards Bd. 1987).

<sup>31</sup> IRC §§ 1501, 1504.

solidated financial statements is likely to include any number of separate taxable entities. These differences can be significant.<sup>32</sup>

#### IV. METHODOLOGY

##### A. *Potential Data Sources*

###### 1. *Tax Return Data*

Although there exists no publicly available tax return information at the entity level that could be used in this study, it is worth noting the advantages and disadvantages tax return data could bring to understanding this issue. Further, such a discussion is important in judging the ability, and limitations, of using financial statement information and making any inferences based upon such data.

Tax return data is clearly well suited for quantifying the reported differences between book and tax reporting in the current year through the Schedule M-1. Schedule M-1 of the Form 1120 begins with a firm reporting its after-tax book income on the same consolidated entity as the return, and then adds back the provision for taxes. The sum of these two items is pretax book income. From there, Schedule M-1 provides a reconciliation of the differences, though with the exception of depreciation and tax-exempt interest, there is little specific identification of the exact causes.

Treasury used Schedule M-1 to produce Figure 1 in their 1999 report on tax shelters,<sup>33</sup> which shows aggregate book and taxable income reported by a select group of firms from 1987 to 1996, and Figures 1 and 2 of Treasury Assistant Secretary (Tax Policy) Jonathan Talisman's March 8, 2000 testimony, which provided an updated graph of book and taxable differences through 1997 and an estimate of the book-tax differences, respectively. These two graphs from the Treasury testimony are reproduced on the next two pages.<sup>34</sup>

Though clearly unique, tax return information can provide only a limited amount of insight into understanding the causes of book-tax differences. First, unlike financial statements, tax returns (or more specifically, the data collected from tax returns) do not provide as

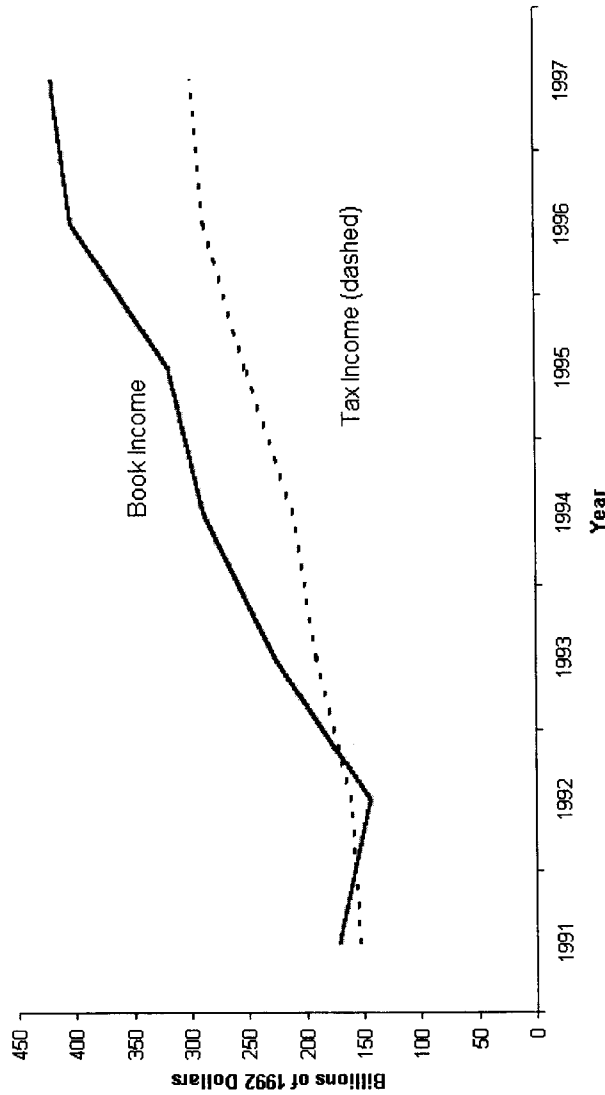
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<sup>32</sup> Lowell Dworin, *On Estimating Corporate Tax Liabilities From Financial Statements*, 29 *Tax Notes* 965, 966-68 (Dec. 2, 1985); Gil B. Manzon & George A. Plesko, *Self-Disclosure and Selection Bias in Studies of AMT-Motivated Behavior* (paper presented at the Financial Reporting Forum at the Ann. Meeting of the Am. Acct. Ass'n) (Aug. 1996); George A. Plesko, *An Evaluation of Alternative Measures of Corporate Tax Rates* (1999), available at [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=174688](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=174688) [hereinafter *Tax Rates*]; George A. Plesko, *Book-Tax Differences and the Measurement of Corporate Income*, in *Proceedings*, note 4, at 171, 172.

<sup>33</sup> Treasury Tax Shelter Study, note 1, at 33.

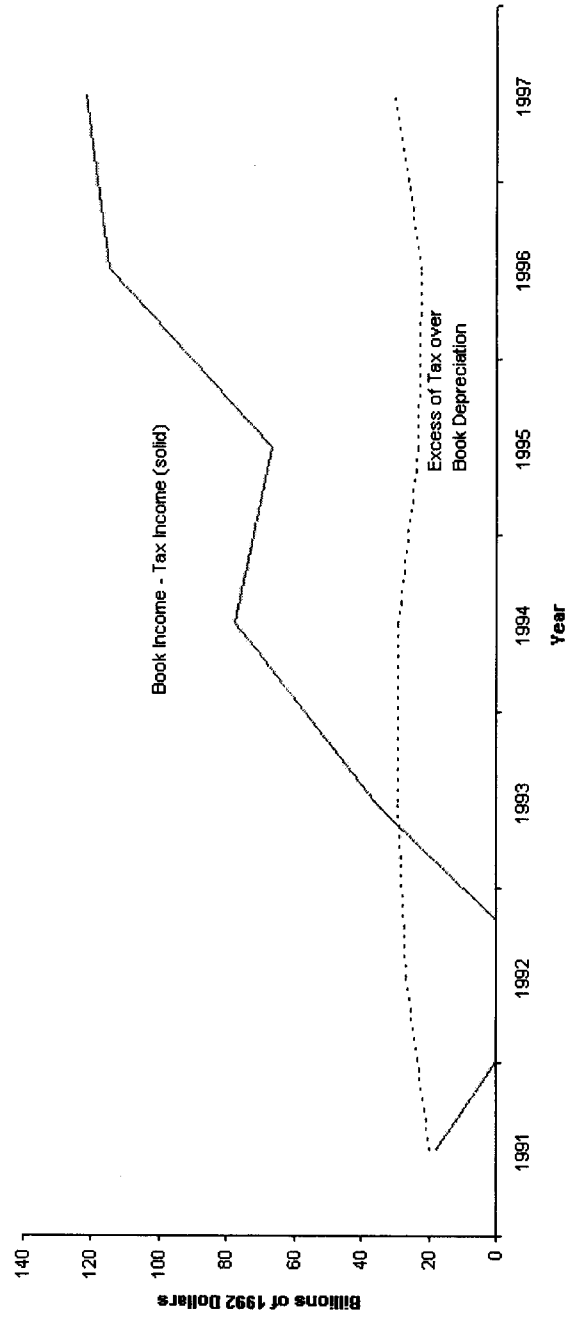
<sup>34</sup> Talisman Statement, note 2, at pt. I.C., available at <http://www.ustreas.gov/taxpolicy/documents.html#testimony>.

**FIGURE 1**  
**BOOK AND TAX CORPORATE INCOME**  
**FIRMS WITH MEAN ASSETS OVER \$1 BILLION**



Book Income = After-tax book income from Schedule M-1 + Federal taxes - tax exempt interest  
 Tax Income = Total Receipts - Total Deductions  
 Corporations excluding S corporations, RICs, REITs, and Foreign Corporations  
 Source: Internal Revenue Service, Statistics of Income

**FIGURE 2**  
**THE DIFFERENCE BETWEEN BOOK AND TAX CORPORATE INCOME**  
**FIRMS WITH ASSETS OVER \$1 BILLION**



Book Income = After-tax book income from Schedule M-1 + Federal taxes - tax exempt interest

Tax Income = Total Receipts - Total Deductions  
 Corporations excluding S corporations, RICs, REITs, and Foreign Corporations  
 Source: Internal Revenue Service, Statistics of Income

much information on many types of firms' transactions (nor are they intended to) as financial statements do. Financial statements, and their notes, provide greater detail on revenue and expense recognition methods and cash flows than do tax returns. Examples of these types of transactions, and the way in which they can be examined with financial data, are described below. Second, financial statements provide more information about the past, and report the cumulative effects of many accounting decisions, whereas tax returns primarily provide information for the current year. Finally, and of particular importance in attempting to analyze tax shelters, given that shelters are designed to reduce taxable income, it is unlikely that tax return data by itself will yield clues to the presence or magnitude of sheltering activity. In fact, given the potentially competing tax and financial reporting incentives, a well-designed shelter would reduce taxable income, leaving income reported for financial purposes undiminished.<sup>35</sup> While any reporting difference will be reflected in the Schedule M-1, the degree of detail within the schedule is insufficient to easily make inferences about sheltering activities.<sup>36</sup>

## 2. *Financial Accounting Data*

We use financial statements to obtain financial reporting income, estimates of taxable income, and the measures of factors that might be responsible for differences between the two. As noted in Section II, firms are required to disclose their current and deferred tax positions on both an annual and cumulative basis, as well as quantify the extent to which taxes are not accrued due to permanent differences in the definition of income under each system.

The advantage of using financial statements to examine the difference between financial and taxable income is that financial statements provide data that make it possible to examine a broad range of potential explanations for divergent growth rates in financial and taxable income. For example, consider the interpretation of recent evidence of a decline in corporate tax receipts as indicative of tax shelter activity.<sup>37</sup> A number of economic factors other than sheltering activities may explain the decrease in corporate tax receipts (for example, some

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<sup>35</sup> David Weisbach asserts that “[v]irtually no shelters in the current market reduce book income.” David A. Weisbach, Ten Truths About Tax Shelters, 55 Tax L. Rev. 215, 227 (2002). Joseph Bankman provides anecdotal evidence on a variety of tax shelter schemes that do not reduce book income. Joseph Bankman, The New Market in Corporate Tax Shelters, 83 Tax Notes 1775, 1777-80 (June 21, 1999).

<sup>36</sup> This lack of specificity was part of the motivation for increased disclosure of tax avoidance transactions. See Talisman Statement, note 2, at pt. I.C.

<sup>37</sup> See Kenneth J. Kies, A Critical Look at “Corporate Tax Shelter” Proposals, 83 Tax Notes 1463 (June 7, 1999) (reviewing the literature that suggests shelters reduce tax base);

economic factors include increased exercise of significantly “in-the-money” nonqualified stock options as well as increased investment in tax-favored assets).<sup>38</sup> In the next Subsection we examine in detail various economic activities that may lead to differences between the amount of income reported to tax authorities and that reported to shareholders.

### *B. Using Financial Statements to Infer Taxable Income*

#### *1. Estimating Current Taxes and Taxable Income*

As detailed in Equations 1 and 2, the total tax expense (benefit) reported by companies under SFAS 109 is equal to the sum of current tax expense (related to current period taxable income) plus deferred tax expense (related to current period timing differences). We base our estimate of taxable income on firms' reported current tax expense.

Specifically, current period U.S. domestic taxable income can be estimated as current federal tax expense divided by the statutory tax rate:

$$\text{Current Federal Tax Expense}^{39}/\text{Statutory Tax Rate} \quad (3)$$

Variants of this measure have been used in a variety of studies examining the sources of differences in firms' effective tax rates.<sup>40</sup> A survey of the measures used in these other studies is presented in Table 1.<sup>41</sup>

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Martin A. Sullivan, A Revenue Estimate for Corporate Tax Shelters, 85 Tax Notes 981 (Nov. 22, 1999); Sullivan, Shelter Fallout, note 3.

<sup>38</sup> James B. Mackie III, The Puzzling Comeback of the Corporate Income Tax, Proceedings of the 92d Ann. Conf. on Tax'n 93 (Nat'l Tax Ass'n, 1999). Martin A. Sullivan, Lobbyist's Figures Flawed, Data Indicate Corporate Shortfalls, 86 Tax Notes 309 (Jan. 17, 2000).

<sup>39</sup> This item is reflected as data item 63 in Standard & Poor's COMPUSTAT Annual File. For a discussion of the data found in Standard & Poor's COMPUSTAT Annual File, see text accompanying notes 79-81.

<sup>40</sup> See, e.g., Joint Comm. on Tax'n, 98th Cong., Study of 1983 Effective Tax Rates of Selected Large U.S. Corporations 3 (Comm. Print 1984); Thomas M. Porcano, Corporate Tax Rates: Progressive, Proportional or Regressive, J. Am. Tax'n Ass'n, Spring 1986, at 17, 20; Jerold L. Zimmerman, Taxes and Firm Size, J. Acct. & Econ., August 1983, at 119, 122; Terry Shevlin, Taxes and Off-Balance-Sheet Financing: Research and Development Limited Partnerships, Acct. Rev., July 1987, at 480, 492; Clyde P. Stickney & Victor E. McGee, Effective Corporate Tax Rates—The Effect of Size, Capital Intensity, Leverage and Other Factors, J. Acct. & Pub. Pol'y, Winter 1982, at 125.

<sup>41</sup> With the exception of Zimmerman, note 40, the various studies of corporate effective tax rates, summarized in Thomas C. Omer, Karen H. Molloy & David A. Ziebart, Measurement of Effective Corporate Tax Rates Using Financial Statement Information, 13 J. Am. Tax'n Ass'n 57, 60 (1991), and Callihan, Corporate Effective Tax Rates: A Synthesis of the Literature, 13 J. Acct. Literature 1, 5-9, 20-26 (1994), use some variant of net income under financial reporting rules as the denominator.

TABLE 1<sup>42</sup>  
**Common Measures of Income Used in Effective Tax Rate Studies**  
**(Including COMPUSTAT Data Item Numbers)**

JCT <sup>43</sup>	Pretax book income minus (equity income (loss) from unconsolidated subsidiaries and income (loss) from extraordinary and discontinued operations) plus income (loss) from minority interests. (18 + 16 + 49) - 55)
Porcano <sup>44</sup>	Pretax book income minus equity income (loss) from unconsolidated subsidiaries plus income (loss) from minority interests. (18 + 63 + 49 + ((-1.0 + 48) - 55))
Zimmerman <sup>45</sup>	Operating cash flow (12 - 41)
Shevlin <sup>46</sup>	Pretax income minus (change in deferred tax liability/statutory marginal tax rate) (18 + 16 + 49 - (change in 74/.34))
Stickney & McGee <sup>47</sup>	Pretax book income minus (deferred tax expense/statutory marginal tax rate) (18 + 16 + 49 - (50/.34))

Several factors may limit the ability to estimate taxable income using financial statement data, as discussed in the next Subsection.

*a. Differences in the Reporting Entity*

Financial accounting standards generally require consolidation of all firms in which the parent has more than 50% ownership.<sup>48</sup> For tax reporting, consolidation is voluntary and cannot occur unless there is 80% ownership.<sup>49</sup> To the extent that the variable "Current Federal Tax Expense" in Equation 3 does not reflect the consolidated entity's tax expense, the estimate of taxable income will be in error.<sup>50</sup>

*b. Operating Losses*

A second factor that may limit the ability to estimate corporate taxable income using financial statement data is the presence of net oper-

<sup>42</sup> All definitions are drawn from Omer et al, note 41, at 60.

<sup>43</sup> Joint Committee, note 40.

<sup>44</sup> Porcano, note 40.

<sup>45</sup> Zimmerman, note 40.

<sup>46</sup> Shevlin, note 40.

<sup>47</sup> Stickney & McGee, note 40.

<sup>48</sup> FASB Standard No. 94, note 30.

<sup>49</sup> IRC § 1504(a).

<sup>50</sup> See generally Dworin, note 32, at 967; Manzon & Plesko, note 32; Plesko, Tax Rates, note 32.

ating losses (NOLs)<sup>51</sup> Specifically, during all but two years of our sample period, a firm generating a taxable loss in one year could carry that loss back to offset taxable income in the three previous years or forward to offset taxable income earned in the subsequent 15 years.<sup>52</sup> The three-year carryback rule limits the potential current tax benefit from operating losses to the sum of taxes paid in the three years preceding the loss. Estimated taxable income based on the reported current tax benefit when current period operating losses exceed taxable income in the three previous years will underestimate the extent of current taxable loss.

*c. Nonqualified Stock Option Compensation*

While corporations can deduct employee compensation related to nonqualified stock options in determining taxable income,<sup>53</sup> this deduction does not reduce current tax expense. Rather, it is reflected as a reduction in current tax liability.

Consider the following example: *Corporation A* has taxable income in 1999 before consideration of nonqualified stock compensation of \$100 million and faces a 35% tax rate. Also, assume that *Corporation A* has nonqualified stock compensation totaling \$40 million. Consistent with reported income before nonqualified stock compensation, *Corporation A* will report a current tax expense of \$35 million and record a tax liability of \$35 million. *Corporation A*, however, will not have to pay \$35 million in tax. Specifically, it will reduce taxable income by \$40 million as a result of nonqualified stock compensation to \$60 million. The resulting tax liability will be \$21 million (\$60 million x .35). *Corporation A* will reduce its tax liability by \$14 million (\$40 million x .35) and, rather than reducing tax expense, it will increase contributed capital by \$14 million. Thus, using Equation 3, the presence of nonqualified stock option compensation will lead to the systematic overestimation of corporate taxable income.

While corporate taxable income and the related corporate tax obligation is systematically overestimated when companies compensate employees using nonqualified stock options, the magnitude of overestimation is not a proxy for tax sheltering activity. Specifically, while companies do not reduce their reported tax expense at the same time they reduce their tax obligations by compensating employees with nonqualified stock options, employees who receive nonqualified stock

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<sup>51</sup> IRC § 172.

<sup>52</sup> The carryback and carryover periods were changed in 1997, with limited exceptions, to two and twenty years, respectively. Taxpayer Relief Act of 1997, Pub. L. 105-34, § 1082(a), 111 Stat. 788, 826.

<sup>53</sup> IRC § 83(h).



option compensation generally report that compensation as ordinary income on their individual tax returns and pay tax accordingly.<sup>54</sup> In effect, nonqualified stock option compensation shifts the actual payment of tax from corporations to individuals. The loss to Treasury from this shift is equal to the amount of nonqualified stock option compensation multiplied by the difference between the corporate and individual tax rates. If the corporate rate is less than the individual rate, Treasury is better off as a result of nonqualified stock option compensation. If the corporate rate is greater than the individual rate, Treasury is less well off as a result of nonqualified stock option compensation.

It is also important to note that while this accounting treatment will lead to systematic overestimation of firms' tax liabilities and taxable income, it will not affect the estimate of the difference between book and taxable income when using financial statement information. Specifically, neither book income as reported in financial statements nor taxable income inferred from the financial statements is reduced by nonqualified stock option compensation. As a result, when calculating the difference between book income and taxable income, the effect of stock options is completely removed.

Consider again the previous example, with the added assumption that the treatment of stock options is the only source of difference between financial and tax accounting measures of income. If one were to calculate the book-tax difference based upon the Schedule M-1, the firm would report pretax financial income of \$100 million, taxable income of \$60 million, and deductions not charged against book income of \$40 million. This \$40 million would be included as an unexplained book-tax difference in both Figures 1 and 2, as reported by Treasury.<sup>55</sup> When estimating this difference from financial statement information, the book income amount will be unchanged (\$100 million) and the estimate of taxable income will be based upon the amount of tax that would be paid in the absence of the \$40 million stock compensation expense. This accounting treatment yields an estimate of taxable income of \$100 million (\$35 million/.35), eliminating the book-tax difference caused by stock options. As a result, we do not need to introduce variables to control for the extent to which firms utilize nonqualified stock compensation in our regression estimates. Compared to Treasury's measures of the book-tax difference, presented in Figures 1 and 2, in which taxable income is reduced by nonqualified stock compensation but book income is not, our estimates of the book-tax difference should be smaller.

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<sup>54</sup> IRC § 83(a).

<sup>55</sup> Treasury Tax Shelter Study, note 1, at 21.

Reported evidence indicates that nonqualified stock option compensation has had a significant effect on corporate tax revenue and, by extension, Treasury's measures of book-tax difference. A recent report by Bear Stearns<sup>56</sup> estimates that for the seven largest companies in the NASDAQ 100 index, the tax benefit from stock options may exceed 10% of their cash flow from operations. Microsoft, in its 1999 Annual Report, reported a tax benefit from stock options of \$3.1 billion and tax expense (exclusive of these tax benefits) of \$4.1 billion.<sup>57</sup> An estimate of the book-tax difference of these options can be obtained by dividing the tax benefit by Microsoft's reported effective tax rate of 35.0%<sup>58</sup> yielding \$8.9 billion. This represents nearly 75% of Microsoft's reported income before taxes of \$11.9 billion.<sup>59</sup>

## 2. *Estimating the Difference Between Financial Reporting Income and Taxable Income*

We define the variable unadjusted SPREAD as the difference between U.S. domestic income for financial reporting purposes and U.S. domestic taxable income:

$$\text{Unadjusted SPREAD} = \text{U.S. domestic income} - \text{U.S. domestic taxable income} \quad (4)$$

where our estimate of U.S. domestic taxable income was defined in Equation 3.<sup>60</sup>

A more precise estimate of the book-tax SPREAD can be calculated by reducing U.S. domestic financial reporting income by expenses that are deductible in determining federal taxable income and by income that is not taxable. Specifically, we subtract from U.S. domestic income the following items when available: current state income taxes, other income taxes, and equity in income of nonconsolidated subsidiaries. We subtract current state and other income taxes because each is deductible in determining taxable income

<sup>56</sup> Bear Stearns, Accounting Issues, Employee Stock Options (July 6, 2000).

<sup>57</sup> Microsoft Corp., 1999 Annual Report 15, 22 (1999), available at <http://www.microsoft.com/msft/ar99>.

<sup>58</sup> Id. at 11, 22.

<sup>59</sup> Id. at 7. For estimates of the magnitude of the effect of stock options on income, see Michelle Hanlon & Terry Shevlin, Accounting for Tax Benefits of Employee Stock Options and Implications for Research, *Acctg. Horizons* 1, 9-13 (Mar. 2002) (providing a detailed description of the accounting treatment of stock options and documenting the extent to which estimates of taxes and tax rates will be affected); Martin A. Sullivan, Let the Good Times Roll: Options and Tax-Free Profits, 87 *Tax Notes* 1185, 1190 (May 29, 2000).

<sup>60</sup> Our sample was reduced due to the elimination of firms that did not delineate domestic and foreign income. An alternative to this treatment is to assume that firms that do not separate out the two types of income are wholly domestic. Doing so does not qualitatively change the results reported later; however, the coefficients are more difficult to interpret, as it is unlikely these firms are wholly domestic.

for federal tax purposes.<sup>61</sup> We also remove equity in the income of nonconsolidated subsidiaries because this income is not included in taxable income. Specifically, when firms use the equity method to account for investments in nonconsolidated subsidiaries they increase reported income by their proportionate interest in the income of the subsidiary.<sup>62</sup> No taxable income is recognized, however, unless a dividend is paid,<sup>63</sup> and even then the taxable income is reduced in a manner consistent with the intercorporate dividend exclusion provision.<sup>64</sup> The SPREAD measure is therefore:

$$\text{SPREAD} = \text{Unadjusted SPREAD} - \text{Income Taxes (State)} - \\ \text{Income Taxes (Other)} - \text{Equity in Net Loss} \\ \text{(Earnings)} \quad (5)$$

### 3. *Limitations of the SPREAD Measure*

We focus on the measure of the book-tax SPREAD because it has been suggested that financial reporting income has increased relative to taxable income and that this increase is indicative of an increase in tax shelter activity.<sup>65</sup> As noted, the accuracy of our estimate of taxable income may be limited by consolidation practices and by the manner in which operating loss carryforwards are accounted. Moreover, our measure of the book-tax SPREAD will not reflect the magnitude of nonqualified stock compensation, since it is excluded from our estimates of both book and taxable income. Another potential source of error in the book-tax SPREAD measure relates to repatriation of income from low-tax foreign sources when the foreign tax credit (FTC) limit is not binding.<sup>66</sup> Specifically, if the FTC limit is not binding, repatriation of foreign source income will trigger a current period domestic tax and increase our estimate of taxable income. Simply repatriating foreign source income, however, will not result in additional income recognition for financial reporting purposes. Thus, repatriation of foreign source income for firms for which the FTC limit is not binding will decrease the SPREAD.

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<sup>61</sup> IRC § 164(a).

<sup>62</sup> The Equity Method of Accounting for Investments in Common Stock, APB Opinion No. 18, §§ 10-12 (Accounting Principles Bd. 1971).

<sup>63</sup> IRC §§ 301, 316.

<sup>64</sup> IRC § 243.

<sup>65</sup> See, e.g., Treasury Tax Shelter Study, note 1, at 33.

<sup>66</sup> See IRC §§ 901, 904.

#### 4. *Factors Likely to Affect the SPREAD*

We identify three sources of book-tax differences that will affect the value of the SPREAD (and their respective control variables): tax-favored investment and financing actions, differences in accounting for financial reporting versus tax purposes, and noise factors.

##### a. *Tax-Favored Investment and Financing Actions*

###### i. *Profitability*

Profitable firms can make efficient use of tax deductions and tax credits and benefit from tax exemptions. We expect such firms to take “tax-advantaged” positions that reduce current taxable income and increase the SPREAD. We control for differences between profitable and nonprofitable firms’ book-tax difference by including a binary variable equal to one if the firm reports positive pretax income. We expect a positive relation between this variable and the SPREAD.

###### ii. *Presence of NOLs*

Relative to firms that do not have NOL carryforwards, firms with NOL carryforwards cannot make efficient use of tax deductions and credits or benefit as much from tax exemptions. As a result, we expect firms with NOL carryforwards to eschew “tax-advantaged” positions that reduce current taxable income, resulting in a negative relation between the SPREAD and the presence of NOL carryforwards. That said, it should be noted one way in which firms can generate NOL carryforwards is by taking tax-advantaged positions. To the extent firms take tax-advantaged positions and then, once they generate NOL carryforwards, find it costly to unwind those positions, a positive relation between the presence of NOL carryforwards and the SPREAD will result. Separately, firms with NOL carryforwards may find it less expensive to recognize additional (discretionary) income, potentially increasing the amount of income reported to shareholders while not affecting current period tax payments.

Taken together, the combined use of these two binary variables (positive pretax income and the existence of an NOL carryforward) have been shown to be effective controls for firms’ marginal tax rates.<sup>67</sup> Further, the use of two binary variables, rather than the use of one, allows for the delineation of firms into four distinct categories. Firms with positive pretax income and no NOL carryforwards should

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<sup>67</sup> Plesko, *Tax Rates*, note 32, at 23.

have the highest marginal tax rates, and loss firms with NOL carryforwards will have the lowest.<sup>68</sup>

iii. *Change in Net Sales*

A key factor in accrual prediction models is change in net sales,<sup>69</sup> and we expect accruals from sales to differ between tax and financial reporting due to revenue recognition differences under each system. Specifically, we anticipate a positive relation between the rate of firm growth and the SPREAD. Of importance with respect to this study, growing firms may make more significant investments in tax-favored assets that generate timing differences in the recognition of expenses for financial reporting and tax purposes. This effect may be mitigated to the extent that growing firms generate tax losses rendering tax shields from tax-favored investments less valuable. If these firms can contract efficiently with more highly taxed firms to hold assets and exploit tax shields, the relation between the rate of firm growth and the SPREAD will be lessened. Consistent with this accruals literature,<sup>70</sup> we measure firm growth as the change in reported net sales.

b. *Differences in Accounting for Financial Reporting Versus Tax Purposes*

i. *Property, Plant, and Equipment*

The depreciable lives of property, plant, and equipment are set by statute for tax purposes.<sup>71</sup> For financial reporting purposes, depreciable lives reflect management judgment. If depreciable lives for tax purposes are shorter than those used for financial reporting purposes, taxable income will be less than financial reporting income in the early years of an asset's life and higher in the later years of an asset's life. We expect the SPREAD to increase with utilization of depreciable assets measured using gross property, plant, and equipment. Moreover, we expect the SPREAD to increase to the extent firms use younger assets measured as the ratio of net property, plant, and equipment to gross property, plant, and equipment.

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<sup>68</sup> Id. at 19-26, 42-47; see also Terry Shevlin, Estimating Corporate Marginal Tax Rates with Asymmetric Tax Treatment of Gains and Losses, J. Am. Tax'n Ass'n, Spring 1990, at 51, 52-54 (originally suggesting four-part categorization).

<sup>69</sup> Jennifer J. Jones, Earnings Management During Import Relief Investigations, 29 J. Acct. Res. 193, 210-12 (1991).

<sup>70</sup> Id.

<sup>71</sup> IRC § 168(c), (e).

*ii. Other Assets Subject to Systematic Write-off*

Tax-deductible goodwill created subsequent to 1993 could be amortized for tax purposes over 15 years.<sup>72</sup> If this goodwill were amortized over more than 15 years for financial reporting purposes, financial reporting income would be greater than taxable income in the early years of the asset's life and there would be a positive relation between the SPREAD and post-1993 goodwill. Conversely, if goodwill created after 1993 were amortized over less than 15 years for financial reporting purposes, financial reporting income would be less than taxable income in the early years of the asset's life and there would be a negative relation between the SPREAD and post-1993 goodwill.

As with post-1993 goodwill, other intangible assets may be subject to different amortization periods for financial reporting and tax purposes. If financial reporting amortization is slower than amortization for tax purposes, the SPREAD will be positive in the early years of the asset's life and the relation between the SPREAD and these other intangible assets would be positive. Conversely, if financial reporting amortization is faster than amortization for tax purposes, the SPREAD will be negative in the early years of the asset's life and the relation between the SPREAD and other intangible assets would be negative.

*iii. Post-Retirement Benefits*

Under SFAS 106, firms were required to report obligations associated with post-retirement benefits.<sup>73</sup> For tax purposes, these obligations essentially are recognized on a cash basis.<sup>74</sup> Year to year, firms that increase (decrease) their post-employment obligation (that is, report an expense for financial reporting purposes) by an amount greater (less) than the reduction in post-employment obligation by way of tax deductible expenses (that is, report and expense for tax purposes) will report negative (positive) SPREAD. We calculate the change in post-retirement benefit obligation as the current year obligation less the prior year's obligation. We anticipate the change in post-employment obligations to be negatively related to the SPREAD.

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<sup>72</sup> IRC § 197, added by the Omnibus Budget Reconciliation Act of 1993, Pub. L. 103-66, § 13261, 107 Stat. 312, 532-40. Section 197 is generally effective for acquisitions after August 10, 1993, the date of enactment. IRC § 197(c)(1)(A). Purchased but not self-created goodwill is generally amortized over 15 years.

<sup>73</sup> Employers' Accounting for Postretirement Benefits Other Than Pensions, Statement of Financial Accounting Standards No. 106 (Financial Accounting Standards Bd. 1990).

<sup>74</sup> Reg. § 1.461-1(a).

*iv. Permanent Difference: Pre-1993 Goodwill*

Until 1993 goodwill had to be amortized for financial reporting purposes (over a period not to exceed 40 years)<sup>75</sup> but could not be amortized for tax purposes.<sup>76</sup> As a result, for years prior to 1993, the financial reporting income of firms with goodwill should have been less than their taxable income. This would result in lower measures of the SPREAD and create a negative relation between goodwill and the SPREAD.

*c. Noise Factors*

*i. Change in NOLs*

As discussed, in the year in which an NOL carryforward is generated, estimated taxable income is overstated because the current tax benefit generated will not reflect the future tax benefits from the carryover. Thus, when NOL carryforwards increase, the SPREAD will be underestimated. We expect a negative sign on the relation between a change in NOLs and the SPREAD.

*ii. Foreign Operations*

The U.S.-source versus foreign-source nature of income may differ between what is reported in published financial reports and tax reports, with this difference increasing as the level of foreign profitability increases. Specifically, if firms operate in foreign countries that tax corporate income at a lower rate than it is taxed in the United States, they will have an incentive to shift taxable earnings to those foreign countries. If firms with significant foreign operations (measured using foreign source income) report more U.S. source income in their financial statements than they do in their tax reports, their measures of the SPREAD will be higher than those of firms with less significant foreign operations. Conversely, if firms operate in foreign countries that tax corporate income at a higher rate than it is taxed in the United States, they will have an incentive to shift taxable earnings to the United States. If firms with significant foreign operations report less U.S. source income in their financial statements than they do in their tax reports, their measures of the SPREAD will be lower than those of firms with less significant foreign operations. Because we cannot readily infer the tax-shifting incentives of firms in our sample from the

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<sup>75</sup> E.g., Danny P. Hollingsworth & Walter T. Harrison, *Taxation of Intangibles*, 9 J.L. & Com. 51, 51 (1989).

<sup>76</sup> Reg. § 1.167(a)-3 (“No deduction for depreciation is allowable with respect to goodwill.”). This absolute prohibition was relaxed significantly by the addition of § 197.

data sources we used, we cannot predict a sign on the relation between the extent of foreign operations and the SPREAD.

*iii. Size*

Assets generating temporary differences that reduce taxable income relative to financial reporting income can be viewed as tax-advantaged.<sup>77</sup> Large firms may be able to more efficiently devise and execute investing plans to exploit tax-advantaged assets. The ability of large firms to exploit tax-planning opportunities, however, may be limited by their perception that availing themselves of such opportunities may bring about unwanted political and regulatory scrutiny.<sup>78</sup> These conflicting effects do not make it possible to predict a sign on the relation between firm size and the SPREAD. We measure firm size as total assets less net property, plant, and equipment, and intangibles assets.

*iv. Lagged SPREAD*

We expect that the SPREAD may follow either a monotonic or mean reverting process. For many firms, the SPREAD will be the result of tax-favored investments that hasten tax deductions. If the firm is in a steady state with positive factor price inflation, continually replenishing tax-favored investments at nominally increasing prices, the SPREAD will increase year to year. Such a state may reasonably describe large businesses operating in fairly stable industries. If firms make investments in tax-favored assets in a non-monotonic manner (for example, large “one-time” investments), the SPREAD will reflect a spike and then revert to a normal level as the timing difference associated with the investment unwinds.

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<sup>77</sup> Myron S. Scholes, Mark A. Wolfson, Merle Erickson, Edward L. Maydew & Terry Shevlin, *Taxes and Business Strategy* 141-42 (2d ed. 2002).

<sup>78</sup> Lillian F. Mills, *Book-Tax Differences and Internal Revenue Service Adjustments*, 36 *J. Acct. Res.* 343, 344-45 (1998), discusses the extent to which book-tax differences may play a role in the audit process of large firms. It has been estimated that the return to large firms for tax planning is on the order of four dollars for each dollar invested. Lillian Mills, Merle M. Erickson & Edward L. Maydew, *Investments in Tax Planning*, 20 *J. Am. Tax'n Ass'n* 1, 2 (1998). John Phillips examines the effect of including firms' taxes paid as a factor affecting managerial compensation. John D. Phillips, *Corporate Tax Planning Effectiveness: The Role of Incentives* (Univ. Conn. Working Paper, 2001).



## V. DESCRIPTIVE RESULTS

### A. *Data*

Data was collected from the Standard & Poor's COMPUSTAT Annual File for the years 1988 to 1999.<sup>79</sup> The COMPUSTAT Annual File contains firm identifying information and more than 300 other data items from the financial statements and footnotes of more than 10,000 publicly-traded firms. Within the COMPUSTAT file, each item of information collected from the financial statements is assigned a Data Item Number, which does not change from year to year (for example, Total Assets is data item 6), allowing the easy electronic retrieval of data for a large number of corporations.<sup>80</sup> While COMPUSTAT data is widely used in research, data can only be obtained for the datafile if it is reported in the financial statements, and distinctions must be made between where a lack of reporting is due to the value being zero rather than missing.<sup>81</sup>

Some data fields (for example, Total Assets) are rarely missing, while others, particularly those from the footnotes, rarely contain valid entries. In any given year, the number of firms with nonmissing fields for all relevant variables will exceed the number of firms having the same data over two or more years. Initially, we collected data on all firms with nonmissing values for the variables of interest in any of the sample years. We then imposed data requirements spanning the entire study period, substantially reducing the number of observations, but allowing us to make comparisons on the same set of firms over the entire period.

Our final sample contains 17,692 firm-year observations for which we are able to calculate unadjusted-SPREAD, and 12,204 firm-year observations for which we are able to calculate the SPREAD. The actual number of observations used in any particular application will be much smaller, as the explanatory variables used in the regression to explain the book-tax SPREAD may not be available for every firm in every year. For example, in the most restrictive setting, 178 firms, representing 1,958 firm-years, had sufficient data to calculate the SPREAD and each of the explanatory variables in each of the 11 years.

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<sup>79</sup> Standard & Poor's, COMPUSTAT Annual File.

<sup>80</sup> See Standard & Poor's COMPUSTAT (North America) User's Guide (2000), for a description of the database, the data item codes, and other information related to the file.

<sup>81</sup> In some cases, Standard & Poor's may yield incorrect values or classification errors. See Michael R. Kinney & Edward P. Swanson, *The Accuracy and Adequacy of Tax Data in COMPUSTAT*, J. Am. Tax'n Ass'n, Spring 1993, at 121.

*B. How Significant Are Book-Tax Differences?*

While Figures 1 and 2 provide Treasury's graphs of the book-tax differences for the largest firms,<sup>82</sup> Treasury appears to have limited its analysis to only the very largest firms—those with assets in excess of \$1 billion.<sup>83</sup> While it is reasonable to expect firms with the largest incomes to also have the largest book-tax differences, limiting the sample will make it more difficult to make statistical inferences. Further, restrictions placed on the data to construct the sample of firms may influence the conclusions that can be reached.

In Figure 3 we plot the aggregate unadjusted book-tax SPREAD for all firms with data to do so in each of the years. Relative to Treasury's Figure 2, three things stand out. First, while showing a different and more volatile pattern than Treasury, the overall trend is approximately the same, with the book-tax difference rising dramatically in the mid-1990's. Second, the dollar magnitude of the differences is smaller, with the amount of book-tax difference well below \$60 billion until 1999, in comparison to Treasury's estimate of more than \$120 billion in 1997.<sup>84</sup> Third, Treasury shows a negative book-tax difference only once, in 1992.<sup>85</sup> This is likely the result of firms adopting new accounting for post-retirement benefits as outlined in SFAS 106.<sup>86</sup> We estimate negative book-tax differences from 1990-1993. Part of the difference in the magnitude and sign of the differences may be due to the sample, with Treasury likely to have data on more firms (even with the restriction on asset size), or firms with greater book-tax differences. Other explanations for the difference have to do with what income is included. As explained previously, our measure excludes the effects of stock options, which are included in Treasury's measure of the book-tax differences.<sup>87</sup> Also, while we focus solely on domestic income, the Schedule M-1 data Treasury uses may contain consolidated foreign source income.

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<sup>82</sup> Talisman Statement, note 2, at pt. I.C.

<sup>83</sup> The exact sample used by Treasury in these graphs is unclear. While Treasury states an asset requirement, it is not clear in which year that asset requirement applies, or whether a firm must meet that requirement in all years to be included. Based on Figure 1, it appears that the firms included for 1992 reported approximately \$150 billion of total receipts less total deductions. This is slightly less than one-half of the amount of total receipts less total deductions reported for all corporations with assets in excess of \$250 million in 1992. IRS, *Statistics of Income 1992: Corporation Source Book 9* (1995). The description of the sample in Figure 2, however, differs from that in Figure 1. In Figure 1 the sample is described as "Firms with Mean Assets Over \$1 Billion," but in Figure 2 the sample states "Firms with Assets Over \$1 Billion." Talisman Statement, note 2, at pt. I.C.

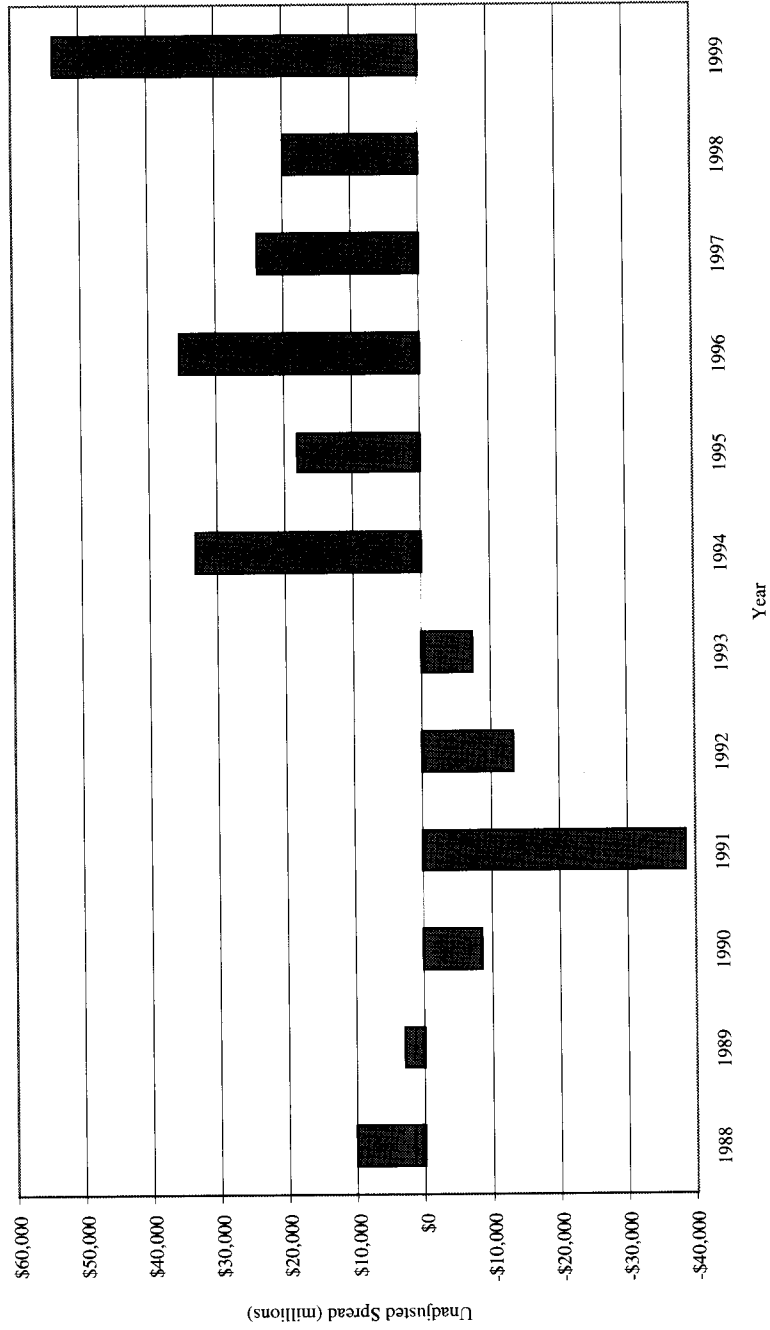
<sup>84</sup> Talisman Statement, note 2, at pt. I.C. fig. 2.

<sup>85</sup> *Id.*

<sup>86</sup> FASB No. 106, note 73.

<sup>87</sup> See Subsection IV.B.1.C.

FIGURE 3  
AGGREGATE UNADJUSTED BOOK-TAX SPREAD — UNBALANCED PANEL OF FIRMS



The concern in basing a conclusion regarding the pattern of book-tax differences on Figure 3 is that the group of firms included in any given year may not be the same firms included in any other year. Without requiring the composition of the sample to remain constant over the sample period, changes in the value of the SPREAD from year to year may be due solely to the inclusion or exclusion of particular firms.

Figure 4 displays the results of restricting the sample by requiring all firms to have data to construct the unadjusted-SPREAD variable in all years, leaving a total of 365 firms.

As in prior figures, the trend in the unadjusted-SPREAD is similar to that reported by Treasury until 1997. For 1997, we estimate the unadjusted-SPREAD fell relative to 1996, and fell further in 1998, but dramatically increased in 1999. Treasury data ends in 1997, so a comparison of the last two years is not possible.

Further restricting the sample to the firms in Figure 4 for which we can also calculate the SPREAD reduces the panel to 178 firms, and is displayed in Figure 5. The general trend in this figure, similar to the earlier figures, is of an increase in the book-tax SPREAD from the early 1990's through 1996 followed by a decline in 1997 and 1998 and a sharp increase in 1999.

The data in Figures 1 through 5 reveals a consistent pattern of variation in book-tax differences across time periods and samples. The data does not provide evidence, however, on whether book-tax differences and variations in those differences over time result from the mechanical application of different accounting procedures for book and tax purposes, economic factors that have created incentives for firms to engage in activities that result in different calculations of book and tax income, or from tax sheltering activities.

Descriptive statistics for the most restricted sample are presented in Table 2. This sample of 178 firms, representing 1,958 firm-years, has sufficient data to calculate the SPREAD and each of the explanatory variables in each of the 11 years. We focus on these data for two reasons. First, we believe the SPREAD variable is less noisy than the unadjusted SPREAD variable. Second, it is difficult to interpret the means from unbalanced samples that allow firms to enter and leave year to year.

Several things stand out in Table 2. First, as reflected in the figures, the estimates of book-tax income differences increased from a low point in 1991 to a high in 1999. This is generally consistent with the observation that the gap between income for financial reporting purposes and income tax purposes grew during the 1990's. Second, it appears that among this group of firms, 1991 was a particularly poor

FIGURE 4  
AGGREGATE UNADJUSTED BOOK-TAX SPREAD — BALANCED PANEL OF 365 FIRMS

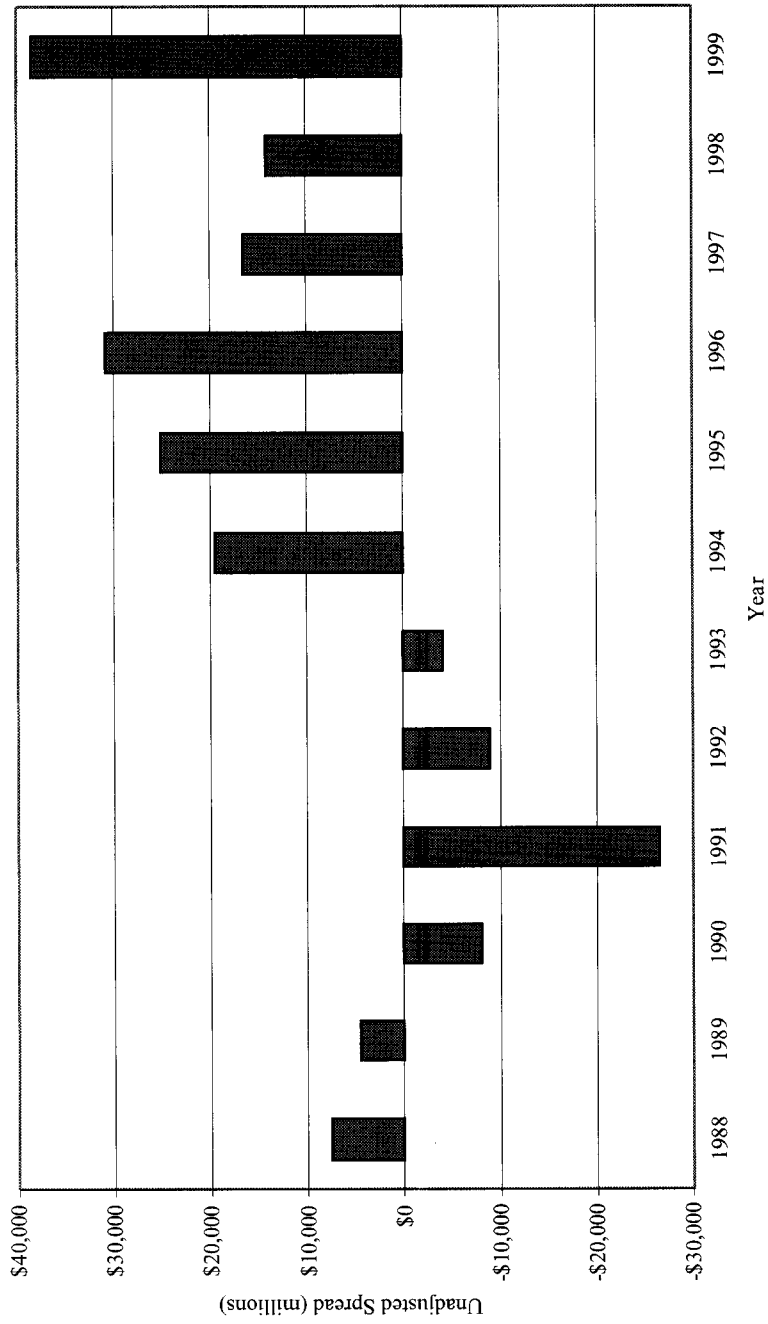
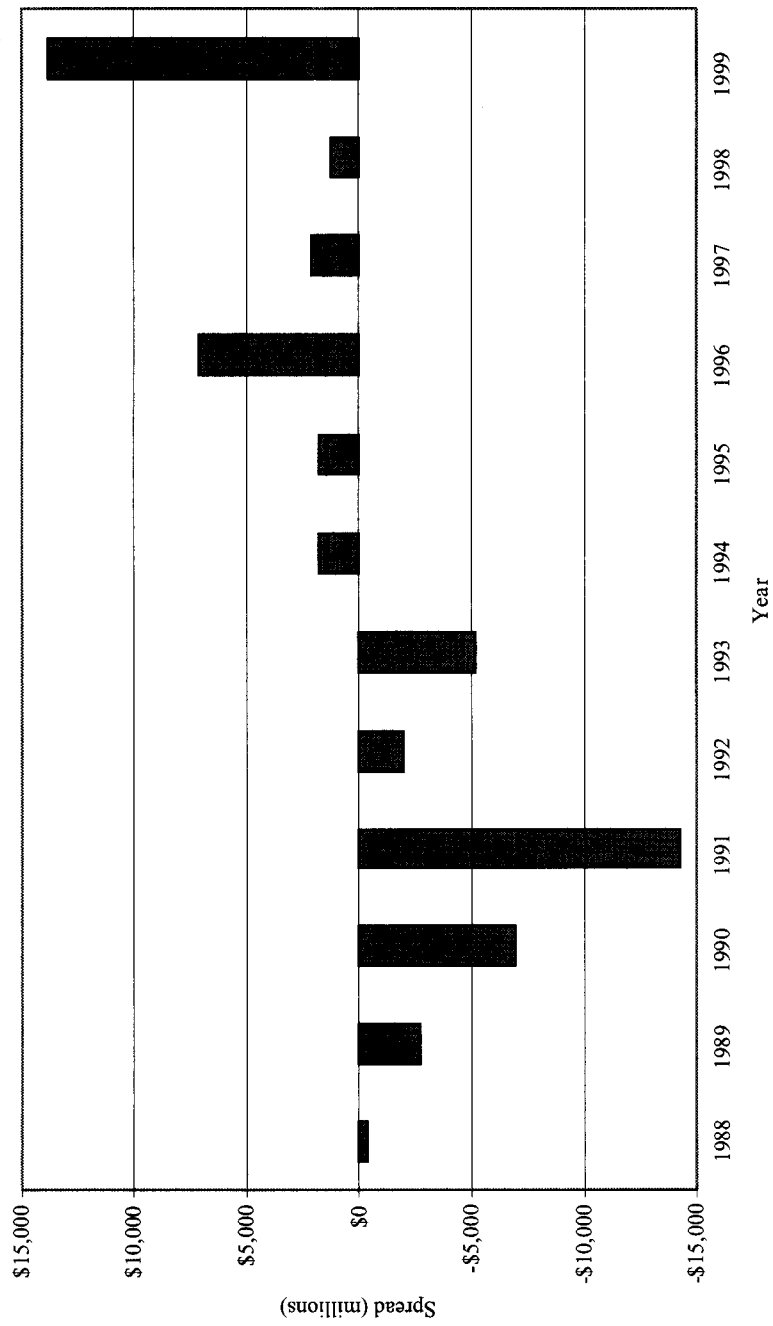


FIGURE 5  
AGGREGATE BOOK-TAX SPREAD — BALANCED PANEL OF 178 FIRMS



**TABLE 2**  
**MEANS OF SAMPLE VARIABLES: SPREAD (DOLLARS IN MILLIONS)**  
**178 OBSERVATIONS PER YEAR, 1,958 TOTAL FIRM-YEAR OBSERVATIONS**  
**(STANDARD ERRORS IN PARENTHESES)**

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
<b>SPREAD</b>	-15.01 (216.30)	-38.92 (227.98)	-80.28 (374.06)	-10.96 (171.33)	-29.07 (235.12)	10.16 (218.63)	10.08 (281.83)	40.55 (382.94)	11.75 (336.00)	6.63 (405.10)	77.41 (711.61)
<b>Positive Pretax Income</b>	0.84 (0.37)	0.83 (0.38)	0.72 (0.45)	0.78 (0.41)	0.79 (0.41)	0.85 (0.36)	0.84 (0.37)	0.83 (0.38)	0.85 (0.36)	0.78 (0.41)	0.79 (0.41)
<b>Positive NOL Carryforward</b>	0.20 (0.40)	0.23 (0.42)	0.25 (0.43)	0.25 (0.43)	0.22 (0.41)	0.22 (0.42)	0.25 (0.43)	0.25 (0.43)	0.27 (0.45)	0.28 (0.45)	0.28 (0.45)
<b>Change in Net Sales</b>	307.87 (1156.76)	310.66 (1152.48)	-212.71 (1537.98)	203.85 (1317.93)	95.40 (1093.51)	432.76 (2014.80)	329.18 (1064.99)	348.70 (1430.64)	315.20 (1148.55)	-81.69 (2333.80)	530.32 (2290.28)
<b>Gross PP&amp;E</b>	2340.09 (6738.25)	2554.16 (7357.58)	2659.32 (7510.70)	2757.66 (7677.79)	2830.15 (7815.25)	2997.61 (8308.88)	3163.51 (8882.83)	3266.14 (9148.20)	3408.44 (9467.24)	3471.41 (9327.41)	3659.42 (9918.73)
<b>Net PP&amp;E/Gross PP&amp;E</b>	0.56 (0.14)	0.55 (0.13)	0.53 (0.13)	0.52 (0.14)	0.51 (0.14)	0.50 (0.14)	0.49 (0.14)	0.49 (0.14)	0.49 (0.14)	0.49 (0.14)	0.50 (0.14)
<b>Change in Goodwill After 1993</b>	-	-	-	-	-	7.47 (60.92)	-15.37 (326.60)	-17.82 (303.35)	23.98 (341.47)	63.60 (494.53)	161.47 (677.25)
<b>Non-Goodwill Intangible Assets</b>	114.77 (1206.48)	136.30 (1456.73)	126.75 (1422.83)	128.77 (1415.19)	108.28 (1562.37)	185.01 (1966.04)	202.66 (1935.70)	206.98 (1859.69)	204.82 (1774.45)	210.04 (1599.64)	230.09 (1602.48)
<b>Change in Post-Retirement</b>	-	-	16.87 (151.44)	105.16 (577.36)	26.42 (144.96)	2.00 (28.41)	0.10 (17.19)	-2.73 (31.56)	-0.11 (29.68)	-3.75 (65.67)	4.91 (50.85)
<b>Pre-1993 Goodwill</b>	102.50 (531.10)	126.70 (623.92)	129.43 (624.97)	134.42 (600.00)	136.07 (589.54)	136.07 (589.54)	136.07 (589.54)	136.07 (589.54)	136.07 (589.54)	136.07 (589.54)	136.07 (589.54)
<b>Change in Unused NOL</b>	-1.76 (25.00)	11.42 (117.61)	-2.70 (48.04)	3.81 (101.13)	3.91 (39.14)	-0.61 (46.41)	-0.03 (38.03)	2.85 (27.08)	1.96 (60.71)	3.66 (44.58)	6.57 (45.58)
<b>Foreign Pretax Income</b>	130.15 (484.45)	98.69 (340.26)	79.10 (303.36)	63.86 (297.14)	67.63 (254.75)	112.94 (339.86)	144.49 (416.45)	146.63 (450.36)	180.47 (549.70)	145.39 (447.71)	160.67 (474.86)
<b>Total Assets less PP&amp;E and Intangibles</b>	2118.89 (10711.94)	2270.67 (11304.06)	2314.26 (11433.00)	2437.97 (12024.31)	2649.76 (13858.24)	2908.84 (15142.62)	3149.06 (16597.90)	3411.34 (17976.46)	3653.27 (19204.46)	3572.91 (16131.30)	4013.42 (18221.58)

sales year, with the mean change in sales equal to negative \$213 million. In fact, 1991 and 1998 were the only years covered in the sample that mean sales declined, with mean year-to-year change over the sample period equal to positive \$235 million. In contrast, 1999, which has the largest estimated value of the SPREAD, also has the largest reported change in sales. Third, the change in post-retirement obligations spikes in 1992 and then diminishes significantly thereafter. This is consistent with firms' adoption of FAS 106 in 1992<sup>88</sup> and electing to take a large one-time charge against income rather than spreading the charge over an optional 20-year period. Lastly, there was a significant increase in goodwill in 1999, consistent with increased merger and acquisition activity. As noted earlier, goodwill may be accounted for in a different manner for book and tax purposes, giving rise to a book-tax difference.<sup>89</sup>

Correlations are presented in Table 3. The majority of the relations between the SPREAD and the explanatory variables are as expected. One notable exception is the positive relation between the SPREAD and pre-1993 goodwill. As discussed, amortization of pre-1993 goodwill was deductible for financial reporting purposes but not for tax purposes.<sup>90</sup> Thus, we expected the SPREAD and pre-1993 goodwill to be negatively related.

While our primary focus is on the ability to predict the SPREAD rather than on identifying the specific variables that generate the SPREAD, it is important to note that the explanatory variables are highly correlated. The high degree of correlation suggests that introducing each of the variables into the regression analysis is important to avoid a correlated omitted variables bias and incorrect inferences regarding the relative explanatory power of any particular variable.

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<sup>88</sup> FASB No. 106, note 73.

<sup>89</sup> See Subsection IV.B.4.b.ii.

<sup>90</sup> *Id.*



**TABLE 3**  
**PEARSON CORRELATION COEFFICIENTS**  
**(VALUES BELOW COEFFICIENT REPRESENT THE SIGNIFICANCE LEVELS)**

	Spread	Positive Pretax Income	Positive Pretax Carryforward	Positive NOL Carryforward	Change in Net Sales	Gross PP&E	Net PP&E/ Gross PP&E	Change in Goodwill After 1993	Non-Goodwill Intangible Assets	Change in Post-Retirement	Pre-1993 Goodwill	Change in Unused NOL	Foreign Pretax Income	Total Assets less PP&E and Intangibles
<b>SPREAD</b>	1.00													
Positive Pretax Income	0.13*	1.00												
Positive NOL Carryforward	-0.02	-0.21*	1.00											
Change in Net Sales	0.29*	0.09*	-0.05*	1.00										
Gross PP&E	0.18*	0.05*	-0.05*	0.30*	1.00									
Net PP&E/Gross PP&E	0.03	0.05*	0.00*	0.07*	0.03	1.00								
Change in Goodwill After 1993	0.06*	0.01	-0.05*	0.23*	-0.02	0.06*	1.00							
Non-Goodwill Intangible Assets	0.12	0.04	0.52	0.01	0.10*	0.07*	0.10*	1.00						
Change in Post-Retirement Benefits	-0.03	-0.02	0.00	0.03	0.14*	0.00	0.01	0.09*	1.00					
Pre-1993 Goodwill	0.24*	0.05*	0.01	0.28*	0.53*	0.02	-0.23*	-0.11*	0.02	1.00				
Change in Unused NOL	-0.11*	-0.06*	0.13*	0.06*	0.03	0.00	0.02	0.01	0.01	0.11*	0.04*	1.00		
Foreign Pretax Income	0.06*	0.08*	-0.06*	0.24*	0.69*	0.03	-0.10*	0.37*	0.11*	0.11*	0.24*	-0.05*	1.00	
Total Assets less PP&E and Intangibles	0.45*	0.05*	-0.05*	0.41*	0.66*	0.03	-0.04	-0.02	0.03	0.03	0.76*	0.01	0.35*	1.00
	0.00	0.02	0.02	0.00	0.00	0.14	0.10	0.36	0.16	0.00	0.68	0.01	0.00	

## VI. EXPLAINING THE BOOK-TAX SPREAD

### A. *Estimating the Sources of the Book-Tax SPREAD*

To estimate the extent to which the book-tax SPREAD can be explained by institutional and economic factors we first estimate the following model for the book-tax SPREAD including only those variables that explicitly are accrued for differently under financial and tax accounting and the lagged book-tax SPREAD variable:

$$\begin{aligned} \text{SPREAD} = & \beta_0 + \beta_1 (\text{change in net sales}) + \beta_2 (\text{gross PP\&E}) + \beta_3 (\text{net} \\ & \text{PP\&E/gross PP\&E}) + \beta_4 (\text{change in goodwill after 1993}) \\ & + \beta_5 (\text{other intangible assets}) + \beta_6 (\text{change in post-retire-} \\ & \text{ment benefits}) + \beta_7 (\text{pre-1993 goodwill assets}) + \beta_8 \\ & (\text{change in unused NOL}) + \beta_9 (\text{lag SPREAD}) \end{aligned} \quad (6)$$

where the variables are as defined in the Appendix.

We also estimate a model for the book-tax SPREAD using accounting variables and four additional variables: (1) the firm's pretax income, (2) the presence of NOLs, (3) the extent of foreign income, and (4) the size of the firm. The full model follows:

$$\begin{aligned} \text{SPREAD} = & \beta_0 + \beta_1 (\text{change in net sales}) + \beta_2 (\text{gross PP\&E}) + \beta_3 (\text{net} \\ & \text{PP\&E/gross PP\&E}) + \beta_4 (\text{change in goodwill after 1993}) \\ & + \beta_5 (\text{other intangible assets}) + \beta_6 (\text{change in post-retire-} \\ & \text{ment benefits}) + \beta_7 (\text{pre-1993 goodwill assets}) + \beta_8 \\ & (\text{change in unused NOL}) + \beta_9 (\text{lag SPREAD}) + \beta_{10} (\text{posi-} \\ & \text{tive pretax income}) + \beta_{11} (\text{positive NOL carryforward}) + \\ & \beta_{12} (\text{foreign pretax income}) + \beta_{13} (\text{total assets less PP\&E} \\ & \text{and intangibles}) \end{aligned} \quad (7)$$

We pool together the successive cross-sectional data for the 11-year period and estimate Equations 6 and 7 using a fixed-effects model.<sup>91</sup> In a fixed-effects model, we assume that differences across firms can be captured with firm-specific constants, but that the marginal effect of each explanatory variable is the same across all firms and over time.

### B. *Results*

Table 4 presents the estimated coefficients for Equations 6 and 7. Equations 6 and 7 are estimated using balanced (columns 1 and 3) and unbalanced (columns 2 and 4) panels of firms. The adjusted  $R^2$ s for

<sup>91</sup> For a description of the fixed-effects model and other approaches to panel data models, see William H. Greene, *Econometric Analysis* 560 (4th ed. 2000); Jeffrey M. Wooldridge, *Introductory Econometrics: A Modern Approach* 420 (1999). For a discussion of the possibility and extent of bias when lagged dependent variables are included in fixed-effects models, see Wooldridge, *supra*, at 378-79, 421-22. We find that the coefficients in our model are not statistically different when we exclude the lag SPREAD.

**TABLE 4**  
**FIXED EFFECTS ESTIMATES OF FACTORS AFFECTING THE BOOK-TAX**  
**SPREAD (STANDARD ERRORS IN PARENTHESES)**

	<i>Expected Sign</i>	(1) <i>Balanced</i>	(2) <i>Unbalanced</i>	(3) <i>Balanced</i>	(4) <i>Unbalanced</i>
Change in Net Sales	+	0.028*** (0.004)	0.010*** (0.002)	0.025*** (0.004)	0.017*** (0.002)
Gross PP&E	+	0.110*** (0.005)	0.065*** (0.003)	0.096*** (0.005)	0.068*** (0.003)
Net PPE/Gross PPE	+	34.434 (88.292)	19.705 (32.907)	-2.090 (83.142)	9.032 (31.755)
Change in Goodwill after 1993	?	0.046** (0.022)	0.040*** (0.010)	0.022 (0.021)	0.028*** (0.009)
Non-Goodwill Intangible Assets	?	-0.029*** (0.010)	-0.102*** (0.006)	-0.010 (0.010)	-0.096*** (0.006)
Change in Post- Retirement Benefits	-	-0.027 (0.031)	0.058*** (0.012)	-0.046 (0.029)	0.027** (0.011)
Pre-1993 Goodwill	-	-0.661*** (0.078)	0.217*** (0.050)	-0.823*** (0.077)	0.094* (0.049)
Change in Unused NOL	-	-0.684*** (0.094)	-0.269*** (0.033)	-0.792*** (0.091)	-0.286*** (0.033)
Lag SPREAD	?	0.168*** (0.028)	0.166*** (0.013)	0.097*** (0.027)	0.209*** (0.013)
Positive Pretax Income	+			122.233*** (16.642)	93.451*** (7.182)
Positive NOL Carryforward	?			4.929 (18.479)	11.079 (8.731)
Foreign Pretax Income	?			-0.323*** (0.029)	-0.395*** (0.018)
Total Assets less PP&E and Intangibles	?			0.022*** (0.003)	0.010*** (0.001)
Constant		-262.592*** (47.852)	-111.915*** (18.131)	-308.471*** (47.420)	-166.698*** (18.299)
Observations		1,958	10,702	1,958	10,702
Adjusted $R^2$		0.435	0.236	0.501	0.290

Significance levels: \* 10%; \*\* 5%; \*\*\* 1%

the balanced samples are approximately twice those of the unbalanced samples. It is notable that the adjusted  $R^2$ 's from estimating Equation 6 (columns 1 and 2) are approximately 80% of those from estimating Equation 7. We infer from this result that a relatively few variables that reflect differences in accounting methods applied for book and tax purposes explain a significant proportion of the aggregate book-tax SPREAD.

Looking to columns 1 and 2, which report the results from estimating Equation 6, each of the coefficients on the variables are significant at conventional levels, with the exception of those related to net PP&E/gross PP&E, change in post-retirement benefits and pre-1993 goodwill in the unbalanced sample. Specifically, the change in net sales is positively related to the book-tax SPREAD, consistent with growing firms making more significant investments in tax-favored assets that generate timing differences that result in greater book in-

come relative to taxable income. Gross PP&E is positively related to the book-tax SPREAD, consistent with firms reliant on PP&E depreciating assets more quickly for tax than book purposes. The change in goodwill after 1993 is positively related to book-tax SPREAD, consistent with firms amortizing goodwill more slowly for financial reporting purposes than for tax purposes. In contrast, other intangible assets are negatively related to the book-tax SPREAD, consistent with firms amortizing other intangible assets more quickly for financial reporting purposes than for tax purposes. The change in unused NOLs is negatively related to the book-tax SPREAD. As noted, we expect this mechanical relation since firms generating losses often will not realize a current tax benefit, resulting in an estimate of taxable income equal to zero. Lag adjusted SPREAD is positively related to book-tax SPREAD, consistent with the view that firms operating in a steady state continually replenish tax-favored investments.

The results from estimating Equation 7 are reported in columns 3 and 4. The signs and significance of the coefficients on the accounting-based variables are largely unchanged. The coefficients on positive pretax income, foreign pretax income, and total assets less PP&E and intangibles are each significant. The positive coefficients on positive pretax income are consistent with profitable firms making tax-advantaged investments. The negative coefficients on foreign pretax income are consistent with firms transferring income from foreign operations to the United States for taxation, bypassing the tax system of the foreign country. Such behavior is consistent with the United States being, effectively, a low tax-rate country. Lastly, positive coefficients on total assets less PP&E and intangibles (our size variable), are consistent with larger firms making relatively more tax-advantaged investments than smaller firms.

Table 5 presents the adjusted  $R^2$ s by year for Equations 6 (accounting variables only) and 7 (the full model).

TABLE 5  
ANNUAL ADJUSTED- $R^2$

<i>Year</i>	<i>Accounting Variables*</i>	<i>Full Model**</i>
1989	0.57	0.61
1990	0.83	0.85
1991	0.82	0.91
1992	0.46	0.64
1993	0.44	0.52
1994	0.37	0.68
1995	0.75	0.80
1996	0.81	0.81
1997	0.59	0.66
1998	0.43	0.71
1999	0.72	0.83

\* The accounting variables models uses the following independent variables to explain variations in SPREAD: Change in Net Sales, Gross PP&E, Net PPE/Gross PPE, Change in Goodwill after 1993, Nongoodwill Intangible Assets, Change in Post-Retirement Benefits, Pre-1993 Goodwill, Change in Unused NOL, and Lag SPREAD.

\*\* The full model uses all of the accounting variables and adds Positive Pretax Income, Positive NOL Carryforward, Foreign Pretax Income, and Total Assets less PP&E and Intangibles. All variables are defined in the Appendix.

The  $R^2$ s for Equation 6 vary from a low of .37 in 1994 to a high of .83 in 1990. The  $R^2$ s for Equation 7 vary from a low of .52 in 1993 to a high of .91 in 1991. It is instructive to note that while the explanatory power of Equations 6 and 7 varies over time, there is no discernable pattern of increase or decrease in  $R^2$  over time. To the extent that tax-sheltering activities are not correlated with the explanatory variables in Equations 6 and 7, the absence of a pattern in the  $R^2$ s, and, specifically, the absence of a decline in  $R^2$  over time, is consistent with tax sheltering activities not markedly changing over the sample time periods examined.

## VII. CONCLUSIONS

We model the difference between income for financial reporting purposes and income for tax reporting purposes as a function of a relatively small set of variables. These variables reflect demand for tax-favored investing and financing activities, specific factors that generate timing and permanent differences between financial and taxable income, and factors that may create noise in the estimation of financial and taxable income.

The evidence we report is consistent with the view that a small number of factors are responsible for a significant amount of book-tax dif-

ferences. Moreover, the evidence indicates that the predictability of the book-tax SPREAD has remained fairly constant over time. This latter finding is inconsistent with an increase in tax shelter activity.

Beyond the narrow concerns of tax shelter activity, these book-tax accounting differences have broader implications for tax policy. If financial accounting represents a better measure of economic income than tax accounting, then differences in the two will indicate the extent to which tax rules mismeasure economic activity. Indeed, in explaining the reasons for the changes in the alternative minimum tax (AMT) enacted as part of the Tax Reform Act of 1986, "Congress concluded that the minimum tax should serve one overriding objective: to ensure that no taxpayer with substantial economic income can avoid significant tax liability by using exclusions, deductions, and credits."<sup>92</sup> In addition to statutory preferences, such as accelerated depreciation and tax-exempt interest, the difference in the amounts of income determined under tax and financial reporting rules was also an explicit concern addressed in the 1986 Act:

With respect to corporations, Congress concluded that the goal of applying the minimum tax to all companies with substantial economic incomes cannot be accomplished solely by compiling a list of specific items to be treated as preferences. In order to achieve both real and apparent fairness, Congress concluded that there must be a reasonable certainty that, whenever a company publicly reports significant earnings, that company will pay some tax for the year.<sup>93</sup>

To achieve this objective, Congress enacted the book income preference, which included one-half of the difference between taxable and financial reporting income as a preference item. It was effective for years 1987 to 1989.<sup>94</sup>

Whether the book income preference was an appropriate solution to this perceived problem is beyond the scope of this paper. The AMT did reduce the number of firms reporting positive income to shareholders yet reporting little or no income in its tax filings. Empirical evidence suggests, however, that this result may well have been

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<sup>92</sup> Staff of the Joint Comm. on Tax'n, 99th Cong., General Explanation of the Tax Reform Act of 1986, at 432 (Comm. Print 1987).

<sup>93</sup> *Id.* at 434.

<sup>94</sup> IRC § 56(f) (enacted by Tax Reform Act of 1986, Pub. L. 99-514, § 701(a), 100 Stat. 2085, 2326-33, repealed by Omnibus Budget Reconciliation Act of 1990, Pub. L. 101-508, § 11801(a)(3), 104 Stat. 1388, 1388-520. The requirement for conformity between tax and financial reporting under LIFO inventory accounting is an example where the tax benefit of increased deductions required the recognition of increased expenses for financial reporting. IRC § 472(c).

accompanied by increased compliance costs, distortions in financial reporting, and a reduction in many of the incentives in the Code.<sup>95</sup> Given the experience with the book income preference, any proposal to introduce financial reporting into the determination of taxable income<sup>96</sup> should be viewed with caution.<sup>97</sup>

There remains more research to be done into the nuances of the book-tax relation. More detailed analyses of particular industries, where both the financial and tax reporting should be more homogeneous, would be an appropriate next step, along with greater detail in the modeling of the tax and financial accounting accruals process of particular types of income and expense items, and the pattern of reversals. Such research, though common in academic circles, generally has not considered the tax reporting implications of these differences. While much narrower in scope, such research will allow for a better understanding of both the origins of these differences, and the economic circumstances that give rise to their reversal.

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<sup>95</sup> Both the AMT and the book income preference have been well studied. For a discussion of the effects of the book income preference on financial reporting, see Charles E. Boynton, Paul S. Dobbins & George A. Plesko, *Earnings Management and The Corporate Alternative Minimum Tax*, 30 *J. Acct. Res.* 131, 148-50 (1992); Gil B. Manzon, Jr., *Earnings Management of Firms Subject to the Alternative Minimum Tax*, *J. Am. Tax'n Ass'n*, Fall 1992, at 88, 108. For a comprehensive overview of the economic effects of the corporate AMT, see Andrew B. Lyon, *Cracking the Code: Making Sense of the Corporate Alternative Minimum Tax* 117-28 (1997).

<sup>96</sup> For an example of such proposals, see George K. Yin, *Getting Serious About Corporate Tax Shelters: Taking A Lesson From History*, 54 *SMU L. Rev.* 209, 224-30 (2001) (proposing adjusted book income tax base).

<sup>97</sup> For additional discussion, see Shevlin, note 68, at 65.

APPENDIX  
VARIABLE CONSTRUCTION

In the text we describe factors that may be responsible for book-tax differences, and outline the motivation for including certain variables in our analysis. In this appendix we provide a more detailed description of the variables and their construction, complete with COMPUSTAT data items numbers in parentheses.

*Book-Tax SPREAD* is defined in Equation 5 as U.S. domestic income (272) less U.S. domestic taxable income (where U.S. domestic income is estimated as the current federal tax expense (63) divided by the statutory maximum corporate tax rate) less income taxes, state (173) less income taxes, other (211) less equity in net loss (55).

*Change in net sales* is calculated as current year net sales (12) as reported on the income statement less prior year net sales.

*Gross PP&E* is taken from firms' balance sheets (7).

*Net PP&E/Gross PP&E* is the ratio of balance sheet item (8) divided by gross PP&E (7).

*Change in goodwill after 1993* is measured as the difference between reported goodwill (204) and the value of goodwill reported by the firm in 1993. For years 1993 and earlier this variable is equal to zero. If goodwill is reported by COMPUSTAT to be missing, we set it equal to zero.

*Other intangible assets* are measured as the difference between total intangible assets (33) and goodwill (204). Missing values for COMPUSTAT item 204 are set equal to zero.

*Change in post-retirement benefits* is measured as the difference between reported post-retirements benefits (330) and the value reported in the previous year. COMPUSTAT reports item 330 (counterintuitively) as a negative value, reflecting its nature as a liability. We multiply these values by (-1) to provide a more readily interpretable coefficient.

*Pre-1993 goodwill assets* is the amount of goodwill reported on firms' balance sheets for 1993 and earlier, and is equal to the 1993 value thereafter.

*Change in unused NOL* is the change in COMPUSTAT item (52).

*Positive pretax income* is a binary variable, taking on the value of one if pretax income (272) is positive, and zero otherwise.

*Positive NOL carryforward* is a binary variable equal to one if the firm reports a NOL carryforward (52) on its balance sheet. We assume that firms with missing values for item 52 have no NOL carryforwards.

*Foreign pretax income* is reported in COMPUSTAT as item (273).

*Total assets less net PP&E and intangibles* is calculated as (6) - (8) - (33).