Trends in book-tax income and balance sheet differences

Lillian Mills*

Kaye Newberry**

William B. Trautman***

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*, ** Assistant and Associate Professors, respectively, at the University of Arizona, 301 McClelland Hall, Tucson, AZ 85721. lmills@u.arizona.edu, newberry@u.arizona.edu
*** Senior Economist, Internal Revenue Service LMSB:SRPP, One Montvale Avenue, Stoneham, MA 02180. william.b.trautman@irs.gov

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ABSTRACT

We use Compustat and tax return data to describe trends from 1991-1998 in differences between book and tax measures of income and balance sheet amounts. Our primary findings confirm that book-tax income differences are growing throughout the 1990s. Extending prior work, we partition the sample to describe the differences by industry, global character and profitability. Secondly, we compare Compustat financial statement assets and liabilities to the book balance sheet reported on the tax return and find that the tax return amounts exceed the financial statement amounts in the aggregate. We plan to investigate suggested explanations for this excess, including differences in book versus tax consolidation reporting and off-balance sheet activity.

Key words: Book-tax differences, consolidation, off-balance sheet
JEL classifications: H25, H26, M4

Introduction

As a result of growing interest from Treasury in corporate tax shelters, as well as IRS interest in incorporating financial reporting data into the tax administration process, LMSB Research East is conducting a firm-level study of book-tax differences and compliance risks.[1] Recent government and academic studies report a growing aggregate gap between book income and taxable income. The U.S. Treasury (1999) suggested that part of this gap may result from corporations' growing use of tax shelters, consistent with concern raised by some academics (Bankman 1999) and various members of Congress.[2] However, other authors caution that the increasing use of non-qualified stock option plans (which generate tax deductions but not book expenses) may be responsible for a large portion of the perceived growing book-tax gap (Manzon and Plesko, 2001, Hanlon and Shevlin, 2002, Desai, 2002). Further, book-tax consolidation differences, particularly for multinational corporations, could generate much of the gap (Mills and Newberry 2000, Manzon and Plesko 2001).

Prior research suggests that book-tax differences relate to firms' tax and financial reporting incentives, as well as to mechanical differences caused by known differences between accounting standards and tax laws. Controlling for simple causes of book-tax differences such as depreciation and foreign repatriation, Mills (1998) finds that tax deficiencies are higher the

[1] We define book-tax differences generally as pre-tax book income less taxable income, or book assets (or liabilities) less assets (or liabilities) on the tax return. As we discuss later, since there are many ways to define book income or taxable income, specific definitions are a research design choice. When we refer to differences between book income and taxable income, we call these book-tax income differences. We also measure differences between book and tax measures of assets and liabilities for the first time, and we describe these differences as book-tax balance sheet differences.

[2] Representative Lloyd Doggett D-TX, sponsored both the Abusive Tax Shelter Shutdown Act of 1999, HR 2255, introduced in the House, 06/17/99, and the Abusive Tax Shelter Shutdown Act of 2001, HR 2520, introduced in the House, 07/17/01. While both bills were referred to the House Ways and Means committee,

more book income exceeds taxable income. Mills and Newberry (2001) learn that public firms (with greater financial reporting pressures) have larger absolute book-tax differences than private firms: more positive when public firms are profitable and more negative when public firms are unprofitable. Current research by Manzon and Plesko (2001) and others highlight the need to carefully investigate sources of book-tax differences to separate explained from unexplained effects.

The IRS project team plans to reconcile, insofar as reasonably possible, financial statement data to tax return data.[3] LMSB Research East has constructed a data set that merges Statistics of Income (Form 1120) data with Compustat financial statement data from 1990 through 1999. The first stage of the project will focus on understanding and reconciling both aggregate and component measures of book-tax differences. The second stage will attempt to use the book-tax differences to evaluate compliance risk by modeling the relation between book-tax differences and tax deficiencies. This paper summarizes some of the main issues and provides descriptive evidence from the aggregate book-tax comparisons, based on a panel of 1,579 firms from 1991 to 1998.

Our primary findings confirm results in prior studies that book-tax income differences are growing throughout the 1990s. Extending prior work, we partition the sample to describe the differences by industry, global character and profitability. Secondly, we compare Compustat financial statement assets and liabilities to the book balance sheet reported on the tax return. To

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neither bill was passed. Finally, the Tax Haven and Abusive Tax Shelter Reform Act of 2002 S. 2339, is in the Senate Finance Committee as of May 2002.

[3] We are aware of a concurrent project by the Office of Tax Analysis, U.S. Department of Treasury to match Statistics of Income data with Compustat data, and we look forward to further discussions with the SOI_CS (Compustat) Matched File Project Team.

our surprise, the tax return assets and liabilities exceed the financial statement assets and liabilities. This phenomenon is strikingly large by the end of the sample period: $1.9 trillion of assets and $900 billion of liabilities are not reported on the Compustat financial statement compared to the book balance sheet on the tax return.[4] Based on preliminary discussions with IRS personnel, we surmise that this difference could be related to off-balance sheet financing resulting from structured transactions or special purpose entities.

Financial versus tax reporting rules and incentives

Financial accounting standards and tax laws frequently provide specific, and often different, rules for how to report income for book and tax purposes, even though both income reports are based on the same underlying fundamental transactions. Some book-tax reporting differences may be viewed as mechanical because they relate to clear differences in rules. Examples of material book-tax differences generated by clear differences in rules are depreciation, stock options and consolidation. We discuss the latter two in detail because they present particular measurement challenges.

Stock options

Hanlon and Shevlin (2002) provide a detailed discussion of the accounting treatment for nonqualified stock options, and the difficulty such treatment presents in controlling for the book-tax difference caused by stock option deductions. There is typically little book expense recorded for stock options, but the company receives a tax deduction when the employee

[4] This difference could be even larger if the balance sheet on the tax return excludes the gross assets and liabilities of controlled foreign corporations that are separately reported on Forms 5471. We are perfecting these data and inquiring about common reporting practice.

exercises the option. The deduction is equal to the difference between the fair market value of the stock and the option price at the date of exercise. The benefit for the deduction is not recorded in tax expense, but is treated as an offset to the stock transaction in the stockholders' equity account. Thus, both the difference between book income and taxable income and the difference between tax expense on the books and tax on the return are similarly affected. Since neither Compustat financial data nor the tax return delineate the stock option deduction, constructing a large-sample control is difficult.

Manzon and Plesko (2001) avoid the difficulty by using financial statement data to estimate taxable income before an option deduction. Thus, their comparison of book income to derived taxable income is free of the stock option difference. Hanlon and Shevlin (2002) conduct a small-sample study using hand-collected footnote data. Desai (2002) extrapolates employee option exercises from Compustat's Executive Compensation database (Execucomp), which are available for 2000 firms since 1992. He compares these computations to a detailed analysis of 150 firms and concludes that the estimates from Execucomp "are reliable estimates for the aggregate levels of the impact of option exercises on the corporate tax base" (Desai, 16). We intend to use Execucomp to estimate the stock option deduction for our sample of firms.

Consolidation differences

Many U.S. corporations own part or all of other corporations. Financial reporting standards and tax laws provide different rules for when related corporations should be combined for reporting. The combined reporting is called consolidation, in which the individual

lines of income and expense are totaled across all consolidated entities, net of transactions between related parties.

Financial consolidation is governed by Statement of Financial Accounting Standard No. 94, with numerous administrative interpretations by the Financial Accounting Standards Board. Generally, the consolidated reporting group includes the parent corporation and all subsidiaries (both domestic and foreign) in which the parent has more than 50% ownership. If the parent corporation does not own 100% of the subsidiary, it subtracts from net income the portion of the subsidiary's earnings that is allocable to the minority shareholder interest. When a corporation owns between 20 and 50 percent of another corporation, the parent's financial reports include its percentage interest in the net income of that entity as "net equity of unconsolidated subsidiaries." If the parent owns 20 percent or less of a corporation, then it only includes the dividends of such corporation in book income.

These general rules have flexibility related to the control exercised by the parent. Special Purpose Entities (SPEs) have recently received great publicity as a mechanism to avoid financial consolidation.[5] The corporation can benefit by excluding the assets and the associated debt and equity of the SPE from the consolidated balance sheet, because such entities are typically designed with higher leverage ratios. By keeping debt out of the consolidated balance sheet, the company protects its credit rating. Further, SPE losses appear to remain outside the consolidated income statement. Since we do not yet know whether companies typically treat the SPEs as corporations or as partnerships for tax purposes (the check-the-box rules would permit either treatment), we cannot definitively comment on the tax effect. However, if the SPE

is treated as a partnership, foreign SPE losses will be deductible on the U.S. consolidated tax return and the high leverage typical of SPEs would generate large interest deductions.

Tax consolidation is governed by IRC Section 1501, under which affiliated groups may elect to file a single consolidated return. Affiliated groups may consist of corporations that are related through ownership of at least 80%. Only domestic corporations may be included in the affiliated group. Corporations owned less than 80% are excluded completely from the consolidated return and file their own separate returns.

Thus, several types of entity differences arise due to book-tax consolidation differences.[6] The following differences make financial statements more inclusive than tax returns:

1. The financial statement consolidates > 50% owned foreign subsidiaries that are excluded from the tax return.
2. The financial statement consolidates > 50 to < 80% domestic subsidiaries that are excluded from the tax return
3. For companies owned 20 to 50%, the financial statement includes the percentage ownership in the net equity of companies.

On the other hand, the tax return is more inclusive than the financial statement in the following ways:

4. The consolidated tax return includes 100% of the income for all domestic subsidiaries owned at least 80%, with no reduction for minority interest.[7]
5. The tax return includes dividends from unconsolidated subsidiaries, reduced by the dividends received deduction for dividends from domestic corporations.
6. The tax return may include special purpose pass-through entities that are excluded from the financial statement.

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[5] See Financial Executives International (2002) for a discussion of SPE guidelines.
[6] See Dworin (1985) for an early discussion of consolidation differences.
[7] We assume that U.S. parents elect to file a consolidated return with all of their 80% owned subsidiaries. While corporations may file separately, our experience with the Coordinated Examination Program suggests that affiliated groups elect to file consolidated returns.

Consistent with consolidation differences existing for foreign subsidiaries, Mills and Newberry (2000) show that average book income reported on the tax return, Form 1120, Schedule M-1, lines 1 plus 2, falls between Compustat worldwide consolidated pretax income and Compustat U.S. pretax income. Their finding for large industrial firms is consistent with some, but not all, foreign income being repatriated and included in taxable income. We hope to use information on dividend schedules and Form 5471 related to controlled foreign corporations to construct a proxy for the unrepatriated foreign earnings.

There are no easy solutions for detecting and measuring consolidation differences for domestic subsidiaries. Our anecdotal understanding from agents in the large-case audit program (Coordinated Industry Cases) is that very large taxpayers do not have many > 50 to < 80% owned domestic subsidiaries. We are less sure whether this is equally true for the full large and midsize business (LMSB) program. For minority interest differences, we can adjust for the items disclosed in the financial statements, including minority interest and equity in net earnings or loss of nonconsolidated subsidiaries.

A recent trend is the increasing use of check-the-box regulations to choose freely whether an entity is a corporation or a pass-through entity (like a partnership) for tax purposes. The book use of special purpose entities to exclude the income, losses, assets and liabilities of pass-through entities will be difficult to identify. We do not yet know how to detect book-tax differences due to differing classification of corporation versus pass-through status, and we welcome suggestions on how to address this issue.

Book and tax incentives to manage reporting

We discuss above how certain known differences in accounting standards versus tax laws generate book-tax differences. However, both accounting standards and tax laws permit flexibility in reporting decisions. This flexibility means that book-tax differences could be viewed as potential indicators of either opportunistic financial reporting or tax compliance risk.

Although financial reporting principles are designed to provide relevant and reliable information to financial statement users, managers may prepare such reports opportunistically. Financial reporting principles emphasize consistency over time within a firm, but they permit considerable flexibility in the choice of methods and discretion in estimation, particularly when the information is not deemed to be 'material', i.e. of sufficient magnitude to affect a user's decision.[8] Independent auditors are necessary because managers may opportunistically use the discretion granted by financial accounting principles. Typically, users are concerned that managers will overstate income and assets.[9]

In contrast, the IRS must audit tax returns to detect and deter underreporting. Tax laws exist primarily to raise government revenues. IRC Section 446(a) states that "taxable income shall be computed under the method of accounting on the basis of which the taxpayer regularly computes his income in keeping his books," but IRC Section 446(b) permits the IRS to

[8] See Manzon and Plesko (2001) for an extended discussion of the application of the Statements of Financial Accounting Concepts No. 1 and 2.

[9] Managers may also face incentives to decrease book income opportunistically. For example, firms with higher income than projected may use discretionary accruals to smooth income downward, building reserves (called 'cookie jar' accounting by the SEC) to use in the future to manage earnings upward. Alternatively, firms in loss years may further decrease eamings (called taking a 'big bath'), also creating additional reserves for future use.

disallow accounting methods that do not 'clearly reflect income.'[10] Tax law only requires conformity with financial reporting in the case of last-in first-out (LIFO) inventory. Since firm managers generally prefer to pay less tax (to increase cash flows) and report lower tax expense (to increase reported financial earnings), potential underreporting represents a compliance risk.

Therefore, book-tax differences represent several factors: mechanistic differences due to specific methods required by financial accounting principles and tax laws, differences due to managers exercising discretion in financial reporting to manage (increase or smooth) book income, and differences due to managers exercising flexibility in tax rules to manage (generally decrease or defer) taxable income. The portion of book-tax difference that is specifically related to decreasing taxable income may represent a compliance risk. For example, the Treasury white paper (1999) points to the growing gap between book income and taxable income as possible evidence of corporations' increasing use of abusive tax shelters that decrease taxable income relative to book income.

An extensive empirical literature investigates how conflicting incentives affect tax, financial and regulatory reporting (see Shackelford and Shevlin 2001 for a review). While researchers acknowledge the dual incentives in book accounting versus tax accounting inherent in book-tax differences, some studies emphasize one system as the economic benchmark to evaluate manipulation in the other system.

For example, some accounting studies imply that taxable income can be used as a benchmark for high-quality earnings. Phillips et al. (2002) find that firms avoiding an earnings

[10] See *Thor Power Tool Co. v. Commissioner*, 79-1 USTC 9139 for a detailed discussion by the Supreme Court of financial accounting not governing tax treatment.

decline or loss have higher deferred tax expense, consistent with using discretionary accruals to achieve earnings targets. Joos et al. (2002) find that extreme values of deferred tax expense are less useful in predicting future cash flows, consistent with deferred tax expense representing subjectivity in accruals. Mills and Newberry (2001) partition their data by profitability to control for tax incentives in order to study financial earnings management incentives. They find results consistent with earnings management hypotheses concerning different incentives for public versus private firms and firms' use of financial leverage. Desai (2002) finds no evidence that earnings management explains financial-based book-tax differences using tests that only compare book-tax differences across firms with different smoothing patterns and across industries.

Other authors emphasize how firms' decisions regarding book and tax methods are related to the perceived effect of book-tax differences on audit scrutiny. Using an experimental survey design, Cloyd (1995) shows that managers (especially for privately-held firms) are more likely to recommend conforming book accounting when they are claiming an aggressive tax position. Cloyd et al. (1996) find that tax advisors are more willing to recommend an aggressive tax position when the book treatment will be conforming. Using IRS data, Mills (1998) shows that IRS revenue adjustments are higher the more book income exceeds taxable income. Mills and Sansing (2000) model the game-theoretical behavior of the firm and the IRS when book-tax differences imperfectly signal tax evasion.

In summary, while a body of academic literature associates book-tax differences with both tax aggressiveness and financial earnings management, there is no comprehensive firm-level analysis of the aggregate and components of such differences using both financial statement and

tax return data. The IRS has begun such a study. Its goals are to provide a richer data set to audit teams, understand and reconcile differences where possible, and eventually incorporate reporting differences in models for audit selection and workload identification.

Sample

To study aggregate and component book-tax differences and identify indicators of compliance risk, LMSB Research East has constructed a dataset of public companies in the Large and Mid-Size Business (LMSB) population. The dataset is comprised of income statement and balance sheet information from Compustat and tax return information from the Statistics of Income Division (SOI) of the IRS, merged by employer identification number (EIN) and accounting period.[11] The merged data cover fiscal years ending between 1990 and 1999.[12]

Table 1 presents aggregate statistics for the full sample. This dataset is comprised of 28,031 firm-year records for 6,191 companies. We partition the sample by industry using the standard LMSB industry codes, by multinationality defining a company as a multinational if it has any foreign subsidiaries or is a foreign-controlled corporation, and by profitability defining a company as profitable if Line 28 from the tax return is positive. Nearly 50 percent of the records are for multinational companies, and approximately 70 percent are profitable.

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[11] The book-to-tax income and balance sheet differences reported in this paper do not include the adjustment variables that SOI provides to correct the income, deduction, assets, and liabilities information reported by taxpayers on tax returns. While these adjustments would slightly reduce the differences reported in this paper, they do not significantly affect the results.

[12] For the purposes of aggregation, we define the fiscal year as the calendar year in which the last month of the fiscal year falls. This is different from the aggregation approach in Compustat. We eliminate any non-consolidated financial reports and other duplicate observations. We are also aware that mergers create some survivorship bias and that EINs may change over the sample period.

Since we wish to examine book-tax differences over time, we construct a panel of 1,579 companies for which Compustat and SOI data are available for each of the eight years from 1991 to 1998. We constructed this panel because we wish to examine trends in book-tax differences over time. As a result, the panel should not be interpreted as representative of public LMSB companies. This panel provides the basis of the information presented in Tables 2 to 5 and Figures 1 to 7.

Results on financial statement / tax return comparisons

We construct several aggregate income and balance sheet book-tax differences. We examine how these differences change over time in total and by industry, multinationality, and profitability. The results provide a framework for future research, where we will focus on measuring the components of these aggregate book-tax differences and identifying indicators of compliance risk.

Book-tax income differences

We examine two book-tax income differences. The first is the difference between worldwide pre-tax income from Compustat (net of state and other income tax expenses) and net taxable income before net operating loss and special deductions (Line 28 of Form 1120), labeled *WWBookTax*. The second is the difference between income per books before federal income tax (Line 1 plus Line 2 of Schedule M-1 of Form 1120) and the same net taxable income measure as above, labeled *M1BookTax*.

Table 2 describes the trends in *WWBookTax* (Panel A) and *M1BookTax* (Panel B) differences. Both book-tax income differences increase significantly over the 1991 to 1998

period from less than $10 billion to over $150 billion. Since this measure may reflect increases in income over the period, we separately graph worldwide book income and taxable income in Figure 1 and M-1 book income and taxable income in Figure 2. These figures show that book income and net taxable income are increasing over time with the difference between them increasing. We speculate that the negative book-tax income difference in 1992 arises in part due to Statement of Financial Accounting Standard No. 106 requiring firms to accrue other post-retirement employment benefits (typically unfunded promises to pay medical costs to current and future retirees).

We partition the data by industry, multinationality and profitability as described above. The results transcend all LMSB industries, domestic and multinational companies, and profit and loss companies.[13] The differences are most pronounced for multinational companies (see Figure 3), in the financial services industry and communications (see Figure 4) and in companies showing positive net taxable income on their tax returns.

We hope to cooperate with IRS personnel from the financial services industry group to assist us in understanding the sources of differences in that industry. Our informal discussions indicate several avenues for further investigation. For example, financial services firms apply different mark-to-market rules to their securities for book and tax purposes.[14] IRS financial services industry experts note that differences in the application of mark-to-market rules generate substantial book-tax income differences each year.

[13] See also Plesko (2002) for detailed tabulations of the M-1 total and component differences for 1996-1998.
[14] IRC Section 475 provides a Mark to Market Accounting Method for Dealers in Securities for tax purposes. Statement of Financial Accounting Standards No. 115, Accounting for Certain Investments in Debt and Equity Securities generally governs accounting treatment. Securities held available for sale are marked to

In addition, anecdotal information suggests that financial services firms have structured transactions (or special purpose entities) that place assets and liabilities off the book balance sheet, while either creating tax deductions or sheltering taxable income. While we have not gained sufficient understanding to describe such transactions in detail, we are continuing our conversations with IRS personnel who are experts in tax shelters, financial products and financial services. Several material transactions involve leasing entities, wherein leasing companies shelter lease income from taxation while building up cash in a related-party tax haven. Other transactions include LILOs (lease-in, lease-out transactions), SLIPs (self-liquidating income partnerships), and IRC Section 351 transactions, which transform tax-deferred contingent liabilities into immediate capital losses. These transactions are not limited to financial services firms, although that industry appears to generate material differences.

Our team includes several members with international examination experience, so we expect to focus substantial attention on resolving the consolidation and repatriation issues that likely underlie the differences for multinational companies. Finally, the smaller differences for loss firms are not surprising given Mills and Newberry's (2001) evidence that public loss firms engage in 'big bath' behavior to accrue additional non-deductible losses into loss years.

Book-tax balance sheet differences

We also examine two book-tax balance sheet differences. The first is the difference between ending total assets from Compustat and ending total assets from Schedule L of Form 1120 (*BookTaxAsset).* The second is the difference between ending total liabilities from

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market, but the unrealized gains or losses are booked to equity rather than to earnings. In contrast, unrealized gains or losses on trading securities are booked to earnings.

Compustat and ending total liabilities from Schedule L of Form 1120 *(BookTaxLiab)*. Table 3 presents these aggregate differences in total and by our partitions for industry, multinationality, and profitability.

The results are similar to the book-tax income results in that the total differences are increasing in magnitude over time (see Figure 5), and the differences are increasing across all LMSB industries. The differences, and the growth in the differences, are largest among multinational companies (see Figure 6) and in the financial services industry (see Figure 7).

We expected that the book balance sheets reported on firms' financial statements and their tax returns would be the same or, if they differed at all, the Compustat book assets would exceed the tax return book assets. A finding of higher Compustat assets would be more consistent with the financial and tax consolidation rules outlined above, and with firms' reporting of book income in excess of taxable income (see Table 2).

Instead, we find that book assets and liabilities are, in aggregate, less than assets and liabilities reported on the tax return. In 1998, the last year of our panel, tax return assets exceeded book assets by over $1.9 trillion, and tax return liabilities exceeded book liabilities by over $0.9 trillion. The observation that nearly $2 trillion of assets (and nearly $1 trillion of liabilities) appear to be off-balance sheet for book purposes is remarkable. We have made best efforts to date to confirm these results. IRS personnel have visually examined both the 10-Ks and the tax returns for the 50 largest firms in 1998, and have verified that our book-tax balance sheet differences for these firms are correct.

We note that Forms 5471 report assets and liabilities for controlled foreign corporations (CFCs). While we are still perfecting these data, the aggregate assets reported on Forms 5471

for our panel total in the trillions for 1998. At this time, we do not know to what extent the assets and liabilities of the foreign subsidiaries are generally included in the Schedule L balance sheet. If the Schedule L balance sheet only includes the cost basis or net equity of the foreign subsidiaries, then the book-tax balance sheet differences could be even more negative than the amounts shown in Table 3.

We acknowledge that there is unlikely to be one common answer for the difference. We informally confirmed with two Big-5 CPA firms and one international tax director that the simple imprecision of the Schedule L instructions ("The balance sheet should agree with the corporation's books and records.") creates a great deal of latitude in taxpayers' interpretation. Consistent with the prior practice experience of two of the authors, our contacts noted that some taxpayers report only the assets and liabilities of entities included in the consolidated tax return on Schedule L, and other taxpayers report the financial consolidated balance sheet from the 10-K.

In untabulated results, we find that out of 1,029 multinationals in the panel in 1998, there are 74 for which Compustat and tax return assets are equal, 145 for which they are within $1 million, and 307 for which they are within $10 million. These frequencies represent a substantial minority of the sample that are reporting (approximately) the consolidated financial balance sheet from the 10-K.

Another explanation could be that some taxpayers fail to eliminate intercompany transactions when combining assets and liabilities for the Schedule L (see Boynton et al. 2002). Such a simple combination would generally overstate assets and liabilities on Schedule L

compared to a consolidated balance sheet. We plan to investigate how much of our differences could be due to this potential explanation.

Although taxpayers' failing to eliminate intercompany transactions on Schedule L may account for part of the difference, our conversations with IRS personnel expert in financial products and abusive tax shelters suggest that part of the difference may arise due to special purpose entities (SPEs) that are not consolidated on firms' financial statements but may be consolidated for tax purposes. We find firms' growth in book income over taxable income corresponds with their tax assets/liabilities exceeding book assets/liabilities. This reporting pattern is consistent with parent corporations omitting the book losses, assets and liabilities of SPEs from their consolidated financial accounts, but including these amounts on their consolidated tax returns. We will focus our future research on a more complete understanding of how differences in the financial and tax consolidation rules may contribute to the book-tax income and balance sheet differences we observe.

Book-tax differences by asset quintiles

We further investigate firms' book-tax differences by quintiles of total assets. We sort our panel of 1,579 firms by total assets reported in Compustat for 1998, group the firms into classes by asset size, and sum the book-tax differences over these classes. The results presented in Table 4 are consistent with the largest firms accounting for most of the book-tax differences. Indeed, the top 20 percent of firms in terms of asset size account for virtually all of the book-tax income and balance sheet differences in 1998.

The top 15 firms, each of whose assets exceeded $100 billion, account for over $50 billion of book-tax income differences. This represents almost one-third of the total book-tax

income difference for all firms in the panel for 1998. The top 15 firms also account for $1.2 trillion of the book-tax asset difference, representing more that 60% of the total difference for 1998.

Research plan for identifying compliance risk

The results presented in this paper reinforce our view that further examination of book-tax differences is likely to improve our measures of compliance risk. While the increase in book-tax income and balance sheet differences may reflect different rules for financial and tax reporting, they may also reflect increasingly aggressive behavior on the part of corporate taxpayers. As a result, we will first focus our research efforts on identifying and adjusting for differences between financial and tax accounting rules. In particular, we will identify differences related to the financial and tax rules for the consolidation of affiliated entities and the exercise of non-qualified stock options.

In theory, we would like to use tax return and other available information to construct hypothetical tax entities that are comparable to the financial reporting entities. While it will be difficult to identify domestic affiliates that are consolidated for financial reporting purposes but not consolidated for tax purposes, we should be able to use information from Form 5471 to account for the book-tax differences associated with foreign affiliates. Our anecdotal evidence suggests that unconsolidated domestic affiliates will be less of a problem for our sample of large firms. Thus, we should be able to account for much of the difference associated with consolidations of subsidiaries for financial versus tax purposes.

We will also focus on measuring the value of non-qualified stock options exercised by employees, the deduction of which may represent a significant portion of the book-tax differences we observe. We are currently exploring the possibility of using the Executive Compensation database from Compustat in conjunction with information from tax returns to develop a measure of this deduction. This database provides information on the value of stock options *exercised* by the five highest-paid employees in a given company in a given year and information on the ratio of stock options *granted* to these five employees out of the total granted to all employees in a given year. Desai (2002) used this information to develop estimates of the value of the stock options exercised by all employees, and we are exploring how we may use tax return information (e.g., from Schedule M-1 of Form 1120) to refine Desai's approach.

Once we refine our measures of book-tax differences to identify unexplained differences, we will begin to use statistical methods to identify relationships between those differences and historical data on audit results. We believe that this approach will allow us to better identify not only those taxpayers who are more likely to be engaged in aggressive tax behavior, but also those activities that are likely to yield positive tax assessments for any given taxpayer.

Conclusions

We confirm prior indications (Treasury 1999, Manzon and Plesko 2001, Desai 2002) that aggregate book-tax differences are growing throughout 1990s. In addition, we examine the

growth in book-tax differences across several data partitions, including profit versus loss firms, domestic versus multinational firms, and by industry.

We observe that book-tax income differences are most pronounced for firms with multinational characteristics, indicating that we will need careful consolidation and repatriation reconciliations before we can investigate compliance risk. Among our five industry groups, the growth in book-tax income differences is largest in the financial services industry. As expected, profitable firms have larger book-tax income differences than loss firms.

We also present balance sheet differences for the first time. On its face, this should not be interesting because the instructions to the Form 1120 direct taxpayers to report their book balance sheet on Schedule L. However, we find that the Schedule L reports more assets and liabilities than the financial statement balance sheet on Compustat. The amount of the difference has grown substantially at the end of our sample period, 1997 and 1998.

While we have just begun our efforts to reconcile these differences, our descriptive results to date highlight directions for future analysis. We will particularly pursue consolidation differences (including SPEs), industry-related differences and stock option differences. After known material differences are explained, we will explore the association between the explained and unexplained differences and compliance risk. Our preliminary discussions with IRS personnel concerning book-tax balance sheet differences suggest that off-balance sheet transactions may deserve further scrutiny.

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Table 1
Summary Statistics

Frequency of Observations by Industry and Year

Year	Financial Services	Natural Resources	Comm., Tech. & Media	Retail, Food, Pharmacy &Health	Heavy Manufact. & Transp.	Total
Total	5,552	4,379	7,849	6,361	3,890	28,031
1990	262	342	304	258	231	1,397
1991	291	375	486	437	306	1,895
1992	314	393	539	498	328	2,072
1993	561	423	609	564	356	2,513
1994	641	453	688	642	400	2,824
1995	721	492	818	713	453	3,197
1996	793	538	1,020	814	501	3,666
1997	855	595	1,216	954	544	4,164
1998	1,024	687	1,748	1,138	643	5,240
1999	90	81	421	343	128	1,063

Frequency of Observations by Industry, Global Character, and Profitability

Characteristic	Financial Services	Natural Resources	Comm., Tech. & Media	Retail, Food, Pharmacy &Health	Heavy Manufact. & Transp.	Total
Global Character						
Domestic	4,542	1,946	2,899	3,356	1,513	14,256
Multinational	1,010	2,433	4,950	3,005	2,377	13,775
Profitability						
Profit	4,861	3,179	4,798	4,561	2,936	20,335
Loss	691	1,200	3,051	1,800	954	7,696

Notes: Sample observations based on the firm-year match of LMSB (Large and mid-sized business) firms in the SOI (Statistics of Income) tax return data with Compustat annual report data, using employer identification numbers as reported in Compustat and on the 1120. Industry categories are the LMSB industry groupings. Year: calendar year in which the last month of the fiscal year falls. Global Character: we code a firm as multinational if it is either 1) a U.S. multinational owning a controlled foreign corporation (based on filing a form 5471) or 2) a foreign-controlled U.S. corporation (based on answering yes to question 7 in Schedule K of Form 1120 related to being owned 25% or more by a foreign person). Profitability: we code a firm as profitable if Form 1120, line 28 is greater than zero.

Table 2
Book-to-Tax Income Differences
($ Billions)

	1991	1992	1993	1994	1995	1996	1997	1998
Worldwide Book-Tax Income Difference *(WWBookTax)*								
Total	8.2	22.7	27.5	76.1	94.7	102.3	104.2	158.1
Industry								
Financial Services	3.8	5.6	7.3	10.6	17.3	21.8	29.4	51.6
Natural Resources	4.8	12.5	10.4	17.7	11.1	22.6	18.8	13.4
Comm., Tech. & Media	-1.1	-4.0	-1.4	18.0	21.2	20.2	18.5	28.4
Retail, Food, Pharm. & Health	11.2	9.4	14.4	15.9	16.1	24.0	20.1	32.8
Heavy Manufact. & Transp.	-10.4	-0.9	-3.4	14.0	29.1	13.7	17.4	31.8
Global Character								
Domestic	-5.1	-9.4	-3.1	15.0	13.2	7.8	9.2	14.5
Multinational	13.4	32.0	30.5	61.2	81.6	94.5	95.0	143.6
Profitability								
Net income (line 28) > 0	10.1	20.7	27.4	61.5	74.7	94.1	95.2	132.1
Net income (line 28) <= 0	-1.8	1.9	0.1	14.6	20.1	8.2	9.0	26.0
M-1 Book-Tax Income Difference *(M1BookTax)*								
Total	4.2	-45.0	40.0	70.3	71.6	105.4	100.2	152.5
Industry								
Financial Services	9.9	8.1	10.2	19.3	18.9	27.7	31.1	39.8
Natural Resources	2.2	-7.7	17.3	13.8	11.1	25.9	11.3	27.9
Comm., Tech. & Media	-6.5	-0.9	2.6	13.6	8.3	21.3	22.6	49.2
Retail, Food, Pharm. & Health	11.6	5.8	22.9	17.8	17.0	23.4	24.2	20.2
Heavy Manufact. & Transp.	-13.0	-50.2	-13.0	5.9	16.3	7.1	10.9	15.4
Global Character								
Domestic	-9.0	-8.8	-1.3	9.3	4.8	8.9	12.4	9.3
Multinational	13.2	-36.2	41.3	61.0	66.8	96.4	87.8	143.2
Profitability								
Net income (line 28) > 0	5.6	-1.0	32.7	60.7	56.3	94.8	90.9	136.9
Net income (line 28) <= 0	-1.4	-44.0	7.3	9.6	15.3	10.6	9.4	15.7

Notes: This table is based on the panel of 1,579 firms that are in our sample in all years from 1991 to 1998. Sample observations are based on the firm-year match of LMSB (Large and mid-sized business) firms in the SOI (Statistics of Income) tax return data with Compustat annual report data, using employer identification numbers as reported in Compustat and on the 1120. Year: calendar year in which the last month of the fiscal year falls. *WWBookTax* equals Compustat pre-tax income (minus state and other income tax expense) minus tax return net income (line 28). *M1BookTax* equals net income (loss) per books (line 1) plus federal income tax per books (line 2) minus tax return net income (line 28). Industry categories are the LMSB industry groupings. Global Character: we code a firm as multinational if it is either 1) a U.S. multinational owning a controlled foreign corporation (based on filing a form 5471) or 2) a foreign-controlled U.S. corporation (based on answering yes to question 7 in Schedule K of Form 1120 related to being owned 25% or more by a foreign person). Profitability: we code a firm as profitable if Form 1120, line 28 is greater than zero.

Table 3
Book-to-Tax Balance Sheet Differences
($ Billions)

	1991	1992	1993	1994	1995	1996	1997	1998
Book-tax Asset Difference *(BookTaxAsset)*								
Total	-290.9	-494.0	-370.4	-432.7	-287.5	-731.5	-1,343.0	-1,947.8
Industry								
Financial Services	14.1	-130.4	-41.7	-119.2	97.4	-328.5	-747.5	-1,066.7
Natural Resources	-173.6	-154.3	-143.8	-136.1	-149.1	-148.8	-201.4	-317.7
Comm., Tech. & Media	-17.4	-21.4	-23.4	-82.3	-87.5	-54.3	-152.3	-207.5
Retail, Food, Pharm. & Health	-142.9	-211.0	-201.8	-171.6	-229.7	-134.6	-125.9	-142.6
Heavy Manufact. & Transp.	28.8	23.0	40.3	76.4	81.4	-65.3	-116.0	-213.3
Global Character								
Domestic	84.1	-0.5	-27.3	-2.6	142.4	-42.1	-45.5	-3.9
Multinational	-375.0	-493.5	-343.0	-430.1	-429.9	-689.4	-1,297.5	-1,943.9
Profitability								
Net income (line 28) > 0	-350.2	-344.0	-355.4	-442.7	-296.4	-698.5	-1,324.5	-1,861.6
Net income (line 28) <= 0	59.3	-150.0	-15.0	10.0	8.9	-33.0	-18.5	-86.2
Book-tax Liability Difference *(BookTaxLiab)*								
Total	130.6	-36.5	144.5	62.5	213.4	-81.0	-527.0	-922.6
Industry								
Financial Services	165.2	47.0	170.1	110.5	327.0	38.5	-272.2	-492.9
Natural Resources	-31.0	-33.4	-43.6	-36.9	-44.8	-42.3	-58.4	-120.3
Comm., Tech. & Media	7.3	10.2	30.8	-40.4	-55.5	-14.7	-105.5	-138.8
Retail, Food, Pharm. & Health	-71.3	-127.6	-111.8	-92.8	-133.4	-83.8	-67.0	-76.0
Heavy Manufact. & Transp.	60.4	67.3	99.0	122.2	120.0	21.3	-23.8	-94.7
Global Character								
Domestic	104.2	37.7	27.6	25.6	159.5	18.4	25.3	51.9
Multinational	26.4	-74.2	117.0	36.9	53.9	-99.4	-552.2	-974.5
Profitability								
Net income (line 28) > 0	31.8	-9.8	126.6	54.1	191.3	-72.2	-544.0	-988.7
Net income (line 28) <= 0	98.8	-26.7	17.9	8.4	22.1	-8.8	17.0	66.1

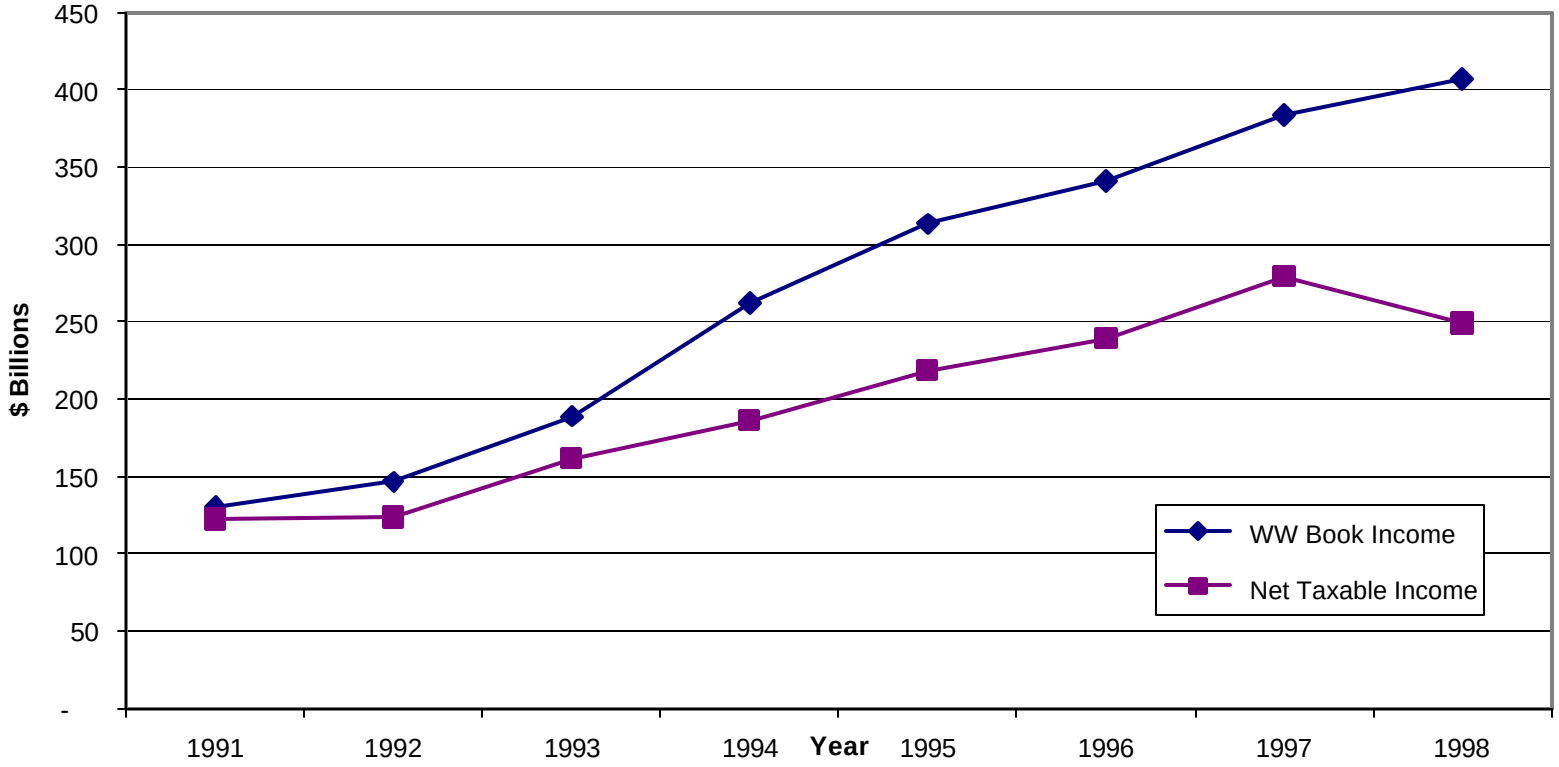
Notes: This table includes the panel of 1,579 firms that are in our sample in all years from 1991 to 1998. Sample observations are based on the firm-year match of LMSB (Large and mid-sized business) firms in the SOI tax return data with Compustat annual report data, using employer identification numbers as reported in Compustat and on the1120. Year: calendar year in which the last month of the fiscal year falls. *BookTaxAsset* equals book total assets (from Compustat) minus tax return total assets (Form 1120, Schedule L). *BookTaxLiab* equals book total liabilities minus tax return total liabilities. Industry categories are the LMSB industry groupings. Global Character: we code a firm as multinational if it is either 1) a U.S. multinational owning a controlled foreign corporation (based on filing a form 5471) or 2) a foreign-controlled U.S. corporation (based on answering yes to question 7 in Schedule K of Form 1120 related to being owned 25% or more by a foreign person). Profitability: we code a firm as profitable if tax return line 28 is > zero.

Table 4
Book-to-Tax Differences By Asset Class, 1991-1998
($ Billions)

	1991	1992	1993	1994	1995	1996	1997	1998
Worldwide Book-Tax Income Difference *(WWBookTax)*								
Top 15 Firms	0.4	3.2	-1.8	19.7	32.1	24.5	33.5	62.6
Top Quintile	5.5	18.6	25.0	69.5	86.4	91.5	93.6	148.6
Second Quintile	2.1	3.6	1.4	5.2	6.1	7.6	8.8	8.3
Middle Quintile	0.2	0.9	1.0	1.0	2.2	2.2	2.5	2.0
Fourth Quintile	0.4	-0.2	0.0	0.7	0.3	1.0	-0.4	-0.7
Bottom Quintile	0.0	-0.3	0.0	-0.3	-0.2	0.1	-0.3	-0.1
M1 Book-Tax Income Difference *(M1BookTax)*								
Top 15 Firms	0.1	-33.7	1.7	23.7	29.1	29.2	36.1	51.3
Top Quintile	4.0	-44.3	40.7	67.7	66.1	99.3	93.2	144.2
Second Quintile	0.0	0.0	-3.3	1.3	4.8	3.6	5.5	7.4
Middle Quintile	-0.2	0.1	2.4	0.8	0.7	1.5	1.7	2.0
Fourth Quintile	0.7	-0.5	0.1	0.7	0.1	0.9	-0.1	-0.9
Bottom Quintile	-0.3	-0.3	0.1	-0.2	-0.2	0.0	-0.1	-0.1
Book-Tax Asset Difference *(BookTaxAsset)*								
Top 15 Firms	121.7	-27.9	60.0	-8.8	184.8	-277.3	-783.4	-1,286.8
Top Quintile	-264.8	-471.1	-340.4	-417.0	-274.3	-720.0	-1,334.3	-1,919.6
Second Quintile	-16.2	-12.2	-19.8	-7.2	-5.3	-5.4	0.5	-19.3
Middle Quintile	-6.6	-8.9	-7.5	-6.5	-6.1	-4.1	-6.2	-6.7
Fourth Quintile	-2.5	-3.5	-3.3	-2.5	-2.0	-2.5	-2.8	-2.2
Bottom Quintile	-0.7	1.7	0.5	0.5	0.3	0.4	-0.3	0.1
Book-Tax Liability Difference *(BookTaxLiab)*								
Top 15 Firms	173.5	63.1	180.9	122.2	297.4	-6.8	-399.7	-785.9
Top Quintile	135.2	-37.6	150.9	58.7	209.7	-90.4	-545.4	-923.4
Second Quintile	0.3	5.7	-3.0	7.3	6.4	10.5	20.1	3.5
Middle Quintile	-2.0	-4.1	-2.2	-2.7	-2.0	-0.8	-0.8	-2.1
Fourth Quintile	-1.9	-2.2	-2.0	-1.6	-1.1	-1.0	-1.0	-0.6
Bottom Quintile	-1.0	1.8	0.7	0.8	0.5	0.6	0.2	0.0

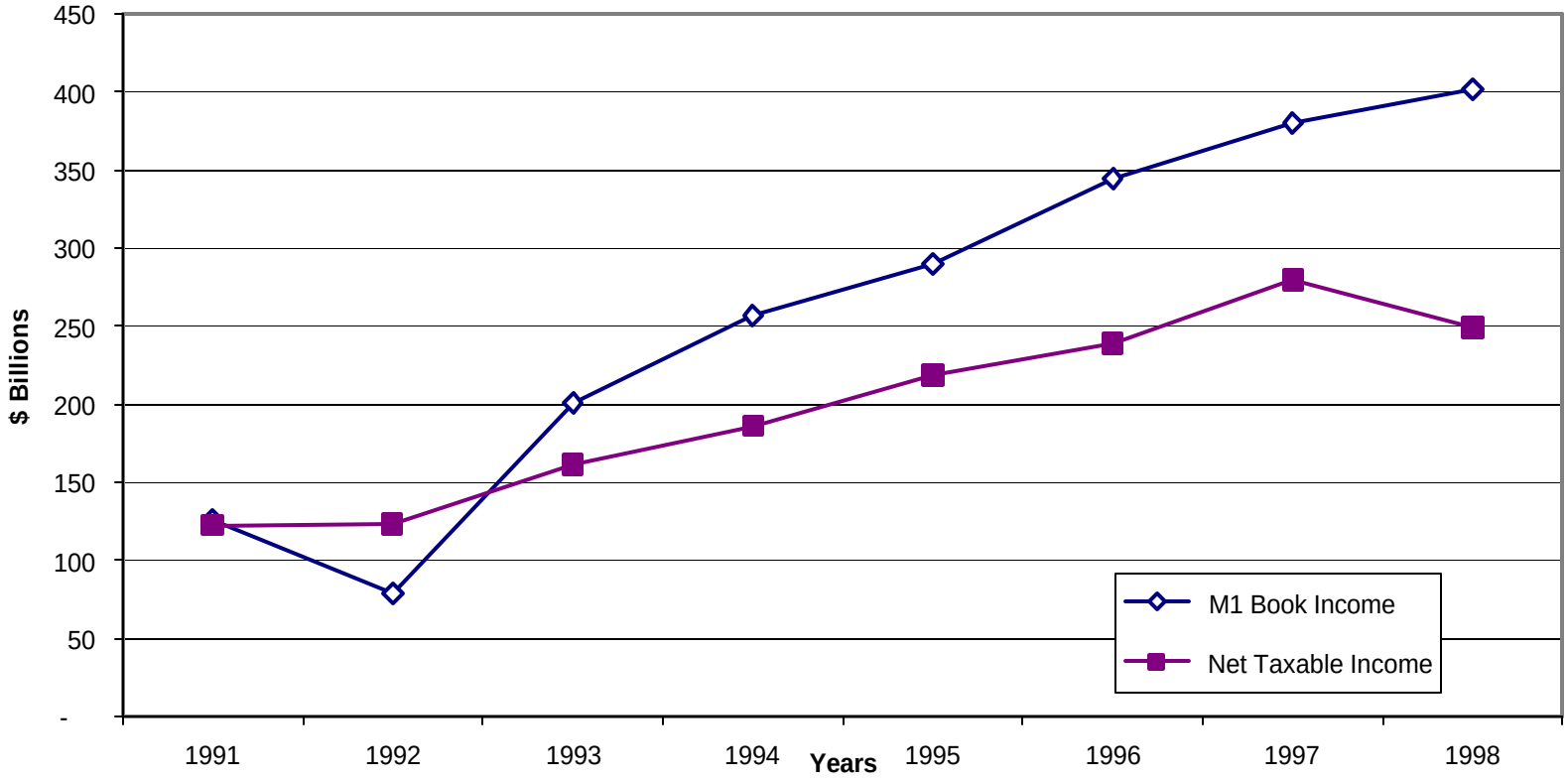
Notes: This table is based on the panel of 1,579 firms that are in our sample in all years from 1991 to 1998. Sample observations are based on the firm-year match of LMSB (Large and mid-sized business) firms in the SOI (Statistics of Income) tax return data with Compustat annual report data, using employer identification numbers as reported in Compustat and on the 1120. We form asset classes based on quintiles of Compustat total assets for 1998. Year: calendar year in which the last month of the fiscal year falls. *WWBookTax* equals Compustat pre-tax income (minus state and other income tax expense) minus tax return net income (line 28). *M1BookTax* equals net income (loss) per books (line 1) plus federal income tax per books (line 2) minus tax return net income (line 28). *BookTaxAsset* equals book total assets (from Compustat) minus tax return total assets (Form 1120, Schedule L) and *BookTaxLiab* equals total liabilities minus tax return total liabilities.

Figure 1
World-Wide Book and Tax Income of All Firms



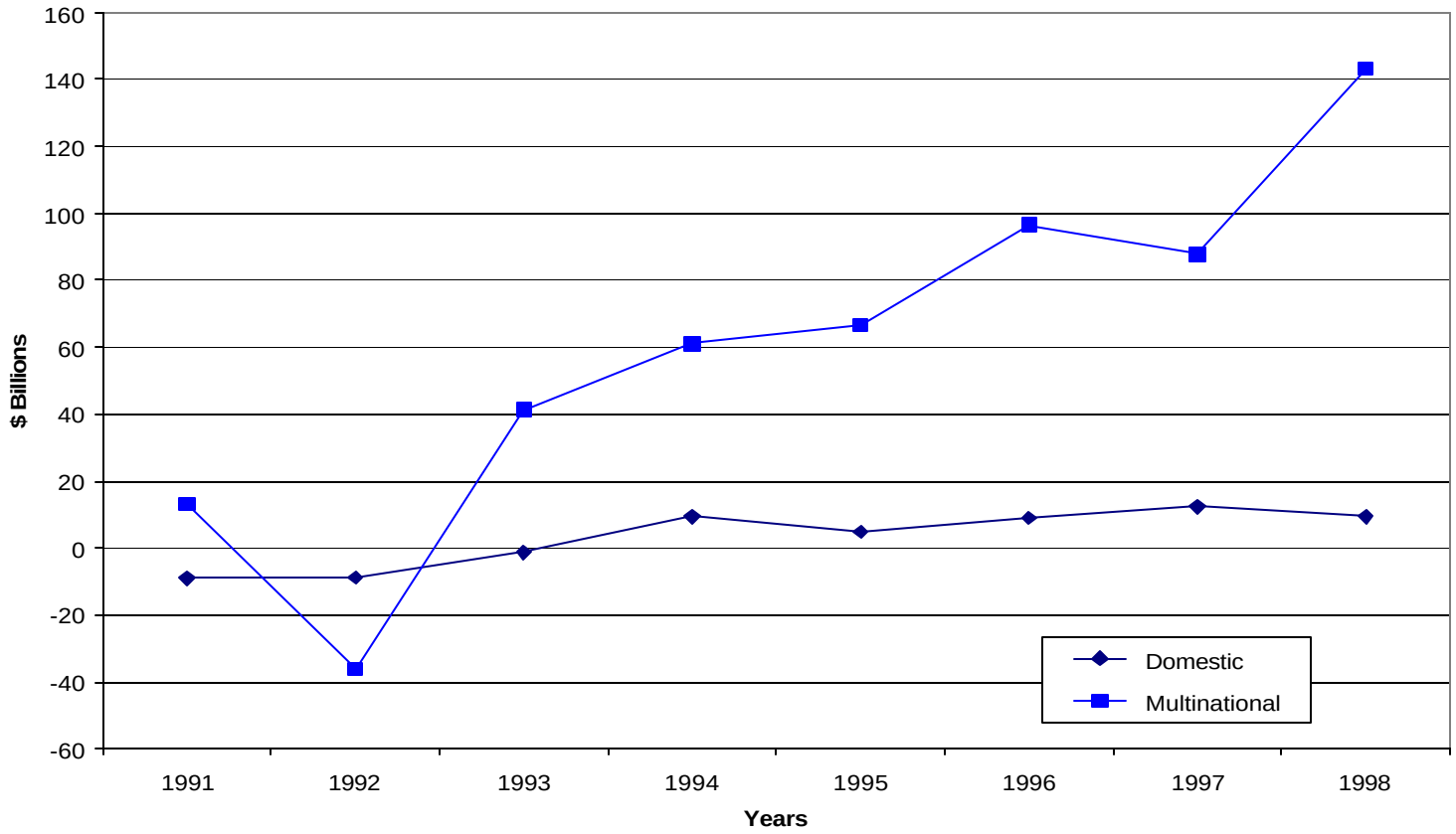
This figure is based on the panel of 1,579 firms that are in our sample in all years from 1991 to 1998. Sample observations are based on the firm-year match of LMSB (Large and mid-sized business) firms in the SOI (Statistics of Income) tax return data with Compustat annual report data, using employer identification numbers as reported in Compustat and on the 1120. Year: calendar year in which the last month of the fiscal year falls. *WW Book Income* equals Compustat pre-tax income (minus state and other income tax expense). *Net Taxable Income* equals tax return net income (line 28).

Figure 2
Schedule M-1 Book and Tax Income of All Firms



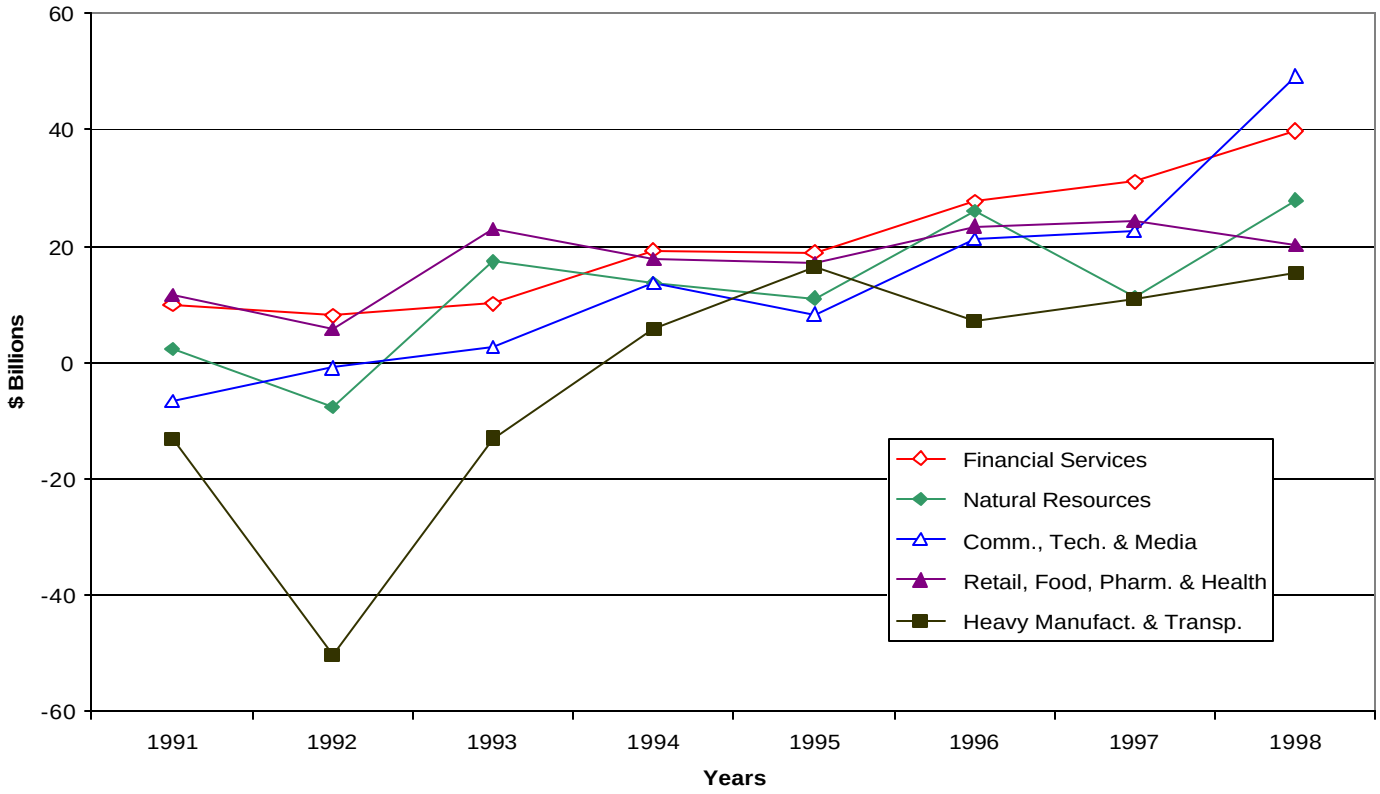
This figure is based on the panel of 1,579 firms that are in our sample in all years from 1991 to 1998. Sample observations are based on the firm-year match of LMSB (Large and mid-sized business) firms in the SOI (Statistics of Income) tax return data with Compustat annual report data, using employer identification numbers as reported in Compustat and on the 1120. Year: calendar year in which the last month of the fiscal year falls. *M1 Book Income* equals net income (loss) per books (line 1) plus federal income tax per books (line 2). *Net Taxable Income* equals tax return net income (line 28).

Figure 3
Schedule M-1 Book-to-Tax Income Differences By Global Character



This figure is based on the panel of 1,579 firms that are in our sample in all years from 1991 to 1998. Sample observations are based on the firm-year match of LMSB (Large and mid-sized business) firms in the SOI (Statistics of Income) tax return data with Compustat annual report data, using employer identification numbers as reported in Compustat and on the 1120. Year: calendar year in which the last month of the fiscal year falls. *M1BookTax* equals net income (loss) per books (line 1) plus federal income tax per books (line 2) minus tax return net income (line 28). Global Character: we code a firm as multinational if it is either 1) a U.S. multinational owning a controlled foreign corporation (based on filing a form 5471) or 2) a foreign-controlled U.S. corporation (based on answering yes to question 7 in Schedule K of Form 1120 related to being owned 25% or more by a foreign person).

Figure 4
Schedule M-1 Book-to-Tax Income Differences By LMSB Industry

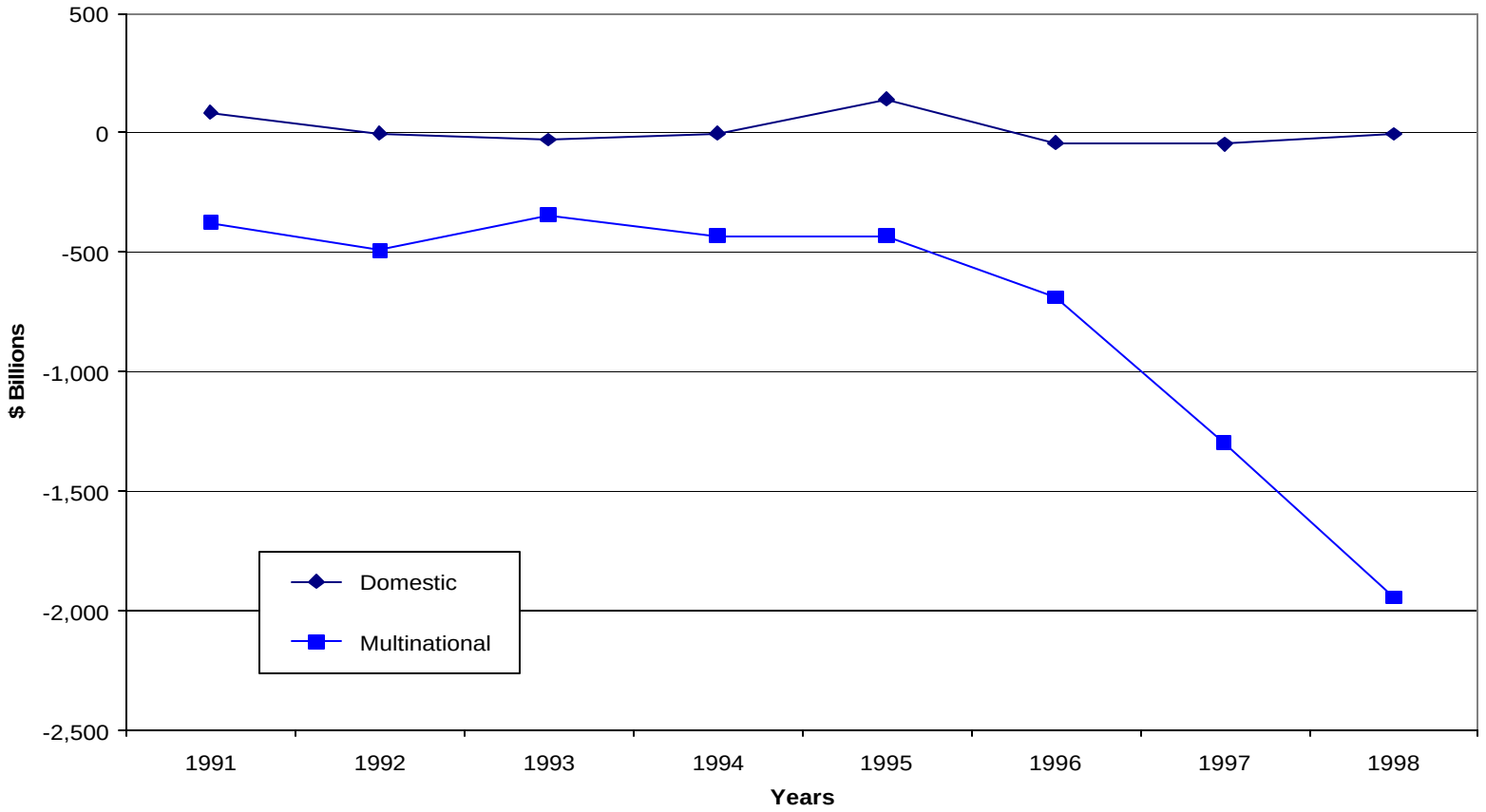


This figure is based on the panel of 1,579 firms that are in our sample in all years from 1991 to 1998. Sample observations are based on the firm-year match of LMSB (Large and mid-sized business) firms in the SOI (Statistics of Income) tax return data with Compustat annual report data, using employer identification numbers as reported in Compustat and on the 1120. Year: calendar year in which the last month of the fiscal year falls. *M1BookTax* equals net income (loss) per books (line 1) plus federal income tax per books (line 2) minus tax return net income (line 28). Industry categories are the LMSB industry groupings.

Figure 5
Book-to-Tax Balance Sheet Differences

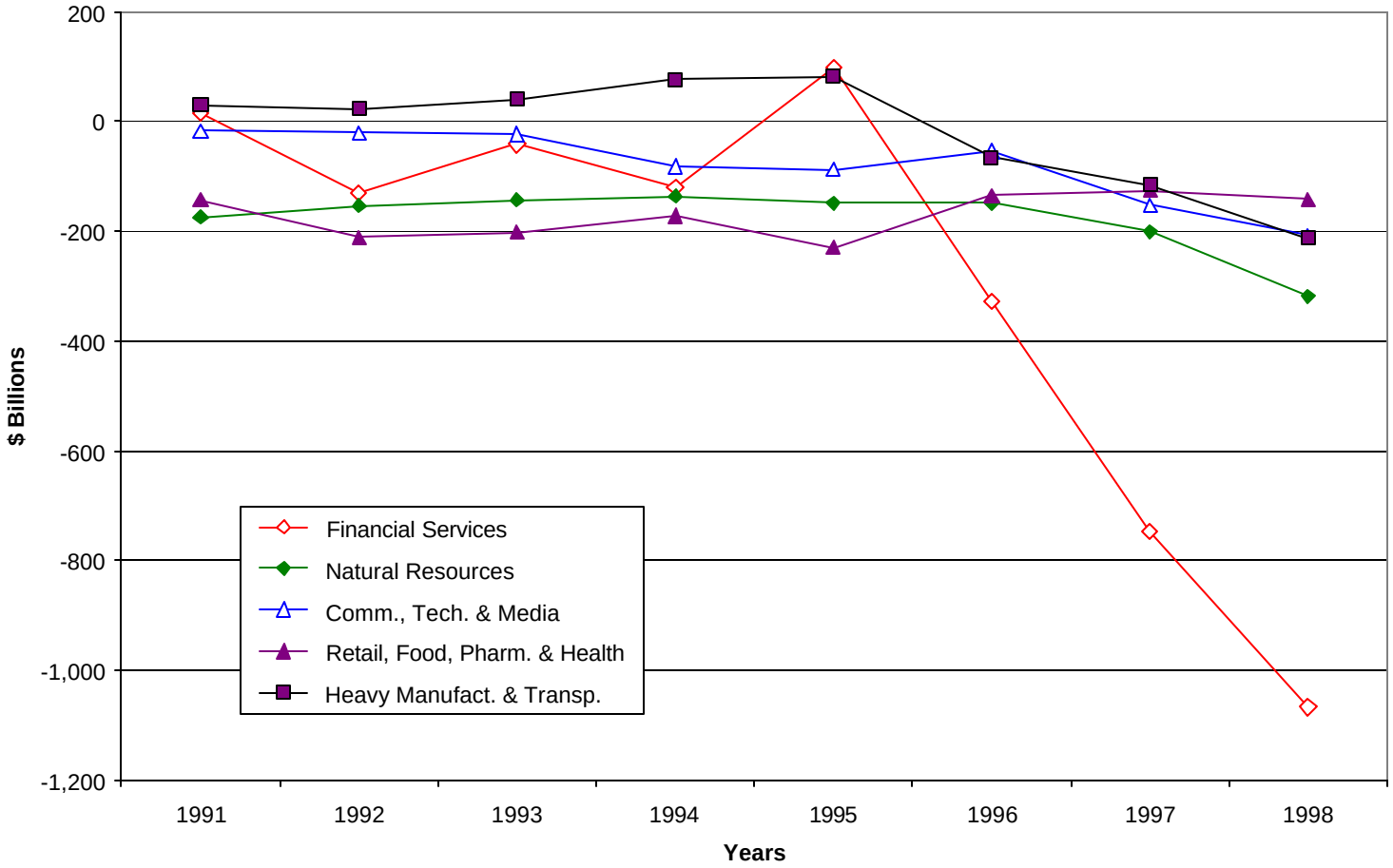
This figure is based on the panel of 1,579 firms that are in our sample in all years from 1991 to 1998. Sample observations are based on the firm-year match of LMSB (Large and mid-sized business) firms in the SOI (Statistics of Income) tax return data with Compustat annual report data, using employer identification numbers as reported in Compustat and on the 1120. Year: calendar year in which the last month of the fiscal year falls. *BookTaxAsset* equals book total assets (from Compustat) minus tax return total assets (Form 1120, Schedule L). *BookTaxLiab* equals book total liabilities minus tax return total liabilities. Industry categories are the LMSB industry groupings.

Figure 6
Book-to-Tax Asset Differences By Global Character



This table is based on the panel of 1,579 firms that are in our sample in all years from 1991 to 1998. Sample observations are based on the firm-year match of LMSB (Large and mid-sized business) firms in the SOI (Statistics of Income) tax return data with Compustat annual report data, using employer identification numbers as reported in Compustat and on the 1120. Year: calendar year in which the last month of the fiscal year falls. *BookTaxAsset* equals book total assets (from Compustat) minus tax return total assets (Form 1120, Schedule L). Global Character: we code a firm as multinational if it is either 1) a U.S. multinational owning a controlled foreign corporation (based on filing a form 5471) or 2) a foreign-controlled U.S. corporation (based on answering yes to question 7 in Schedule K of Form 1120 related to being owned 25% or more by a foreign person).

Figure 7
Book-to-Tax Asset Differences By Industry



This table is based on the panel of 1,579 firms that are in our sample in all years from 1991 to 1998. Sample observations are based on the firm-year match of LMSB (Large and mid-sized business) firms in the SOI (Statistics of Income) tax return data with Compustat annual report data, using employer identification numbers as reported in Compustat and on the 1120. Year: calendar year in which the last month of the fiscal year falls. *BookTaxAsset* equals book total assets (from Compustat) minus tax return total assets (Form 1120, Schedule L). Industry categories are the LMSB industry groupings.