DISTRICT ECONOMICS GROUP

Analytics & Insights

Sales Factor Apportionment of Global Profits as an Alternative Construction of a Corporate Income Tax Base

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July 14, 2014

Summary

- The current corporate income tax system relies on separate accounting of income for a multinational taxpayer and results in substantial understatement of corporate profits reported on tax returns.
- Relatively small amounts of corporate income tax – for example less than the amount paid for the current federal motor fuels excise taxes – are paid to the United States Treasury on foreign source income.
- The corporate income tax relies upon poor information dynamics that make it difficult for tax authorities to verify liability. As a result, non-compliance is greater and costs to taxpayers and tax authorities to comply and administer the tax are greater than with more efficient income tax regimes with more reliable information reporting mechanisms.
- A broader and more transparent tax base of corporate profits could be constructed using U.S. sales to apportion global profits of multinational corporations. Sales factor apportionment of global profits could:
  - Solve a number of challenging tax administration issues with the current corporate income tax, including easier verification of the tax base and elimination of tax on foreign sales, but
  - Create new challenges for tax administration including a conflict between permanent establishment concepts and the attribution of certain profits attributable to members of a consolidated group and the identification of the destination of certain sales.
  - In general, a tax base defined by sales factor apportionment of global profits will be larger than under present law the greater is the amount of foreign source income reported and foreign tax credits claimed on tax returns.
  - A tax base defined by sales factor apportionment of global profits, while generally larger than the current law corporate income tax base, can be smaller than under present law in some cases when global profits are smaller than domestic profits for a multinational corporation.

[1] The authors thank Reuven Avi-Yonah, Pat Driessen, Elliot Dubin, Michael Durst, Jane Gravelle, Martin Lobel, Walter Minnick, Bill Parks, Martin Sullivan, and Eric Toder for helpful comments.

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I. Introduction

As an alternative approach for taxing corporate profits, a sales factor apportionment of global profits applied to all of the consolidated income from all of the sources of all members of a taxpayer group, defined by investors with common interest in the profits of the taxpayer, could increase the size of the tax base and improve the information dynamics, resulting in reduced compliance costs for taxpayers and tax authorities. This study presents estimates of a corporate tax base for 2010 using financial statement data and applying U.S. sales factor apportionment of global profits. The estimates are static in the sense that no adjustments to amounts reported on financial statements are made, and no response by corporations to a new tax system is modelled. The goal is construct static measures of a sales factor apportioned tax base; allow for certain policy relevant adjustments to this base, and compare it with actual 2010 tax return amounts. We make no policy recommendations but discuss at length the under-appreciated role that information reporting contributes to taxpayer incentives to report tax liability accurately, and how sales factor apportionment of global profits might offer an improvement in corporate income tax compliance.

The current corporate income tax imperfectly measures and taxes corporate profits. Although the tax remains an essential part of the federal income tax system, accounting for $223 billion (19 percent) of the $1.174 trillion of liability reported in 2010 (not including payroll and other taxes), only $30 billion (2 percent) is from foreign source earnings.[2] While much attention has been given to the taxation of foreign source income, an equally large problem is the approximately $250 billion annual understatement in domestic corporate profits on tax returns benefiting U.S. multinational corporations over their purely domestic counterparts.[3]

The difficulty in verifying corporate income tax liability has contributed to both the paucity of federal tax revenue from foreign source earnings and the understatement of domestic profits. This difficulty causes the tax authority to engage in lengthy, costly, and contentious audits and disagreements with corporate taxpayers.[4] The tax authority (Treasury and the Internal Revenue Service) has responded to these challenges by proposing increasingly burdensome regulations for transfer pricing, advanced pricing agreements, reporting of uncertain tax positions, and litigation around tax accrual work papers.[5] Given that the corporate income tax is a tax on corporate profits, and that corporate profits (at least for publicly traded corporations which pay the vast bulk of corporate income tax) are publicly available, it might seem surprising that corporate profits would

[2] The CBO February 2014 tax receipts baseline shows that over the fiscal year 2015 through 2024 budget period corporate income tax receipts will be even less at 18 percent of total income taxes, www.cbo.gov/publication/45010.

[3] See Kimberly Clausing, "The Revenue Effects of Multinational Firm Income Shifting", *Tax Notes*, March 28, 2011; the BEA NIPA Table 7.16 line 2 adjustment for corporate profits; and Reuven S. Avi-Yonah, Kimberly Clausing, and Michael Durst, "Allocating Business Profits for Tax Purposes: A Proposal To Adopt A Formulary Profit Split", *Florida Tax Review*, 2009.

[4] In 2010 the IRS assessed $26.2 billion in additional tax on corporations under audit, or about the same amount as was paid in tax on foreign source income that year. (See Table 9a, IRS Data Book 2010).

[5] Because the tax liability amounts at issue can be large, tax authorities have taken administrative actions to induce greater clarity in the reporting of income. See 1) t the reporting of uncertain tax positions following Notice 2010-9 and subsequent commentary by J. Richard Harvey, (http://www.procedurallytaxing.com/surprising-statistics-on-corporate-disclosures-of-uncertain-tax-positions-utp/?goback=%2Egde_740757_member_5837617205801414657), after only 3 years, the schedule UTP filings are declining when they should be increasing; 2) the OECD's January 30, 2014 Discussion Draft on Transfer Pricing and Documentation requiring separate documentation of within and between country pricing within a multinational corporation; and 3) "Changes to Advance Pricing Agreement Procedures Are Too Burdensome, Deloitte Tax Says", *Tax Notes*, March 13, 2014..

be difficult to verify. Yet they are, because the corporate profits measures required by regulators and used by investors to understand the economic performance of a business, are *not* the corporate profits measures used to determine corporate income tax liability.[6] If they were, corporate tax receipts could be much greater, corporate tax liability shown on tax returns could be greater, litigation around corporate tax liability could be much less, and it is likely the corporate tax rate could be lower than it is today while achieving equal if not greater revenue.

A sales factor apportionment of global profits as an alternative construction of a corporate income tax base can address both the underreporting of domestic corporate profits and the un-economic location of permanently reinvested earnings overseas that results in little tax paid to the Treasury on foreign source earnings. We show using 2010 data that an alternative definition of a corporate tax base using a sales factor apportionment of global profits could result in a much broader tax base – as much as 97 percent larger than the current tax base. This tax base could be more transparent by design and less costly to comply with, both for taxpayers and the tax authority than the current system. We argue that sales factor apportionment of global profits at least partially addresses a problem of asymmetric information that challenges the reporting of tax liability by multinational corporations resulting in an understatement of income – an issue that has largely been addressed in the individual income tax through the evolution of three-party information reporting systems. The benefits from three-party information reporting that would accompany the adoption of a tax system based on the sales factor apportionment of global profits should be carefully considered along with some of the resulting challenges discussed later in this paper.

Section I of this paper provides an introduction to sales factor apportionment and major issues relating to the current tax system. Section II discusses the disparity between the levels of corporate profits and corporate income tax receipts, and section III discusses the underappreciated role that information reporting provides in tax system administration and compliance by contrasting key features of the individual and corporate income tax systems. Estimates of a single sales factor apportionment of global profits using financial statement data are compared with corporate tax return amounts for 2010 using the IRS Statistics of Income (SOI) tabulations in Section IV. Finally, Section V discusses some important benefits and challenges in adopting sales factor apportionment.

[6] Robert S. McIntyre, Matthew Gardner, and Richard Phillips, "The Sorry State of Corporate Taxes: What Fortune 500 Firms Pay (or Don't Pay) in the USA And What they Pay Abroad – 2008 to 2012", www.ctj.org/corporatetaxdodgers/sorrystateofcorptaxes.pdf, February 2014.

II. Disparity between Corporate Profits and Tax Liability

Domestic profits

There is a disconnect between the size and growth of corporate profits of U.S. domiciled multinational firms as stated in financial statements and the relatively modest amounts of corporate profits reported and tax paid on income tax returns. Measuring the amount of underreported corporate profits on income tax returns is challenging because tax returns are not publicly disclosed; yet a variety of indirect approaches have arrived at remarkably similar estimates. The Bureau of Economic Analysis (BEA) estimates unreported corporate profits of $287 billion for 2008, or 32% of reported corporate profits. The BEA estimates of profits rely upon corporate tax return information provided by the SOI. These amounts are adjusted for misreporting by extrapolating corporate income tax audit results to all corporate income tax returns. For 2008 the adjustment for misreporting of profits was $287 billion, for 2009 $314 billion, and for 2010 $402 billion as shown in Table 1 below.

Table 1. Underreporting of Corporate Profits on Corporate Tax returns, as shown in The National Income and Product Accounts, 2008 through 2010, in $ billions

	2010	2009	2008
Total receipts less deductions (tax returns)	$1,254	$829	$903
BEA adjustment for misreporting on income tax returns	$402	$314	$287
BEA adjustment as a percentage of total receipts less reductions	32%	38%	32%

Sources: EconStats, U.S. National Income and Product Accounts, Section 7- Supplemental Tables.
Original source: U.S. Bureau of Economic Analysis, 2008 through 2010.

Clausing (2011) uses an econometric specification to estimate the size of unreported corporate profits on 2008 tax returns at $256 billion, while Avi-Yonah, Clausing, and Durst (2009) use BEA data on domestic and international profitability of U.S. corporations for 2005 and estimate underreporting of $285 billion.[7]

From 2006 through 2012 (which includes the period of the great recession) U.S. corporate profits after tax increased by 30 percent but tax receipts declined by 21 percent even after accounting for tax relief provisions included in the Economic Stimulus Act of 2008, the American Recovery and Reinvestment Tax Act of 2009, and the Home Improvements Revitalize the Economy Act of 2009. In 2006 BEA corporate profits amounted to $1,342 billion which rose to $1,746 billion in 2012. During the same time period, corporate income tax receipts for tax year 2006 (paid in 2007) amounted to $370 billion and for tax year 2012 $294 billion. The fact that income tax receipts declined by 21 percent (holding constant changes to tax law) while profits over the same period

[7] Kimberly Clausing, 2011 op. cit. The BEA NIPA Table 7.16 line 2 adjustment for corporate profits is derived from IRS corporate audit information not available to the public. Reuven Avi-Yonah, Kimberly Clausing, and Michael Durst, 2009, op. cit.

rose by 30 percent challenges the efficacy of the current corporate tax base in reflecting corporate profitability.[8]

While overall corporate profits have been increasing, domestic profit margins for manufacturing companies as reported on tax returns have been decreasing. While the worldwide gross profit margin of manufacturing corporations filing financial statements in the United States has decreased very little from 34 percent in 2000 to 33 percent in 2010, on U.S. corporate income tax returns these same corporations reported a decrease in the domestic gross profit margin from 31 percent in 2000 to 26 percent in 2010.[9] Had manufacturing corporations reported a gross profit margin of 30 percent rather than 26 percent in 2010 on corporate income tax returns (mirroring the 1 percent decline in worldwide profit margins between 2000 and 2010 for manufacturers) approximately $264 billion more in domestic profits would have been reported on 2010 U.S. corporate income tax returns.[10]

The understatement of profits for tax purposes may be the result of several prominent features of the current corporate income tax, including transfer pricing, advance pricing agreements, cost sharing agreements, interest allocation arrangements, check-the-box regulations (and Controlled Foreign Corporation, or CFC, look-thru rules) that effectively unhinge profits from either the source of the economic activity or the domicile of the corporation, by manipulating the separate accounting of income that underlies the corporate income tax.[11] Under the current system, worldwide profits of a multinational corporation remain unaffected but high tax jurisdictions end up with lower profits, and low tax jurisdictions end up with higher profits.[12] As a result, domestic tax bases in high-tax jurisdictions like the United States are reduced, while foreign tax bases in low-tax jurisdictions rise.[13]

[8] The measure of corporate profits used here reduces corporate profits for these tax benefits (see July 2013 Revision Basis Corporate Profits, NIPA, www.bea.gov/national/#corporate). NIPA corporate profits include the worldwide profits of U.S. resident corporations but both worldwide profits and the domestic component of these profits of U.S. corporations have been increasing.

[9] Data from annual financial reports of manufacturing corporations in the U.S., Compustat, and Internal Revenue Service, Statistics of Income. Gross profit is sales less cost of goods sold. The decline in corporate profits as shown on tax returns is not the result of LIFO accounting as part of cost of goods sold. For 2012, the JCT estimates the tax expenditure for LIFO as $4.0 billion implying that LIFO resulted in an increase in COGS of $4.0 times 35 percent equals $11.4 billion. So reducing the $264 billion discrepancy by $11.4 billion to account for the increase in COGS from LIFO still leaves approximately $252 billion of discrepancy. See "Estimates of Federal Tax Expenditures for Fiscal Years 2012-2017", JCS-1-13, Joint Committee on Taxation, February 2013.

[10] Statistics of Income, Corporate Source Books, 2000 through 2010. It might be argued that the decline in the domestic profitability of manufacturing corporations simply reflects the increasing cost of doing business in the United States. However, during the same 2000 through 2010 period, the gross profit margin of *all* corporations reported on U.S. income tax returns was steady at 37 percent, evidencing no decline in gross profit margins related to U.S. sourced business receipts.

[11] Edward D. Kleinbard, "Through a Latte, Darkly: Starbucks' Stateless Income Tax Planning", *Tax Notes*, June 24, 2013. Susan Morse, "Revisiting Global Formulary Apportionment*", Virginia Tax Review*, Vol. 29:593. Reuven S. Avi-Yonah, Kimberly Clausing, and Michael Durst, 2009, op. cit.

[12] See Kimberly Clausing 2011 op. cit.. Also see Joann M. Weiner, "It's Time to Adopt Formulary Apportionment", *Tax Notes*, 2009, and in particular the analysis on page 105 of Merck Group's 1999 through 2006 financial statement income and geographic segment reporting of profits.

[13] See "Reforming Corporate Taxation in a Global Economy: A Proposal to Adopt Formulary Apportionment" by Reuven Avi-Yonah and Kimberly Clausing, *The Brookings Institution*, June, 2007.

Residual federal tax liability

Understated domestic profits on corporate income tax returns is only the first of two challenges for the corporate tax. The second challenge is the ability to defer U.S. tax on foreign source income, allowing a multinational to control the timing of receipt of income for U.S. tax purposes. A consequence of this is that the *residual* U.S. corporate tax liability – the liability paid as tax to the U.S. Treasury – on foreign source income reported on U.S. corporate income tax returns is calculated using a tax rate that is roughly one-fifth of the tax rate that applies to domestic profits, as shown in Table 2 below. These two challenges place purely domestic companies at a competitive disadvantage compared with multinational corporations. While tax policy has understood these challenges for decades, they persist.

Just how significant are these challenges? In 2010, of the roughly $1 trillion in taxable income, $439 billion was foreign source and $583 billion was domestic source. In contrast, of the $223 billion in corporate income taxes paid, about $30 billion was attributable to foreign source income and the remaining $193 billion was attributable to domestic source income.[14]

Thus in 2010 about 7 percent of the U.S. corporate income tax paid was attributable to foreign source income, while 43 percent of corporate income reported on tax returns was foreign sourced.

Table 2. Taxable Income, Liability, and Average Rate for Corporate Income Tax Returns, 2008 through 2010, in $ billions

	2010	2009	2008
Income subject to tax (less REITs and RICs)	$1,022	$895	$978
Foreign taxable income*	$439	$404	$373
Domestic taxable income	$583	$490	$605
Income tax before credits	$355	$310	$340
Net income tax	$223	$205	$229
From foreign income	$30	$30	$22
From domestic income	$193	$175	$206
Effective average federal tax rate			
On foreign income	7%	7%	6%
On domestic income	33%	35%	34%

* Foreign taxable income calculated as the sum of subpart F income and repatriated earnings and profits of related foreign corporations, foreign branch income of U.S. parents, dividends received from foreign corporations and rents and royalties from foreign corporations.
Sources: Corporation Source Book, IRS Statistics of Income, 2008-10 and Form 1118, 2008-10.

[14] SOI Returns of Active Corporations, Table 6, Tax Year 2010.

III. Information and Efficient Tax Administration

Individual income taxes

The understatement of the corporate income tax base is facilitated by a two-party information reporting system (with only the taxpayer reporting amounts to the tax administrator) that creates inefficient tax administration. Efficient tax administration is necessary for tax compliance and ultimately for the fairness of the tax system. Tax systems with inefficient administration leak revenue and often disadvantage taxpayers who cannot avail themselves of the opportunities that inefficient administration creates. One hallmark of efficient tax administration is the ease with which liability can be verified and the resulting low cost of compliance. The easier it is for the tax authority to verify liability, the more costly it is for the taxpayer to embark on tax avoidance.

For example, with the individual income tax the tax authority has an interest in employees accurately reporting wage and salary income. Although employees have little incentive (other than penalties for fraud) for accurately reporting income, employers have the incentive to do so, in order to support their deduction for wages and salaries. To bring these two amounts together, an information report is filed by the employer to the tax authority and to the employee. This information reporting regime aligns the interests of employers with those of the tax authority, reinforcing the accurate reporting of wages and salaries by employees. It is widely understood that this three-party system (a taxpayer who is an employee, an employer, and a tax administrator) results in as much as 99 percent of wage income being accurately reported on individual income tax returns.[15]

The essential feature of efficient three-party information reporting for tax administration is the presence of an *interest* between two of the parties – the taxpayer and a third party who is not the tax authority – in an amount that *can* be used by the tax authority to aid verification of income or liability. When the tax authority can use this interest, as they do with employer reported amounts of wages on form W-2 to employees, there is a gain in efficiency for tax administration as less effort is required to verify the reported amounts, and taxpayers spend less in post-filing audits and litigation.

The incentives for employers to report wages creates an successful tax system with very little enforcement activity required. This information reporting system accounted for 71 percent of $8.2 trillion of total income reported on 2010 individual income tax returns and as much as 63 percent of $1.0 trillion of individual income tax liability (after tax credits) and 94 percent of the $0.8 trillion of payroll tax liability.[16] The tax authority (the IRS) spends relatively little effort verifying wage income as a result of the information reports. In 2010, the audit rate on individual income tax returns that did not have any business income was 0.6 percent, and on employment tax returns it was 0.2 percent.[17] Table 3 below shows the benefits in tax administration of a well-designed efficient three-party information system.

[15] Source: Tax Gap for Tax Year 2006 Overview, Internal Revenue Service 2011. www.irs.gov/pub/irs-soi/06rastg12overvw.pdf, January 6, 2012.
[16] Source: SOI 2010 individual income tax return summary table 1.4, 2010 IRS Collections by Type Table 1, and author calculations.
[17] Source: IRS 2010 Data Book, table 9a. The audit rate excludes audits performed under a special program to assess earned income tax credit compliance.

A completely different story unfolds with respect to the over $320 billion – or 4 percent – of the $8.2 trillion in total income reported on 2010 individual income tax returns as business income. This income has little information reporting, and as a result lacks a reinforcing regime to align the interests of the tax authority with a third party that could incentivize the individual taxpayer to report accurately.[18] The IRS estimates that approximately 44 percent of business income is accurately reported on tax returns.[19] For the remaining 56 percent – most of which is unreported gross receipts – the tax authority must audit. [20]

The audit rate on individual returns with business income in 2010 was nearly three times larger than that for other individual returns, at 1.7 percent, but even this statistic masks the effort that the IRS expends verifying business income. Most of the IRS audits of individual income tax returns are performed through correspondence via mail. A smaller number of returns are examined in a more costly approach by IRS agents "in the field." The IRS field audit function examined approximately 96 thousand non-business returns as part of enforcing the 71 percent of total income associated with wages and salary, while at the same time examining in the field approximately 149 thousand business returns as part of enforcing the 4 percent of total income associated with business income. Tax administration of the individual income tax system for wages and salaries is efficient but, by most measures, for business income less so.

Another metric to judge the efficiency of tax administration would be to compare the size of the taxpayer reported liability with the size of the recommended changes to liability by the tax authority. While individual taxpayers reported approximately $1.0 trillion in income tax liability for 2010, the tax authority recommended approximately $15 billion, or 1.5 percent, of tax in audit adjustments during that year on returns filed in prior years. Of this $15 billion, $7.7 billion was associated with business returns even though those returns accounted for only 4 percent of the total individual income reported.[21] That is a typical year for tax administration of individual income tax.

Some may argue that it is easier to report a gross amount (like wages) rather than a net amount (like income) and this is the reason that tax compliance with wage income is high. However, both wages and sole proprietor business gross receipts are gross amounts, yet wages have high reporting compliance, while business receipts of sole proprietors have low reporting compliance. The difference is that the wage reporting system uses three-party information reporting with incentives that aid tax administration, while substantial sole proprietor business receipts rely upon two-party information reporting that lacks these incentives. The extent to which two-party reporting results in strategic understatement of income is governed largely by the tax penalty regime and the willingness and budget capacity of the tax authority to challenge taxpayer reported amounts.

[18] Most business income in 2010 had no information reporting but there are exceptions. There is information reporting on purchases of legal services, and while not required, there is substantial information reporting to health care providers by insurance companies. Beginning with tax year 2011, Code section 6050W requires information reporting on credit card purchases went into effect, but the impact on compliance is not yet known.
[19] Op cit 15.
[20] Op cit 15.
[21] IRS 2010 Data Book, table 9a.

Tax entity independent

Corporations do not understate income by underreporting receipts as sole proprietors do because it is easier for the tax authority to verify corporate receipts as corporations maintain more formal books and records than most sole proprietors. Most corporations are not paid in cash as most non-compliant sole proprietors are. Instead, when multinational corporations understate income it is through a variety of adjustments to receipts driven by the separate accounting of profits. The adjustments to income required by separate accounting of profits for tax purposes are not shared with any third party. Instead, income verification rests with an increasingly budget-constrained tax authority. Table 3 below shows the costs in revenue and tax administration effort from a two-party information system.

Three parties necessary but not sufficient for efficient tax administration

Not all three-party information reporting systems result in efficient tax administration. One failed three-party information reporting system involved individuals with foreign bank accounts that understated income earned overseas. The qualified intermediary (QI) regime that preceded the Foreign Account Tax Compliance Act (FATCA) was supposed to report amounts of income of U.S. persons with overseas financial accounts, but failed to induce truthful three-party reporting that the tax authority could use to verify income because the QI and the taxpayer's interests were aligned in underreporting income. Efficient three-party information requires at least one of the two parties other than the tax authority to report an amount that the tax authority can use to support the tax base.

Information and corporate profits

The corporate income tax system lacks an analog to the wage and salary information reports of the individual income tax system for tax administration. A major drawback to the current system of separate accounting, used to determine taxable income of a multinational corporation is, that taxpayer reports of income are not constrained by the interest of a third party that the tax authority could use to aid with the measurement of income.[22] As Edward Kleinbard wrote when describing the tax liability in the United Kingdom of Starbucks Corporation, "The Starbucks story – in particular, its U.K. experience – demonstrates the fundamental opacity of international tax planning, in which neither investors in a public firm nor the tax authorities in any particular jurisdiction have a clear picture of what the firm is up to."[23]

The opacity that Kleinbard refers to is not necessarily a symptom of bad corporate actors, but rather the outcome of poorly designed two-party information reporting that results in inefficient tax administration. To achieve efficient tax administration, increase the accuracy of reported liability,

[22] See Daniel Shaviro, "The Optimal Relationship Between Taxable Income and Financial Accounting Income: Analysis and a Proposal", *The Georgetown Law Journal*, 2009. By requiring separate books for financial accounting and tax accounting, managers can face perverse incentives to overstate earnings for book purposes but understate earnings for tax purposes. Shaviro's solution was to engineer incentives to correct this: "Conceptually speaking this approach amounts to burdening managers' achievement of desired results under either system by causing an improvement (given their preferences) under one measure to automatically trigger a worsening under the other. As noted above, I therefore call it a 'Madisonian' approach to income measurement, reflecting James Madison's famous constitutional strategy of using 'ambition …. to counteract ambition.'

[23] See Edward Kleinbard, 2013, op. cit.

reduce the level of disputes upon audit, incentives are needed that bring the taxpayer reported liability and the tax administrator's measurement of liability together. As with wage reporting, one solution would be to enlist the assistance of a third party to which the taxpayer has a strong incentive to report accurate amounts that the tax administrator can use to verify liability.

The following table, a snapshot of 2010 reported tax liability and audit measures, demonstrates the impact of three-party (individual income tax system) and two-party (corporate income tax system) reporting on tax compliance. The tax audit measures of additional tax, recommended penalties and unagreed amounts (i.e., assessed amounts that taxpayers disagree with and contest through IRS appeals and eventually courts) are for tax years prior to 2010. Appropriately designed three-party information systems (as the wage based system) drive the taxpayer and the tax authority to the same measure of liability, and reduce conflict and expense for taxpayers and tax authorities alike.

Table 3. Tax Compliance of Three- and Two-party Information Reporting Systems for Federal Taxes, 2010 in $ billions

	Reported tax liability after credits	Additional tax and penalties recommended during 2010	Additional tax and penalties unagreed by taxpayer	Additional tax and penalties unagreed as a percentage of reported tax liability
Three-party wage based individual system*	$1,531	$7.3	$1.6	0.1%
Two-party corporate income tax	$223	$26.2	$17.9	8.0%

Note: The wage based individual system is the sum of $860 billion of employment tax liability plus $671 billion of individual income tax liability associated with wage income determined using SOI Individual Income Tax Table 1.4 for Tax Year 2010. Additional tax and penalties and unagreed amounts are from Tables 9a and 10 of the IRS 2010 Data Book. Audit recommended and unagreed amounts pertain to multiple tax years prior to 2010 that were under audit during 2010.
Sources: Internal Revenue Service Data Book, 2010, DEG calculations of wage based system from Statistics of Income Individual Income Tax Returns for Tax Year 2010 Table 1.4 and Corporate Income Tax Returns for Tax Year 2010 Corporate Source Book.

Economists have generally not recognized the poor information dynamics of two-party information systems that characterize the corporate income tax system as a cause of the substantial underreporting of corporate income on tax returns. Recommended tax adjustments in the corporate income tax were approximately 12 percent of reported net liability in 2010 ($26.2/$223), while for the wage based system the adjustments were proportionately 24 times smaller, at 0.5 percent of reported net liability ($7/$1,531). Worse, tax adjustments that were challenged by corporate taxpayers were approximately 8 percent of reported net liability in 2010, while for the wage based system the challenged adjustments were proportionately 80 times smaller, at 0.1 percent of reported net liability. By abstracting away the tax system benefits of three-party information reporting that can be part of formulary apportionment tax schemes, comparisons with two-party information reporting tax schemes with separate accounting understate the support for the tax base that three-party information reporting in a formulary apportionment system can provide.[24]

[24] See Rosanne Altshuler and Harry Grubert, "Formula Apportionment: Is It Better Than The Current System And Are There Better Alternatives?" *National Tax Journal*, December 2010.

Finding a third-party

For publicly traded corporations shareholders could be a third party. Shareholders need, and are provided, a set of standardized metrics of corporate profits that convey the financial results of corporate activities in order to judge their investment decisions. Corporate managers are incented to increase profits to hold shareholder interest. Corporate profits and shareholder interest determine the value of the enterprise and managers' compensation. At least for publicly traded corporations shareholder interest in increasing profits can be used by the tax authority to help verify reported profits used to determine tax liability.

Not local profits

Shareholder and tax authority interests could be aligned if the tax authority could use the same profits measure to verify tax liability that shareholders use to determine the value of their investment, i.e., worldwide profits. Shareholders want high profits, and tax authorities want accurate reporting of income. Just as corporations want to report all wage and salary payments provided employees to support their claim for a deduction, corporations want to report profits to shareholders accurately to support their continued investment in the business. This incentive could be the reinforcing third-party information reporting mechanism absent from the current corporate income tax system. The attendant benefits of a reinforcing information reporting system are clear for tax administration: more liability is voluntarily reported and less effort is required to verify liability, as Table 3 above shows.

IV. Formulary apportionment of global profits

If the tax authority could use global profits as reported on financial statements as the basis for determining U.S. corporate income tax liability, this might be the end of the story. Tax authorities can use global profits of a unitary business as part of a formula to determine tax liability, as both Container Corp. of America v. Franchise Tax Board and Barclays Bank PLC v. Franchise Tax Board of California Supreme court cases established.[25] However, they cannot solely rely on global profits because some portion of those profits might not be related to economic activity that occurs within their jurisdiction and therefore could run afoul of the permanent establishment clause contained in all U.S. tax treaties. While recognizing that recent tax reform proposals by Chairman Camp[26] and Chairman Baucus[27] have sought to extend the corporate income tax for U.S. domiciled multinationals to a unitary business even when a controlled foreign corporation (CFC) of the business has sales, but no permanent establishment in the United States, some means to apportion global profits will be needed.[28]

A. The tax base and shareholder interest

In order to preserve the benefit of using shareholders as a third-party to receive accurate measures of profits, formulary apportionment of global profits would require combined reporting of income rather than separate reporting for each entity within the unitary business. This is because the shareholders' interest in profits that management will respond to is defined by the collection of business activities reflected in the consolidated metrics of profits and earnings per share of the investment, which is at the unitary level.[29] Not all approaches to defining a unitary business include a third-party with both access to, and an intrinsic interest in, information from the taxpayer that the tax authority could also use to verify liability. For example, the federal income tax relies upon the Internal Revenue Code section 482 rules to define a unitary basis by determining direct or indirect control of a business, but these rules do not make use of a third party that has an intrinsic interest in business profits.[30] Instead, Code section 482 rules construct measures of profits that no one other than the taxpayer (and their agents hired to construct the transfer prices) and the tax authority have access to. The current section 482 rules essentially preclude the possibility of an interested third party that the tax authority could use to aid in the verification of tax liability, because the transfer pricing information and documentation are private.

The tax base we construct follows financial statement reporting requirements as described in International Financial Reporting Standards (IFRS) 10 – Consolidated Financial Statements, which focus on control to define a unitary business, but more importantly, on control by *investors*.[31] As

[25] Container Corp. of America v. Franchise Tax Board of California, 463 U.S. 159 (1983), and Barclays Bank PLC v. Franchise Tax Board of California, 62 U.S. 4552 (1994).
[26] *The Participation Exemption System for the Taxation of Foreign Income* included in the February 2014 draft of *The Tax Reform Act of 2014.*
[27] *The Reform of Taxation of Income Earned in Controlled Foreign Corporations* draft of November 2013.
[28] See *"*Analysis of a Formulary System, Part VIII: Suggested Statutory Regulatory Language for Implementing Formulary Apportionment*"* Michel Durst, *Bloomberg BNA, Tax Management Transfer Pricing Report*, May 1, 2014, for a model statute for apportioning global profits.
[29] See "Mandatory Unitary Combined Reporting Regimes", Hollis Hyans, Chuck Mueller, Todd Senkiewicz, presentation to the Multistate Tax Symposium, February, 2013.
[30] See Reuven Avi-Yonah and Kimberly Clausing, 2007 op. cit..
[31] See Summary of IRFS 10 – Consolidated Financial Statements, www.iasplus.com/en/standards/ifrs/ifrs10#link0

IFRS 10 states, "An investor controls an investee when it is exposed, or has rights, to variable returns from its involvement with the investee and has the ability to affect those returns through its power over the investee."

The measure of profits used to construct the tax base would not rely upon the separate profits of disparate economic entities within a unitary business, but upon the profits of shareholders as equity investors in the combined activities of the unitary business.[32] An investor perspective would result in a tax base that includes a greater amount of economic activity than under current law because some enterprises within a consolidated corporation may not have a permanent establishment under existing tax treaties with the U.S. and would not be included in the current law tax base, but would be part of a consolidated tax base defined by investors' interests.

We acknowledge that the permanent establishment clauses in tax treaties and the receptiveness of U.S. trading partners to formulary apportionment pose challenges to the design and construction of a tax base defined by investors' interests.[33] For this exercise, we place these challenges aside to focus on the construction of a static tax base under sales factor apportionment of global profits.

B. Apportionment formula and shareholder interest

Income tax apportionment formulas usually rely upon three factors – property, payroll, and sales – to allocate profits.[34] The property and payroll factors measure fixed factors of production and are used to source income to the production activity. From a shareholder perspective, source concepts used to allocate profits for tax purposes are not particularly relevant to the valuation of the business, and therefore do not lend support to investors' interests in profits. Investors rely upon management as their agents, to source production and maximize profits. On investor earnings calls of publicly traded corporations the attention is on profits and sales (a destination concept) and which markets a business is increasing or contracting. Investors will take management to task for declining sales and reward management for growing sales, and it is this management-investor relationship that can be beneficial to tax administration. Investors will exert less pressure on management along the other dimensions of property (investment) and payroll because, as Hines shows, the connection to profits is not as clear.[35]

While this management-investor relationship to increase profits should be beneficial to tax administration in the case of publicly traded corporations, it may be less so for privately held companies where management and investors can be the same persons. In the analysis that follows, we assume that the management-investor incentive to report profits for publicly traded corporations is the same for privately held corporations. To test this assumption would require access to either financial statements of privately held corporations or individual tax returns of both parties, neither of which are available. Additionally, we acknowledge that management's incentive

[32]. See "Combined Reporting for Corporate Income Tax: Issues for State Legislatures", William Fox and LeAnn Luna, *Center for Business and Economic Research, University of Tennessee,* November, 2010.
[33] See Michael C. Durst", Analysis of a Formulary System, Part IV: Choosing a Tax Base", Bloomberg BNA, October 17, 2013 and Susan C. Morse, "Revising Global Formulary Apportionment", *Virginia Tax Review,* 2010.
[34] Of the 45 States and the District of Columbia with corporate income taxes, all use formulary apportionment, with the formula based on various combinations of sales (destination based), property (source based), and payroll (source based). As of 2012, nine states and the District of Columbia used an even weighted formula, 21 used an over-weighted sales factor, and 16 used a single sales factor formula.
[35] See James Hines, "Income Misattribution under Formula Apportionment", *European Economic Review,* 2010.

to increase sales may not provide perfect support for increasing sales in a particular location, especially when some sales carry a greater tax burden. Under sales factor apportionment of global profits, the central goal of tax planning would be to reduce the *appearance* of sales in high-tax jurisdictions without actually reducing sales. We return to this tax avoidance issue in Section IV of this paper.

No perfect apportionment system

Apportioning worldwide profits to jurisdictions must rely on second best, measures as there are no clear formulae to allocate value geographically.[36] The Multistate Tax Commission (MTC), Walter Hellerstein, Michael Durst and others have led extensive legal development and economic analyses of formulary apportionment schemes and incentives for state taxation in the United States, including a complete revision of the model statute, along with rules that address instances that result in unfair taxation under a formula and the resolution of disputes.[37] The trend among states has been to adopt destination based single sales factor apportionment to induce firms to locate property and payroll within their state, and use these source based factors only when the sales factor alone would result in an unfair apportionment of income.[38]

Most states have used an allocation mechanism that first defines profits to the "waters-edge" of the United States, and then applies a version of the three-factor apportionment formula to each state's share of those profits. Recently, some states have begun to challenge the waters-edge construct by including income from foreign affiliates in their state apportionment formulas. Montana and Oregon list countries that have foreign affiliates of corporations doing business in those states, while Alaska, West Virginia, and the District of Columbia require income from all controlled foreign affiliates in tax havens to be included in the state tax base.[39] The European Union (E.U.) in considering the Common Consolidated Corporate Tax Base (CCCTB) follows the U.S. states' experience by first defining a waters-edge as the 27 member states of the E.U., and then apportioning financial statement profits among member states by a four factor formula using sales, number of employees, payroll, and assets. Even when sales is used to apportion income, investor and tax administrator interests cannot be aligned under waters-edge apportionment schemes unless the unitary business is contained within the boundary. Waters-edge accounting for profits is a separate-accounting approach to measuring profits and shares the same poor incentives for

[36] See Shirley Sicilian, "Multistate Tax Compact Article IV Recommended Amendments", Multistate Tax Commission, May 3, 2012; Walter Hellerstein, "Designing the Limits of Formulary Income Attribution Regimes", *State Tax Notes*, April 7, 2014, and Michael C. Durst, "Analysis of a Formulary System, Parts I-VIII", *Bloomberg BNA*, 2014

[37] See "Report of the Hearing Officer, Multistate Tax Compact Article IV (UDITPA), Proposed Amendments", Richard Pomp, *Tax Analysts*, October 2013. For a recent economic analysis of the U.S. state experience with formulary apportionment see "Lessons for International Tax Reform from the U.S. State Experience under Formulary Apportionment",Kimberly Clausing, mimeo, January, 2014. For a detailed economic analysis of formulary apportionment of corporate profits for EU nations see "Study on the Economic and Budgetary Impact of the Introduction of a Common Consolidated Corporate Tax Base in the European Union", by Robert Cline, Tom Neubig, Andrew Phillips, Christopher Sanger, and Aidan Walsh, Ernst & Young LLP, 2010. For a review of states experiences with moving towards combined reporting, see "Combined Reporting: Understanding the Revenue and Competitive Effects of Combined Reporting" by Robert Cline, Ernst & Young LLP, 2008.

[38] Fairness in apportionment factors is a central issue with formulary apportionment schemes and is enshrined in the Multistate Tax Compact Article IV.18. See Richard Pomp, 2013, op cit 35. In particular see Cara Griffith, "What is a Reasonable Alternative Apportionment Method", *State Tax Notes*, February 11, 2013.

[39] See "West Virginia Seeks Study of Revenue Lost to Offshore Tax Havens", *Tax Notes*, March 11, 2014.

reporting liability that occur with two-party information reporting schemes, in that investors' interests are not aligned with waters-edge measurements.

C. Single sales factor apportionment of global profits

A broader tax base

Compared with tax accounting standards, the business consolidation used in financial statements increases the scope of economic activity that is measured when determining profits. Financial statements are not limited to reporting profits using permanent establishment concepts. As a result, we should expect a larger tax base when using financial statements than when using tax returns, both because more economic activity is captured and because cross-border income stripping is netted out. At the same time, a broader consolidation of profits means that losses can be more broadly applied towards income within the consolidated business. Because the analysis presented here is based upon financial statements for 2010, a year in which many industries were still in recession, both a broader tax base and wider utilization of business losses can be demonstrated.

Comparing financial statement amounts with tax return amounts

Because sales factor apportionment of global profits would rely upon financial statement measures of profits, there is no need to adjust financial statement data for comparability with tax returns. The comparisons that follow are between two different tax bases – financial statements and tax returns – using two different measures of profits. However, financial statements are not designed or prepared today for the purposes of tax reporting but instead to inform investors of the economic performance of the business. To assist investors in judging the performance of a business, a certain amount of earnings smoothing over time is acceptable in financial statements that may not be acceptable for tax reporting purposes. Were financial statements to be prepared for the purposes of determining tax liability using sales factor apportionment of global profits, they may differ from the financial statements used in this analysis, creating some conflict between the goal of accurate reporting of profits for tax purposes and reporting of profits for investors to allow them to determine the prospects for the business.

There are a number of specific differences between financial statements and tax returns that can create sizeable benefits or costs when switching from tax returns to financial statements for the purpose of determining tax liability. First, financial statement profits are calculated using straight line depreciation rather than accelerated depreciation. This increases book profits relative to tax profits, in proportion to the amount of capital investment. As shown in a recent analysis by the Joint Committee on Taxation, the U.S. corporate income tax system contains significant investment incentives through depreciation, relative to major trading partners.[40] To the extent that corporate tax reform eliminates accelerated depreciation, the tax base approaches the financial statement tax base presented.[41] There are at least three other significant book-tax differences that

[40] "Description of the Treatment by Certain Countries of Cost Recovery for Business Investment in Tangible and Intangible Assets", Joint Committee on Taxation, April, 2013, reprinted in Tax Notes, document 2013-28455.
[41] This may not be such an extreme assumption, as section 3104 of the February 21, 2014 draft of the Tax Reform Act of 2014 introduced by Chairman of the House Ways and Means Committee Dave Camp would replace the accelerated depreciation system in section 168 of the Internal Revenue Code with straight line method of depreciation.

are not accounted for. Tax returns limit travel and entertainment expenses, while financial statements allow for a full deduction. Second, capital losses are limited to the extent of capital gains on tax returns while financial statements allow for a full deduction. Both result in a decrease in book profits relative to tax returns. Third, Code section 263A costs are capitalized into inventory for tax system profits while a deduction is taken on financial statements. We list these important differences to dissuade the reader from concluding that financial statement profits will always be larger than tax profits. Depending upon the importance of these adjustments (and others not listed here) for some companies financial statement profits could be smaller than tax profits.

The financial statement data lack consistent segment reporting by companies. Ideally, all companies would report U.S. sales as well as the U.S.-designated operating income under the Generally Accepted Accounting Principles (GAAP) to measure the change in the tax base and the resulting tax liability at the company level. The sales could then be grossed up to match the size of the business receipts reported in the SOI. However, since the geographic-segment data for operating income (economic profits) is not a reporting requirement under U.S. GAAP or IFRS, it is sometimes not available in the annual regulatory filings and annual reports of corporations.[42] In addition, although U.S. sales are commonly reported by corporations included in the company level dataset, on rare occasions only sales for North America (or the Americas) is reported, and this was used to supplement missing U.S. sales amounts.[43]

A second issue with the data used for the analyses is the inconsistency between GAAP accounting methods used by U.S. domiciled firms, and IFRS accounting methods used by most foreign domiciled firms. GAAP accounting methods allow expensing of development costs while under IFRS these are amortized, and the U.S. GAAP allows for the use of Last-In First-Out (LIFO) accounting methods, while IFRS does not. LIFO increases the cost of goods sold in an environment of rising prices, which reduces reported profits. In industries with significant inventories such as mining, petroleum manufacturing, and automobile dealerships, the reduction in profits can be meaningful. Because there are both U.S. domiciled and foreign domiciled multinationals in these industries and in our data, profits are inconsistently measured when using financial statement data. In the future, since the stated goal of U.S. Financial Accounting Standards Board (FASB) and the International Accounting Standards Board (IASB) is convergence of U.S. GAAP with IFRS, and since many of the projects implementing convergence have already been completed, U.S. GAAP versus IFRS differences should eventually be eliminated.[44]

Finally, in the analyses presented, for the company level financial statement data, we use sales in two or more countries to indicate that a corporation is a multinational. This assumption is a simplified approach towards classifying U.S. corporate taxpayers when compared with other more expansive criteria, such as those outlined by the Organization for Economic Co-operation and Development (OECD) in the determination of what constitutes a Multinational Enterprise (MNE).

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[42] Under both GAAP and IFRS segment reporting is generally determined under a management approach rather than a sales approach (see "U.S. GAAP vs IFRS: The basics", Ernst & Young, March 2010.)

[43] North America is defined in financial statements to include Canada, the U.S., and Mexico. While using North America is not an ideal construct for allocating sales to a U.S. only corporate tax base, because the U.S. GDP is roughly 85% of the combined GDP of Canada, the U.S., and Mexico (based on 2010 data from the World Bank, accessed at: *http://data.worldbank.org/country*), it is likely a small overstatement of allocated profits. North American sales data was used for only 18 companies of the 2,121 included in the financial statements sample for the fourteen industry analysis presented here.

[44] See "Joint Update Note from the IASB and FASB on Accounting Convergence", April 2012.

As a result, we identify companies as multinationals that may in fact not be considered multinationals under alternative definitions that require physical locations overseas.

Comparing financial statement sales with tax return sales

Using annual financial statement data for U.S. and foreign domiciled corporations for 2010, we construct a corporate income tax base from global profits apportioned by sales in the United States. Sales by jurisdiction aren't a requirement for financial statement reporting, although the great majority of statements provide sales by geography. We assume that the measures of sales reported on financial statements are accurate for the exercise of constructing a static measure of a sales factor apportioned tax base, with the understanding that these amounts may be less accurate if the location of sales becomes a factor in determining tax liability.

This stylized tax base is compared with reported net income on 2010 corporate income tax returns, and the associated tax liability is compared with the liability reported by corporate taxpayers. No attempt is made to adjust reported tax liabilities from corporate tax returns to construct a tax base comparable to the tax base constructed from financial statements. Such a construction would be a futile exercise; there is no public data by which to precisely model the understatement of corporate profits on income tax returns. As Section II of this paper discusses, there are good reasons to believe that the discrepancy is substantial, but the opacity that Kleinbard refers to only reinforces the fact that data are lacking to measure the extent of underreporting.

Profits measures

Global profits are defined as revenues less the sum of cost of goods sold, selling, general, and administrative expenses, and depreciation and amortization. (Research and development costs are included in administrative expense). This pre-tax, pre-interest expense, pre-other income definition of a tax base, along with global and apportioned sales, is shown in Table 4 below. Table 6 will account for interest expense and other income separately. We focus on the fourteen largest industries in terms of business receipts reported on 2010 SOI data. These include petroleum manufacturers, pharmaceutical manufacturers, other chemical manufacturers, computer and electronic equipment manufacturers, transportation manufacturers, mining companies, insurance companies, retail trade companies, wholesale trade companies, information companies, professional, scientific, and technical services companies, construction companies, accommodation and food services companies, and health care and social assistance companies.[45] We follow the practice of many U.S. states by excluding financial services including banks, securities dealers, mutual funds and real estate investment trusts from sales factor apportionment of income.[46] The

[45] We focus on these industries for a number of reasons. First the fewest number of financial statements (2,121) cover the broadest amount of economic activity in the United States. This is of practical importance because some of the Compustat financial statement data requires manual review to extract geographic market segment information and to prevent double counting of sales and profits when parents file consolidated statements at the same time that related entities also file financial statements. These fourteen industries accounted for 60 percent of the number of filed tax returns, but 76 percent of business receipts and 64 percent of taxes paid. Second, these industries report the greatest amounts of foreign source income and foreign tax credits, and are therefore front-and-center with the shortcomings of the current corporate income tax with regards to erosion of the domestic tax base and a low residual federal income tax on foreign source income.

[46] For example, see California Regulation Section 25137 under Title 18 of the California Code of Regulations for alternative taxation rather than single sales factor apportionment.

financial statement sample includes 2,121 corporations, of which 1,883 were U.S. domiciled (of which 871 had domestic sales only and 1,010 had both domestic and foreign sales, considered multinationals), and 238 were foreign domiciled multinational corporations with U.S. sales.

Table 4. Sales Factor Apportioned Global Profits for 2,121 Companies with U.S. sales, 2010 in $ billions

Item	Total sales	Global profits
Total sales	$11,690	$1,322
U.S. share	$6,318	$645
Foreign share	$5,372	$677

Source: Form 10K and 20F annual financial statements for 2010

Single sales factor apportioned tax base

The $6,318 billion of U.S. sales, shown in Table 4 above, accounts for 53.8 percent (weighted by industry sales, or 48.1 percent unweighted) of the $13,143 billion of business receipts reported on 2010 corporate income tax returns for the 14 industries in our sample. We use the weighted 53.8 percent coverage because the ratio of financial statement sales to tax return business receipts varies by industry, as shown in the final row on Table 7C labelled "percent coverage based on sales." With the assumption that one dollar of business receipts on tax returns is equivalent to one dollar of sales on financial statements, we gross up the amount of U.S. apportioned global profits for each industry by the ratio 1/"percent coverage based on sales" for each industry, as shown in Table 5 below. (Each industry's estimated amounts of apportioned global profits are shown in the second row of Table 7A.) Grossing up the financial statement sample's U.S. apportioned global profits for industry sales coverage increases the amount from $645 billion (shown on Table 4) to $645 billion x (1/0.538) = $1,199 (sixth row of Table 5).

Finally, these 14 industries accounted for 76 percent of business receipts for all corporate income tax returns (excluding financial services). Grossing up the U.S. apportioned global profits for the 14 industries to all corporations by (1/0.76) yields an estimate of apportioned global profits as $1,199 billion x (1/0.76) = $1,572 billion. This sales factor apportioned global profits tax base is 97 percent larger than the $798 billion of net income subject to tax reported for all corporations on 2010 returns (other than financial services).

Table 5. Comparison of Reported Tax Liability to Sales Factor Apportionment of Global Profits, Based on a Financial Statements Sample and SOI C-corporation Tax Return Population, for 2010, in $ billions

	IRS Statistics of Income 2010		Financial statement applied to 14 industries with U.S. sales 100% U.S. share, 0% foreign
Fourteen industry sample*			
Number of companies	988,513	Sample	2,121
Business receipts [1]	$13,143	Sales [2]	$6,318
		Unweighted sales-based sample coverage of SOI data	48.1%
		Industry-weighted sales-based sample coverage of SOI data	53.8%
		Sales-apportioned global profits for sample	$645
Net income (total income, less deductions)	$621	Estimated sales-apportioned 14 industries* global profits	$1,199
Income tax before credits at 35% [3]	$250	Estimated income tax before credits for 14 industries*	$420
Income tax after credits at 35%	$146	Estimated income tax after credits for 14 industries*	$420
		Tax rate equivalent to U.S. tax after credits	12.2%
Extension up to all U.S. corporations			
Business receipts, not including financial services [1]	$17,222		
Percentage of SOI corporate business receipts			76%
U.S. net income, not including financial services [4]	$798	U.S. sales-apportioned global profits	$1,572
Income tax after credits	$204	Tax rate equivalent to U.S. tax after credits	13.0%

[1] Business receipts reported in Table 6 of the SOI Corporation Source Book are U.S. (domestic) business receipts.

[2] Financial statement net sales.

[3] Income tax before credits is less than the statutory 35% because net operating losses were allowed against the $798 billion of net income for 2010.

[4] Net income is a slightly narrower income measure than income subject to tax because it allows for losses from prior years to offset income in certain situations.

*The 14 industries represented here are: Petroleum manufacturing, Mining manufacturing, Pharmaceutical manufacturing, Chemical manufacturing, Computer and electronics manufacturing, Transportation manufacturing, Insurance, Retail trade, Wholesale trade, Information, Professional, Scientific and Technical services, Construction, Accommodation and food services, and Health care and social assistance, which account for 76% of the total U.S. business receipts (less Financial Services), based on SOI data for 2010.

Unlike the $798 billion of net income reported on tax returns for non-financial industries, the $1,572 billion of U.S. sales-apportioned global profits excludes foreign source income. In 2010

non-financial corporations reported income tax liability after tax credits of $204 billion. Because there would be no need for foreign tax credits against a U.S. sales-apportioned global profits tax base, each dollar of apportioned profit, whether from a domestic corporation with U.S. sales only, or a multinational with U.S. and foreign sales, would be subject to the same effective U.S. tax rate. On a *static basis, before taking into account compliance issues, significant adjustments for interest expense, state and local taxes, or tax expenditures, and behavioral responses* by corporations, a 13 percent tax rate applied to $1,572 billion of sales apportioned global profits could result in the same $204 billion tax liability reported as income tax after credits on tax returns.

Some modifications to a single sales factor apportioned tax base

To demonstrate how policy options may reduce the $1,572 billion under sales factor apportionment we consider four modifications, as shown in Table 6. First, from the financial statements, we apportion global interest expense by U.S sales. Sales factor apportioned interest expense amounts to $259 billion. In contrast, on 2010 tax returns, approximately $597 billion in interest expense was claimed for these industries, more than twice as much as would have been allowed under a sales factor apportionment. Subtracting $259 billion of interest expense from the $1,572 billion sales factor tax base that remains reduces the tax base to $1,313 billion.

A second modification allows for a deduction for state and local taxes paid. For the fourteen industries this amount was $360 billion, taken from 2010 tax returns. We use the tax return reported amount of state and local taxes paid rather than apportion regulatory filing amounts, due to poor reporting on financial statements of sub-national taxes. This assumption may create a larger deduction for state and local taxes than would result from sales factor apportionment because state and local taxes in the U.S. are proportionately larger than in most countries. This adjustment would further reduce the sales factor apportioned tax base from $1,313 billion to $953 billion.

A third adjustment allows all the current law tax expenditures that benefit corporations. To estimate this amount, we use the Joint Committee on Taxation's tax expenditure estimates for 2010 except for those associated with foreign source income or export benefits, since income such those activities would not be subject to tax. The tax base associated with domestic corporate income tax expenditures is estimated at approximately $291 billion, further reducing the sales factor apportionment tax base from $953 billion to $662 billion. At a 35 percent tax rate, this tax base would yield $232 billion in revenue compared with $204 billion. A revenue neutral tax rate would be approximately 30.9 percent.[47]

[47] Tax expenditures are allocated to each of the fourteen industries in two steps. First, each of the industries was allocated tax expenditures for general business credits, inventory benefits (section 863(b), LIFO, and Lower of Cost Method), executive compensation limitations (excess parachute and limitation on deductible compensation), employee benefits (adoption credit, credit for employer insurance, drug plans for Medicare), the AMT limitation, and charitable deductions according to the amounts listed in the SOI Corporate Source Book for each industry. Second, each industry was allocated specifically according to amounts in the Corporate Source Book for the deduction for domestic production activities, deferral of active income of controlled foreign corporations, bonus depreciation, work opportunity tax credit, tonnage tax, credit for maintaining railroad tracks, completed contract rules, energy-efficient commercial building property, credit for plug-in electric vehicles, excess of percentage depletion over cost, election to expense 50 percent of qualified property to refine liquid fuels, LIFO, private activity bonds, exclusion of investment income on life insurance and annuity contracts, special treatment of life insurance company reserves, special deduction for Blue Cross and Blue Shield companies, interest rate and discounting period assumptions for reserves of property

A fourth and final adjustment adds to the tax base passive income reported on financial statements, i.e., income from rents, royalties, interest, capital gains (or losses), as well as non-business losses carried forward. These worldwide amounts of passive income are apportioned to the United States using the sales factor and result in an increase of $52 billion, raising the tax base from $662 billion to $714 billion. With the addition of the U.S. share of passive income, the tax rate necessary for revenue neutrality would be 28.6 percent. Alternatively, adjusting for all current law tax policy incentives and allowing the inclusion of apportioned passive income would, at current statutory rate of 35% led to a 22.5 percent increase in corporate income tax liability from $204 billion to $250 billion.

Note that the "great recession" that began in 2007 is likely a key factor in the relatively small estimate of passive income based on the financial statements sample. Of the 2,121 companies across 14 industries, 1,030 (or 49%) reported losses from these sources of income. It is likely that the percentage of companies reporting passive losses would have been lower, and that passive income amounts would have been larger if 2007 data had been used for these analyses instead of 2010 data.

Table 6. Adjustments to Single Sales Factor Apportioned Global Profits Compared with $204 billion Corporate Income Tax Liability for All Industries Other Than Financial Services, in 2010, in $ billions [1]

Item	Amount of Adjustment	Tax Base	Static revenue at 35% rate	Static revenue neutral rate
Single Sales Factor Apportioned Global Profits		$1,572	$550	13.0%
Less sales factor apportioned global interest expense [2]	-$259	$1,313	$460	15.6%
Less U.S. taxes paid (SOI)	-$360	$953	$333	21.4%
Less tax expenditures other than for foreign source income [3]	-$291	$662	$232	30.9%
Plus sales factor apportioned global passive income [4]	$52	$714	$250	28.6%

[1] Net income on corporate income tax returns other than for financial services was $798 billion with after tax credit liability of $204 billion which is used to estimate the revenue neutral rate.

[2] Sales factor apportioned global interest expense is from financial statements. Tax return amount of interest expense for all industries excluding financial services was $597 billion in 2010. Because factors of production are not included in the apportionment factor for global profits, they have not been included in the allocation of interest expense.

[3] The tax expenditures excluded from this calculation are: inventory property sales source exception; deduction for foreign taxes paid instead of a credit; unavailability of symmetric worldwide method; apportionment of research & development expenses for determination of foreign tax credits; special rules for interest-charge domestic international sales corporations; deferral of active income of controlled foreign corporations; deferral of active financing income.

[4] Passive income defined as the difference between variables: Pretax Income and Operating Income After Depreciation less Interest Expense, as reported in the Compustat data base. Note that Compustat defines Pretax Income to be OIAD less Interest Expense, plus non-operating income, plus interest income. Thus, estimated U.S. share of passive income from financial statements is the sales-apportioned non-operating and interest income reported on SEC filings.

and casualty insurance companies, tax-exempt status and election to be taxed only on investment income for certain small property and casualty insurance companies, proration for property and casualty insurance companies, orphan drug credit, credit for employer paid FICA taxes on tips, depreciation of buildings other than rental housing in excess of alternative depreciation system, and expensing of magazine circulation expenditures.

D. Industry details

General observations

The following discussion provides detail of the financial statement sample and sales factor apportionment of global profits by industry. Where Table 6 describes the tax base for sales factor apportioned global profits for all industries other than financial services, Tables 7A, 7B, and 7C describe the tax base of sales factor apportioned global profits specifically for the fourteen industries analyzed. Table 7A provides the distribution of the $1,199 billion of sales factor apportioned global profit, shown on line 6 in Table 5, among the fourteen industries in our sample. In addition, it shows the distribution within each industry of apportioned profits by purely domestic corporations, U.S. domiciled multinational corporations, and foreign domiciled multinational corporations. Table 7B extends the sensitivity analysis, shown in Table 6, to each of the fourteen industries, and contrasts the resulting sales factor apportioned profits tax bases with the tax base reported on 2010 tax returns. Table 7C provides counts of financial statements for each industry and the percent of business receipts on tax returns explained by sales on the financial statements from our sample.

Before discussing the industry specifics, however, a few generalizations can be made. First, for each of the fourteen industries, sales factor apportioned global profits before any of the adjustments shown on table 6 are larger than net income on tax returns. This can be seen by comparing the first two rows of table 7A. Multinational corporations account for 76% of sales factor apportioned global profits on average with a high of almost 100% in the pharmaceutical and chemical manufacturing industries and the construction industry and a low of 11% in the health care and social assistance industry. In only two industries do multinational corporations account for less than one-half of sales-apportioned profits: the health care and social assistance industry and retail trade industry. This can be seen by comparing rows three and four on table 7A.

Second, after accounting for the sensitivity analysis in Table 6 that allows deductions for interest expense, state and local taxes paid, and all tax-expenditures (other than those that would apply to foreign source income), and adds sales factor apportioned passive income, five of the fourteen industries would have global profits apportioned to the United States *smaller* than U.S. net income from 2010 tax returns. This can be seen by comparing the eighth row on Table 7B – *Apportioned global profits and passive income adjusted for all current policy incentives* – with the first row on Table 7A. These are: the pharmaceutical industry, the computer and electronics manufacturing industry, both the retail and wholesale trade industries, and the construction industry. No single amount from the sensitivity analysis shown on rows two through seven on Table 7B supports the possibility of a sales-apportioned profits measure resulting in a smaller tax base than shown on tax returns. For the pharmaceutical and computer and electronics manufacturers, there were large amounts of negative passive income (row 7 of Table 7B); for the construction industry there was a large amount of sales-apportioned interest expense (row 2 of Table 7B – actual interest expense on tax returns for the construction industry was $4 billion versus $10 billion of interest expense using sales factor apportionment), and for the retail and wholesale industries no single adjustment presented allows for sales-apportioned profits being less than net income on tax returns.

However, the fact that the sales apportioned profits tax base is sometimes less than net income shown on tax returns *does not mean* that tax liability will be less under sales factor apportionment

than under present law. This is because the effective federal tax rate on foreign source income is much lower than on domestic source income, as the bottom two rows of Table 2 illustrate. Since there is no foreign source income under sales factor apportionment as there is under present law, it is possible for tax liability to be greater under sales factor apportionment than under present law even when the tax base is smaller. This is the case for the pharmaceutical manufacturing industry which shows a smaller tax base under sales factor apportionment, $32 billion (seventh row of Table 7B), than under present law, $46 billion (first row of Table 7A), but also shows a large tax liability under sales factor apportionment, $11 billion (second from bottom row of Table 7B), compared with present law, $8 billion (bottom row of Table 7B).

At the same time, it is possible that a smaller tax base under sales apportionment can result in a smaller tax liability. For three of the five industries that show a smaller tax base under sales factor apportionment, tax liability would also be smaller. These three industries are retail trade, wholesale trade, and construction as seen by comparing the 2010 tax return liability shown on the bottom row of Table 7B with the sales-apportioned liability shown on the second to bottom row of Table 7B. A common theme with these three industries is the small amount of foreign source income and foreign tax credits primarily utilized by multinational corporations.

Third, while we would expect sales factor apportionment of global interest to result in smaller deductions for interest expense when compared with tax return amounts, for the petroleum manufacturing and construction industries this is not the case. For these two industries, sales factor apportionment of global interest expense results in larger deductions against profits than were claimed on tax returns. For the petroleum manufacturing industry, actual interest expense on tax returns was $19 billion, while sales factor apportioned expense would have been $30 billion, as shown on row 2 of Table 7B. Both these industries show special circumstances on 2010 tax returns. Petroleum manufacturers, with $132 billion of net income subject to tax, showed a net U.S. tax liability of $5 billion as the result of substantial foreign tax credits, and the construction industry showed a loss of $4 billion for net income subject to tax (row 1 of Table 7A).

Fourth, this sample of 2,121 financial statements accounts for 53.8% of business receipts reported on tax returns for these industries, with four industries accounting for less than 30% of business receipts (mining, construction, professional, scientific and technical services, and wholesale trade) and three accounting for more than 75% of business receipts (pharmaceutical manufacturing; computer and electronics manufacturing; and information).

Specific observations

Turning to Table 7B, the greatest disparity in tax liability that results from sales factor apportionment of global profits, after allowing for deductions for interest expense, state and local taxes paid, all tax expenditures other than foreign source income benefits, and including sales factor apportioned global passive income, occurs for the petroleum manufacturing industry. On 2010 tax returns the petroleum manufacturing industry reported a net U.S. tax liability of $5 billion (bottom row of first column) compared with a liability under sales factor apportionment that would have been $46 billion (second from bottom row of first column).

Should only federal liability be considered?

While the federal tax liability (as reported on tax returns) of the petroleum manufacturing industry exceeded that of only the construction, health care and social assistance, and accommodation and food services, among the fourteen industries analyzed (bottom row of Table 7B), the combined federal, state and local tax burden was significantly greater. This $29 billion exceeded the combined tax burdens of eight of the fourteen industries (mining, pharmaceutical manufacturing, chemical manufacturing, transportation manufacturing, construction, health care and social assistance industry, and accommodation and food services industry) as can be seen by adding *Taxes Paid (SOI)* (row 4 of Table 7B) to *Present law income tax after credits* (on the bottom row). Were the distribution of state and local taxes across industries uniform, it may make sense to focus solely on federal liability, but as row 3 of Table 7B shows, this is not the case. State and local taxes vary greatly across industries, with the petroleum manufacturing, insurance, retail trade, wholesale trade, and information industries paying the most and pharmaceutical and chemical manufacturing paying the least, in aggregate terms. Importantly, all states that impose an income tax on corporations use formulary apportionment, with many using a single sales factor. There should be significant improvement in compliance with state formulary apportionment systems for corporate income tax if the federal government adopted formulary apportionment for federal corporate income tax. We do not estimate or analyze the size of this coordination benefit, but note that tax administration synergies between federal and state individual income tax systems are significant and a similar outcome could occur with corporate income taxes.

Least change in tax liability

The bottom two rows of Table 7B also show that sales factor apportionment of global profits after allowing for deductions for interest expense, state and local taxes paid, all tax expenditures other than foreign source income benefits, and including sales-apportioned global passive income results in very similar tax liability compared with tax returns for four industries. These are the accommodation and food services industry ($2 billion), health care and social assistance industry ($3 billion), the insurance industry ($28 billion for taxes from sales factor apportionment versus $23 billion for tax return income tax after credits), and the computer and electronics manufacturing industry ($11 billion for taxes from sales factor apportionment versus $13 billion for tax return income tax after credits). Three of these four, the accommodation and food services industry, the health care and social assistance industry, and the insurance industry, have relatively small amounts of foreign source income.

Greatest change in liability from industries with foreign source income

Not surprisingly, the six industries that show the greatest increase in federal tax liability under sales factor apportioned profits are industries with the greatest amount of foreign tax credits applied against income. Because sales factor apportionment of global profits is essentially a territorial tax system based on U.S. sales, foreign tax credits would not be creditable against U.S. sales-apportioned liability. The impact of foreign source income on U.S. tax liability, illustrated with the second- and third-last rows of Table 2, can be seen by comparing the eighth line of Table 7B – *Present law income tax before credits* – with the second to last line on the table – *Present law income tax after credits*. Tax credits, the overwhelming amount of which are for foreign taxes paid, reduce U.S. tax liability for the petroleum manufacturing industry from $47 billion to $5 billion, for the mining industry from $14 billion to $6 billion, for the pharmaceutical manufacturing industry from $17 billion to $8 billion, for the chemical manufacturing industry

from $13 billion to $7 billion, for the computer and electronics manufacturing industry from $24 billion to $13 billion, and for the information industry from $27 billion to $19 billion. Of these six industries, four show a greater than doubling of federal tax liability under sales factor apportionment. This can be seen by comparing *Apportioned global profits and passive income adjusted for all current policy incentives* (third from bottom row on Table 7B), with *Present law income tax after credits* (second from bottom row on Table 7B). For Petroleum manufacturing, the increase in liability is the greatest from $5 billion under present law to $46 billion under sales factor apportionment, for the mining industry the increase is from $6 billion to $22 billion, for the chemical manufacturing industry the increase is from $7 billion to $15 billion, and for the transportation manufacturing industry the increase is from $6 billion to $12 billion. Finally, the last row includes the tax liability resulting from *Apportioned global profits and passive income adjusted for all current policy incentives*, taxed at 28.6%, the rate at which sales factor apportionment would result in "revenue neutrality" as compared with the current tax system, i.e., generating $204 billion in federal tax revenues for all industries (except financial services) in the United States.

Little change in taxable income

Five industries end up with a similar tax base under sales factor apportionment (after allowing for deductions for interest expense, state and local taxes paid, all tax expenditures other than foreign source income benefits, and including sales factor apportioned global passive income) when compared to the amount of net income subject to tax reported on tax returns. This can be seen by comparing *Apportioned global profits and passive income adjusted for all current policy incentives* on the line 7 of Table 7B with *Net income for tax returns* on line 1 of Table 7A. These industries are: petroleum manufacturing ($131 billion tax base under sales factor apportionment versus $132 billion tax return net income), insurance ($79 billion tax base under sales factor apportionment versus $77 billion tax return net income), information ($69 billion tax base under sales factor apportionment versus $64 billion tax return net income), health care and social assistance ($8 billion tax base under sales factor apportionment versus $7 billion tax return net income), and accommodation and food services ($6 billion tax base under sales factor apportionment versus $6 billion tax return net income). Three of these industries, due to limited amounts of foreign source income, do not show much change in tax liability – insurance, health care and social assistance, and accommodation and food services – while two show sizeable increases in liability under sales factor apportionment of profits – petroleum manufacturing and information – due to significant amounts of foreign source income.

Table 7A. Tax Base under Sales Factor Apportionment
by Industry, 2010, in $ billions

	Petroleum mfg	Mining mfg	Pharma-ceutical mfg	Chemical mfg	Computer and electronics mfg	Trans-portation mfg	Insurance	Retail trade	Wholesale trade	Info-rmation	Professional, Scientific & Technical Services	Const-ruction	Health-care and social assistance	Accom-modation and food services
Net income for tax returns	$132	$28	$46	$39	$69	$18	$77	$68	$66	$64	$7	-$4	$7	$6
Apportioned global profits* Financial statements sample	$191	$89	$76	$59	$75	$62	$151	$122	$75	$155	$77	$9	$36	$22
Domestic only	$24	$11	$0	$0	$6	$7	$60	$64	$19	$59	$9	-$5	$32	$6
Multinationals	$167	$79	$77	$59	$68	$55	$91	$58	$56	$96	$68	$14	$4	$16
U.S. domiciled	$98	$31	$47	$39	$50	$43	$68	$55	$53	$89	$52	$9	$2	$15
Foreign domiciled	$69	$48	$30	$20	$18	$13	$24	$3	$3	$8	$16	$5	$4	$2

* Grossed up to reflect SOI industry size based on business receipts in 2010.

Source: Corporation Source Book, IRS Statistics of Income, 2010; Company Financial Statements, 2010; DEG calculations

Table 7B. Sensitivity Analysis of Tax Base under Sales Factor Apportionment and Resulting Tax Liability, by Industry, 2010, in $ billions

	Petroleum mfg	Mining mfg	Pharma-ceutical mfg	Chemical mfg	Computer and electronics mfg	Trans-portation mfg	Insurance	Retail trade	Wholesale trade	Info-rmation	Professional, Scientific & Technical Services	Const-ruction	Health-care and social assistance	Accom-modation and food services
Apportioned global profits* Financial statements sample	$191	$89	$76	$59	$75	$62	$151	$122	$75	$155	$77	$9	$36	$22
***Less* Apportioned Interest Expense (sample)**	*$30*	*$9*	*$6*	*$7*	*$6*	*$13*	*$27*	*$18*	*$11*	*$35*	*$8*	*$10*	*$10*	*$8*
***Less* Taxes Paid (SOI)**	*$24*	*$9*	*$5*	*$5*	*$10*	*$9*	*$30*	*$37*	*$24*	*$25*	*$21*	*$8*	*$15*	*$12*
***Less* Tax Expenditures (JCT)**	*$33*	*$13*	*$19*	*$11*	*$21*	*$11*	*$28*	*$15*	*$15*	*$21*	*$4*	*$5*	*$1*	*$4*
[Minimum] Apportioned global profits adjusted for all current policy incentives	$104	$57	$46	$35	$39	$30	$66	$52	$26	$75	$45	-$13	$10	-$2
***Plus* Apportioned Passive Income (Loss)**	*$27*	*$6*	*-$14*	*$8*	*-$6*	*$4*	*$13*	*-$2*	*$2*	*-$5*	*$0*	*$0*	*-$2*	*$8*
Apportioned global profits and passive income adjusted for all current policy incentives	$131	$63	$32	$43	$33	$34	$79	$50	$28	$69	$45	-$14	$8	$6
Present law income tax before credits	$47	$14	$17	$13	$24	$8	$27	$26	$26	$27	$10	$2	$3	$5
Tax liability at 35% rate:														
Apportioned global profits (sample)	$67	$31	$27	$21	$26	$22	$53	$43	$26	$54	$27	$3	$13	$8
[Minimum] Apportioned global profits adjusted for all current policy incentives	$36	$20	$16	$12	$13	$10	$23	$18	$9	$26	$16	-$5	$4	-$1
Apportioned global profits and passive income adjusted for all current policy incentives	$46	$22	$11	$15	$11	$12	$28	$18	$10	$24	$16	-$5	$3	$2
Present law income tax after credits	$5	$6	$8	$7	$13	$6	$23	$24	$21	$19	$8	$2	$3	$2
Tax liability at revenue neutral rate of 28.6%, from:														
Apportioned global profits and passive income adjusted for all current policy incentives	$38	$18	$9	$12	$9	$10	$23	$14	$8	$20	$13	-$4	$2	$2

* Grossed up to reflect SOI industry size based on business receipts in 2010.

Source: Corporation Source Book, IRS Statistics of Income, 2010; Company Financial Statements, 2010; DEG calculations

Table 7C. Financial Statement Sample Company Count by Industry, 2010, in $ billions

	Petroleum mfg	Mining mfg	Pharma-ceutical mfg	Chemical mfg	Computer and electronics mfg	Trans-portation mfg	Insurance	Retail trade	Wholesale trade	Info-rmation	Professional, Scientific & Technical Services	Const-ruction	Health-care and social assistance	Accom-modation and food services
Tax Returns	380	13,050	702	3,555	6,800	3,728	36,073	174,683	138,041	45,336	209,282	164,635	116,253	75,995
Financial statements sample	218	47	189	60	447	107	87	168	113	350	152	62	62	59
Domestic only	137	25	84	15	69	21	56	116	48	119	45	38	56	42
Multinationals	81	22	105	45	378	86	31	52	65	231	107	24	6	17
U.S. domiciled	64	10	78	38	315	70	20	47	57	188	88	19	5	13
Foreign domiciled	17	12	27	7	63	16	11	5	8	43	19	5	1	4
Percentage coverage of industry based on sales	52%	20%	93%	37%	75%	74%	44%	63%	21%	85%	28%	19%	31%	39%

* Grossed up to reflect SOI industry size based on business receipts in 2010.

Source: Corporation Source Book, IRS Statistics of Income, 2010; Company Financial Statements, 2010; DEG calculations

V. Discussion

Sales factor apportionment of global profits of a unitary business can be a useful approach for addressing a number of tax administration issues that have challenged lawmakers, tax administrators, and tax payers. By defining the tax base at a unitary level, intercompany transactions, the allocation of shared resources, and the valuation of combined synergies (the very reason that a company would not outsource an activity) are less relevant for tax avoidance. This is because corporate profits would be measured at an aggregate level that consolidates the current separation of these activities across taxing jurisdictions and entities. In addition, by defining the tax base using measures that are of intrinsic value to investors, tax administration could gain efficiency and taxpayer compliance costs could be reduced. However, formulary apportionment could create new challenges in the taxation of profits of multinational corporations. Some of these challenges are discussed below.

A. Unitary business

Sales factor apportionment of global profits requires identifying a unitary business from which to allocate profits. Financial market regulators require information about businesses using capital markets to be publicly available so that investors can make informed decisions about the prospects of a business. The tax system should use information reported to investors for financial purposes to use the alignment of investor and management interests to compel the taxpayer to report profits using the same metrics that they report to investors. While some may argue that defining a business for tax purposes by management control using separate accounting leads to a theoretically more "correct" measure of corporate profitability, practical experience shows that this is a deeply flawed belief resulting in significant misrepresentation of corporate profits. Policymakers should not let the perfect be the enemy of the good. Pursuit of the perfect has resulted in an annual understatement of corporate profits on income tax returns of at least $250 billion, which disproportionately ends up as permanently reinvested earnings overseas of U.S. multinational corporations located in low tax countries such as the Netherlands (with an effective tax rate on U.S. corporations of 2.1%), Ireland (4.0%), Bermuda (0.6%), Switzerland (3.4%), Singapore (3.4%), and Luxembourg (0.4%).[48]

However, it is likely that for some multinational corporations a unitary definition of the business may include business unites with no sales, property and employees in the U.S. and the inclusion of profits from these units may violate the permanent establishment clauses in most tax treaties. However, for shareholders, the profits (or losses) from such activity would be part of the profits of the multinational business. For shareholder interest in profits to be aligned with the tax authority interest in profits for tax purposes, the unitary measurement of profits is needed. Resolving this issue, either through treaty negotiation or a process similar to the advance pricing agreement program used today, or some other approach is beyond the scope of this analysis.

A unitary definition of a business for the reporting of profits, while necessary to align shareholder interests with those of the tax authority, would also allow for increased utilization of losses across multinational businesses. This would create new opportunities for loss-trafficking as a tax avoidance tool in the form of acquisition of losses to be used against profits of an unrelated

[48] See Kimberly Clausing, 2011, op cit 3.

business with common ownership. Currently tax Code section 382 governs the use of losses from acquisition for tax purposes, but one of the benefits of aligning shareholder interest with the tax authority interest is that shareholders as investors have a limited tolerance for losses. The lack of investor appetite for losses can be a benefit to tax administration if it can provide negative feedback to management making the acquisition of losses for tax purposes not acceptable. We acknowledge that this may or may not be sufficient to police such a tax avoidance strategy when the tax base is defined as a unitary business, but we do not account for the potential impact in the static estimates presented.

B. Formulary apportionment

Sales factor apportionment of global profits, like the current corporate income tax, is a "second best" solution to the taxation of corporate income. As with all second best solutions, it is open to the criticism that it will only approximate the "correct" corporate income tax base. In particular, apportioning global profits by sales ignores the varying levels of profitability among lines of businesses or markets that may exist within an enterprise, and implicitly treats the profitability of each sale as equal, regardless of the location of the sale. However, today, transfer pricing and cost sharing agreements effectively reduce the reported profitability of sales in locations with high corporate tax rates and increase reported profits in locations with low or no corporate tax. Sales factor apportionment of global profits dispenses with measurement of a conceptual liability required by separate accounting for easily administrable and transparent concepts such as global profits that can provide improved incentives to accurately report a tax base.

It is not a perfect system, and when single sales factor apportionment of profits does not fit the facts of a particular economic activity, state corporate income tax systems have acknowledged this situation and have included rules to provide relief to more fairly reflect a taxpayer's income, such as resource extraction in Alaska or North Dakota.[49] In addition, section 18 of the Uniform Division of Income for Tax Purposes Act (UDIPTA) creates a mechanism by which a statutory apportionment formula can be modified when the apportionment formula results in a distortion of income, and when an alternative that is reasonable exists.[50] While this provision has been the subject of a great deal of litigation for state taxation, it can be used as a model to address situations when sales factor apportionment would result in a significant distortion of income.[51]

C. Tax avoidance concerns

One benefit of using single sales factor apportionment would be that reducing sales is generally not a strategy that corporate managers would pursue, as they would be held accountable by shareholders for declining sales. Yet investors might not hold management accountable for the strategic *location* of sales. This leads to what may be the biggest challenge to adopting a sales factor apportionment of global profits: identifying the party with nexus for sales that occur in the United States, but originate outside of the United States. This paper does not resolve the nexus

[49] See the Multistate Tax Commission Multistate Tax Compact Proposed Amendments to Article IV.18, May, 2012, prepared by Shirley Sicilian.
[50] See Richard Pomp, 2013, op cit 35.
[51] See Cara Griffith, 2013, op cit 36.

issues with implementing sales factor apportionment of global profits, but the following example and discussion touches on the numerous authorities that currently exist to address this issue.

Suppose that a U.S. company A manufactures a valuable product outside of the United States in country X and the price of the product when sold in the United States includes an 80 percent profit margin. Were company A to sell the product directly into the United States, both the 80 percent profit margin and the sale into the United States would be part of the single sales factor apportioned global profits tax base. Alternatively, the company decides to sell the product first to an unrelated company B in country X. Company B then sells the product into the United States for the same price as before. In order to maintain the market price, company A sells to company B with 75 percent of the profit margin of the final sale price, and company B sells into the United States with 5 percent of the profit margin of the final sale price. The same 80 percent profit is associated with the product, but now company B has the sale into the United States and a 5 percent profit on the product, and company A has a sale in country X, not the United States, with a 75 percent profit on the product. U.S. consumers see no difference in prices, but company A has lowered profitability of its sale to 75 percent in order to change the destination of its sale away from the United States. The result is that in the first case a sale into the United States has an 80 percent profit margin, and in the second case the same sale into the United States has a 5 percent profit margin. Should the sale into the United States with the 5 percent profit margin be respected for tax purposes, or should the sale from company A to company B with the 75 percent profit margin that did not take place in the United States be the sale for tax purposes? This is the nexus issue in a nutshell. There are a nearly endless number of variations of this example, but all have the same outcome of unhinging profits that otherwise would be subject to U.S. tax.

The problem that sales factor apportionment of global profits resolves is the situation where companies A and B are related, and sales between them are across taxing jurisdictions. Under the current income tax, transfer pricing, cost sharing, and inversion transactions are deployed to shift income between A and B. Under sales factor apportionment of global profits these tools have no effect because profits are not measured across taxing jurisdictions. The problem that sales factor apportionment creates is when companies A and B are unrelated and in different taxing jurisdictions, as described above. For companies that produce and sell high-valued final products where there is value in the marketing of a brand such as cell-phones, soft drinks, and automobiles, using an unrelated party, such as company B, to complete the sale will be problematic for company A as it would require relinquishing some control over the value chain. For companies that produce and sell high-valued intermediate products, such as computer chips and certain software, using an unrelated party such as company B, to complete the sale will entail less risk to company A, and may be possible.

With respect to intangible goods and services, some practical guidance is available for implementing sales factor apportionment. California Revenue and Taxation Regulation Section 25136-2 describes a cascading set of rules to establish the location of services and sales of intangible property as part of that state's single sales factor apportionment of corporate income tax. If the first rule does not apply, then a second rule applies, and if the second rule does not apply, then a third rule would apply. In general, the regulation first looks to the where the customer *receives the benefit* of the service *or uses* the intangible property. When the location of the customer benefit cannot be determined, an additional set of rules are used to determine the

domicile of the customer. When the customer is an individual, the customer's billing address would be the secondary rule. When the customer is a business, the regulation states "the secondary rule for assignment which is applicable only when the taxpayer and its customer or the taxpayer's books and records kept in the regular course of its business indicate the extent to which the benefit of the service was received in the state."[52] More generally, Michael Durst outlines a series of principles that can be used to determine the place of use of intangible goods and services for formulary apportionment for a very wide range of activities.[53]

Whether the goods and services are tangible or intangible, and whether the tax is an income, sales, or excise tax, common themes have emerged that the party that creates the market (including advertising and marketing efforts), causes the sale (by being more than a freight forwarder), and supports, warrants, or is held accountable by regulators for the product or service, should be the party with nexus. In *Scripto, Inc. v. Carson*, the U.S. Supreme Court determined that even though Scripto had no physical presence in the state of Florida, it could still be held liable for sales taxes associated with sales of its products in that state made by independent agents.[54] Agency nexus is an important part of sales and excise tax administration. The IRS, in Revenue Ruling 69-393 addressing liability for firearms excise tax when an importer is a part of the sale states that "the person who as *principal* and not as agent arranges for, or *is the inducing and efficient cause* (emphasis added) of, the firearms being brought into the United States for the purposes of sale or use …." is the party liable for the excise tax.[55] The practical effect of this ruling, which permeates all federal manufacturers excise tax nexus issues to this day, is that the party that brings the goods into the United States needs to have substantial "skin in the game" in terms of risk for the products and responsibility for creating its market to be liable for a manufacturers excise tax. It will not be straightforward for a multinational corporation to insert an unrelated party into its high-value supply chain to achieve shifting sales out of the United States. Finally, in *Geoffrey v. South Caroline State Tax Commission*, which the Supreme Court denied *certiorari*, an out-of-state firm that licensed trademarks to another company, Toys'R'Us, that operated within the state, but that had no physical presence in the state, had nexus for state income tax purposes.[56]

These cases are illustrative of an important point about nexus and tax administration. Courts generally have been supportive of efforts by a tax authority to defend a tax base – whether a sales or income determined base – when conduit sales are a part of an arrangement that undermines the amount of liability reported. The overall theme has been that conduits must have "skin in the game" and substantial risk for the goods that they bring to market, and here lies the rub for a multinational business. In order to use a conduit to undermine the tax base, a multinational will need to relinquish some control over its supply chain and over the way it brings goods to market. Many multinational businesses will be reluctant to do this as their supply chain is a significant source of profit. Still, how the lines are drawn in determining nexus for a single sales factor apportionment of global profits is an unknown at this time. Additional effort will be necessary to refine how nexus will impact the tax base. The static estimates of the tax base in this analysis assume no leakage as a result of tax avoidance.

[52] See California Revenue and Taxation Regulation Section 25136-2, page 3. 2011.
[53] See Michael C. Durst, "Analysis of a Formulary System, Part VII: The Sales Factor", *Bloomberg BNA*, March 20, 2014.
[54] *Scripto, Inc. v. Carson* – 362 U.S. 207 (1960)
[55] Revenue Ruling 69-393, Internal Revenue Service.
[56] *Geoffrey v. South Carolina State Tax Commission* 437 S.E. 2nd 13 (1993).

VI. Conclusion and future work

Single sales factor apportionment of corporate global profits has a number of attractive features that warrant further consideration for corporate tax reform. The current corporate income tax system does not raise much revenue from foreign source income, and requires a lot of tax administrator and taxpayer effort, time and expense. The absence of third-party information reporting is the hallmark of an inefficient tax system, and the current corporate income tax system lacks a reinforcing information regime that supports the tax base. Single sales factor apportionment of global profits can address these shortcomings by aligning shareholder interest in global profits with the tax authority interest in transparent measurement of the tax base. Apportioning global profits can result in a much larger tax base than the current system of separate accounting. The design of a single sales factor apportionment of global profits will create pressure on the rules establishing nexus for tax purposes. Much work remains to be done to develop these rules for application to a corporate income tax, but much work has already been done on nexus in the context of other tax systems and the common themes that have emerged can usefully be applied.[57]

[57] For a much fuller consideration around nexus issues as they pertain to an income tax, see *Implementing State Corporate Income Taxes in the Digital Age*, by Charles McClure, National Tax Journal, No. 4, Part 3 (2000).

VII. Appendix

A. Data sources

The data used in these analyses are taken from two sources. Aggregate tax return data are from the IRS Statistics of Income (SOI) division Corporate Source Book for returns filed in 2010 of tax return data aggregated by industry. These data are used to compare federal tax revenues under the current system of corporate taxation to estimated amounts under a sales-based formulary apportionment of global economic profits. The most recent year for which data are available through the SOI (2010) is used for the analyses presented here.

The second data source is annual financial statement data for publicly traded companies (Form 10-K for U.S.-domiciled firms and Form 20-F for foreign-domiciled firms) filed with the Securities and Exchange Commission (SEC) accessed through Research Insight's Compustat database. For each company, reported amounts of sales and operating income after depreciation (OIAD) for the global business and by geographic segment were recorded. For companies that did not report U.S. segment amounts separately, when available, amounts reported for the Americas or North America geographic segment were used instead (for only 18 of the 2,121 companies of the sample). When Compustat had incomplete data, the corresponding 10-Ks, 20-Fs or investor annual reports were manually accessed through the SEC website in order to create a more complete dataset. For each company the country of incorporation, the North American Industry Classification System (NAICS) code, and whether the firm is a subsidiary of a publically traded corporation were also captured. "U.S. companies" refers to companies domiciled in the United States and "foreign companies" refers to those domiciled in any country other than the United States.

The dataset consists of only parent public companies and subsidiaries of private parent companies that had reported non-zero amounts for U.S. sales in 2010. A total of 2,121 companies are in the following fourteen major industries: Petroleum manufacturing, Mining manufacturing, Pharmaceutical manufacturing, Chemical manufacturing, Computer and electronics manufacturing, Transportation manufacturing, Insurance, Retail trade, Wholesale trade, Information, Professional, Scientific and Technical services, Construction, Accommodation and food services, and Health care and social assistance. For example, all companies with the four-digit NAICS code 3254 (Pharmaceutical and Medicine Manufacturing) were included in the Pharmaceutical manufacturing industry dataset, and the remaining records with the three-digit NAICS code 325 made up the non-pharmaceutical component of the chemical manufacturing industry. These fourteen industries accounted for 48% of business receipts reported on 2010 corporate income tax returns (not including the Financial Services industry) excluding 1120 forms filed for S-corporations, mutual funds, and real estate investment trusts (1120S, 1120RIC, 1120REIT respectively) because these entities are generally not subject to the corporate income tax.

Company financial statement data is summed to an industry total. For example, industry level business receipts from tax return data are compared with industry level U.S. Sales (or "Operating revenues") from the financial statements. Similarly, OIAD apportioned to the United States from the financial statement data is compared with "Net income" (i.e., total income, less deductions) from tax returns at the industry level. Income tax before credits from the SOI data is compared

with OIAD apportioned to the United States taxed at a rate of 35% also at the industry level. Since the industry-level sales data provided only partial coverage of reported business receipts on tax returns for each industry, the U.S. apportioned OIAD amounts were 'grossed up' to match business receipts reported on tax returns. The gross-up factor is equal to 1 divided by the percentage of SOI reported business receipts accounted for from financial statement data as U.S. sales for each industry.

The 2,121 companies included in the analysis dataset from Compustat reported a total of $6,318 billion in U.S. sales for 2010. For comparison, the 988,513 corporate tax returns for these fourteen industries reported business receipts of $13,143 billion of total business receipts. We weight the financial statement reported sales within each industry by its coverage of industry sales reported on tax returns. For all fourteen industries combined, this sample coverage percentage is 53.8%, as shown on Table 5. Of these companies, 1,250 also reported sales in jurisdictions other than the United States. These multinational corporations account for $4,439 billion in U.S. sales, or 70%, of the $6,318 billion in U.S. sales from the financial statement data. Of the 1,250 multinationals, 1,012 are U.S. domiciled corporations (with $3,278 billion in U.S. sales) and 238 are foreign domiciled corporations (with $1,161 billion in U.S. sales).

Table A1. Comparison of tax return business receipts and U.S. sales on financial statements for fourteen industries, in $ billions, 2010

	Number of companies	US sales	Net income from tax returns and apportioned profits from financial statements
Filed tax returns	988,513	$13,143	$621
Financial statements sample	2,121	$6,318	$1,199
Domestic only	871	$1,879	$288
Multinationals	1,250	$4,439	$911
U.S. domiciled multinationals	1,012	$3,278	$648
Foreign domiciled multinationals	238	$1,161	$263

Source: Corporation Source Book, IRS Statistics of Income, 2010; Company Financial Statements, 2010; DEG calculations

The following table compares the i) counts, ii) U.S. revenues, i.e., tax return business receipts or U.S. sales from financial statements, iii) tax base, i.e., tax return net income or U.S. share of global profits from financial statements, and iv) final tax liability, i.e., tax return income tax after credits or 35% of the U.S. share of global profits from financial statements. Totals for corporate income tax returns (excluding 1120 forms filed for S-corporations, mutual funds, and real estate investment trusts as before) and for the financial statements sample for the 14 industries analyzed are shown at the aggregate level.

Because the financial statements are only available for publicly traded companies, the distribution across asset categories underrepresents small C- corporations when compared with the number of filed tax returns. This imbalance in the data leads to very small coverage of business receipts on tax returns from sales reported on financial statements. One consequence is that when profits from financial statements are grossed up by the ratio of business receipts on tax returns to sales on financial statements, the estimate of profits is less than one-tenth of the amount of net income reported on C-corporation returns as can be seen in table A2 in third panel of the first column. We

believe that this also results in a conservative estimate of the tax base and tax liability under sales factor apportionment, as it results in an understatement of the U.S. apportioned global profits of small firms that are not publicly traded, which are more likely to only have U.S. sales and thus would have 100% of their (global) profits included in the tax base under the proposed regime.

Also of note is the relationship between the tax base (net income) and tax liability (income tax after credits) for the tax return data for the asset categories under $500M. This is likely due to the fact that many of the smaller taxpayers reported losses, and the data presented is net of deficits.

Table A2. Comparison of tax return and financial statements data by asset size for fourteen industries, in $ billions, 2010

	Asset category			
Totals for 14 industries*	**Less than $100M**	**$100M to $500M**	**Greater than $500M**	**Totals**
Count of companies				
Number of tax returns	985,030	1,175	2,308	988,513
Count of financial statements sample	611	481	1,029	2,121
Percentage coverage	0.1%	40.9%	44.6%	0.2%
U.S. business receipts				
Business receipts (tax returns)	$2,736,054	$585,304	$9,822,110	$13,143,468
U.S. sales (geographic segment note)	$37,308	$107,367	$6,173,455	$6,318,130
Percentage coverage^	1.4%	18.3%	62.9%	48.1%
U.S. corporate tax base				
Net Income (tax returns)	$14,138	$2,981	$604,378	$621,496
U.S. share of global profits (estimated)	$1,333	$11,348	$1,186,662	$1,199,344
Percentage change in tax base	-91%	281%	96%	93%
U.S. Corporate tax revenues				
Income tax after credits (tax returns)	$15,597	$11,710	$119,175	$146,482
Tax liability under sales apportionment (at 35% rate)	$467	$3,972	$415,332	$419,770
Percentage change in tax revenues	-97%	-66%	249%	187%

* The 14 industries represented here are: Petroleum manufacturing, Mining manufacturing, Pharmaceutical manufacturing, Chemical manufacturing, Computer and electronics manufacturing, Transportation manufacturing, Insurance, Retail trade, Wholesale trade, Information, Professional, Scientific and Technical services, Construction, Accommodation and food services, and Health care and social assistance, which account for 76% of the total U.S. business receipts (less Financial Services), based on SOI data for 2010.

^ The percentage coverage shown here is the unweighted percentage coverage based on revenues, not the percentage coverage used for the gross-up of U.S. sales-apportioned global profits to the full size of the industries, which is weighted by the business receipts of each of the 14 industries, and results in a 48 percent coverage.

Source: Tax return data, Statistics of Income, 2010 and Financial statements, 2010

Note that the SOI does not provide data for C-corporations by asset size and minor industry as they do for all business taxpayers (C-corporations and S-corporations) and thus the 14 industry totals for C-corporations have been distributed into the asset categories based on the asset distribution of all business taxpayers in the following way: 95% of all business taxpayers with over $500M in assets are considered to be C-corporations, with 5% assumed to be S-corporations. The remainder of the C-corporation totals are then apportioned to the under $100M and $100M to 500M asset categories using the distribution of all business taxpayers. Thus, the distribution by assets size of the C-corporation tax return amounts is an estimate while the financial statement amounts are actuals.

B. The uniformity of profits

A key assumption to extrapolate from reported sales to operating profits on financial statements is that a dollar of sales results in the same amount of profits regardless of the size of the company. We tested this hypothesis by separating the 2,121 companies by the amount of sales. Of the 2,121 companies, 1,554 had positive operating profits, and for these companies, 714 had sales greater than $1 billion and 840 had sales less than or equal to $1 billion. For the 714 companies with large sales, the average amount of operating income after depreciation per-dollar-of-sales was $0.127 (with a standard deviation of $0.100), and for the 840 companies with smaller sales, the average amount of operating income per dollar of sales was $0.135 (with a standard deviation of $0.121). A two-sided t-statistic for the hypothesis that the difference between the two average profit per dollar amounts was zero is 1.35, which at conventional levels of significance would not be rejected.

Of the 2,121 companies, 567 had negative operating profits, and for these companies 30 had sales greater than $1 billion while 537 had sales less than or equal to $1 billion. For the 30 with sales greater than $1 billion the average operating loss after depreciation per dollar of sales was $0.05 (with a standard deviation of $0.05) and for the 537 companies with smaller sales the average amount of operating loss after depreciation per dollar of sales was $13.60 (with a standard deviation of $108.41illustrating that many small start-up companies have operating losses far in excess of earnings). A two-sided t-statistic for the hypothesis that the difference between the two average loss per-dollar-of-sales amounts was zero is 2.90, which would be rejected at conventional levels of significance.

Therefore, when companies report operating losses, companies with smaller amounts of sales tend to show greater losses per dollar of sales than do large companies. How could this impact our results? To test how operating losses impacted the estimate of the sales-apportioned global profits tax base, we calculated the tax base using two different assumptions about how losses are counted. The first assumption was that the sum of OIAD for each industry included the full amount of losses reported by companies that reported losses, and the second was that the sum of OIAD for each industry included only zero or positive amounts of OIAD. Therefore, the industry level OIAD would be lower with the first assumption than with the second assumption. This second assumption is effectively a loss limitation rule similar to present law, and would be appropriate were we specifically modeling the OIAD liability for a single year. The first assumption allowed for the full utilization of losses in calculating industry level OIAD, and would be appropriate if we were modeling a long-run view of the tax base even though all of the data used was for a single year. This approach would result in a more conservative estimate of the OIAD tax base than using a loss limitation rule. Under the full utilization of losses assumption, the estimated OIAD for the fourteen industries was $1,199 billion, as shown on Table 5. Alternatively, imposing a loss limitation rule resulted in an estimated OIAD for the fourteen industries of $1,225 billion. This amounts to a 2.2 percent difference in the estimates of the tax base from which we conclude that while the uniformity of profits assumption might not hold, the impact on estimated liability is very small.

This loss limitation rule is further supported by evidence presented in the following table, which shows the relative profit and loss rates for companies included in the financial statement sample.

Profit (loss) rates are calculated as global profits (losses) divided by global assets and are presented for domestic only, U.S. multinationals and foreign multinationals separately. Of the 567 companies reporting loses that are included in the financial statements sample, the loss rates for small companies (with assets less than $100M) are approximately ten times as large as the loss rates for larger corporations (with assets over $500M), indicating that corporate taxpayers in loss positions—and with more significant losses—are concentrated among the smaller companies.

Table A3. Comparison of financial statement operating income after depreciation per dollar of sales for fourteen industries by asset size, in $ billions, 2010

Totals for 14 industries*	Asset category: Less than $100M	$100M to $500M	Greater than $500M	Totals
Financial statements with global profits				
Number of financial statements	226	365	963	1,554
Median profit rate				
Total sample	0.0919	0.0811	0.0860	0.0855
U.S. domestic only [GAAP]	0.0825	0.0831	0.0787	0.0810
U.S. multinationals [GAAP]	0.0995	0.0778	0.0926	0.0906
Foreign companies [IFRS]	0.0886	0.0834	0.0837	0.0838
Financial statements with global losses				
Number of financial statements	382	113	72	567
Median loss rate				
Total sample	-0.2674	-0.0693	-0.0265	-0.1551
U.S. domestic only [GAAP]	-0.3178	-0.0841	-0.0366	-0.1915
U.S. multinationals [GAAP]	-0.2142	-0.0704	-0.0131	-0.1139
Foreign companies [IFRS]	-0.2078	-0.0597	-0.0312	-0.1353

Source: Financial statements, 2010

It is also interesting to note that for the 1,554 profit-making companies included in the financial statements sample, there is little variation across the domicile of multinationals (U.S. versus foreign), although the multinationals tend to have higher median profit rates than the domestic-only U.S. companies.

C. Illustrative step-by-step example

As an example of the calculations performed, consider Pfizer Corporation, a member of the pharmaceutical industry.

On its financial statements filed with the SEC in 2010, Pfizer reported $67,791 million in global sales, of which $29,046 million (43%) was attributed to the United States in the geographical segments footnote. The company reported $18,067 million in global Operating Income After Depreciation (i.e., operating income of a company after deducting expenses for cost of goods sold, selling, general, and administrative expenses, and depreciation). Under a single sales factor apportionment regime, 43% of this OIAD, or $7,741 million would be apportioned to the United States and represents the new tax base, referred to as the *U.S. share of global profits apportioned by sales*.

This calculation is performed for each of the 189 pharmaceutical companies included in the financial statements sample (companies with NAICS code 3254 reporting U.S. sales). These

companies reported a total of $286 billion in U.S. sales, representing 93% of the $307 billion in 2010 Business Receipts reported on tax returns for the Pharmaceutical and Medicine manufacturing minor industry. The total U.S. share of global profits apportioned by sales for these 189 companies for 2010 is $70.9 billion. Using the sales-based industry coverage percentage of 93%, this $70.9 billion is grossed up by the fraction (1/0.93) to $76 billion. (See Section D for a discussion of weighting method issues.) This amount of sales-apportioned global profits would be the U.S. corporate tax base under sales factor apportionment for the Pharmaceutical industry for 2010. At a 35% rate, the resulting tax liability for the industry under sales factor apportionment would be $27 billion.

Table A4. Estimates of sales factor apportionment for the Pharmaceutical Industry*

	IRS Statistics of Income		Financial statement applied to all Pharma. companies with U.S. sales
$ billions (2010)	Pharmaceutical Industry		100% foreign sales exclusion: 100% U.S. share, 0% foreign [3]
Number of companies	702	Industry sample	189
Business receipts [1]	$307	Industry sales [2]	$286
		Industry sales-based sample coverage of SOI data	93%
		Industry sales-apportioned global profits for sample	$71
Net income (total income, less deductions)	$46	Industry estimated sales-apportioned global profits	$76
Income tax before credits at 35%	$17	Industry estimated income tax before credits	$27
Income tax after credits at 35%	$8	Industry estimated income tax after credits	$27
		Tax rate to be equivalent to U.S. SOI tax before credits	10.0%

[1] Table 6, Corporation Source Book, SOI
[2] Financial statement net sales.
[3] Financial statement amounts for foreign corporations will understate amount for destination sales based factor because sales factor would apply to foreign companies that do not have permanent establishment and therefore are not filing financial statement information.
*Note that this is an illustrative example of the effect of sales factor apportionment on the Pharmaceutical industry, not a representative one.
Source: Corporation Source Book, IRS Statistics of Income, 2010; Company Financial Statements, 2010; DEG calculations

Comparing the single sales factor apportionment regime with the current system of corporate income taxation for the Pharmaceutical industry, the result would be a 66% increase in the tax base, from $46 billion to $76 billion as shown in the table above. Similarly, there would be a 59.9% increase in the amount of tax liability before credits, from $17 billion reported on corporate tax returns to the estimated $27 billion calculated as 35% of the new tax base, but a 251% increase in tax liability *after* credits, the tax base under the current system, reported as $8 billion for 2010. In other words, in order for the single sales factor apportionment regime to generate revenues equal to those reported on tax returns for the Pharmaceutical industry in 2010, a 10% corporate income tax rate would suffice, as compared with the current 35% rate.

Since the SOI data do not distinguish between domestic-only firms and multinationals, we assume a sales coverage of 93% as shown in table A4 to estimate the effects on multinationals in the

Pharmaceutical industry. As shown in the table below, $278 billion of the $286 billion in U.S. pharmaceutical industry sales is associated with the 105 pharmaceutical companies in the financial statement sample reporting foreign sales and thus deemed multinational entities, of which $168 billion is attributable to the 78 companies domiciled in the United States. The total sales-apportioned global profits for these multinationals are estimated to be $71.2 billion (which, being greater than the total estimate for the industry implies that multinational pharmaceutical companies were on the whole more profitable than the domestic-only pharmaceutical companies which reported losses), of which $46 billion is associated with U.S. domiciled firms. Using the 93% coverage percentage, these amounts are grossed up to $77 billion as the new tax base for all pharmaceutical multinationals with sales in the United States and to $47 billion as the new tax base for U.S. domiciled pharmaceutical multinationals operating in the United States. The associated tax liabilities for 2010 under the sales factor apportionment regime are $27 billion and $16 billion, respectively.

Table A5. Estimates of sales factor apportionment for Pharmaceutical Industry multinationals

	100% foreign sales exclusion All multinationals	U.S. domiciled multinationals	Foreign domiciled multinationals
Industry MNC sample	105	78	27
Industry MNC sales	$278	$168	$110
Assumed industry MNC sales-based sample coverage of SOI data	93%		
Industry MNC sales-apportioned global profits for sample	$71.2	$43	$28
Industry estimated sales-apportioned global profits	$77	$47	$30
Industry estimated income tax before credits	$27	$16	$10

Source: Corporation Source Book, IRS Statistics of Income, 2010; Company Financial Statements, 2010; DEG calculations

Estimates for the U.S. share of global profits apportioned by sales (as shown for Pfizer) are calculated for each of the 2,121 companies included in the sample, followed by industry-level estimates performed for each of the 14 industries for which results are presented (Tables 7A, 7B, and 7C).

Cumulative estimates for all fourteen industries shown in Table 3 are performed analogously with one exception. The sales-based coverage percentage used for the fourteen industries is weighted by the sales of each industry, which is different than the percentage calculated as sales of companies included in the sample divided by SOI-reported business receipts for each industry, as shown for the Pharmaceutical industry. For the fourteen industries cumulatively, this results in a sales-weighted coverage percentage of 53.8%.

D. Sample Weighting

Geographic segment data on sales from financial statements is compared with business receipts data from tax returns. Both are measures of sales after allowance for returns and allowances for damaged goods. The dollar amount of business receipts is compared with sales from financial statements apportioned to the United States. Because tax return reported amounts of sales are

source based, and financial statement amounts of sales are *destination* based, there is a risk that the two measures of sales may not be the same. Tax return information is source based so that exports by U.S. companies are included in business receipts but imports by a foreign CFC are not. Tax and financial statement measures of sales would be comparable if sales as exports (shown on tax returns) and sales as imports (shown on financial statements) were equal. Since the United States is a net importer of goods and services, this condition does not hold. For an economy that is a net importer, this approach will impart a downward bias to the weighting of apportioned global profits leading to an understatement of a tax base. The downward bias in the weight used to gross up apportioned profits is demonstrated with a simple example in the following table.

Table A6. Weighting financial statement data using tax return business receipts: Hypothetical example when imports are greater than exports, amounts in dollars

	Financial statement sample	Tax return data	Formula
Actual business receipts [1]	12	8	
Domestic sales	5	5	
Export sales		3	
Import sales	7		
Business receipts from sample of financial statements	6		
Weight used in analysis to increase profits from sample of financial statements	1.33		8/6
Correct weight using business receipts from all financial statements to increase profits from sample of financial statements	2.00		12/6

[1] Business receipts on financial statements report sales on a destination basis, so that sales in the United States from U.S. production and overseas production would be U.S. sales. Business receipts on tax returns report sales on a source basis, so that sales in the United States from U.S. production, and exports from the United States from U.S. production are included in sales.

In essence, the business receipts amounts on tax returns are "too small" when constructing a weight to increase the amount of apportioned global profits for an industry when the industry is a net importer of goods or services to the United States because the tax returns report exports (small) but not imports (large) while the financial statement data report imports (large) but not exports (small). As a result, the estimates shown on Tables 3 and 4 conservatively understate the true size of a single sales factor apportionment of global profits. The correction that should be applied to the tax return amounts of business receipts would be a function of the industry specific trade balance. In the above example the trade balance is -4, imports are 7 and exports are 3. The -4 would be the numerator and the industry gross output would be the denominator. Gross output should be used rather than industry specific GDP because both imports and exports include intermediate goods and services which are not included in GDP, but are in gross output. As a rough approximation of the size of the total correction for 2010, consider that the trade balance was -$635 billion and gross output was approximately $30,000 billion. The correction to apply to business receipts on tax returns for the trade deficit would be to increase it by approximately two percent as (635/30000) equals 0.02.