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Reforming Corporate Taxation in a Global Economy:

A Proposal to Adopt Formulary Apportionment

The Hamilton Project seeks to advance America’s promise of opportunity, prosperity, and growth. The Project’s economic strategy reflects a judgment that long-term prosperity is best achieved by making economic growth broad-based, by enhancing individual economic security, and by embracing a role for effective government in making needed public investments. Our strategy—strikingly different from the theories driving economic policy in recent years—calls for fiscal discipline and for increased public investment in key growth-enhancing areas. The Project will put forward innovative policy ideas from leading economic thinkers throughout the United States—ideas based on experience and evidence, not ideology and doctrine—to introduce new, sometimes controversial, policy options into the national debate with the goal of improving our country’s economic policy.

The Project is named after Alexander Hamilton, the nation’s first treasury secretary, who laid the foundation for the modern American economy. Consistent with the guiding principles of the Project, Hamilton stood for sound fiscal policy, believed that broad-based opportunity for advancement would drive American economic growth, and recognized that “prudent aids and encouragements on the part of government” are necessary to enhance and guide market forces.





Reforming Corporate Taxation in a Global Economy:

A Proposal to Adopt Formulary Apportionment

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This discussion paper is a proposal from the authors. As emphasized in The Hamilton Project's original strategy paper, the Project is designed in part to provide a forum for leading thinkers from across the nation to put forward innovative and potentially important economic policy ideas that share the Project's broad goals of promoting economic growth, broad-based participation in growth, and economic security. The authors are invited to express their own ideas in discussion papers, whether or not the Project's staff or advisory council agree with the specific proposals. This discussion paper is offered in that spirit.

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Abstract

The current system of taxing multinational firms relies on separate accounting: firms account for earnings and costs in each location in which they operate. This system generates a large tax incentive to earn income in low-tax countries, and multinational firms respond by earning disproportionate profits in low-tax locations.

We propose a system of formulary apportionment for taxing the corporate income of multinational firms. Under our proposal, the U.S. tax base for multinational corporations would be calculated based on a fraction of their worldwide income. This fraction would simply be the share of their worldwide sales that are destined for customers in the United States.

This system is similar to the current method that U.S. states use to allocate national income. The state system arose due to the widespread belief that it was impractical to account separately for what income is earned in each state when states are highly integrated economically. Similarly, in an increasingly global world economy, it is difficult to assign profits to individual countries, and attempts to do so are fraught with opportunities for tax avoidance.

Under our proposed formulary apportionment system, firms would no longer have an artificial tax incentive to shift income to low-tax locations. This would help protect the U.S. tax base while reducing the distortionary features of the current tax system. In addition, the complexity and administrative burden of the system would be reduced. The proposed system would be both better suited to an integrated world economy and more compatible with the tax policy goals of efficiency, equity, and simplicity.

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1. Introduction

The current system of taxing the income of multinational enterprises (MNEs) in the United States is flawed across multiple dimensions. The system provides an artificial tax incentive to earn income in low-tax countries, rewards aggressive tax planning, and is not compatible with any common metrics of efficiency. The U.S. system is also notoriously complex: observers are nearly unanimous in lamenting the heavy compliance burdens and the impracticality of coherent enforcement. Furthermore, despite a corporate tax rate one standard deviation above that of other OECD countries, the U.S. corporate tax system raises relatively little revenue, due in part to the shifting of income outside the U.S. tax base.

In this proposal, we advocate moving to a system of formulary apportionment (FA) for taxing the corporate income of MNEs. Under our proposal, the U.S. tax base for MNEs would be calculated based on a fraction of their worldwide income. This fraction would simply be the share of their worldwide sales that occur in the United States. This system is similar to the current method that U.S. states use to allocate national income across states.¹ The state system arose due to the widespread belief that it was impractical to account separately for what in-

come is earned in each state when states are highly integrated economically. Similarly, in an increasingly global world economy, it is difficult to assign profits to individual countries; attempts to do so are fraught with opportunities for tax avoidance.

Under our proposed FA system, firms would no longer have an artificial tax incentive to shift income to low-tax locations. This would help protect the U.S. tax base while reducing the distortionary features of the current tax system. In addition, the complexity and administrative burden of the system would be reduced. The proposed system would be both better suited to an integrated world economy and more compatible with the tax policy goals of efficiency, equity, and simplicity.

Section 2 will discuss the current U.S. system of corporate taxation and its flaws. Section 3 will propose an FA system, discuss its advantages, and clarify how the proposal addresses the flaws of the current system. Section 4 will address potential hurdles and problems associated with FA, including implementation issues. Section 5 will conclude, briefly contrasting this proposal with other reform suggestions.

1. We should note, however, that our proposal is significantly different from current state tax law, in ways discussed in §3.1.

2. The U.S. System of Corporate Taxation

2.1. Description of Current System

Under the current tax system, MNEs (both resident and nonresident) pay tax to the U.S. government based on the income that they report earning in the United States. As is typical, the United States uses a separate accounting (SA) system, where firms account for income and expenses in each country separately. The current U.S. tax rate is 35 percent. Figure 1 shows the evolution of corporate tax rates for OECD countries over the past quarter century. As is clear from this diagram, the U.S. statutory corporate tax rate has been increasing relative to other OECD countries over the previous fifteen years, and is now one standard deviation higher than the average OECD tax rate.²

The U.S. government taxes U.S. MNEs on a residence basis, thus U.S. resident firms incur taxation on income earned abroad as well as income earned in the United States. This system is sometimes referred to as a credit system: U.S. firms receive a tax credit for taxes paid to foreign governments. The tax credit is limited to the U.S. tax liability, although firms may generally use excess credits from income earned in high-tax countries to offset U.S. tax due on income earned in low-tax countries, a process known as *cross-crediting*. Taxation occurs only when income is repatriated. Thus, income can grow free of U.S. tax prior to repatriation, a process known as *deferral*.³ Deferral and cross-crediting provide strong incentives to earn income in low-tax countries. There is also typically an incentive to avoid income in high-tax countries due to the limited tax credit.

As an example, consider a U.S.-based MNE that operates a subsidiary in Ireland. Assume that the U.S.

corporate income tax rate is 35 percent, while the Irish corporate income tax rate is 12.5 percent. The Irish subsidiary earns €800 and decides to repatriate €70 of the profits to the United States. Assume, for ease of computation only, a one-to-one exchange rate. First, the Irish affiliate pays €100 to the Irish government on profits of €800. It then repatriates \$70 to the United States, investing the remaining profit (€630) in its Irish operations. The firm must pay U.S. tax on the repatriated income, but it is eligible for a tax credit of \$100 (the taxes paid) times 70/700 (the ratio of dividends to after-tax profits), or \$10. This assumes that the U.S. MNE does not have excess foreign tax credits from its operations in high-tax countries; if it does, it can use these credits to offset taxes due on the repatriated Irish profits. Due to deferral, the remaining profits (€630) can grow abroad tax-free prior to repatriation.

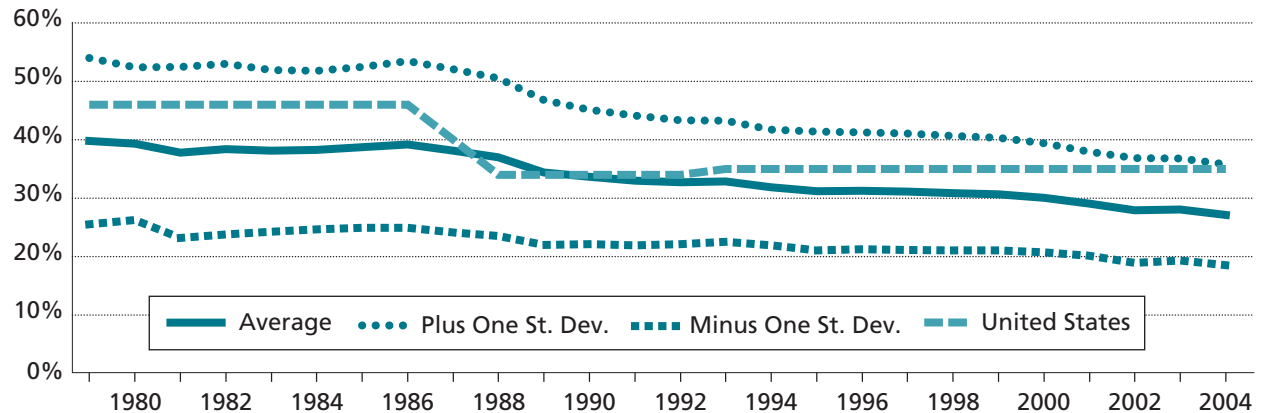
This system creates a clear incentive to earn profits in low-tax countries. Firms may respond by locating real activities (jobs, assets, production) in low-tax countries. In addition, firms may respond by shifting profits to low-tax locations, disproportionate to the scale of business activities in such locations. There are multiple ways to shift income among countries. For example, it may be advantageous for MNEs to alter the debt-to-equity ratios of affiliated firms in high- and low-tax countries in order to maximize interest deductions in high-tax countries and taxable profits in low-tax countries. Furthermore, MNEs have an incentive to distort the prices on intrafirm transactions in order to shift income to low-tax locations. For example, firms can follow a strategy of under- (over-) pricing intrafirm exports (imports) to (from) low-tax countries, following the opposite strategy with respect to high-tax countries.⁴

2. The trends for average effective tax rates are similar. Data are available from the authors upon request.

3. The Subpart F provisions of U.S. tax law prevent some firms from taking full advantage of deferral. Under Subpart F, certain foreign income of controlled foreign corporations, including income from passive investments, is subject to immediate taxation.

4. There are numerous other margins along which income-shifting incentives influence MNE behavior, including the location of intangible

FIGURE 1
Statutory Corporate Tax Rates, OECD Countries, 1979–2004



Source: PricewaterhouseCoopers (various years)

Notes: Statutory tax rate data are from Pricewaterhouse Coopers. Effective tax rate data are calculated as foreign income taxes paid relative to net (pre-tax) income for U.S. affiliates operating in a particular country. These data are from BEA. They are discussed further in Appendix A.

In theory, firms should be limited in their ability to engage in tax-motivated transfer pricing by fear of detection. Governments generally use an arm's length standard, requiring MNEs to price intrafirm transactions as if they were occurring at arm's length. Nonetheless, there is universal agreement that this standard leaves substantial room for tax incentives to affect pricing: arm's length prices are often difficult to establish for many intermediate goods and services. Furthermore, as argued in §3.2.3, the arm's length standard has become administratively unworkable in its complexity. As a result, the arm's length standard rarely provides useful guidance regarding economic value.

Some countries (such as Japan and the United Kingdom) use a tax-credit system similar to that used by the United States. Others (such as France and the Netherlands) exempt most foreign income from taxation, which is referred to as a territorial system of international taxation. In theory, MNEs based in these countries have an even greater incentive to incur income in low-tax countries because such income will not typically be taxed on repatriation.

Some authors argue that excess foreign tax credits and deferral blur the distinction between these two systems (e.g., Altshuler 2000).⁵

Shortly before the 2004 election, the U.S. Congress passed the *American Jobs Creation Act* (2004). The international tax provisions of this law represent a subtle shift toward a territorial system of taxing international income in the United States. For example, the legislation contained a provision to allow a temporary tax holiday for dividend repatriations of 5.25 percent. This provided a substantial tax advantage to repatriate funds from low-tax countries in the year of the tax break.

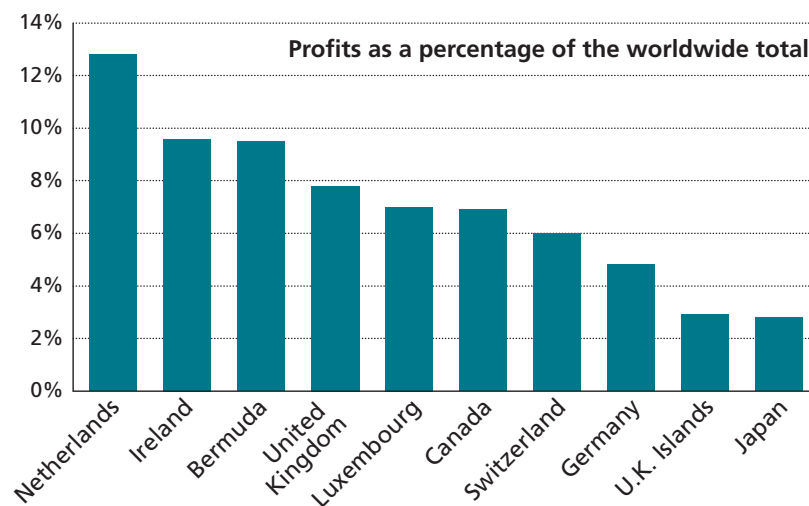
On net, this holiday made investments in low-tax countries more attractive relative to the prior status quo, because there is now the promise of methods for repatriating profits without incurring large tax costs. In addition, other measures of the legislation permanently lighten the taxation on foreign income, including provisions that facilitate cross-crediting as well as changes in the interest allocation rules. Recently, George Yin, the former

property, the payment of royalties, and the timing and planning of repatriation decisions.

5. de Mooij and Ederveen (2003) find evidence in support of this view. In addition, several countries have hybrid systems that lie somewhere in between these two systems. For instance, foreign income may be exempt from taxation in the home country provided that the foreign country's tax system is sufficiently similar to that of the home country.

FIGURE 2

Where Were the Profits in 2003?



Country	Effective Tax Rate (percent)
Netherlands	5.3
Ireland	6.1
Bermuda	1.7
United Kingdom	20.1
Luxembourg	-1.8
Canada	23.5
Switzerland	4.5
Germany	8.2
U.K. Islands	1.3
Japan	36.9

Source: www.BEA.gov/international/di1usdop.htm

Notes: In 2003, majority-owned affiliates of U.S. MNEs earned \$326 billion of net income. This figure shows percentages of the worldwide (non-U.S.) total net income occurring in each of the top-ten income countries. Thus, each percentage point translates into approximately \$3.3 billion of net income. Effective tax rates are calculated as foreign income taxes paid relative to net (pre-tax) income. The year 2003 is the most recent year with revised data available. The BEA conducts annual surveys of operations of U.S. parent companies and their foreign affiliates. These data are discussed in more detail in Appendix A.

chief of staff of the Joint Committee on Taxation, concluded that the *American Jobs Creation Act* (2004) takes the U.S. system of taxation closer to a territorial system, and speculated that future tax policy could move farther in that direction (Glenn 2004).

2.2. Problems with Current System

The current system of corporate taxation has both conceptual and practical weaknesses.

2.2.1. Current System Is Not Suited to a Global Economy

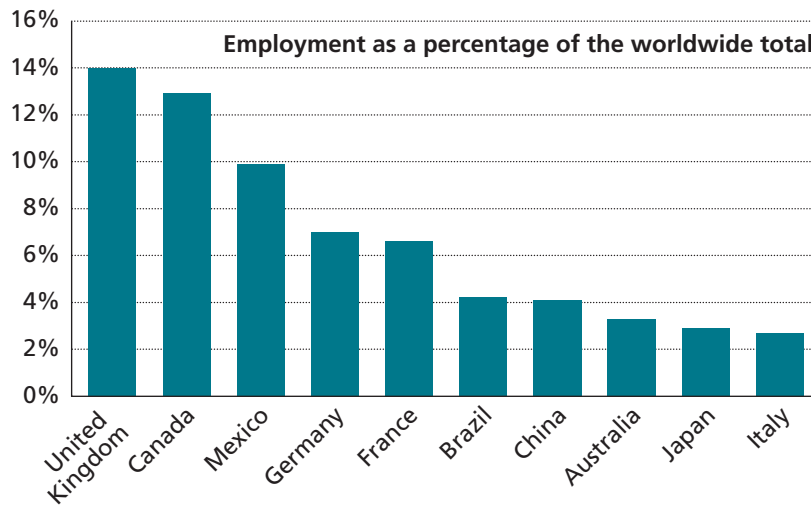
First, the system is not suited to the global nature of international business. In particular, international production processes make the SA system of assigning profit to specific geographic destinations inherently arbitrary. Furthermore, the very nature of MNE operations generates additional profit over what would occur with strictly arm’s length transactions between unaffiliated entities. Theories of MNEs emphasize that they arise in part due to organizational and internalization advantages rela-

tive to purely domestic firms. Such advantages imply that profit is generated in part by internalizing transactions within the firm. Thus, with firms that are truly integrated across borders, holding related entities to an arm’s length standard for the pricing of intracompany transactions does not make sense, nor does allocating income and expenses on a country-by-country basis. In fact, similar logic was behind the use of FA for U.S. state governments. With an integrated U.S. economy, it does not make sense to attribute profits and expenses to individual states, nor to regulate transfer prices between entities of different states.

In addition, the current system is based on an artificial distinction among legal entities. For instance, companies are taxed differently based on whether they use subsidiaries or branches. As one example, deferral of taxation on unrepatriated profits is allowed for the former but not for the latter. Recently, there has been an increasingly common use of hybrid entities (treated as subsidiaries by one country and branches by another) to achieve double non-taxation.

FIGURE 3

Where Were the Jobs in 2003?



Country	Effective Tax Rate (percent)
United Kingdom	20.1
Canada	23.5
Mexico	34.8
Germany	8.2
France	25.1
Brazil	65.4
China	13.0
Australia	28.0
Japan	36.9
Italy	35.1

Source: www.BEA.gov/international/di1usdop.htm.

Notes: In 2003, majority-owned affiliates of U.S. MNEs employed 8.2 million employees. This figure shows percentages of the worldwide (non-U.S.) total employment occurring in each of the top-ten countries. Thus, each percentage point translates into approximately eighty-two thousand jobs. Effective tax rates are calculated as foreign income taxes paid relative to net (pre-tax) income. The year 2003 is the most recent year with revised data available. The BEA conducts annual surveys of operations of U.S. parent companies and their foreign affiliates. These data are discussed in more detail in Appendix A.

Another related problem is that the current system is based on an increasingly artificial distinction between MNEs whose parent is incorporated in the United States and MNEs whose parent is incorporated elsewhere. The former, but not the latter, are subject to worldwide taxation with its attendant complexities (which are primarily the foreign tax credit and Subpart F). But in today’s world, this distinction is less and less meaningful for MNEs as the sources of capital, location of R&D, location of production, and location of distribution become increasingly globalized. The current distinction has led to a spate of inversion transactions, in which U.S.-based MNEs formally shift the location of incorporation of their parent offshore without changing the location of any of their business activities. Arguably, it has also encouraged takeovers of U.S.-based MNEs by larger foreign-based MNEs who can benefit from territorial systems of taxation.

2.2.2. Current System Creates Artificial Tax Incentives

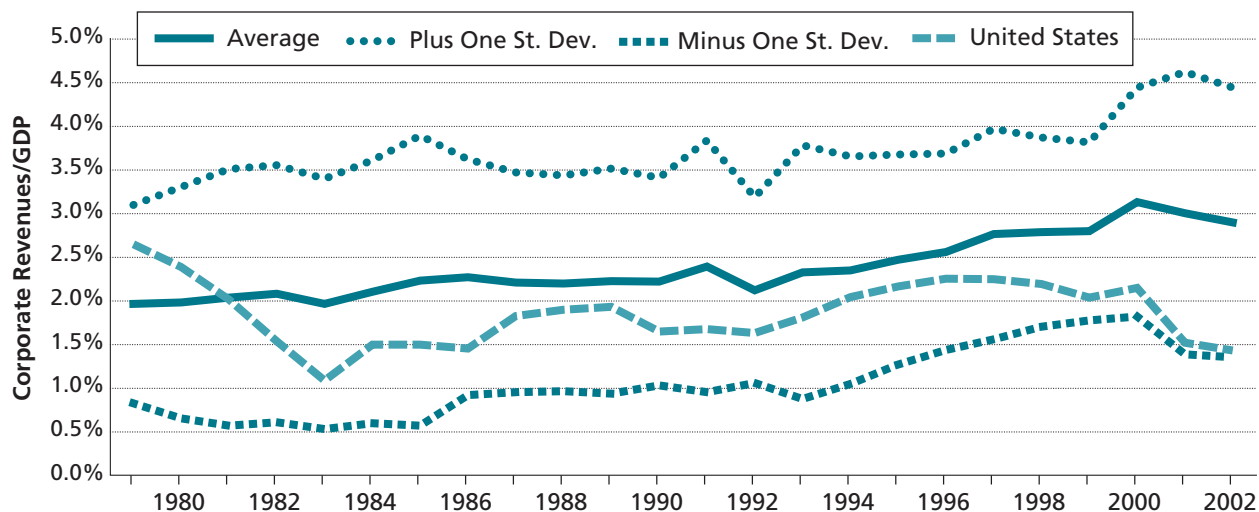
Second, as explained in §2.1, the current U.S. system of international taxation creates an artificial tax incentive to locate profits in low-tax countries, both by locating real economic activities in such countries and by shifting profits toward locations that are taxed more lightly. It is apparent that U.S. MNEs book disproportionate amounts of profit in low-tax locations. For example, Figure 2 shows the top-ten profit locations for U.S. MNEs in 2003, based on the share of worldwide (non-U.S.) profits earned in each location. While some of the countries have a large U.S. presence in terms of economic activity (Canada, Germany, Japan, and the United Kingdom), seven of the top-ten profit countries are locations with very low effective tax rates.

The literature has consistently found that MNEs are sensitive to corporate tax rate differences across countries in their financial decisions.⁶ One recent

6. See de Mooij 2005 for an overview of this work.

FIGURE 4

Central Government Corporate Tax Revenues Relative to GDP, OECD Countries



Source: GDP data from World Bank (various years); corporate tax revenue data from OECD (various years).

study suggests that corporate income tax revenues in the United States in 2002 were approximately 35 percent lower due to income shifting.⁷

This problem has worsened because U.S. corporate tax rates have become increasingly out of line with other countries. In the past twenty years, most OECD countries have lowered their corporate income tax rates, whereas U.S. rates have remained relatively constant. This increasing discrepancy between U.S. and foreign rates likely results in increasing amounts of lost revenue for the U.S. government due to the strengthening of income-shifting incentives.

Also, the literature suggests a substantial real responsiveness to tax rate differences among countries.⁸ These findings imply less activity in the United States and less tax revenue for the U.S. government. However, the tax responsiveness of real activity is less immediately apparent in the data. For example, Figure 3 shows the top-ten employment locations for U.S. MNEs in 2003, based on

the share of worldwide (non-U.S.) employment in each location. The high employment countries are the usual suspects—large economies with close economic ties to the United States. As the accompanying table indicates, tax rates are not particularly low for these countries.

2.2.3. Current System Is Too Complex

Third, the current system is absurdly complex. As Taylor (2005, slide 9) notes, observers have described the system as “a cumbersome creation of stupefying complexity” with “rules that lack coherence and often work at cross purposes.” Altshuler (2005) noted that observers testifying before the President’s Advisory Panel on Federal Tax Reform (White House 2005) found the system “deeply, deeply flawed,” noting that “it is difficult to overstate the crisis in the administration of the international tax system of the United States” (p. 12).

2.2.4. Current System Raises Little Revenue

Fourth, particularly given the high U.S. corporate statutory tax rates, the U.S. corporate tax system

7. This estimate is from Clausing (2007b). The calculation is based on a regression of U.S. MNE affiliate profit rates on tax rate differences across countries. See Appendix A for more details.

8. See de Mooij 2005 for a review.

raises relatively little revenue. Figure 4 shows the evolution of government corporate tax revenues relative to GDP for OECD countries. For most OECD countries, revenues have increased as a share of GDP even as corporate tax rates have declined. The average OECD country receives 3 percent of GDP from corporate tax revenue by the end of the sample. Most observers attribute this trend to a broadening of the tax base for many OECD countries during this period. For the United States,

revenues are lower. Although they fluctuate with the cyclical position of the economy, they tend to be closer to 2 percent of GDP. There are several plausible reasons for the lower amount of U.S. revenue, including the increasingly aggressive use of corporate tax shelters, a narrower corporate tax base, and stronger incentives for tax avoidance, which tend to increase because the U.S. tax rate is high relative to other countries.⁹

9. Auerbach (2006) also notes that there is a declining ratio of nonfinancial C corporation profits, although he notes that this is offset by an increasing average tax rate due to the increasing importance of tax losses.

3. A Proposal to Adopt Formulary Apportionment

Our proposal would address most of the aforementioned flaws with the current system of corporate taxation. Under FA, tax liabilities would reflect truly globally-integrated business, and they would not be dependent on artificial distinctions among legal entities. Under FA, unlike SA, firms would have no incentive to shift income across countries because tax liabilities would be based on total world income as well as on the share of a firm's sales that occur in each destination. Since there would be no tax savings associated with shifting income across countries, the overall incentive to locate real activities in low-tax countries would also be reduced.

Furthermore, absent income shifting, U.S. government revenues would be higher. If the proposal offered here were implemented in a revenue-neutral fashion, it would enable a substantial cut in the corporate income tax rate. Since the proposed system could entail dramatic simplification and help finance a corporate tax-rate reduction, there is justification for corporate support.

3.1. How Would Formulary Apportionment Work?

Under FA, a unitary business is defined based on whether the parent corporation exercises legal and economic control over its subsidiaries. That unitary business is treated as a single taxpayer and its income is calculated by subtracting worldwide expenses from worldwide income, based on a global accounting system, without regard to legal distinctions among units. The resulting net income is apportioned among taxing jurisdictions based on a formula that takes into account various factors. Each jurisdiction then applies its tax rate to the in-

come apportioned to it by the formula and collects the amount of tax resulting from this calculation.

Our proposed system would use a sales-based formula.¹⁰ In the experience of U.S. states, income has been allocated to state jurisdictions using a variety of formulas. Historically, many U.S. states have used the so-called Massachusetts formula, which uses equal weights on property, payroll, and sales. For example, under an equal-weighted FA system, tax liability to the U.S. government would be based on the U.S. tax rate times the fraction of worldwide profits that are attributed to the United States. This fraction would be based on how much of worldwide economic activity (an average of sales, assets, and payroll shares) occurs in the United States.

Observers have noted that an FA system creates an implicit tax on the factors used in the formula, thus discouraging assets and employment in high-tax locations. This formula also leaves unresolved issues concerning the treatment of intangible property, how to value property, and so on. In part due to these concerns, we propose a far simpler formula, which would consider only the fraction of sales in each location. Sales would be determined on a destination basis: that is, they would be based on the location of the customer rather than the location of production. We propose this destination-basis sales formula for several reasons. Alternative formulas are discussed in Appendix B.

The key advantage of a sales-based formula is that sales are far less responsive to tax differences across markets, because the customers themselves are far less mobile than are firm assets or employment. Even in a high-tax country, firms still have an incentive to sell as much as possible. In addition, if

10. A similar proposal has been advocated by Durst (2007), who offers legislative language for implementing a formulary approach to corporate taxation. He notes that technical barriers to adopting FA have been overstated; defining a unitary group and establishing the destination of sales are both attainable objectives.

some countries adopt sales-based formulas, other countries will have an incentive to adopt sales-based formulas as well, in order to avoid losing payroll or assets to countries in which these factors are not part of the formula.

The U.S. state experience reinforces the merits of this proposal. In recent years, many U.S. states have shifted to a formula that double-weights the sales factor, often based on a desire to encourage exports out of state and to discourage imports into the state. State incentives to move toward a sales-based formula are well documented. For example, Edmiston (2002) generates a model with this prediction, and Omer and Shelley (2004) empirically document this trend. Goolsbee and Maydew (2000) demonstrate that U.S. states that lower the weight on the payroll factor experience increases in manufacturing employment. According to Weiner (2005), twenty-three states double-weight sales as of 2004, and eight others have an even larger weight on sales. Some states even use a sales-only formula (which was approved for Iowa by the U.S. Supreme Court).

In addition, international experience suggests that movement toward a sales-based formula is likely. Because of the widespread belief that imposing taxes on imports and exempting exports boosts national competitiveness and reduces trade deficits, it is possible that if some countries were to adopt a sales-based formula for apportioning corporate income, other countries would follow suit. It would also be in these countries' economic interest to avoid the implicit tax on assets and payroll that is embedded in a three-factor formula.¹¹ This built-in incentive for sales-based formulas would minimize the likelihood of over- or undertaxation due to disparate formulas, which is an obstacle to adopting FA. Still, it would be ideal to have international cooperation and consensus regarding both the adoption of FA and the choice of formula. We will discuss in §4.2.2 the problems that would arise if only the United

States were to adopt FA, or if different countries were to use different formulas.

3.2. Four Key Advantages of Formulary Apportionment

3.2.1. FA Would Align the U.S. Tax System with a Global Economy

The first advantage associated with this proposal is that it would align the U.S. corporate tax system with the reality of a truly global world economy. In a world where most major corporations are MNEs, where 70 percent of U.S. international trade is done by MNEs, and where many opportunities for tax avoidance have an international dimension, the current U.S. system of corporate taxation is obsolete. In particular, SA systems treat each affiliate of an MNE as a distinct entity with its own costs and incomes. Allocating income and expenses across countries is both complex (an issue discussed in §3.2.3) and conceptually unsatisfactory, given that worldwide income is generated by interactions between affiliates across countries. MNEs exist in large part because these interactions generate more income than would separate domestic firms interacting at arm's length. Requiring firms to allocate this additional income among domestic tax bases is necessarily artificial and arbitrary, therefore, because it would by definition disappear if the related entities operated at arm's length. Furthermore, such allocation generates ample opportunity for MNEs to reduce worldwide tax burdens by shifting income to more lightly taxed jurisdictions, an issue to which we will return in §3.2.2.

Under an FA system, tax liabilities are instead based on an MNE's global income, and the share that is taxed by the national jurisdiction depends on the fraction of a firm's economic activity that occurs in a particular country. In the case of a sales-based definition, the measure of economic activity is sales, which focuses on the demand side of market value.

11. In the past fifty years, more than one hundred countries have adopted the value-added tax (VAT); each of these countries (including all other members of the OECD) has adopted the destination principle (i.e., imposing VAT on imports and rebating it on exports). The spread of destination-based VATs around the world provides a good example of how tax innovations can spread without a coordinating supranational agency or world tax organization, simply on the basis of countries' perception of their self-interest.

One could argue that a three-factor formula would also take into account the supply side of economic activity (with payroll and assets representing the capital and labor inputs into the production process), but we feel that the disadvantages of adopting a three-factor formula outweigh this conceptual advantage. Alternative formulas are discussed in Appendix B.

Thus, while a truly precise definition and measurement of economic value is probably unattainable, FA provides a reasonable, administrable, and conceptually satisfying compromise that suits the nature of the global economy. Furthermore, an FA system does not create an artificial legal distinction among types of firms, whether the MNEs are organized as subsidiaries, branches, or hybrid entities, nor does an FA system rely on an artificial distinction between MNEs whose parent is incorporated in the United States and MNEs whose parent is incorporated elsewhere.¹²

3.2.2. FA Eliminates the Tax Incentive to Shift Income to Low-Tax Countries

The second advantage associated with the proposal is that it eliminates the tax incentive to shift income to low-tax countries. Because income-shifting incentives are an important part of the overall tax incentive for locating operations in low-tax countries, removing this incentive would result in fewer tax-distorted decisions regarding the location of economic activity. Under FA, firms are taxed based on their global income. Thus, accounting for the income earned in each country is no longer necessary, and there is no way to lighten global tax burdens by manipulating this accounting for tax purposes. Since the share of global income that is allocated to each country under FA depends on the share of an MNE's sales that are in each country, there would be some tax incentive to distort the location of sales among markets. However, this could be combated by basing the sales definition on a destination prin-

ciple. In general, firms have an incentive to encourage sales in each market in order to serve the customers there.

Under FA, there is no reason for the sort of profit distortions that are so clearly visible in Figure 2, which shows profits in 2003.¹³ In addition, when firms consider the tax advantages associated with operating in low-tax countries, these advantages would be based simply on the lower tax associated with their sales in such countries, rather than any additional advantages conferred because real operations in low-tax countries facilitate tax avoidance. Thus, the adoption of FA should vastly reduce tax distortions to MNE decisionmaking. Also, it is important to note that, despite the emphasis on the sales of MNEs in different countries, this remains a corporate income tax, not a consumption tax. For example, tax liabilities do not arise unless an MNE is earning profits worldwide, irrespective of their sales.

Even though a unilateral move toward FA creates large incentives for other countries to adopt FA, and in particular sales-based formulas, such changes in the taxation of international income ultimately help governments set their tax policies more independently. The wishes of voters in each government influence the ideal size of government, required revenue needs, and the allocation of the tax burden among subgroups within society. Under FA, governments would be able to choose their own corporate tax rate based on their assessment of these sorts of policy goals, rather than the pressures of tax competition for an increasingly mobile capital income tax base.

3.2.3. FA Increases Simplicity

The third advantage associated with the proposal is the massive increase in simplicity that it would enable for the international tax system. If FA were adopted by our major trading partners, simplification

12. If a sales-based formula is adopted, both U.S.- and foreign-based MNEs would be able to locate their headquarters (which frequently produce positive externalities, such as those that flow from R&D) in the United States without increasing the MNEs' tax burden.

13. A very similar pattern is apparent in other years. The Bureau of Economic Analysis (BEA) data are discussed further in Appendix A.

gains would be particularly large, but simplification would still exist even if FA were to be adopted unilaterally. To determine U.S. tax liability, there would be no need to allocate income or expenses among countries, resulting in far lighter compliance burdens for firms. Subpart F and the foreign tax credit, which are both hugely complicated and a major source of transaction costs for U.S.-based MNEs, are no longer necessary, since there is no deferral under this system (which is essentially territorial and which treats U.S.- and foreign-based MNEs alike).

Furthermore, the likely administrative savings from abandoning the current cumbersome transfer-pricing regime are huge. The current regime consumes a disproportionate share of both public (i.e., IRS) and private sector resources. For example, several recent Ernst and Young surveys of MNEs have concluded that “transfer pricing continues to be, and will remain, the most important international tax issue facing MNEs” (Ernst and Young 2005/2006, p. 5). Seventy percent of the surveys’ respondents feel that transfer-pricing documentation has become more important in recent years, and 63 percent report transfer-pricing audit activity in the previous three years (Ernst and Young). For the government, audit costs are three to seven times higher for federal transfer-pricing cases than for state FA audits, even in cases where the most efficient federal cases are compared to the least efficient state cases (Bucks and Mazerov 1993).

Opinions in transfer-pricing cases run to hundreds of pages each, and litigation involves billions of dollars in proposed deficiencies, such as the recently settled Glaxo case (\$9 billion in proposed deficiency, settled for \$3.4 billion) or the Aramco advantage case (litigated and lost by the IRS, which asserted deficiencies of more than \$9 billion). There is no indication that the 1994 regulations under Internal Revenue Code (IRC) §482 (implementing SA) have abated this trend (Avi-Yonah 2006). There have been fewer decided cases than under the pre-1994 regulations because both taxpayers and the IRS have been devoting enormous resources to settling

these controversies in the appeals process, in litigation, or through advance pricing agreements, since both sides have been wary of losing a major court case.

The contemporaneous documentation rule adopted by Congress requires taxpayers to develop documentation of their transfer-pricing methods at the time the transactions are undertaken rather than when they are challenged on audit. This requirement, as well as the complexity of the new SA methods (such as the comparable profits method, or CPM), have led the major accounting firms to develop huge databases and expertise in preparing transfer-pricing documentation for clients. This imposes large costs on major U.S. MNEs (Durst and Culbertson 2003). Meanwhile, small and medium-sized enterprises, which cannot afford the major accounting firms, are left to fend for themselves and are frequently targeted for audits in which the IRS can use more sophisticated methods than the taxpayer’s methods: only the IRS and the large accounting firms have the necessary data to apply CPM. Thus, while the IRS continues to lose transfer-price cases against major MNEs (e.g., Xilinx) under the 1994 regulations or has to settle for less than half the proposed deficiency in Glaxo, it is able to win cases against small and medium firms on the basis of superior resources, rather than on the basis of a greater substantive justification of its position.

By contrast, FA is relatively simple since all that it requires is determining which businesses are unitary (discussed in §4.2.1), and establishing the destination of arm’s length sales of goods or services. Once these two elements are established, the resulting formula permits both the taxpayers and the IRS to determine the correct tax liability for each jurisdiction that uses FA. This means that there is no longer a need to allocate or apportion expenses (a source of major complexity in the current rules, as the 861 regulations indicate), because all a business needs is to calculate its worldwide net income (worldwide gross income minus worldwide expenses). This net income is then allocated to various ju-

risdictions based on a single formula, the tax rate of each jurisdiction is applied to the allocated income, and the tax is paid.

For small and medium-sized enterprises in particular, FA results in major cost savings as well as the likelihood of paying less tax (since such businesses are rarely in a position to take on the IRS under SA). For major MNEs, FA also offers the prospect of avoiding the costs of contemporaneous documentation. While some firms may pay more tax than under SA, many would welcome the opportunity of paying a single, low rate to each jurisdiction in which they do business (especially if the adoption of FA is coupled with a reduction in the corporate rate), instead of having to cope with the complexities and costs of SA. Of course, some firms would also be hurt by the change in tax environment. These issues are discussed in §4.3.

3.2.4. FA Would Raise Revenue or Enable a Rate Reduction

The fourth advantage associated with the adoption of FA for the United States is that the new system would either raise more revenue or enable a substantial rate reduction. Estimating exactly how much revenue such a change would raise is a difficult and imprecise task, and the details of the implementing legislation and regulations would likely be influential in determining the ultimate effects of the proposed change. Still, previous studies and back-of-the-envelope calculations suggest that such a change is likely to generate substantial additional U.S. government revenue.

Appendix A reviews several such calculations in more detail. For example, one recent study finds that tax avoidance activities reduced income earned in the United States by U.S. MNEs by more than \$150 billion in 2002, lowering corporate tax revenues by about 35 percent. Since FA would eliminate tax avoidance incentives, one would expect it to raise revenues by a similar margin. If corporate tax revenues were to increase by 35 percent, that would correspond to an increase of approximately \$50 billion (annually) over the period 2001–04.

The most thorough estimate of the revenue effects of FA to date is Shackelford and Slemrod (1998): they use accounting data in financial reports for forty-six U.S.-based MNEs over the period 1989–93 to estimate changes in revenue under a three-factor FA system. They estimate that U.S. government revenues would increase by 38 percent. This increase is not dependent on any particular factor, and they calculate that a single-factor sales formula would increase revenues by 26 percent. Given the changes in the international tax environment since the time period of their data, and in particular the increasing discrepancy between the U.S. corporate tax rate and those of other major countries, these estimates likely understate the current U.S. revenue gain with FA adoption.

Table 1 shows illustrative statistics on the operations of U.S. multinational affiliates in 2003 for all countries where the Bureau of Economic Analysis (BEA) reports data and where affiliate operations are at least 0.5 percent of worldwide totals in either sales or income. Column (1) shows the share of worldwide foreign affiliate sales that occur in each country, Column (2) shows the share of worldwide affiliate net income earned in each country, Column (3) shows the effective tax rate, and Column (4) shows the percentage by which the income share exceeds or falls short of the sales share. Countries are shown in descending order of values for Column (4). It is immediately apparent that those countries with income shares that vastly exceed their sales shares tend to be very low-tax countries, and those with sales shares that exceed their income shares are typically high-tax countries. Thus, it appears quite likely that a sales-based FA system would increase revenues in comparatively high-tax countries, decreasing them in low-tax countries.

As one plausible conjecture, if revenues increase by 35 percent with FA, one can also calculate the tax-rate reduction that would be possible with a revenue-neutral implementation of FA. In that case, the implied new corporate tax rate would be 26 percent, nine percentage points lower than the current corporate tax rate of 35 percent. Of course, one could

TABLE 1

U.S. MNE Operations, 2003

	(1) Share of sales (%)	(2) Share of income (%)	(3) Effective tax rate (%)	(4) Excess income share (vs. sales) (%)
Luxembourg	0.3	7.0	-2	2,585
Bermuda	1.4	9.5	2	600
Barbados	0.1	0.6	3	324
U.K. Caribbean Islands	0.8	2.9	1	246
Portugal	0.3	0.8	6	205
Netherlands	4.4	12.8	5	194
Denmark	0.4	1.0	11	150
Ireland	3.9	9.6	6	146
Indonesia	0.4	0.8	40	71
Switzerland	4.3	6.0	5	41
Belgium	2.1	2.1	11	-3
Hong Kong	1.9	1.8	9	-6
Singapore	3.4	2.7	7	-19
Norway	0.7	0.6	66	-23
Spain	2.1	1.6	10	-24
Taiwan	0.9	0.7	19	-27
China	1.7	1.1	13	-33
Sweden	1.7	1.1	20	-33
Germany	7.6	4.8	8	-37
Korea, Republic of	0.7	0.4	28	-39
Thailand	0.7	0.4	39	-43
United Kingdom	14.0	7.8	20	-44
Malaysia	1.1	0.6	23	-48
Australia	2.6	1.3	28	-48
Japan	5.9	2.8	37	-52
Mexico	3.9	1.6	35	-58
France	5.2	2.0	25	-61
Argentina	0.6	0.2	45	-64
Italy	3.0	1.0	35	-66
Brazil	2.2	0.2	65	-92

Source: www.BEA.gov/international/di1usdop.htm

Note: For those economies with the largest U.S. affiliate operations. Economies are selected for inclusion in this table if either their sales share or their income share exceeds 0.5 percent of worldwide totals. The year 2003 is the most recent year with revised data available. BEA conducts annual surveys of operations of U.S. parent companies and their foreign affiliates. These data are discussed in more detail in Appendix A.

also pursue an intermediate policy that allowed a smaller rate reduction and also increased revenues more modestly. Appendix A provides more background on these calculations.

Therefore, adoption of FA can help address the four flaws in the current system of U.S. taxation that were discussed in §2 of the paper. There are also potential gains due to coordination with other taxes and among other countries. Consider first coordination with value-added taxes (VATs). Existing VATs around the world depend on defining the destination of sales of goods and services. Determining destination for goods is relatively easy because of customs enforcement. In fact, many jurisdictions use harmonized rules for customs, VAT, and income tax collection. Determining destination for services is harder, but countries have developed significant expertise in it under VAT. If the United States adopts sales-based FA, it can learn from this experience even without adopting its own VAT. If the United States subsequently adopts a VAT, the existing rules for determining sales destination under FA can be coordinated with the VAT rules. In addition, existing U.S. regulations already define destination and origin of goods for purposes of trade regimes and tax-based export subsidies; the regulations also define destination and origin under the base company

rules of Subpart F. Any FA regime can build on this expertise as well.

This proposal also introduces the possibility of gains from coordination with other countries. The European Union (EU) Commission is actively working on defining a common tax base and apportioning it among member states by formula.¹⁴ We can learn from this effort (which itself learned from the U.S. state and Canadian province experiences) (Weiner 2005). Also, if the United States and the EU both adopt FA, there is obvious potential for coordinating their efforts through the OECD. It may be possible, given current discussions of FA within the EU, to reach agreement with the EU (and possibly with other OECD members) on the adoption of FA before it is actually implemented.

Still, while an international agreement would be ideal, we do not believe that reaching such an agreement should be a necessary prerequisite to the United States adopting FA unilaterally. Many significant advances in international taxation—such as the foreign tax credit and CFC regimes, as well as more problematic developments such as the current transfer-pricing methods—resulted from unilateral action by the United States, which was followed by most other jurisdictions and by the OECD.

14. Gnaedinger and Nadal (2007) report that EU Tax Commissioner Kovacs is optimistic that the common consolidated corporate tax base would move forward, despite the opposition of a minority of EU member governments. If a member country vetoes the draft legislation, the EU may turn to the enhanced cooperation procedure through which action can still proceed. According to these authors, Kovacs described a timeline through which the common tax base could be in place as soon as 2010.

4. Downsides of FA

This section of the paper will consider potential drawbacks associated with this proposal. The concerns fit into three broad categories. First, some critics argue that FA is inherently arbitrary. Second, there are implementation issues associated with the definition of a unitary business and the determination of the location of sales. There are also problems associated with interactions between countries with incongruent corporate tax systems. There is a potential for non-taxation or double taxation, accounting standards across countries are not uniform, tax treaties may need modification, revenues may systematically shift away from some countries, and there may be issues of compatibility with WTO obligations. Third and finally, the proposed FA system is likely to negatively affect some stakeholders, because some domestic industries and firms would find that their tax obligations increase under the new system.

4.1. Is FA Arbitrary?

Some would consider basing the corporate income tax liability solely on the extent of sales in a particular country to be arbitrary. Indeed, this approach focuses on the demand side of the value created by the corporation. For example, the market jurisdiction would levy the entire corporate income tax in the case of an MNE that produces in one country and sells in another. Still, it is not clear that the current SA regime is less arbitrary, given the incentive to shift profits to low-tax jurisdictions.

Under the current regime, it is quite possible that an MNE will not pay taxes either in the location of production (because of tax competition and production tax havens) or in the location of distribution (because it can avoid having a permanent establishment or minimize the profits attributable to the distribution function), while any taxes due to its residence jurisdiction are subject to deferral or exemption. Such a result is more arbitrary than consistently assigning profits to the market jurisdiction, especially if most countries adopt the same formula.¹⁵

It is true that any formula can produce arbitrary results in a given industry. For example, the oil industry has long argued that it is unfair for it to be taxed based on payroll, assets, or sales because most of its profits result from the oil reserves themselves, which are not reflected in the formula (since they are typically not assets of the company for any length of time). However, while some industries would lose under the proposed formula, others (such as major U.S. exporters) would win, and most taxpayers would gain from the increased simplicity and transparency of the FA regime. If companies are willing to pay one level of tax and are concerned only about double taxation, they should be willing to accept the FA option, which prevents double taxation but also prevents double non-taxation.¹⁶

15. In fact, it is likely that a high proportion of current corporate tax collections come from taxing distribution activities that rise over the permanent establishment threshold (or are conducted in a separate subsidiary), given the ubiquity of targeted tax incentives for production activities. This explains why there is so much current pressure on the definition of permanent establishment (Le Gall 2006). Thus, other than reducing distortions, our proposal is a less radical shift from current reality than it appears to be from a theoretical perspective.

16. It can also be argued that ignoring intangible property, which is the source of most of the value added by MNEs, is arbitrary under both our formula and the state formulas (i.e., those state formulas that do not include intangibles in the property factor). But intangibles do not have a real location, and their value inheres in the whole MNE, which is why they cannot be adequately addressed under SA. Any formula that ignores intangibles assigns their value to the entire MNE (divided based on the other factors used in the formula), and we believe this result more accurately reflects the nature of intangibles.

4.2. Implementation Issues

4.2.1. Defining a Unitary Business and the Destination of Sales

First, a difficult implementation issue in adopting FA is how to define a unitary business. Current IRC §482 (implementing SA) merely requires direct or indirect control among related parties, without even a precise definition of what control requires such as is found in other IRC provisions. However, for purposes of FA, mere control is not enough: in the absence of unitary business activities (i.e., an integrated MNE), FA can lead to significant distortions in the way a business operates (lumping together disparate sales from different businesses). In addition, relying solely on control would violate tax treaties that require something more for a subsidiary to be an agent of the parent.

We would suggest a test of unitary business that depends on whether the subsidiary operates under the legal and economic control of the parent.¹⁷ Such a test would look at factors such as where overall business strategy is set, the extent to which risk of loss is shared, and the extent to which there are transfers of goods and services among the constituent units of an MNE. In most modern MNEs, the level of integration is sufficient to find a unitary business, as the experience of the states in administering this test has shown. About 40 percent of all U.S. international trade takes place between affiliates of MNEs, suggesting the extent to which they are integrated. Moreover, the underlying transfer-pricing problem depends on transactions among constituent parts of an MNE, so relying on such transactions as the basis for finding that a

unitary business exists is appropriate to address the problem.¹⁸ Imposing a rebuttable presumption of control whenever there is a combination of legal control (i.e., ownership of more than 50 percent of the stock by vote or value, with the usual attribution rules) plus some de minimis level of inter-MNE transactions should go a long way to prevent tax-motivated attempts to break control.

While it is possible that taxpayers may try to avoid taxation by using independent distributing agents for their sales, it is unlikely that they would be willing to relinquish real control over their marketing and distribution activities, since that is why they are organized in MNE form in the first place.¹⁹ In addition, we would adopt a look-through rule that would regard any sales made by an MNE to an unrelated distributor as sales made into the United States if the distributor sells the goods into the United States and does not substantially transform them before they are resold.²⁰ This would prevent MNEs from avoiding tax by selling their goods into the United States via unrelated strawmen who would themselves have minimal profits.²¹

Second, implementing a sales-based formula depends on the ability of tax administration to determine the destination of sales of goods and services. This issue also arises under VATs and state income and sales taxes. In general, for a country such as the United States that maintains customs controls, establishing the destination of goods is not a significant problem and is already the basis of several IRC provisions.²² The destination of services poses more difficult issues, but these problems also arise under a VAT and have, in general, been treated success-

17. This definition tracks the requirement for finding that a subsidiary is a dependent agent of the parent under tax treaties, discussed in §4.2.4.

18. If an MNE has several lines of business that are truly not related to each other (e.g., GE's financial and nonfinancial businesses), FA should be implemented for each line of business separately. While this raises some definitional issues as well as the possibility of having to apply SA-based transfer pricing to any transactions between such lines of business, these problems should be far narrower in scope than those raised by the current system.

19. Otherwise, they could begin operations in a foreign country by selling through independent distributors, which is usually less costly.

20. The substantial transformation test can be based on current Treasury Regulation §1.954-3(a)(4).

21. Since we ignore intra-MNE sales, the MNE cannot engage in round-tripping transactions in which it exports goods and then reimports them into the United States.

22. See, e.g., Treasury Regulation 1.954-3(a)(3) (the base company sales rule), as well as the various export-related rules (IRC §§941-943, 970-971, 991-994), all of which rely on establishing the destination of goods sold.

fully. For business-to-business provision of services (which covers the majority of services to unrelated parties), a rule that the destination of services is the jurisdiction in which the receiving business takes a deduction for payment to the service provider should establish the destination of the service.

4.2.2. Interactions between Countries with Different Tax Systems

It would be ideal for most major countries to coordinate implementation of FA and to come to a joint agreement on the definition of the formula for apportioning global income. Given that the EU is already pursuing the possibility of FA within Europe, a natural forum for reaching international consensus on these issues would be the OECD. With international cooperation, the possibility of double or non-taxation would be reduced and there would be less room for MNEs to respond strategically to variations in country formulas.

Moreover, one should note that unilateral adoption by the United States of an FA system for taxing international income would create a powerful incentive for other countries that use SA to also adopt FA. In a world with both FA countries and SA countries, FA countries would immediately appear as tax havens from an SA country perspective. For example, an MNE operating in SA and FA countries would have an incentive to book all its income in FA countries: the tax liability in such countries does not depend on the income booked there, but rather on the fraction of a firm's activities in that location. Such responses would likely greatly reduce the tax revenues of remaining SA countries. Thus, SA countries would have a strong incentive to adopt FA, particularly if large economies adopt FA.

Moreover, the experience of the U.S. states amending their formulas to emphasize the sales factor and the experience of more than one hundred countries adopting the destination-based VAT suggest that there is a significant likelihood that if the United States were to adopt a sales-based formula, other countries would be inclined to follow suit. The United States led the way in adopting the foreign

tax credit (1918), Subpart F (1962), and the current transfer-pricing regulations (1968 and 1994), all of which were followed by most of our major trading partners and recognized by the OECD. It is quite possible that if the United States were to adopt sales-based FA, this, too, would be a widely copied innovation, with or without explicit coordination.

Still, if the United States adopts FA unilaterally and other countries do not follow suit (or if they follow suit much later), or if countries adopt different formulas, there is the potential for double or non-taxation. This is the largest obstacle to adoption of FA. As argued above, there are built-in incentives for countries to respond to other countries' adoption of FA by themselves adopting FA, and there are also built-in incentives to move toward sales-based formulas. These incentives might help promote international cooperation in the initial negotiations regarding adoption and formula determination. Still, absent foreign adoption, problems of double or non-taxation may be particularly worrisome.

Furthermore, even if other countries eventually adopt FA, there would likely be a transition period while governments and MNEs adapt to the new tax environment. During this transition period, there may be problematic instances of double taxation, and the firms that experience increased tax liabilities under FA may prove to be vocal critics of FA.

While situations of double taxation could arise, it is not clear that FA would produce more double taxation or double non-taxation than the current SA regime. As noted in §2.1, there is significant evidence that the SA regime results in undertaxation because MNEs succeed in shifting profits from high-tax to low-tax jurisdictions. However, SA can also result in double taxation to the extent that a high-tax jurisdiction successfully asserts that profits belong to it and not to another high-tax jurisdiction.

For example, the IRS recently settled a major transfer-pricing case with the British firm Glaxo for \$3.4 billion. This additional revenue resulted from shifting to the United States profits that Glaxo claimed

belonged in the United Kingdom. It is far from clear that the U.K. tax authorities would accept the result of this settlement: under the U.S.-U.K. tax treaty, they are not required to do so.²³ The dispute resolution mechanism in most of our tax treaties does not provide for binding arbitration and therefore does not necessarily lead to a resolution. As Justice Brennan observed in *Container Corp. v. Franchise Tax Board* (1983) (approving California's application of worldwide FA to U.S.-based MNEs), it is not clear which method (FA or SA) produces more over- or undertaxation, even when some countries use FA and some use SA, or when different countries use different formulas.

Fundamentally, the issue of double or undertaxation under SA and FA resolves to the incentives facing taxpayers and governments, and whether taxpayers or governments are better positioned to respond to such incentives. Under SA, taxpayers are able to achieve undertaxation by shifting profits to low-tax locations, and governments have an incentive to prevent that. Nevertheless, forty years of experience have shown that governments are slow to act, and that the SA rules are insufficient to deter taxpayers or to enable governments to collect the corporate tax due. Under a combination of FA and SA, double taxation can result, but there is an incentive for the taxpayers to prevent that by shifting profits out of SA countries into FA countries, which would in turn incentivize governments to adopt FA. Finally, under FA, double taxation can result if different countries have different formulas, but taxpayers can prevent it by shifting production factors out of countries that have production factor-based formulas. Since taxpayers are more nimble than governments, if the goal is to prevent over- or undertaxation it would seem preferable to err on the side of temporary double taxation, which can be remedied by taxpayer action, rather than to rely on governments to prevent undertaxation.

4.2.3. Defining the Tax Base

There are issues associated with the need for common accounting standards. Still, the unilateral adoption of FA by the United States need not require the United States and other countries to have a common tax base. However, as noted in §4.2.2, the ideal situation would be for most countries to adopt FA using the same (sales-based) formula. For this purpose, a common definition of the tax base is needed, as currently advocated by the EU Commission.

Such a common definition of the tax base (as opposed to harmonized tax rates, which are unlikely as well as undesirable) could be achieved: MNEs already use uniform accounting for worldwide financial reporting purposes. Thus, it is possible to use financial reporting as the starting point for calculating the global profit of the MNE, to be allocated to jurisdictions based on the FA formula. While there are still differences in accounting among countries, those differences are diminishing due to the spread of international accounting standards, which have been adopted in the EU and Japan. Alternatively, it may be possible to let each MNE use its home country accounting methods for calculating the global tax base (as suggested by the EU Commission for inter-EU purposes). In that case, U.S. MNEs would be able to use U.S. generally accepted accounting principles for tax reporting in the EU and Japan, rather than incurring the cost of producing two sets of financial reports under generally accepted accounting principles and international accounting standards. Many European MNEs support FA in the EU precisely because of the cost savings involved.

Such changes would also have the advantage of more closely aligning book income and tax income. This could act as a damper on both the underreporting of income for tax purposes and the overstatement of income for the purpose of signaling profitability to financial markets.²⁴

23. Article 9 of the treaty only states that a country must make a “correlative adjustment” when profits are shifted by the other treaty partner if it agrees that the profit shift was justified, which the United Kingdom seems unlikely to accept.

24. This is discussed in Desai (2005), where he recommends reconsideration of the dual-reporting system. Desai (2003) reports an increasing

However, if coordination of the tax base with accounting-based measures were unachievable or undesirable, FA could also be implemented unilaterally by the U.S. government using its definition of taxable income and applying it to the entire MNE. U.S.-based MNEs already have to calculate the earnings and profits of CFCs for purposes of Subpart F and the foreign tax credit, so the additional information required for unilateral adoption would not be overly burdensome. For non-U.S.-based MNEs, we could use financial reporting to shareholders (already required by the SEC or by home country regulators) as the base for calculating worldwide income. While this would create a disparity between U.S.-based and non-U.S.-based MNEs, the result is similar to allowing MNEs to use their home state base for tax purposes, as recommended by the EU.

4.2.4. Interaction with Tax Treaties

Some have argued that tax treaties will need modification with adoption of FA, but it is not clear that existing U.S. tax treaties would have to be renegotiated. Transfer pricing is currently governed by Article 9 of the treaties (U.S. Treasury 2006), which assumes the SA method because it addresses the commercial or financial relations between associated enterprises. If FA were adopted, Article 9 would become irrelevant in those situations to which FA applies (i.e., where a unitary business is found to exist) because FA ignores the transactions between related parties and treats them instead as part of a single enterprise.

Instead, FA would be governed by Article 7 (U.S. Treasury 2006), which governs the relationship between a parent company and a branch (permanent establishment) or an agent. Under Article 5(7), “the fact that a company that is a resident of a Contracting State controls or is controlled by a company that is a resident of the other Contracting State ...

shall not constitute either company a permanent establishment of the other.” However, it is well established that a dependent agent can be a permanent establishment (Article 5(5)), and whether an agent is dependent is based on whether the principal exercises legal and economic control over the agent. “An agent that is subject to detailed instructions regarding the conduct of its operations or comprehensive control by the enterprise is not legally independent” (U.S. Treasury, Article 5(6)).

In the case of a modern, integrated MNE that operates as a unitary business, a strong argument can be made that the parent of the MNE exercises both legal and economic control over the operations of the subsidiaries, especially where the subsidiaries bear no real risk of loss and acquire goods and services exclusively or almost exclusively from the parent or other related corporations. In that case, the subsidiaries should be regarded as dependent agents of the parent. Such a finding is made with increasing frequency.²⁵

If the subsidiary is an agent of the parent, Article 7(2) (U.S. Treasury 2006) of the treaties requires the attribution of the same profits to the subsidiary “that it might be expected to make if it were a distinct and independent enterprise engaged in the same or similar activities under the same or similar conditions.” Arguably, the application of FA, even when based on a sales-only formula, satisfies this arm’s length condition because, in the absence of precise comparables (which almost never exist), it is not possible to determine exactly what profits would have been attributable to the subsidiary under SA.

When the United States adopted CPM and profit split in the 1994 transfer-pricing regulations, some countries objected that it was violating the treaties because these methods did not rely on exact compa-

divergence between book income and tax income, with more than half of the divergence not explained by conventional differences between the measures. For the United States in 1998, he estimates that this discrepancy amounts to about 34 percent of tax income (a bit more than \$150 billion). He attributes these trends to increased tax-sheltering activities.

25. See Le Gall’s (2006) discussion of recent cases from Canada, Germany, and Italy, as well as from developing countries, and of the Inverworld case in the United States.

rables to find the arm's length price. However, these objections soon subsided, and even the OECD endorsed similar methods in its transfer-pricing guidelines. The United States always maintained that both CPM and profit split satisfy the arm's length standard despite the lack of precise comparables (and, in the case of profit split, using no comparables at all to allocate any residual profits). Similarly, the United States has maintained that the superroyalty rule of IRC §482 (which requires royalties to be commensurate with the income from an intangible, and therefore subject to periodic adjustment) is consistent with the arm's length standard, even though no comparables can be found to show that such adjustments are ever made by unrelated parties.

Thus, were the United States to adopt FA, it could similarly argue that the resulting allocation of profits to the subsidiary is consistent with the arm's length standard embodied in Articles 7 and 9 (U.S. Treasury 2006). Despite the OECD's traditional hostility to FA, there is no way to prove—in the absence of comparables—that any profit allocation deviates from an arm's length result. As articulated in 1993 by senior officials of the U.S. Treasury, the U.K. Inland Revenue, the Fiscal Affairs Division of the OECD, and the Japanese National Tax Administration,

the arm's length principle and formulary apportionment should not be seen as polar extremes; rather, they should be viewed as part of a continuum of methods ranging from CUP to predetermined formulas. It is not clear where the arm's length principle ceases and formulary apportionment begins, and it is counterproductive and unimportant to attempt to apply labels to the methods (Arnold and McDonnell 1993 (p. 1381).

Nevertheless, although the adoption of FA would not require renegotiating any U.S. treaties, it would be a good idea for the United States to explicitly

sanction the use of FA in future treaty negotiations. This can be done by inserting in future U.S. treaties the language of the OECD Model (OECD 2005 Article 7(4)):

Insofar as it has been customary in a Contracting State to determine the profits to be attributed to a permanent establishment on the basis of an apportionment of the total profits of the enterprise to its various parts, nothing in paragraph 2 shall preclude that Contracting State from determining the profits to be taxed by such an apportionment as may be customary; the method of apportionment adopted shall, however, be such that the result shall be in accordance with the principles contained in this Article.

This language is found in many existing tax treaties based on the OECD and UN models, and it can be used by the United States as a basis for applying FA without resorting to a treaty override.

There is one situation where existing treaties would prohibit application of FA based on sales: when a corporation is able directly or indirectly (through an agent) to sell goods or provide services to a market without any kind of permanent establishment. This situation can arise in some cases of electronic commerce.²⁶ However, the same problem arises also under SA, and countries in general have been able to avoid significant revenue losses by aggressive interpretation of the permanent establishment threshold, and because it is difficult as a business matter in most situations to avoid having a permanent establishment in the market jurisdiction. In the long run, we would support renegotiating the treaties to incorporate a modernized version of permanent establishment that depends not on physical presence, but rather on the volume of sales into a market jurisdiction, as is commonly done for VAT purposes.²⁷

26. See, e.g., the recent state case involving MBNA, which applied an economic nexus theory in the absence of any physical nexus (*Tax Commissioner of West Virginia v. MBNA America Bank*, 2006).

27. Most VAT jurisdictions have de minimis rules for volume of sales.

4.2.5. Distributional Issues

Revenues may systematically shift away from some countries under FA. The current tax-haven countries would likely experience large reductions in revenues. For example, Ireland and Luxembourg are both low-tax countries where disproportionate amounts of corporate income are earned, and, in 2002, Ireland received 3.8 percent of GDP and Luxembourg received 6.2 percent of GDP in corporate tax revenues; both are well above the OECD average revenue share of 2.9 percent.

Also, some have argued that a sales-based formula would benefit countries such as the United States, which runs a large trade deficit, at the expense of countries with large trade surpluses. However, the key determinant of which countries would gain or lose revenue is whether countries have disproportionately large or small amounts of local corporate sales relative to corporate income. There is no evidence in the data that this factor is related to countries' trade positions.

If one considers the operations of U.S. MNEs and their foreign affiliates as a guide, it is quickly apparent that it is difficult to make regional generalizations about which countries would gain and which would lose. For example, developing countries do not have systematically lower (or higher) levels of local affiliate sales relative to affiliate income in comparison with richer countries. It appears, for example, that the ratio of local sales to corporate income for U.S. affiliates in African countries is similar to the world average. Asian and Latin American countries actually have a higher ratio of local sales to corporate income than the world average, whereas European countries have a slightly lower ratio of local sales to corporate income. In all cases, however, regional averages mask significant differences across countries. In general, with the adoption of FA, high-tax countries would likely gain revenue at the expense of low-tax countries because high-tax countries tend to have higher shares of local corporate sales relative to corporate income.

This conclusion assumes widespread adoption of FA. Absent that, the remaining SA countries would also lose revenue: MNEs would have a strong incentive to book income in FA countries because their tax liabilities in such countries would not be affected by this accounting. Still, despite concerns about systematic revenue losses in some countries, we believe that our proposal would eventually help many governments by eliminating incentives for tax competition.

4.2.6. Interaction with WTO Rules

Finally, some scholars have argued that the use of a sales-only formula by U.S. states violates WTO rules against export subsidies because they constitute an illegal border adjustment for direct taxes. In general, the WTO rules permit border adjustability for indirect taxes, but not for direct taxes. Although this line has been widely criticized as incoherent, it is embedded in the current WTO agreements.

It is not clear that the adoption of a federal sales-only formula for income taxes would be a WTO violation. It can be argued that the formula is not explicitly contingent on export performance, and that it serves only as a means for allocating the income tax base among jurisdictions, as opposed to exempting transactions that would otherwise be taxable (as in a VAT). No WTO complaint has been filed against the United States on the state formulas, even though state taxes are subject to WTO constraints.

Also, if the adoption of FA by the United States occurs alongside widespread adoptions at least among OECD member countries, it would seem plausible that the WTO rules (which are widely regarded as obsolete) can be renegotiated. In general, progress in the WTO is usually impeded if the United States and other OECD members disagree (e.g., on agricultural subsidies), but not if they agree. As noted in §3.2.4, the EU Commission has already endorsed FA, and thus is unlikely to challenge it.

If a country does successfully challenge the United States over the adoption of sales-based FA and the

rules cannot be renegotiated, the formula might need to be changed to one based equally on assets and sales, which is not open to WTO challenges. However, this would come at a price of encouraging more artificial shifting of assets to low-tax jurisdictions, so we do not advocate it at present.

4.3. Negative Effects on Some Corporate Stakeholders

Analysts have noted that adoption of FA would disproportionately affect some industries and firms negatively. For example, Shackelford and Slemrod (1998) find that FA raises tax liabilities for some industries and firms, lowering liabilities for others. They estimate that the oil and gas industry would see an increase in tax liabilities of 81 percent under FA, compared with 29 percent for all other firms in their study.²⁸ The authors also estimate that some firms—including Boeing, Procter & Gamble, and Dow Chemical—would experience a tax decrease.

Under our proposal, firms with a disproportionate amount of U.S. sales relative to U.S. income

would see tax increases under FA, while those with relatively low U.S. sales compared to U.S. income (e.g., large exporters) would see tax decreases. In addition, observers such as Durst (2007) note that intangible-intensive firms would likely be adversely affected by adoption of FA, because these firms have been particularly adept at lowering their tax burdens through careful tax planning under the current system.

Still, negative impacts could be muted by several considerations. First, firms would benefit from reductions in complexity and compliance burdens. Small and medium-size businesses should be particularly appreciative of such benefits. Second, if FA is accompanied by a reduction in the corporate income tax rate, which could prove quite substantial if FA is implemented in a revenue-neutral fashion, the number of firms benefiting from the adoption of FA would increase. A rate reduction would also appeal to those concerned that the United States is losing competitiveness because of the current rate disparity.

28. In their study, the mean oil and gas company reports 68 percent of assets in the United States, 70 percent of sales in the United States, and 78 percent of total compensation paid to U.S. employees, but such companies book 42 percent of pre-tax earnings in the United States.

5. Conclusion

Our proposal for the adoption of formulary apportionment (FA) for the U.S. taxation of corporate income responds to the reality of an increasingly global world. MNEs have internationally integrated operations, and they are responsive to the incentives created by discrepancies among national tax policies. A separate accounting system generates an artificial need to assign income and expenses by location, and this creates ample opportunities for tax avoidance.

An FA system would remove the complexities associated with sourcing income and expenses across locations, and it would eliminate the tax incentive to shift income to more lightly taxed locations. Absent tax incentives to shift income away from the United States, U.S. corporate tax revenues would likely increase significantly. If this proposal were implemented in a revenue-neutral fashion, on the other hand, the corporate tax rate could be cut substantially. Even a revenue-neutral implementation of FA would retain the simplicity and efficiency gains associated with the proposal.

The common objections to FA appear surmountable. We have argued that the FA system is less arbitrary than the current system and that implementation issues can be overcome. While it would be ideal to implement FA with international cooperation, there are also natural incentives within an FA system that encourage international adoption and formula harmonization. Even absent international cooperation, problems of double taxation or double non-taxation need not be any larger than under the current separate accounting (SA) system. Furthermore, it is likely that FA would be compatible with current treaty and WTO obligations.

We also maintain that U.S. adoption of FA would be preferable to the other suggested reforms. First, consider a simple base-broadening, rate-lowering reform. This would no doubt be an improvement relative to the status quo because a lower rate would reduce the tax incentive to earn income in foreign countries and other distortionary effects of the current tax system. In addition, base broadening would level the playing field among different corporate activities, reducing the deadweight loss associated with tax-induced modifications in financial or real behavior.²⁹ Yet, while such a reform would be desirable relative to the status quo, it would fall short of the gains from FA in terms of compatibility with the global economy, administrative simplicity, and the efficiency gains associated with eliminating income-shifting incentives.

Second, consider the Simplified Income Tax Plan suggested by the President's Advisory Panel on Federal Tax Reform (White House 2005, Chapter 6). This plan would adopt a territorial system for U.S. MNEs, exempting foreign income of U.S. firms from taxation. The report notes that this plan would create

more even treatment of cross-border investment by U.S. multinational corporations. Under the new system, territorial taxation of active foreign business income would be available to all U.S. multinational corporations, not just those that are able to “self-help” themselves to this result or its functional equivalent. The new system is designed to make U.S. businesses more competitive in their foreign operations, while reducing the extent to which tax planning allows some multinationals to

29. As just one example, the production income deduction in the recent *American Jobs Creation Act* (2004) creates an artificial incentive to engage in production activity or to re-label income as production income. Eliminating such provisions would be beneficial to the broader integrity of the tax system.

achieve more favorable results than others (White House 2005, p. 105).

Unfortunately, this proposal has a negative impact on many of the problems discussed in §2.2. In particular, firms would have an even larger incentive to shift income to low-tax locations. Furthermore, while a territorial system could be designed to be revenue neutral, the past experience of OECD countries suggests that territorial systems raise less corporate revenue (Clausing 2007a). In addition, there would be limited simplification gains in comparison with FA, because MNEs would still be responsible for sourcing income and expenses across locations, and the territorial nature of the tax system would put even greater pressure on the transfer-pricing rules, as the report itself notes.³⁰ We would argue that adopting FA is the only way to achieve territoriality for U.S.-based MNEs without risking significant revenue losses, worsening income-shifting incentives, and increasing the complexity of the U.S. international tax regime.

Third, compare adoption of FA to a proposal that would simply end deferral of taxation on foreign income for U.S. MNEs. One such proposal is discussed in Altshuler and Grubert (2006), as a burden-neutral worldwide taxation plan. Under this plan, all foreign income would continue to be taxed as it is currently, there would be no required

allocation of expenses to foreign income, and the U.S. corporate tax rate would be lowered to keep the overall U.S. tax burden on foreign income the same. This system would effectively end deferral for U.S. resident corporations, and thus dramatically reduce income-shifting incentives. The authors estimate that a burden-neutral implementation of the proposal would entail a corporate tax-rate reduction on foreign income to 28 percent.³¹

Still, under their plan, income-shifting incentives would not be completely eliminated: foreign-based MNEs would be largely unaffected. This consideration could create a stronger tax incentive for changing ownership patterns. For example, firms could undertake inversions, basing their parent company in a tax haven. In addition, income-shifting incentives still exist for U.S. MNEs that have excess credits.³²

While all of these proposals have merits, they also illustrate the difficulties associated with the taxation of MNEs in a globally integrated economy. It is nearly impossible to eliminate the tax distortions associated with the location of economic activity and profits across national boundaries without a dramatic rethinking of the nature of corporate income taxation in the world economy. We hope that this proposal contributes to that deliberation.

30. The Advisory Panel on Federal Tax Reform also suggested a growth and investment tax plan that would use domestic consumption as a tax base. While this plan has intriguing elements, it also raises broader issues that cannot adequately be addressed in the scope of this paper.

31. Their estimates are based on tax return data from the Treasury Department for U.S. MNEs. The estimates are static estimates that do not account for behavioral responses such as changes in income-shifting behavior or reduced incentives to lower foreign taxes.

32. The authors estimate that about 30 percent of foreign income would be earned by U.S. firms with excess credits under their plan. For firms with excess credits, there would still be tax planning opportunities associated with moving income from high-tax to low-tax countries, and with shifting income out of the United States.

Appendix A: Estimates of Revenue Gain Due to FA

This appendix considers methods of estimating the revenue gain to the U.S. government due to FA. All of these methods rely on multiple assumptions and simplifications. The data are imperfect and incomplete. Furthermore, there are multiple margins under which this change would affect MNE behavior both in the United States and abroad, and there is substantial uncertainty regarding the net influence of these responses on government revenues. Finally, the actual legislation and accompanying regulations implementing FA would matter a great deal in terms of ultimate effects on revenue.

Therefore, all of these estimates should be treated with a great deal of caution, as a mere starting point for thinking about this question. That said, all three methods below paint a broadly consistent picture of large U.S. government revenue gains with the adoption of FA.

1. The simplest estimate of the revenue gain relies on inferences from the BEA data regarding the operations of U.S. MNEs. According to 2003 data from the BEA, U.S. MNEs earn 56.7 percent of their worldwide net income in the United States. However, 69.6 percent of worldwide sales for these firms occurs in the United States. If the U.S. tax base were 69.6 percent of worldwide income, it would increase by \$149 billion. With the increment taxed at the marginal tax rate of 35

percent, that would generate \$52 billion in additional revenue. Since revenues from the corporate income tax in 2003 were \$131.8 billion, that represents an increase of 40 percent. Table A1 shows the results of the same calculations with available data for the three most recent years. The year 2002, however, was likely an usual year, because net income in the United States was abnormally low in comparison with other years.

If one assumes instead that the increments were taxed at the average tax rate paid on corporate profits, then this increase would be smaller. Yet, in other ways, this estimate represents an underestimate of the revenue gain, since it includes only U.S. MNEs. Foreign-based MNEs with affiliates in the United States would also face changes in their tax treatment that would increase revenues as long as the fraction of their worldwide sales in the United States exceeds the fraction of their worldwide income booked in the United States. While this is not possible to ascertain given the absence of BEA data on foreign parent firms, profits do appear to be disproportionately low for these firms relative to their sales in the United States. For example, in 2003, net income of U.S. parent MNEs was 6.5 percent of their U.S. sales, while net income for U.S. affiliates of foreign parent firms was 1.4 percent of their U.S. sales.

TABLE A1
Estimates of Revenue Gain Due to FA, 2002–04

	2002	2003	2004
Fraction of world sales in United States	71.6%	69.6%	68.2%
Fraction of world income in United States	8.2%	56.7%	56.0%
Implied new tax revenue	\$79 billion	\$52 billion	\$53 billion
Implied new tax revenue as share of same year's federal corporate tax receipts	54%	40%	28%

Source: BEA (various years)

A final issue concerning these calculations is the possibility of double counting in the BEA net income figures. These figures include income from equity investments, some of which may be counted more than once if there are tiers of holdings within the same country. Unfortunately, it is impossible to tell from existing BEA data exactly how large this problem is, or how much this problem is correlated with the tax rate of the country in question.^a Using an alternative data series from the BEA on direct investment earnings, one can exclude all income from equity investments. Although this too is conceptually inappropriate, we nonetheless performed calculations that used this series. To make the data comparable to net income, we adjusted for the fact that direct investment earnings were prorated to reflect the ownership stake of the U.S. parent, assuming an average ownership stake of 68.6 percent for all firms, which was the average ownership stake in 2003. One finds a similar fraction of worldwide income abroad—roughly 57 percent in both 2003 and 2004. Estimates of revenue gain from FA are about 35 percent smaller, due to some combination of a narrower definition of income as well as the elimination of any double counting.

2. Clausing (2007b) estimates revenue lost to the United States due to income shifting by U.S. MNEs. These are based on regressions that consider how profit rates (profit-to-sales ratios) depend on affiliate country tax rates. For the decade 1995 to 2004, the regression results indicate that a tax rate 1 percentage point higher (relative to the United States) is associated with an affiliate profit rate 0.5 to 0.8 percentage points lower. Together with information regarding profits and sales for each country and year, this result is used to calculate how profits would be different absent tax influences, and thus how revenue would be different in the United States absent income shifting.

Results vary by year, by whether one uses a statutory or an effective tax rate in the regression analysis, and by the assumption regarding the U.S. tax rate that would apply to higher levels of income in the United States. One representative calculation finds that in 2002 U.S. corporate profits would be \$170 billion higher absent income shifting. This additional profit generates \$54 billion in tax revenue, assuming additional profits are taxed at an effective tax rate of 32 percent. Since corporate tax revenues in 2002 were \$148 billion, this represents a 37 percent increase in tax revenue.

Some estimates are lower or higher than this number. For the years 2001 to 2004, the average estimate indicates an increase in revenue of 38 percent, assuming new U.S. profits are taxed at an effective rate of 32 percent. Estimates are lower using a statutory tax rate in the regressions (compared to an effective tax rate), and estimates are lower in 2001 or 2002 (compared to 2003 or 2004).

While these calculations are intuitively plausible, several assumptions are embedded that could cause the results to be underestimates or overestimates. For example, it is assumed that all profit shifting occurs between the United States and affiliate countries, rather than among affiliate countries. This consideration would make this estimate of revenue gain too high. Still, estimates consider the activities of only U.S. MNEs. This consideration would make this estimate too low because foreign-based MNEs likely engage in income shifting away from their U.S. affiliates.

3. Other studies have generated estimates of a similar magnitude. The most thorough estimate is Shackleford and Slemrod (1998): they use accounting data in financial reports for forty-six large U.S.-based MNEs over the period 1989 to

a. Using German data, Weichenrieder (2006) finds no relationship between the tax rates of host countries and more complicated ownership chains. However, other tax factors are important, including whether the investing country has a credit or exemption tax system.

1993 to estimate changes in revenue under an FA system. Their estimates are based on firm financial statements and the related income tax footnotes. Three certified public accountants interpreted each detailed disclosure. Both domestic and foreign taxable income were estimated as the sum of the current relevant tax provisions and credits divided by the relevant statutory tax rate. Worldwide income is then the sum of domestic and foreign income. The U.S. tax liability under FA is then calculated as the product of worldwide taxable income, the formula for the fraction of income allocated to the United States, and the U.S. tax rate.

Overall, Shackleford and Slemrod (1998) estimate that revenues would increase by 38 percent under a three-factor FA system. This increase is not dependent on any particular factor, and they calculate that a single-factor sales formula would increase revenues by 26 percent. Given the changes in the international tax environment since the time period of their data, and in particular the increasing discrepancy between U.S. corporate tax rates and those of other major

countries, these estimates likely understate the current U.S. revenue gain with FA adoption.

Any of the first three estimates can also be used to generate an estimate of what corporate tax rate would be associated with a revenue-neutral implementation of FA. Taking as one baseline that tax revenues would increase by 35 percent with FA, this implies that the corporate tax rate could be lowered by 9 percentage points, to 26 percent. Of course, one could also pursue an intermediate policy that lowered the corporate tax rate less but that also modestly increased tax revenue.

Note that the estimates discussed above are based on book income figures, not tax income figures. Numbers (1) and (2) use data from the BEA surveys on MNEs. Number (3) uses data from firm financial statements. It would be preferable to use data on tax income, which is also presumably more responsive to tax incentives. However, this is not possible absent access to Treasury data. Also note that these methods do not address methods that firms use to lower their taxable income overall. Instead, the focus is on the sourcing of income.

Appendix B: Alternative Formulas

Section 3 of the paper explains the merits of using a sales-based formula rather than the traditional Massachusetts formula, which is an equal-weighted average of sales, payroll, and asset shares. A sales-based formula has several advantages. First, firms have little ability to undertake tax avoidance strategies with a destination-based sales formula, since firms have no control over where customers are located.^b Second, this avoids an implicit tax on payroll and assets, which can distort MNEs' investment and employment decisions. Third, U.S. states have demonstrated a tendency to increase the sales weight over time, so adopting a sales-based formula at the outset may encourage countries to adopt formulas that are more uniform.

Still, multiple factor formulas have some advantages. First, while the incidence of the corporate tax is a complex matter beyond the scope of this paper, one advantage of the equal-weighted formula is that the incidence of the tax may be more ideal. For example, some argue that the asset portion of the formula is particularly compatible with the desire to have the corporate tax be borne by capital. Second, some argue that a three-factor formula more adequately captures the supply side of the process that generates profit. Still, as was recognized as far back as Marshall (1890/1997), value has its roots in both supply and demand factors, and trying to separate them is as futile as trying to determine which blade of scissors does the cutting. Third, to the extent that firms are able to manipulate the destination of their sales (which we deem unlikely; see §4.2.1), a multiple-factor formula would make that type of avoidance more

difficult. Finally, to the extent that some countries view a sales-based formula as not suited to their interests, a formula with several factors could be viewed as a useful compromise.

In addition to a sales-based formula and an equal-weighted formula, some have suggested a formula with a double weight on sales. For example, Eichner and Runkel (2006) argue that such a formula would reduce the harmful effects of tax competition because the fiscal externalities of corporate income taxation would be minimized.

Sorensen (2004) and Agundez-Garcia (2006) have discussed the possibility of using industry or macro-based weights in these formulas. Thus, a firm's tax liability in a particular country would not depend on its own share of worldwide activity in the country, but rather on the industry-wide average of these shares. If a firm is small relative to the industry, then its own decisions have little effect on where its tax liability is assigned, and firms have no incentive to distort their behavior. However, this method has the downside of separating a firm's activities from the jurisdictions in which it incurs taxation, which would likely prove too arbitrary. In the extreme, if macroweights were used, a firm's tax liability in a given country would depend on, e.g., the size of that country in the world economy. So if the United States were 25 percent of the world economy, any firm with nexus in the United States would have a U.S. tax base equal to 25 percent of its worldwide profits, even if the particular firm did 1% (or 99%) of its activity in the United States. This would strike many as unduly arbitrary.

b. Of course, this assumes that the definition of a unitary business is sufficient to prevent manipulation of the destination of sales. This issue is discussed in §4.2.1.

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