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In this article, Ferry looks at an alternative system for U.S. corporate taxation known as formulary apportionment or sales factor apportionment, and he uses bottom-up analysis of large U.S. corporations to explore how that alternative system could result in revenue gains for the U.S. treasury.

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The U.S. corporate income tax system is failing to deliver for the government and taxpayers. Receipts are falling steadily as a share of corporate profits as corporations exploit loopholes to shift profit out of the reach of the IRS. Sales factor apportionment (SFA) income tax has been proposed as an alternative. I look at the merits of the SFA system and then estimate the potential receipts of an SFA system by individual analysis of 87 large, public U.S. corporations. I find that under an SFA system at the current top rate of 35 percent, tax receipts would have increased by 34 percent to \$460 billion in 2016. Alternatively, the top rate could be cut by 9 percentage points to 26 percent, and the SFA system would deliver total

receipts similar to those gained by Treasury last year while creating a fairer system and closing many loopholes.

I. Problems of Current Corporate Tax System

In the opinion of economists, business leaders, and many political leaders, the U.S. corporate income tax system is out of step with the realities of modern business as well as the tax practices of many other advanced nations. Companies are integrated across national borders. Economic value can be hard to assign to individual nations. Artificial legal distinctions based upon the residence of entities or subsidiaries create profound tax disparities.

The problems go far deeper than the top tax rate, which at 35 percent is higher than most other advanced nations. As Kimberly A. Clausing and Reuven S. Avi-Yonah showed, the top U.S. corporate tax rate has remained in the mid-30 percent range since 1988, while the OECD average corporate tax rate has fallen in that period from the mid-30s to the high-20s.¹ Yet at the same time, average corporate tax receipts in OECD countries have risen over those years from around 2 percent of GDP to close to 3 percent of GDP. Meanwhile, U.S. corporate tax receipts have remained flat as a share of GDP despite surging corporate profits.²

The stagnation in corporate tax receipts is attributable primarily to erosion of the U.S. corporate tax base as U.S. multinational corporations (MNCs) and foreign-domiciled companies assign income and expenses to foreign

¹ Clausing and Avi-Yonah, "Reforming Corporate Taxation in a Global Economy: A Proposal to Adopt Formulary Apportionment," Brookings Institution (June 1, 2007).

² Urban-Brookings Tax Policy Center, "Corporate Income Tax as a Share of GDP, 1946-2015" (May 8, 2017).

jurisdictions. Holding related entities to an arm's-length standard for pricing intracompany transactions, which are inherently self-dealing, makes no sense. Corporations domiciled (incorporated) in the United States are technically required to pay tax on worldwide profits. But deferral allows U.S. MNCs to delay paying U.S. taxes on overseas profits as long as they keep those profits in offshore affiliates. Commentators have estimated that some \$2 trillion in cash is held overseas by U.S. corporations as deferred profit.

Profit-shifting strategies include moving intellectual property, operations, or debt to affiliated companies in low-tax jurisdictions. Apple, for example, has created a complex web of subsidiaries that appear to make no business sense other than to strategically book revenue and expenses. Its Ireland and Singapore affiliates are assigned a disproportionately large part of Apple's global income. Apple's retail affiliates in high-tax countries book much smaller profits because internal transfer pricing strips the income from those entities.

Inversions are another tax avoidance strategy driven by the different tax treatment of companies incorporated in the United States versus foreign countries. A U.S.-headquartered company can shift the location of its headquarters offshore without changing the location of its business activities. Inversions are effective at reducing taxes owed by the formerly U.S. company through such strategies as interest stripping to reduce profit booked by the U.S. entity and by repatriating the deferred offshore profit tax free to the new non-U.S. headquarters. This provides an additional incentive for foreign companies to acquire U.S. companies.

Economists have tried to estimate the loss to the U.S. treasury caused by profit shifting. For example, in a 2016 article Clausing put the loss at between \$77 billion and \$111 billion, roughly one-quarter of total U.S. corporate tax receipts.³ Clausing used regression analysis to estimate the likely international distribution of U.S. multinational profits based on economic indicators like GDP. She then compared that with actual profit reports, such as the \$41 billion of

profit reported by U.S. affiliate companies in the Cayman Islands in 2012 — more than the profit booked in France and Germany combined. Clausing's method highlights the problem but not the solution, because there is yet no credible proposal to eliminate the many diverse techniques of profit shifting.

I tackle the problem in a different way, replacing the legacy corporate tax system with a new system known as SFA corporate income tax. SFA does not eliminate profit shifting but makes it irrelevant for calculating U.S. corporate tax liability. In this article, I estimate the likely potential corporate tax revenue that would result under an SFA system and compare that with current tax revenue. Instead of looking at what is lost under a legacy system that is unbelievably complex, I look at what could be gained under a new, simpler system that lends itself to bottom-up calculation — that is, analysis of tax liability on a company-by-company basis, based on the public financial statements of public companies.

II. SFA Taxation

SFA applies tax at the corporate tax rate schedule to that portion of corporate pre-tax income corresponding to the portion of corporate revenue (sales) that took place in the U.S. market. As a simple example, assume International Widget (IW) had global revenue of \$100 million from selling widgets, of which 50 percent or \$50 million came from selling widgets in the United States. Assume the company earned pre-tax income (profit) of \$10 million worldwide. Under an SFA system, the tax authority would assume that 50 percent of that income was attributable to the United States and would therefore apply the rate (say, 35 percent) to 50 percent of the worldwide income of \$10 million. So IW would pay \$1.75 million ($0.35 * 0.5 * \10 million) in corporate tax.

The advantage of the SFA system is that tax computation depends only on a company's U.S. revenue as a fraction of total revenue and on its global pre-tax profit. This makes it much harder for companies to engage in deliberate tax minimization strategies to reduce their tax liability and distort the system. Public companies have an incentive to avoid minimizing these two figures and indeed powerful incentives to

³ Clausing, "The Effect of Profit Shifting on the Corporate Tax Base in the United States and Beyond," 69 *Nat'l Tax J.* 905 (Dec. 2016).

maximize those figures. Investors evaluate companies based on their profitability and their success in the U.S. market. There are few if any industries in which companies do not want to report success in the U.S. market. Even for private companies, meeting bankers' and other lenders' requests for information often requires disclosure of revenue in major regional or national markets and overall profitability.

In contrast, today's corporate tax system allows excessive leeway to allocate profit earned in the United States to low-tax jurisdictions. With globalized markets and frequent intracompany and cross-border transactions, it is easy to make it appear that profits are "earned" in jurisdictions where there may be few or even zero company employees.

The SFA system is well known and widely used. Most American states that levy a corporate income tax use a version of formulary apportionment. The best-known model is the "Massachusetts formula," in which tax liability is based on the share of assets, employees, and sales that a company has in the jurisdiction during the relevant tax year. However, linking tax to the proportion of assets and employees a company has in the state provides an incentive for a company to move assets and employees out of that state. Sales appears to be the best factor for tax because almost all companies have incentives to increase sales in every jurisdiction, especially large ones like the United States.

A. Broadening the Tax Base

By basing tax on global pre-tax income and the share of revenue generated in the U.S. market, the tax base would be immune from the effects of profit shifting to foreign jurisdictions.

B. Reduce the Incentive for Inversions

The SFA system would apply the same tax to U.S. corporations, whether owned by U.S. or foreign parent companies. Inversions would not yield any tax benefits. However, inversions would still be attractive to companies wishing to avoid tax on their offshore cash hoards acquired in past years. Other measures would be needed to deal with this issue.

C. Elimination of Wasted Resources

Today, thousands of lawyers and accountants are engaged in developing and implementing tax minimization strategies that often involve complex multinational tax structures. This is a waste of valuable human resources and needlessly raises the cost base of U.S. corporations. A simpler corporate tax system would lead to these resources being deployed on projects that build genuine corporate value rather than avoiding taxes.

D. Reduction of Excessive Debt

Tax deferral for offshore cash leads U.S. companies to build up unnecessary debt. For example, when Microsoft purchased social network LinkedIn for \$26 billion, it paid for the deal by selling \$19.8 billion worth of corporate bonds — despite the fact that Microsoft has \$126 billion of liquid assets stashed in offshore affiliates. The tax deferral rules prevented Microsoft from using the offshore cash to pay for LinkedIn, so it sold bonds instead, paying interest rates in the 3-to-4 percent range. Excessive debt is bad for corporate balance sheets, drives up interest rates, and distracts companies from what should be their focus: increasing revenue, profit, and employment.

E. Fairness

Companies would pay the same tax rate on the U.S. share of global pre-tax income irrespective of tax strategies, deductions, loopholes, and the many other tax ploys endemic in the legacy tax system. The current system discriminates against smaller companies that cannot afford the investment in professional tax management resources as well as industries that have fewer loopholes open to them.

F. Simplicity

Every other proposal to reform the corporate income tax system perpetuates the dependence on a need to define U.S. profits and these "earned" in other jurisdictions. Experience has shown that these jurisdictional distinctions can be manipulated and gamed endlessly.

G. International Fairness

Today, foreign companies have a greater opportunity to minimize U.S. corporate tax liability than domestic corporations, with interest stripping one common tactic to reduce U.S. tax liability. The SFA system would make it easier to tax foreign corporations on an equal footing with domestic ones.

III. Estimating Tax Revenue From SFA

Estimating the change in revenue that could flow from a move to an SFA system is complex because there is insufficient publicly available data to fully evaluate the tax affairs and tax liability of corporations under either system.

To obtain insight into the universe of corporate taxpayers, we studied the S&P 100. To calculate their tax liability under an SFA system, we need two key variables for each company: their worldwide pre-tax income and the share of revenue generated in the U.S. market. Public companies are required to file regular disclosures with the SEC, including the annual 10K report. This report provides the pre-tax income data needed. In many cases, companies do not disclose the share of revenue generated in the United States. In most cases there is a broader regional breakdown. When U.S. revenue is not disclosed, we have made a reasonable assumption of the level of U.S. revenue. For example, many companies disclose North American revenue rather than U.S. revenue. For these companies, we have typically assumed that U.S. revenue accounts for 80 percent of North American revenue, a reasonable or slightly conservative assumption given the relative size of the U.S., Canadian, and Mexican markets. (In 2016 the United States accounted for 88 percent of GDP in the three North American countries.) In the case of 13 companies, there was insufficient regional information to make a reasonable assumption, and those companies are excluded from the sample.

It requires some work to ascertain the actual U.S. corporate income tax paid by a large company from its public disclosures. All public companies report “income tax expense” prominently in their income statement. However, this figure is easily misunderstood by those not well versed in financial statements. Income tax

expense is not actual expenditure. It is a figure grouping together federal, state, local, and foreign corporate income tax expenditure in a given period. It also includes deferred expenditure — in other words, sums that the company does not intend to pay in the current period but will instead pay at some unspecified date. This deferred tax “expense” is of no use to the U.S. treasury when it comes to paying the government’s bills.

For example, pharmaceutical giant Pfizer reported an income tax expense for 2016 of \$1.123 billion, which works out to an effective rate of 13.4 percent. However, a closer look reveals that the vast majority of that expense was actually paid to foreign tax authorities, and only \$342 million was paid to the U.S. treasury for corporate income tax. Based on its global pre-tax income of \$8.351 billion, that is an actual U.S. tax rate of 4.1 percent.

AT&T provides another example of how skillful use of tax deferrals can reduce tax liability while providing a cosmetic cover. Last year, AT&T reported income tax expense of \$6.479 billion, producing an effective tax rate of 32.7 percent on global pre-tax income of \$19.8 billion. However, that income tax expense includes deferred federal tax of \$3.1 billion, leaving just \$2.9 billion in actual federal tax paid last year, which leads to an actual U.S. tax rate of 14.7 percent (less than half the statutory top corporate tax rate of 35 percent). Table 1 below shows the 10 leaders in the sample of companies that reduced their publicly cited so-called effective tax rate through tax deferral or overseas tax.

None of the tax avoidance maneuvers cited is illegal; on the contrary, all are legal and part of tax minimization, a key goal of every well-managed finance department. For example, a recent job advertisement from Walgreen’s includes the following in its list of job responsibilities for a tax manager: “Manages the preparation of tax filings which minimize overall tax liability to the company and continually develops tax improvements to minimize liability.”

Table 1. Companies With Large Differences Between Published “Effective Tax Rate” and True Actual U.S. Tax Rate

Company	Published ETR	Actual U.S. Tax Paid	Difference	Notes
Exelon Corp.	38.3%	3%	35.3%	
Ford Motor Corp.	32.2%	-1.8%	34%	Tax refund received in 2016
FedEx Corp.	34.5%	5.9%	28.6%	
Mondelez International Inc.	8.9%	-15.6%	24.5%	Tax refund received in 2016
United Technologies Corp.	23.8%	0.4%	23.4%	
General Motors Co.	20.7%	-1.1%	21.8%	Tax refund received in 2016
CostCo Wholesale Corp.	34.3%	12.9%	21.4%	
Eli Lilly & Co.	18.9%	-1.7%	20.6%	Tax refund received in 2016
Abbott Laboratories	24.8%	5%	19.8%	
Priceline Group Inc.	21.3%	2.3%	19%	

Source: CPA calculations based on company filings.

The SFA corporate income tax system is notable in that it would eliminate both above-mentioned tax minimization strategies. Tax deferrals, which are primarily enabled by keeping cash earned in foreign subsidiaries outside the United States, would no longer be possible because all tax on U.S.-linked income would be payable in the year in which it was incurred. Secondly, foreign corporate tax payments could no longer be credited against U.S. tax to reduce U.S. tax payments. The current U.S. system is a so-called global system in which the U.S. government purports to tax all corporate income wherever in the world it is earned. But the system is so permeated by loopholes, including the ability to use foreign tax payments to reduce U.S. tax liability, that the treasury suffers huge loss of tax revenue. The SFA system is territorial — that is, Treasury would tax only that portion of corporate pre-tax income linked to the U.S. market (via the revenue share) — but it is far simpler and more efficient at producing tax revenue than today’s loophole-riddled, obsolete global system.

Once the actual U.S. corporate tax paid last year by each company in the sample has been identified, that can be compared with the tax the

company would have paid under an SFA system. Table 2 shows the results for 10 of the largest companies in our sample. The table shows that Microsoft paid \$2.7 billion in U.S. corporate tax for the fiscal year that ended June 30. That was just 11.8 percent of its worldwide pre-tax income of \$23.1 billion. Under an SFA system, its taxable income base would have been 50.3 percent of that worldwide income because 50.3 percent of Microsoft’s fiscal 2017 revenue was attributed to the U.S. market (Microsoft breaks out U.S. revenue specifically in its SEC disclosures). Under an SFA tax system, if the tax rate remained at 35 percent, we would apply that rate to 50.3 percent of Microsoft’s pre-tax income to produce a tax liability of \$4.08 billion. That’s a walloping 49 percent increase in Microsoft’s tax bill for the year. Note, however, that while the tax rate is 35 percent on its U.S. pre-tax income, it’s only 17.6 percent on its worldwide income.

Not every company would have a bigger tax bill under an SFA system. Apple paid a lot of tax in 2016 and would have paid less under SFA. But when totaling the impact on all 87 companies in our sample, the SFA system would yield tax revenue of \$131 billion, a 36 percent increase on the total of \$96.2 billion paid by the sample companies.

Table 2. Top 10 Companies, Tax Under Current Corporate Tax Systems Compared to SFA Tax

Number	Company	Actual U.S. Tax Paid MRY ^a (dollars in billions)	Worldwide Pre-Tax Income (dollars in billions)	Total Revenue (dollars in billions)	U.S. Revenue ^b (dollars in billions)	U.S. Revenue Share	SFA U.S. Tax at 35% Rate (dollars in billions)	Additional Tax Revenue at 35% (dollars in billions)	SEA U.S. Tax at 25% Rate (dollars in billions)	Additional Tax Revenue at 25% (dollars in billions)	True U.S. Tax Rate	U.S. Tax Rate Under SFA 35%	U.S. Tax Rate Under SFA 25%
1	Apple Inc.	\$7,652	\$61,372	\$215,639	\$60,629	28.1%	\$6,039	-\$1,613	\$4,486	-\$3,166	12.5%	9.8%	7.3%
2	Microsoft Corp.	\$2,739	\$23,149	\$89,950	\$45,248	50.3%	\$4,076	\$1,337	\$3,028	\$289	11.8%	17.6%	13.1%
3	Alphabet Inc. (Google)	\$3,520	\$24,150	\$90,272	\$42,781	47.4%	\$4,006	\$486	\$2,976	-\$544	14.6%	16.6%	12.3%
4	Johnson & Johnson	\$1,896	\$19,803	\$71,890	\$37,811	52.6%	\$3,645	\$1,749	\$2,708	\$812	9.6%	18.4%	13.7%
5	The Procter & Gamble Co.	\$1,531	\$13,257	\$65,058	\$23,421	36%	\$1,670	\$139	\$1,241	-\$290	11.5%	12.6%	9.4%
6	Allergan PLC	-\$18	-\$2,832	\$14,571	\$11,736	80.5%	\$0	\$18	\$0	\$18	0.6%	0%	0%
7	Altria Group Inc.	\$4,093	\$21,852	\$19,337	\$25,744	100%	\$7,648	\$3,555	\$5,682	\$1,589	18.7%	35%	26%
8	Wal-Mart Stores Inc.	\$3,454	\$20,497	\$485,873	\$367,784	75.7%	\$5,430	\$1,976	\$4,034	\$580	16.9%	26.5%	19.7%
9	Gilead Sciences Inc.	\$3,351	\$17,097	\$30,390	\$17,716	58.3%	\$3,488	\$137	\$2,591	-\$760	19.6%	20.4%	15.2%
10	Verizon Communications Inc.	\$7,451	\$20,986	\$125,980	\$100,784	80%	\$5,876	-\$1,575	\$4,365	-\$3,086	35.5%	28%	20.8%
	Totals, top 10	\$30,670	\$219,331	\$1,208,960	\$733,654	60.7%	\$41,880	\$6,210	\$31,111	-\$4,559	16.3%	19.1%	14.2%
	Totals, full sample	\$96,229	\$636,756	\$5,096,788	\$3,167,530	62.1%	\$131,151	\$34,923	\$97,427	\$1,198	15.1%	20.6%	15.3%

Source: CPA calculations based on company filings.

^aMRY = Most recent fiscal year.

^bSome estimates based on North American revenue.

^cCurrent U.S. corporate tax paid divided by worldwide pre-tax income.

Table 3. Estimated Total U.S. Corporate Tax Revenue in SFA System, Two Scenarios

	Percentage of Total	Current Projected Receipts	Uplift Under SFA (percentage)	Uplift Under SFA (dollars in billions)	Totals Under SFA 35%	Uplift Under SFA (percentage)	Uplift Under SFA (dollars in billions)	Totals Under SFA Scenario 2
Receipts from companies paying > \$100 million	69%	\$237	41%	\$97.32	\$334.68	1%	\$2.14	\$239.5
Receipts from companies paying > \$1 to \$100 million	27%	\$93	20.5%	\$19.04	\$111.92	0.5%	\$0.42	\$93.3
Receipts from companies paying < \$100 million	4%	\$14	0%	\$0	\$13.76	0%	\$0	\$13.76
Total corporate tax receipts 2016	100%	\$344	33.8%	\$116.36	\$460.36	0.7%	\$2.55	\$346.55
<i>Source:</i> CPA calculations based on company filings.								

Next, we gross-up our estimates from our 87 sample companies to provide an estimate of the impact of an SFA system on total U.S. corporate tax receipts. Figures from the IRS show that companies paying more than \$100 million in tax provided 69 percent of Treasury's receipts in 2013, the latest year for which a breakdown is available. Our sample includes about 40 percent of the corporations with tax bills exceeding \$100 million. Companies paying between \$1 million and \$100 million in tax provided 27 percent of corporate tax receipts, and companies paying less than \$1 million provided the remaining 4 percent. I assume that all the over-\$100 million companies would deliver the same 36 percent average uplift in tax receipts under the SFA as our sample. I assume that the midsize companies would deliver half the uplift because they are less aggressive at using tax minimization strategies in the current system. Finally, I assume that the smaller companies' tax bills would not change and they would deliver the same \$14 billion to Treasury under the SFA as they did in 2016. Note that the tax totals in 2016 are estimates, based on the assumption that corporate tax revenue in 2016 will be the same \$344 billion as it was in 2015, the latest published figure from the IRS. This is a reasonable assumption given that some experts forecast higher tax take in 2016, while the

Congressional Budget Office has forecast a lower tax take for the current fiscal year.

As Table 3 shows, under an SFA tax at 35 percent, U.S. corporations would have paid a total of \$460 billion in tax last year, 34 percent more than they paid in our model. That extra \$116 billion is a large sum and could be used in several ways. For example, it could be used for a 7.25 percent cut in individual income taxes or an increase in spending on federal programs. However, a cut in the top rate of corporate income tax is a priority for many political and business leaders since U.S. corporate tax rates now stand out as among the highest of advanced nations. Table 3 shows that if the SFA system were implemented, the top corporate tax rate of 35 percent could be cut at a stroke by 9 percentage points, to 26 percent, yet would still generate slightly more revenue than the current system. The longer-term benefits of an SFA system described above are perhaps even more important than the revenue benefits.

One consideration is that an SFA system does expose some U.S. corporate profits to double taxation, if a U.S. corporation is a subsidiary of a foreign-headquartered corporation that operates under a global tax system. While this is likely to be a minor problem, it's worth noting that an SFA system will work best if it were adopted by many nations, each of which would then be taxing the

profits that could be attributed to revenue generated in its own market. Nations other than the United States with global tax systems are also suffering base erosion from the shifting of profit to tax havens and thus have an incentive to opt for an SFA.

Table 4. Actual U.S. Tax Rate by Industry Sector

Sector	Actual U.S. Tax Rate 2016
Utilities — electrical	9.7%
Semiconductors and communications technologies	10.6%
Medical equipment	11.8%
Computers, hardware, software, services	12%
Diversified retail	12%
Pharmaceuticals	13.9%
Beverages	14.2%
Personal care	15.5%
Diversified manufacturing	15.5%
Restaurants	15.8%
Aerospace	15.9%
Transportation services	16.5%
Diversified media	18.8%
Biotech	20.9%
Cable TV services	21.1%
Financial data and systems	22%
Utilities — telecommunications	25.4%
Drug and grocery store chains	27.6%
Insurance	34.6%

Source: CPA calculations based on company filings.

Finally, I look at how the current tax system affects different sectors of the economy. The 87 companies are separated into industry sectors and the average tax rate in each sector. The results are presented in Table 4. Semiconductor, computer hardware and software, and pharmaceutical companies pay far lower actual tax rates than many other companies, in part because they can shift IP to low-tax jurisdictions. Manufacturing companies are in the middle of the spectrum, while telecommunications providers, drug store chains, and insurance companies pay higher levels of tax. This favoritism to some industries does not result from conscious policy decisions but rather is the product of loopholes that have been inserted into the tax code since the 1980s — and aggressive exploitation of those loopholes by some industries.

IV. Conclusion

The analysis shows that an SFA tax system holds out the prospect of delivering an immediate uplift of some 30 percent to 40 percent in tax receipts. That uplift could be used to deliver more federal revenue or fund a cut of 9 percentage points in the top corporate tax rate, taking it from today's 35 percent to 26 percent. Also, an SFA system would deliver other benefits including greater fairness and an elimination of much of the tax base erosion that continues to be a large problem for the corporate tax system. ■

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