

## Deconstructing the Fair Tax

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Reprinted from *Tax Notes Federal*, March 27, 2023, p. 2169

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In this article, Gale and Pomerleau assess the feasibility of the Fair Tax, analyzing the required tax-inclusive rate and the proposal's implications for simplicity, tax administration, economic growth, and distribution of the tax burden.

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In a deal that secured Rep. Kevin McCarthy, R-Calif., the speakership, Republicans plan to vote on a bill (H.R. 25) to enact the “Fair Tax.”<sup>1</sup> Introduced by Rep. Earl L. “Buddy” Carter, R-Ga., the Fair Tax would replace federal personal income, corporate income, payroll, and estate and gift taxes with a national retail sales tax. The proposal would create a “family consumption allowance,” a type of universal basic income. The bill would also eliminate the IRS and has a trigger that would eliminate the sales tax if the 16th Amendment were not repealed in seven years.

The Fair Tax is not a new proposal; it was originally developed and pushed by Americans for Fair Taxation, a group established in Houston in the mid-1990s. The Fair Tax was first introduced in Congress by then-Rep. John Linder in 1999 and has been reintroduced in each subsequent Congress. Initially, the bill had between 51 and 83 cosponsors, but recently it has dwindled in popularity, attracting closer to 24 cosponsors.<sup>2</sup>

In this article, we review the Fair Tax proposal and conclude that it is essentially unworkable. First, the rate would need to be far higher than advertised. The cited rate of 23 percent is tax inclusive. This corresponds to a 30 percent tax-exclusive rate, which would be the actual markup at the cash register. These rates, however, would be insufficient to replace income, payroll, and estate and gift tax revenue under current law. When the Fair Tax proponents calculated the required rate, they either made a mistake with the math, as explained below, or built in cuts in government spending. We show that even under the optimistic assumptions that the tax would

<sup>1</sup> Ari Blaff, “House Republicans to Vote on Bill to Abolish IRS,” *National Review*, Jan. 10, 2023.

<sup>2</sup> Grover Norquist, “A National Sales Tax Is a Terrible Idea,” *The Atlantic*, Jan. 23, 2023; Natasha Sarin, “There’s Nothing Fair About Republicans’ Fair Tax Proposal,” *The Washington Post*, Feb. 13, 2023.

generate no avoidance or evasion, maintaining current-law federal revenue and keeping federal spending constant in real terms would require a tax-inclusive rate of about 28 percent over the next decade, corresponding to a 39 percent tax-exclusive rate. Alternatively, if the tax-inclusive rate remained at 23 percent, either federal deficits would rise or government spending would need to be cut by nearly \$10 trillion over the next decade.

No tax is free of evasion (illegal underpayment of taxes owed) or avoidance (legal changes in activity to reduce one's tax burden). If one assumes that the Fair Tax would generate the same rate of evasion as the income tax (but no avoidance), the required tax-inclusive rate rises to 34.1 percent (a 51.7 percent markup at the cash register). Under those circumstances, the revenue loss of a 23 percent tax-inclusive rate would equal almost \$18 trillion over the next decade.

Similarly, virtually no tax is free of exclusions or exemptions. If one assumes that, in addition to the evasion rates noted above, the Fair Tax base is reduced by exempting state and local governments (or rebating their Fair Tax payments) and a small portion of necessities, the required tax-inclusive rate rises to 46.1 percent over the next decade, representing a tax-exclusive rate, or markup at the cash register, of 85.5 percent. Enacting a 23 percent tax-inclusive rate under those conditions would result in a budgetary shortfall of approximately \$27.7 trillion over the next decade.

### I. The Fair Tax Proposal

The Fair Tax Act of 2023 (H.R. 25) would replace the federal individual income tax, corporate income tax, payroll taxes, and the estate and gift tax with a national retail sales tax.

In the first year of enactment (2025), the tax rate would be 23 percent (tax-inclusive), and 64.83 percent of total revenue would be allocated to general revenue, 27.43 percent to the Old-Age and Survivors Insurance and disability trust funds, and 7.74 percent to the hospital insurance and federal supplementary medical insurance trust funds. After that, the tax rate would vary based on government spending. It would be the sum of three components: a 14.91 percent sales tax to cover general fund spending, plus two variable

rate sales taxes to cover trust fund spending as determined by the Social Security Administration.

The base of the sales tax would be broad, including most domestic private consumption in the United States and investment and consumption expenditures by federal, state, and local governments.

The Fair Tax would apply to some sectors that are typically exempt from sales taxes at the state level, such as housing. Rent payments by consumers would be subject to tax, while the imputed rent homeowners pay themselves would be exempt. New home sales would be taxed, but sales of existing homes would not. The base would also include financial service fees. All fees paid directly for services, as well as implicit fees built into interest payments, would be taxed, with the sales tax applied to interest payments exceeding a basic interest rate determined by Treasury rates. This would apply to all interest payments, including on credit card and mortgage debt.

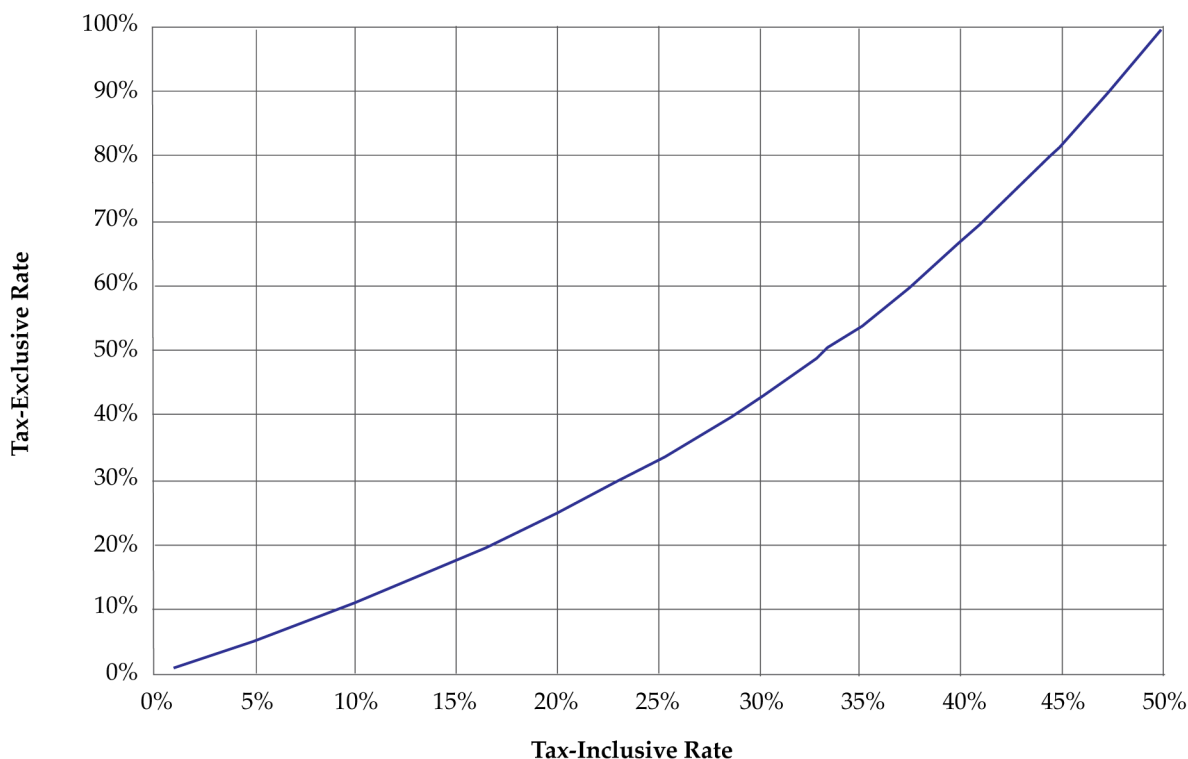
The base of the sales tax would exclude some goods and services. Both private and state and locally provided education and training services would be exempt under the theory that they represent investments in human capital. In addition, food produced and consumed on farms would be exempt for administrative reasons. Lastly, the Fair Tax would not apply to state and local sales taxes, but it would apply to state and local government consumption and investment spending.

The sales tax would be destination-based. As such, it would be border-adjusted and apply to all imports and exempt exports.

The Fair Tax would also enact a family consumption allowance. That allowance would be a monthly, universal, unconditional transfer payment similar to a universal basic income. The family consumption allowance is meant to cover a household's annual consumption up to the federal poverty level and introduces a level of progressivity to the proposal. A household receives a monthly payment roughly based on the federal poverty level for that household times the tax-inclusive sales tax rate.

The proposal would eliminate the IRS and "give the states the responsibility for

The Relationship Between Tax-Inclusive and Tax-Exclusive Rates



Source: Authors' calculations.

administering, collecting, and remitting" the tax. States could keep 0.25 percent of total sales tax collections to offset the cost of administration. If a state chose not to administer the Fair Tax, Treasury would administer that state's tax. The Fair Tax would also allow businesses to keep 0.25 percent of Fair Tax collections to offset the burden of complying with the sales tax.

Finally, the bill has a trigger that would terminate the sales tax if the 16th Amendment of the Constitution is not repealed after seven years.

## II. The Required Fair Tax Rate

### A. Defining Tax Rates

The Fair Tax rate is generally advertised as 23 percent, at least in the first year of enactment. It is worth clarifying that this 23 percent rate is tax inclusive, which is different from a tax-exclusive rate.

To explain the difference, consider a good with a pretax price (P) of \$100. If a \$30 sales tax (T)

is placed on top of that price, the tax-exclusive sales tax rate is  $T/P$ , which is the ratio of the tax to the pretax price (that is, the tax payment is excluded from the denominator). In this example, it would be 30 percent ( $\$30/\$100$ ). The markup at the cash register is the tax-exclusive rate.

In contrast, the tax-inclusive sales tax rate is the ratio of the tax payment to the total cost of the good (including both the pretax price and the tax payment). This is given by  $T/(P + T)$ . In this example, the tax-inclusive sales tax rate would be about 23 percent ( $\$30/\$130$ ).

For positive tax rates, the tax-inclusive rate is always less than the tax-exclusive rate. The two rates are related by  $TI = TE/(1 + TE)$ , where TI is the tax-inclusive rate, and TE is the tax-exclusive rate. The difference between the two rates increases as they get larger — a 9.1 percent tax-inclusive rate corresponds to a 10 percent tax-exclusive rate, but a 50 percent tax-inclusive rate corresponds to a 100 percent tax-exclusive rate.

(see figure). Tax-inclusive rates cannot exceed 100 percent, but tax-exclusive rates can.

There is no right or wrong way to express tax rates, but public discussion of the Fair Tax could be improved if the difference between the two rates were clarified. Income taxes are typically quoted in tax-inclusive terms, and sales taxes, like the Fair Tax, are typically quoted in tax-exclusive terms. For example, someone earning \$130 and paying \$30 in income taxes would generally think they are paying a 23 percent tax. However, someone paying \$30 in sales tax on a \$100 pretax purchase would typically think they are paying a 30 percent tax.

## B. Required Tax Rate

We examine the required rate of the Fair Tax under various scenarios.<sup>3</sup> Each scenario assumes that the real (inflation-adjusted) size of government and real revenue would remain the same under the sales tax as they are under current law. This permits apples-to-apples comparisons: examining different ways of financing the same set of government policies.

Appendix I develops equations for the required tax rate in a national retail sales tax. The formula for the required rate (as a function of taxes to be replaced, the tax base, avoidance, evasion, etc.) is provided, and two significant “neutrality” properties are displayed. First, taxing federal government purchases in a federal retail sales tax does not affect the required tax rate; it simply increases required federal spending to pay for the tax by the same amount as it raises federal revenue from the tax. Second, the required tax rate does not depend on the extent to which the switch to a sales tax creates higher consumer prices versus lower producer prices (as long as the assumptions about the change in the price level are consistent when considering revenue and spending).

We estimate that the required rate would need to be higher than the advertised rate. The first

panel of Table 1 shows the required sales tax rate under the strong optimistic assumptions outlined in H.R. 25: no avoidance, no evasion, and no legislative erosion of the tax base. Even with a base that includes almost all private consumption, government consumption, and government investment purchases, the national retail sales tax rate would need to be 28 percent tax-inclusive (39 percent tax-exclusive) to be revenue neutral and hold government spending on programs constant in real terms relative to current law over the next 10 years. Supporting calculations can be found in Appendix II.

If H.R. 25 were enacted at a 23 percent tax-inclusive rate, the resulting revenue loss relative to current law would be \$798 billion in 2023, \$1.2 trillion in 2032, and nearly \$10 trillion over the next decade — even before considering any potential evasion, avoidance, or legislative erosion of the tax base (see the first panel of Table 1).

## C. Why Not 23 Percent?

In this section, we explain why the 23 percent rate is incorrect and illustrate this point with a simple example.

The difference between the rate calculated above and the 23 percent tax-inclusive rate used in H.R. 25 can be attributed to a mathematical or logical mistake made by advocates of the national retail sales tax, as explained in Appendix I. When estimating government revenue under the sales tax, advocates (implicitly) assumed that consumer prices (what consumers pay, including the sales tax) would rise by the full amount of the sales tax and that producer prices (what producers receive, net of the sales tax) would remain constant. But when estimating government spending, they (implicitly) assumed that consumer prices would remain constant and that producer prices would fall by the full amount of the tax. These assumptions are inconsistent. Either the first assumption overstates nominal revenue or the second assumption understates nominal required spending, or both. This error results in the incorrect conclusion that the government could raise net revenue by taxing itself. The designers of the Fair Tax therefore built in (perhaps inadvertently) a cut in government spending or an increase in federal deficits when they set the rate at 23 percent.

<sup>3</sup>For previous estimates of the required rate, see William G. Gale, “The National Retail Sales Tax: What Would the Rate Have to Be?” *Tax Notes*, May 16, 2005, p. 889; the President’s Advisory Panel on Federal Tax Reform, “Simple, Fair, and Pro-Growth: Proposals to Fix America’s Tax System” (Nov. 2005); and Lindy L. Paull, “Budget Neutral Tax Rate for H.R. 25” (Apr. 2000) (reprinted in Martin A. Sullivan, “The Rise and Fall of the National Sales Tax,” *Tax Notes*, Nov. 15, 2004, p. 916). This section and the appendixes are based on Gale 2005, *supra*.



Table 1. Summary of Results: Required Revenue-Neutral Fair Tax Rates and Revenue Loss at Alternative Rates Relative to Current Law

	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2023-2032
<b>Maintain current law revenue and spending</b>											
Required tax-inclusive rate (%)	27.8	27.6	27	27.8	28.4	28.2	28.2	28.3	28.4	28.5	28
Required tax-exclusive rate (%)	38.5	38.2	36.9	38.5	39.6	39.3	39.3	39.4	39.6	39.9	39
Revenue loss at 23% tax-inclusive rate (\$ billions)	798	802	713	886	1,032	1,036	1,081	1,133	1,191	1,268	9,939
<b>Maintain current law revenue and spending plus allow for 17% evasion and avoidance</b>											
Required tax-inclusive rate (%)	33.7	33.6	32.8	33.7	34.5	34.3	34.3	34.4	34.5	34.7	34.1
Required tax-exclusive rate (%)	50.9	50.5	48.7	50.9	52.6	52.1	52.2	52.4	52.6	53	51.7
Revenue loss at 23% tax-inclusive rate (\$ billions)	1,473	1,504	1,440	1,639	1,812	1,846	1,922	2,007	2,099	2,212	17,955
<b>Maintain current law revenue and spending plus allow for 17% evasion and avoidance and modest legislative erosion of the tax base</b>											
Required tax-inclusive rate (%)	45.6	45.3	44.3	45.6	46.6	46.3	46.4	46.5	46.7	47	46.1
Required tax-exclusive rate (%)	83.7	82.9	79.4	83.8	87.2	86.3	86.6	87	87.6	88.5	85.5
Revenue loss at 23% tax-inclusive rate (\$ billions)	2,290	2,354	2,320	2,551	2,757	2,826	2,941	3,066	3,199	3,354	27,659
<i>Source:</i> Authors' calculations based Congressional Budget Office and National Income and Product Accounts data. See appendices for method and underlying data.											

To demonstrate this, consider the following simplified example (see Table 2).<sup>4</sup> In 2023 the taxes that the Fair Tax would replace (individual income, corporate income, payroll, and estate and gift taxes) are projected to raise \$4.6 trillion. The statutory Fair Tax base (including private consumption and government consumption and investment expenditures) is estimated to be \$20.2 trillion. Excluding consumption financed by the family consumption allowance (\$3.6 trillion), the effective tax base is \$16.6 trillion. Dividing the revenue needed (\$4.6 trillion) by the effective tax base (\$17.2 trillion) yields a required tax-inclusive rate of 27.8 percent, corresponding to a tax-exclusive rate of 38.5 percent.

**Table 2. Example Fair Tax Tax-Inclusive Rate Calculation, 2023 (\$ billions)**

Private consumption base	\$17,265
Plus: state and local consumption and investment	\$1,611
Plus: federal consumption and investment	\$1,320
Minus: allowance	-\$3,556
Equals: effective base	\$16,641
Revenue to replace	\$4,625
Required inclusive rate (revenue to replace/effective base)	27.8%
Required exclusive rate (inclusive rate/(1 - inclusive rate))	38.5%
<p><i>Source:</i> Authors' calculations based on CBO and National Income and Product Accounts data.</p> <p><i>Note:</i> This calculation assumes that consumer prices are held constant and producer prices fall. Federal consumption and investment expenditures are included in the calculation to match the statutory base outlined in H.R. 25. However, their inclusion does not affect the required sales tax rate. If federal government consumption and investment were excluded from the base, nominal federal spending would be able to fall to hold real purchases constant, resulting in the same required sales tax rate. See Appendix I for more details.</p>	

Although the federal government taxing itself would not raise any net revenue, applying the sales tax to government purchases is still good

policy. The Fair Tax's goal is to tax all value added in the U.S. economy, including value added by the government. Excluding government purchases from the tax base would, similarly to excluding private purchases, distort economic decision-making. If excluded, the provision of government services (for example, trash collection) would gain a competitive advantage over the private provision of the same good or service.

### III. Evasion and Avoidance

The estimates above assume no tax avoidance and no tax evasion under the sales tax. These assumptions are unrealistic. A national retail sales tax — like virtually every other tax — would offer numerous channels for avoidance and evasion.

Several channels of evasion are due to the structure of the retail sales tax. A retail sales tax is charged only once, at the cash register, when a good is purchased for final consumption.

First, business-to-business transactions are not subject to tax. Thus, taxpayers could combine business activity — which is generally exempt from retail sales taxation — with personal consumption.

Second, consumers could purchase items from offshore entities (which companies would have an incentive to create) and not pay taxes on the purchases. Under H.R. 25, the purchaser would be responsible for reporting the payment to the government. The enforcement of state-level use taxes and voluntary filings has been “dismal at best,”<sup>5</sup> and the applicable tax rates for those taxes are far lower than the rates that would prevail in a national retail sales tax. The evasion rate on international sales that face higher tax rates would be even larger than on use taxes.

Third, it would prove difficult to collect high-rate sales taxes from small-scale retailers and service providers (for example, dog sitters, house painters, and private tutors). More generally, the two parties to a sale would have incentives to report lower-than-accurate transaction prices to the government and split the tax savings in some manner. Or they might be able to structure sales

<sup>4</sup> Appendix I provides a detailed mathematical treatment of these issues.

<sup>5</sup> Matthew N. Murray, “Would Tax Evasion and Tax Avoidance Undermine a National Retail Sales Tax?” 50 *Nat'l Tax J.* 167 (1997).

with financing or other mechanisms that can avoid the tax.

Fourth, more generally, a key structural issue with a retail sales tax is the lack of third-party reporting. Tax on retail sales would be collected from businesses, but there would be no third-party withholding or reporting. The lack of third-party reporting would be an important determinant of the level of evasion. Under the income tax, the rate of evasion is around 17.6 percent but varies greatly by arrangements for withholding and third-party reporting.<sup>6</sup> For income on which taxes are withheld and reported to the government by a third party (primarily wages), the evasion rate is about 1 percent. At the other extreme, for income on which taxes are not withheld and there is no third-party reporting — primarily sole proprietorships and farms — the evasion rate is 55 percent or more.

In contrast to a retail sales tax, VATs are structured to create a “paper trail.”<sup>7</sup> Under a VAT, tax is collected at each stage of production. A business collects VAT on all its sales (including to other businesses) and receives a credit for any VAT paid on purchases. The same amount of tax is ultimately collected under a VAT as would be collected under a well-functioning retail sales tax, but it is collected in smaller amounts at each stage of production. This has two implications. First, if any business avoids taxation, it represents a smaller loss of revenue than if a company evaded taxes under a retail sales tax.<sup>8</sup> Second, VATs have a self-enforcement mechanism. In a business-to-business transaction, the purchaser has an incentive to report the transaction to the government to receive a tax credit on the purchase. The seller, knowing that the purchaser has reported the transaction, also has an incentive to report the transaction and pay the tax.

Even so, VATs with high rates suffer from avoidance and evasion. In OECD countries in 2021, the average VAT gap was 11.1 percent of the total VAT base, even though the average normal

VAT rate was just 17.1 percent.<sup>9</sup> Evasion would be higher under a retail sales tax with even higher rates.

Finally, recall that under H.R. 25, the IRS would be abolished, and states would be entrusted to enforce a federal tax that has never existed before and thus has no legislative or legal history. There is a saying in public finance that “an old tax is a good tax.” The reason is that in old taxes, definitions have been established, lines drawn, boundaries determined, etc.

For all those reasons, it seems unlikely that a high-rate retail sales tax would be enforced well. Several commentators have concluded that national retail sales taxes would face significant evasion and avoidance if the sales tax rate crept up much beyond 10 percent,<sup>10</sup> and that evasion would likely be higher than they can estimate with available evidence.<sup>11</sup>

Proponents of the Fair Tax also overstate the proposal’s ability to tax the underground economy. Fair Tax literature famously cites an example of a criminal.<sup>12</sup> Under the income and payroll tax, the criminal does not pay tax on the income from any illicit activity. They claim that under a national retail sales tax, the criminal can no longer avoid paying tax because when the

<sup>9</sup> Calculated using figures from Table 2.A.1 and section 2.10.1 in OECD, *Consumption Tax Trends 2022: VAT/GST and Excise, Core Design Features and Trends* (2022); Figure III.3 in United Nations, “Fiscal Policy Amid the Crisis Arising From the Coronavirus Disease (COVID-19) Pandemic” (2020); and European Commission et al., “VAT Gap in the EU: Report 2021” (2021). Averages weighted by 2021 GDP. VAT gap data were unavailable for Iceland, Israel, Japan, Korea, New Zealand, Norway, Switzerland, and Turkey. VAT gap data are from 2019 for Chile, Colombia, Costa Rica, Mexico, and EU countries.

<sup>10</sup> See Bruce Bartlett, “Replacing Federal Taxes With a Sales Tax,” *Tax Notes*, Aug. 21, 1995, p. 997; Milka Casanegra de Jantscher, “Problem in Administering a Consumption Tax,” in *The Consumption Tax* (1987); Charles E. McLure, *The Value-Added Tax: Key to Deficit Reduction?* (1987); John L. Mikesell, “The American Retail Sales Tax: Considerations on Their Structure, Operations, and Potential as a Foundation for a Federal Sales Tax,” 50 *Nat’l Tax J.* 149 (Mar. 1997); Murray, *supra* note 5; OECD, *Consumption Tax Trends* (1998); Joel Slemrod, “Which Is the Simplest Tax System of Them All?” in *Economic Effects of Fundamental Tax Reform* (1996); Alan A. Tait, *Value Added Tax: International Practice and Problems* (1988); Vito Tanzi, *Taxation in an Integrating World* (1995); and “VAT in Drag,” *The Wall Street Journal*, July 19, 1996.

<sup>11</sup> Unfortunately, there is little evidence from the states to gauge how extensive evasion would be under a national retail sales tax. Evasion in a federal sales tax would likely be significantly higher than in existing state taxes, because state sales tax rates have substantially lower rates than a national retail sales tax would, and states can piggyback on federal enforcement efforts, which are in turn aided by the existence of an income tax with its various reporting requirements.

<sup>12</sup> Neal Boortz and John Linder, *The Fair Tax Book: Saying Goodbye to the Income Tax and the IRS* (2005).

<sup>6</sup> IRS Publication 1415, “Federal Tax Compliance Research: Tax Gap Estimates for Tax Years 2014-2016” (Oct. 2022).

<sup>7</sup> Dina Pomeranz, “No Taxation Without Information: Deterrence and Self-Enforcement in the Value Added Tax,” 105 *Am. Econ. Rev.* 2539 (2015).

<sup>8</sup> Alan D. Viard, “Rethink Tax Policy to Address the Long-Term Fiscal Imbalance,” in *Governing Priorities* (2020).



illicit gains are spent, they are taxed at the cash register. However, proponents are missing the other side of the transaction. Under current law, the criminal's customer is paying for illicit goods and services with after-tax income. Under the Fair Tax, this customer would no longer face income or payroll tax and would pay for the goods or services with pretax income. The criminal would presumably not remit sales taxes for the sale, allowing that transaction to go tax free. As a result, the net amount of evasion, in this case, doesn't change. The only difference is where the evasion happens.<sup>13</sup>

Even modest adjustments for evasion and avoidance significantly raise the required tax rate and raise the revenue loss from imposing a 23 percent (tax-inclusive) tax rate. For example, if evasion occurred at roughly the same rate in the sales tax as in the income tax (17 percent) and avoidance was nonexistent (or if the combined avoidance and evasion rate in the sales tax equaled the evasion rate in the income tax), the required rate would be 34.1 percent on a tax-inclusive basis and 51.7 percent on a tax-exclusive basis (see the second panel of Table 1). Imposing the Fair Tax at a 23 percent tax-inclusive rate under those circumstances would reduce revenue by \$17.9 trillion over the next decade.

#### IV. Legislative Base Erosion

H.R. 25 assumes that virtually all domestic consumption is taxable (see Appendix Table A3). This is ideal from a policy perspective because a broad base allows the tax to raise more revenue with fewer distortions. In practice, however, no existing income or consumption tax comes close to meeting that standard. Some items are difficult to tax, some are exempt for economic and social

policy reasons, and some are exempt because of powerful political constituencies.

Using 2019 data, we show that the sales tax base in H.R. 25 covers 92.5 percent of personal consumption expenditures (PCEs) (Appendix Table A3) and 65.7 percent of GDP. These ratios are far higher than most existing consumption taxes around the world. As of 2020, VAT revenue ratios, which show how much revenue VATs actually raise relative to what they would raise with a broad base that taxed all consumption at the normal rate, imply that VATs cover about 56 percent of consumption, on average, in OECD countries. In only one country, New Zealand, does the ratio indicate that the VAT covers more than 75 percent of consumption.<sup>14</sup>

Likewise, in 2018 state sales taxes varied widely across states and applied to less than 40 percent of private consumption of goods and services on average.<sup>15</sup> Paradoxically, many states' sales taxes are also too inclusive in one respect: They improperly tax business-to-business transactions. This suggests that a well-structured national broad-based retail sales tax could be challenging to implement.

The ratio of the tax base to consumption in H.R. 25 is substantially higher than in other consumption tax proposals. Daniel R. Feenberg, Andrew W. Mitrusi, and James M. Poterba use a broad taxable private consumption base that constitutes 83 percent of PCEs.<sup>16</sup> Gilbert Metcalf developed a broad taxable sales tax base that is about 80 percent of PCEs.<sup>17</sup> The Congressional Budget Office defined a "broad" consumption tax base as one that covers about 80 percent of PCEs, including all transactions that could be easily taxed on the product side.<sup>18</sup> A narrower base that restores some of the preferential treatment that exists in the income tax represents only 60 percent of PCEs.

<sup>13</sup> For a careful analysis, see James R. Hines, "Might Fundamental Tax Reform Increase Criminal Activity?" in 71 *Economica* 483 (Aug. 2004). The classic example is a drug dealer who doesn't pay income tax on the money he earns but would be forced to pay sales taxes under a national retail sales tax if he took the funds and bought, for example, a Mercedes. The problem with this argument is laid out by Richard K. Armey, "Caveat Emptor: The Case Against the National Sales Tax," 73 *Pol'y Rev.* 31 (Summer 1995): "If there is an income tax in place, [the drug dealer] won't report his income. If there is a sales tax in place, he won't collect taxes from his customers" and send the taxes to the government. In the end, to a first-order approximation, neither system taxes the drug trade. However, some additional effects may complicate the analysis. For example, the effective tax rate on drug dealers and their customers may differ, and the drugs may be purchased with income generated illegally.

<sup>14</sup> Table 2.A.7 in OECD 2022, *supra* note 9. Average is weighted by 2020 GDP.

<sup>15</sup> Nikhita Airi and Frank Sammartino, "How Broad Are State Sales Tax Bases?" Tax Policy Center (2021).

<sup>16</sup> Feenberg, Mitrusi, and Poterba, "Distributional Effects of Adopting a National Retail Sales Tax," in *Tax Policy and the Economy* (1997).

<sup>17</sup> Metcalf, "The National Sales Tax: Who Bears the Burden?" Policy Analysis No. 289, Cato Institute (1997).

<sup>18</sup> CBO, "Comparing Income and Consumption Tax Bases" (1997).

In thinking about the likely importance of legislative adjustments away from the pure H.R. 25 consumption tax base, it is useful to note that expenditures on health, housing, and food (excluding restaurant meals) account for about 40 percent of all PCEs in the United States.<sup>19</sup> Under current law, federal income and payroll taxes provide significant exemptions for housing and health, and state sales taxes impose relatively light burdens on housing, health, and food. Likewise, no state taxes interest payments on mortgages and credit cards under its retail sales tax.

It seems unlikely that Congress or the administration would have the discipline to oppose the political pressure that would come from imposing a 34.1 percent tax-inclusive (51.7 percent tax-exclusive) rate on those items. It seems much more reasonable to assume that political lobbies, administrative factors, or the desire to introduce economic incentives and social policy adjustments will reduce the proposed consumption tax base and thus raise the required tax rate further.

In addition, there are several reasons why state and local government purchases may not end up in a national retail sales tax base (or, to avoid unfairly subsidizing government services, state and local government purchases might be included but rebated, with the same revenue effect as not including the purchases in the base to begin with). First, including them would reduce the required federal tax rate but not the overall burden on taxpayers. After all, state and local government purchases (and the federal sales taxes that would have to be paid on them) are financed by state and local taxes. Further, taxing state and local government purchases would be strongly opposed by the states. For these reasons, it is worth considering the effects of removing state and local purchases from the tax base (or rebating their federal sales tax payments).

The third panel of Table 1 shows results including avoidance and evasion and a modest

amount of legislative erosion of the tax base. We assume that the Fair Tax base equals the broad measure that the CBO uses, which covers 80 percent of PCEs<sup>20</sup> and exempts state and local consumption (or compensates state and local governments). The required tax rate would be 46.1 percent on a tax-inclusive basis and 85.5 percent on a tax-exclusive basis. The federal revenue loss from administering a 23 percent tax-inclusive Fair Tax with this tax base would be \$2.3 trillion in 2023 and \$27.6 trillion over the 2023-2032 decade.

## V. State and Local Tax Issues

The actual markup at the cash register will be higher than the quoted rates above because of state sales taxes. For example, in 2022 state and local sales tax revenue equaled 2.1 percent of GDP. If the states raised the same amount of revenue from their own sales taxes and conformed to the tax base in the Fair Tax, the combined federal and state tax-inclusive rate would be 48.3 percent, and the tax-exclusive rate would be 93.3 percent.<sup>21</sup>

As noted, H.R. 25 would abolish the federal income tax. This would not simplify taxes much for taxpayers if states maintained their income taxes because most states rely on information from the federal return. This might lead to states abolishing their income taxes and trying to raise money through state sales taxes, resulting in an even higher markup at the cash register. States raise about another 2.9 percent of GDP in individual and corporate income taxes. Under a national retail sales tax, if the states conformed their sales tax bases to the Fair Tax base, repealed their income taxes, and raised the same revenue as before, there would be a total federal, state, and local sales tax-inclusive rate of 54.4 percent or a 119.1 percent markup at the cash register (Table 3).

<sup>20</sup>This would be equivalent to starting with the Fair Tax base and exempting all food purchased for home consumption, medicine, and health insurance.

<sup>21</sup>This assumes 17 percent avoidance and evasion, a Fair Tax base equal to 80 percent of PCEs, and no taxation of state and local government investment and consumption spending.

<sup>19</sup>Calculated using data from National Income and Product Accounts Table 2.4.5U.

**Table 3. Total Federal, State, and Local Sales Tax Rate Under State and Local Conformity to the Fair Tax, 2023 (\$ billions)**

Replace Sales and Use Taxes	
Federal revenue to replace	\$4,625
State and local revenue to replace	\$586
Total revenue to replace	\$5,211
<i>Required combined federal, state, and local sales tax rate</i>	
Tax-inclusive rate	48.3%
Tax-exclusive rate	93.3%
Replace Personal Income, Corporate Income, and Sales and Use Taxes	
Federal revenue to replace	\$4,625
State and local revenue to replace	\$1,348
Total revenue to replace	\$5,974
<i>Required combined federal, state, and local sales tax rate</i>	
Tax-inclusive rate	54.4%
Tax-exclusive rate	119.1%
<i>Source: Authors' calculations based on National Income and Product Accounts and CBO data.</i>	

## VI. Tax Administration and Simplification

### A. Administration

H.R. 25 would dissolve the IRS. The national retail sales tax would be administered by individual states or, in cases in which states didn't want to do so, by Treasury (where the IRS is now located). There are several problems with this aspect of the proposal.

First, this would create a classic principal-agent problem. States would gain little from perfect enforcement (a collection fee of only 0.25 percent of the federal revenue they collect), creating an incentive for them to skimp on costly enforcement measures. Note the irony and confusion created by (1) the federal government taxing itself and (2) simultaneously having the states collect the tax on federal purchases and remit them to the federal government.

Second, it is difficult to see how state tax authorities would administer a national tax. Even with federal tax authorities, use taxes are rarely

enforced. The responsibilities would likely overload state bureaucracies and budgets, leaving the door open for widespread avoidance and evasion.<sup>22</sup>

Third, several states don't tax sales, so they would need to build a new tax apparatus or turn the responsibility back to the Treasury. It is unclear what advantage could be gained from having a non-IRS part of Treasury administer the tax instead of the IRS.

Fourth, existing state sales taxes are poor models for a broad-based national tax. They vary widely in structure and rate, often not taxing grocery purchases, prescription drugs, or a wide variety of services and (inappropriately) taxing business-to-business transactions.

Fifth, states differ significantly in audit coverage and technical capabilities, potentially giving rise to unequal collections and enforcement between states.<sup>23</sup>

Lastly, the Fair Tax would include a family consumption allowance (a demogrant), paid monthly. It would distribute funds to households to offset the sales tax on consumption up to the poverty line. A centralized agency (or state coordination) would be needed to collect personal information (for example, family size, composition, and residence address), distribute the grant to households, and guard against fraudulent claims.<sup>24</sup>

### B. Simplification

Fair Tax proponents argue that eliminating federal income, payroll, and estate and gift taxes would greatly simplify the tax code. However, the extent of this simplification would be limited to the degree to which state and local governments maintain their income taxes, which would maintain much of the same structure as the federal income tax.

On top of the remaining complexity from state and local income taxes, the national retail sales tax

<sup>22</sup> Gregg A. Esenwein and Jane G. Gravelle, "The Flat Tax, Value-Added Tax, and National Retail Sales Tax: Overview of the Issues," Congressional Research Service (updated June 6, 2006).

<sup>23</sup> Gale and Janet Holtzblatt, "The Role of Administrative Factors in Tax Reform: Simplicity, Compliance and Enforcement," Brookings Institution (1999).

<sup>24</sup> President's Advisory Panel, *supra* note 3.

would have complications of its own. Exemptions of particular goods and services represent an often-overlooked aspect of a national retail sales tax with implications for both program complexity and enforcement. Even as written, the Fair Tax does not tax all goods and services, and political lobbies, administrative factors, and social or economic goals can motivate policymakers to exempt certain goods and services from the tax. These issues increase the administrative burden, because the agencies administering the tax will need to resolve definitional questions and ensure that purchases are correctly reported.

In addition, to receive the monthly family consumption allowance, qualified families must annually register with the authorities administering the sales tax.

Under a national retail sales tax, taxpayers would lose some types of transparency they have under the current income tax. The federal income tax allows taxpayers to see their total tax obligation each year and track the changes from year to year, observing how life events and decisions alter their tax obligations. Sales taxes are more opaque since taxpayers do not receive a summary of their annual payments.<sup>25</sup>

## VII. Economic Effects

Proponents argue that there are several economic benefits from replacing federal taxes with a national consumption tax. Some of these effects are reasonable, while others are either overstated or incorrect. And all of them have to be taken in the context of what the rate would have to be and whether this is enforceable or administrable.

The impact on saving and investment is a central consideration. A pure income tax discourages both saving and investing relative to a pure consumption tax. This is because an income tax distorts the trade-off between present and future consumption by taxing returns to capital. For example, the corporate income tax can

reduce companies' incentive to invest by raising the pretax required return on new investment.<sup>26</sup> Lower investment ultimately leads to a smaller productive capital stock, lower labor productivity, lower wages, and lower economic output. Likewise, the individual income tax reduces the incentive to save by reducing the expected after-tax return on saving. If reduced saving by Americans reduces the supply of saving available for productive investments, it will also lead to a smaller capital stock in the long run.<sup>27</sup>

But a consumption tax structured like a retail sales tax does not exempt all capital income from taxation.<sup>28</sup> The return to capital consists of a safe return (the return to waiting, the minimum required return to compensate someone for deferring their consumption), compensation for risk, and excess returns (the last due to, for example, a monopoly or first-mover advantage).<sup>29</sup> The difference between the two systems is that the income tax burdens the safe return to saving, while a consumption tax does not.<sup>30</sup> The two systems treat the taxation of risk and of excess returns similarly.

How eliminating the income tax affects saving and investment depends on the burden that current law places on those activities. Today's income tax is not a pure income tax. Rather, it is a consumption-income tax hybrid. Individuals face the income tax on the returns to some saving through the income tax on capital gains, dividends, and interest. However, those who save for retirement in tax-preferred retirement accounts and are not constrained by contribution limitations face no tax burden on saving at the

<sup>26</sup> Kyle Pomerleau, "The Treatment of Business Interest Expense in the TCJA," *Tax Notes Federal*, May 10, 2021, p. 911. Several features of the tax raise the required return on new investment — including the taxation of normal returns, limited loss offsets, and the double taxation of corporate income. Deductions for interest and accelerated depreciation rules can offset some or all of these factors.

<sup>27</sup> In a perfectly closed economy, saving is equal to investment. However, when the economy is open, like the U.S. economy, saving and investment do not need to equal one another. A change in national saving, therefore, may not affect investment.

<sup>28</sup> A retail sales tax is a "postpaid" consumption tax. Compare this with a "prepaid" consumption tax, such as a payroll tax, under which all returns to capital are completely exempt from taxation. See President's Advisory Panel, *supra* note 3.

<sup>29</sup> *Id.*

<sup>30</sup> William M. Gentry and R. Glenn Hubbard, "Distributional Implications of Introducing a Broad-Based Consumption Tax," 11 *Tax Pol'y & Econ.* 1 (Jan. 1997).

<sup>25</sup> Mikesell, "Changing the Federal Tax Philosophy: A National Value-Added Tax or Retail Sales Tax?" 18 *Pub. Budgeting & Fin.* 53 (1998).



margin. Likewise, the corporate income tax is partially a consumption-based tax because of accelerated depreciation. Under current law, the effective tax burden on capital income is positive but generally lower than statutory tax rates on capital income suggest. According to the CBO,<sup>31</sup> the marginal effective tax rate on capital income is 15.3 percent in 2023 and is scheduled to rise to 16.5 percent in 2032.

Another consequence of replacing the tax code with a consumption tax is that it would eliminate tax distortions across types of investment. Under current law, the marginal effective tax rate is significantly different for different types of assets. While the overall effective tax burden on capital is 15.3 percent, nonresidential structures face a rate of 21 percent, inventories 30.6 percent, and intellectual property products *negative* 4.9 percent. Further, the effective tax burden varies based on the legal entity of a business: C corporations tend to face higher marginal effective tax rates than passthrough businesses<sup>32</sup> on the same asset.<sup>33</sup> Under the Fair Tax, the marginal effective tax rate on all assets would be zero. Nonetheless, a high-rate national retail sales tax that allows for exclusions of good and services would introduce similar distortions across industries and products.

Proponents of the Fair Tax misstate how the proposal would affect the incentive to work, stating that people will be able to “take home their entire paycheck” in the absence of the income and payroll tax.<sup>34</sup> The income tax and payroll tax reduce work incentives by reducing the after-tax wage. However, replacing the income and payroll tax with a sales tax does not eliminate this disincentive. A national retail sales tax would reduce real after-tax wages by increasing the price of all goods and services.

According to the CBO, the average marginal tax rate on labor income, weighted by income, is 27.9 percent in 2023 and will rise to 30.7 percent in 2032.<sup>35</sup> At the sales tax rates required to make the government whole and address avoidance and evasion (see Table 1), the overall marginal tax-inclusive rate on labor would be 34.1 percent, slightly higher than current law.

Fair Tax proponents also mistakenly argue that the border adjustment mechanism in the Fair Tax, which applies the sales tax to imports and exempts exports, would increase the economic competitiveness of the United States and reduce the U.S. trade deficit.<sup>36</sup>

The trade deficit is driven by the balance of saving and investment in the United States, not the lack of a border-adjusted tax. In an open economy, domestic investment can be higher or lower than domestic saving. If investment is greater than saving, a country is a net borrower. This enables a country to finance investment and consume more than it produces, resulting in a trade deficit equal to the capital inflow. If saving exceeds investment, a country is a net lender. The outflow of capital shows up as a trade surplus as the economy consumes less than it produces.

A border adjustment, in isolation, would have no impact on the trade balance because it would not affect cross-border saving and investment incentives. Because of the import tax, foreign investors would need to pay more to invest in the United States, but they would receive higher returns because of the export rebate that exactly offsets the higher cost of the initial investment. Likewise, U.S. investors would find it cheaper to invest overseas because of the export rebate, but returns would be lower because of the import tax, which would exactly offset the export rebate.

Mechanically, the import tax and the export rebate would both increase the demand for

<sup>31</sup> CBO, “The Budget and Economic Outlook: 2022 to 2032” (May 2022).

<sup>32</sup> Passthrough businesses include sole proprietorships, limited liability companies, subchapter S corporations, and partnerships.

<sup>33</sup> CBO 2022, *supra* note 31.

<sup>34</sup> Americans for Fair Taxation, “How FAIRTax Works” (undated).

<sup>35</sup> CBO 2022, *supra* note 31. Laurence Kotlikoff and David Rapson calculated marginal tax rates on labor supply and saving for a variety of prototypical households under the Fair Tax. Kotlikoff and Rapson, “Comparing Average and Marginal Tax Rates Under the Fair Tax and the Current System of Federal Taxation,” National Bureau of Economic Research Working Paper 11831 (Dec. 2005).

<sup>36</sup> Dan R. Mastromarco, “U.S. International Tax Reform? Define ‘Reform’ for Me,” *Tax Notes Int’l*, Jan. 1, 2006, p. 481; Karen Walby, “The Fair Tax Restores International Competitiveness to American Manufacturing, Agriculture, and Trade,” Americans for Fair Taxation (2007).



dollars and reduce their supply on the world market, resulting in a one-time appreciation of the U.S. dollar that would immediately offset the apparent benefits of the border adjustment.

In fact, the Fair Tax proposal would likely worsen the trade deficit in the short term. If the Fair Tax increases domestic investment by more than domestic saving, it would result in an inflow of capital from abroad and an increase in the trade deficit. Further, if the Fair Tax is not revenue neutral, a sharp increase in federal borrowing would also be partially financed by foreign savers, increasing the trade deficit.

A destination-based tax would not reduce the trade deficit, but there would be some notable benefits. Under current law, the corporate income tax is based on the origin of goods and services, or where they are produced. As a result, corporations have the incentive to shift profits from high-tax jurisdictions to low-tax jurisdictions to reduce their worldwide effective tax rates. This is done by either overstating the cost of deductible imports or understating taxable exports, cross-border borrowing, and the location of IP products. Somewhat related, current law creates an incentive to shift headquarters overseas. This is because the minimum tax regime (global intangible low-taxed income) applies to U.S.-headquartered companies but not foreign-headquartered companies.

Under a destination-based tax, such as a sales tax, the shifting of profits and headquarters no longer affects tax liability. Since the sales tax is based on where a good is sold, not produced, corporations would be unable to reduce sales tax liability by artificially shifting profits or headquarters out of the United States.

The extent to which the Fair Tax proposal would address the shifting of profits and the location of headquarters depends on how great the incentive is under current law. Before the Tax Cuts and Jobs Act, the incentives to shift profits and headquarters were meaningful because the residence-based system paired with a relatively high corporate statutory tax rate. The TCJA reduced, but didn't eliminate, these incentives by lowering the statutory corporate tax rate and enacting a minimum tax. Further, the impact on expatriations will depend on the success of the OECD's pillar 1 and pillar 2 global minimum tax

deal in the United States and abroad, which is meant to further reduce these incentives for multinational corporations.

### VIII. Distributional Effects

Consumption taxes, including the sales tax, are generally less progressive than income taxes for several reasons. First, low-income households tend to consume a greater share of their income than high-income households. Second, as noted earlier, income taxes burden the normal return to capital while consumption taxes do not, and wealth is concentrated among high-income households. Finally, the retail sales tax features a flat rate, unlike the graduated rates in current law.

Although the Fair Tax would enact a flat rate on consumption, the overall proposal would be progressive because of the family consumption allowance. That is, the average tax rate would rise as income rises. But numerous studies suggest that it would be less progressive than the current system.<sup>37</sup>

There would be winners and losers among low-income households. The family consumption allowance would be unconditional, meaning households would receive the full transfer regardless of income. For families with consumption below the poverty line, this would result in a net transfer from the government — the allowance would be more than they pay in sales tax in a year. Whether these families would be better off than under current law depends on their current receipt of refundable credits like the earned income tax credit and the child tax credit. These credits may be more valuable for some than the allowance, net of Fair Tax payments. However, the consumption allowance may be more valuable for very low-income households that now earn too little to qualify for the EITC or the child tax credit.

Very high-income households would generally face lower tax rates than under current law. As mentioned, the normal returns to saving and investment would be completely exempt

<sup>37</sup> Feenberg, Mitrusi, and Poterba, *supra* note 16; Metcalf, *supra* note 17; President's Advisory Panel, *supra* note 3; Yingxu Kuang, Ted Englebrecht, and Otis W. Gilley, "A Distributional Analysis of the Fair Tax Plan: Annual and Lifetime Income Considerations," 78 *So. Econ. J.* 358 (2011).

from taxation. The 2005 report of the President's Advisory Panel on Tax Reform, as well as work by Feenberg, Mitrusi, and Poterba,<sup>38</sup> provides evidence that switching to the Fair Tax would reduce taxes substantially on high-income households, because relative to other households, a larger portion of their income comes from capital income and a smaller portion of their income goes to consumption.

Middle-income households are most likely to face net tax increases under a Fair Tax that maintains existing government programs and adjusts for evasion and avoidance. The sales tax effectively applies tax to labor compensation that now goes untaxed, like fringe benefits, including employer-sponsored health insurance. Moreover, households would no longer benefit from any itemized deductions.

Transitional impacts of replacing current taxes with a sales tax can also create some losers. The enactment of a sales tax applies a one-time tax on all existing wealth as households consume out of existing savings. In the short run, the impact on wealth somewhat offsets the regressivity of a sales tax, because high-income households tend to have much higher net worth than low-income households. However, retirees will face an additional tax as they spend down their savings. Current Social Security beneficiaries would not be affected, because benefits are adjusted for changes in price levels. But future beneficiaries would receive lower benefits since initial benefits are based on real wages, which a national retail sales tax would reduce.

Although the proposal would make the tax code less progressive than current law, a flat consumption-based tax would enhance fairness in some ways. Under current law, the progressive individual income tax is not neutral with respect to marriage or household size. Some households face marriage penalties, and others face marriage bonuses. In addition, secondary earners in a household can face a work disincentive when their income is added to the primary earner's income. Replacing the current system with a flat rate tax with a demogrant would eliminate

marriage penalties and bonuses (as long as the demogrant doesn't contain marriage penalties).<sup>39</sup>

## IX. Conclusion

The Fair Tax proposal has several significant challenges. The rate would need to be much higher than advertised. We estimate the sales tax rate would need to be as high as 46.1 percent tax-inclusive or 85.5 percent tax-exclusive (the markup at the cash register), taking into account a reasonable amount of evasion and avoidance and potential legislative erosion. This rate is much less attractive than the advertised headline rate of 23 percent.

A variety of factors could drive the required rate even higher. It bears emphasis that no jurisdiction has ever administered a sales tax with a rate as high as the rates noted above. High-rate retail sales taxes are difficult to administer because there is no third-party reporting of tax liability, unlike under a VAT or the current income tax for wage income. Virtually all European countries adopted VATs in response to widespread evasion and administration issues in sales taxes. Moreover, the Fair Tax proposal would require states to administer a new federal tax. This combination of factors will likely result in failure to collect substantial portions of the tax.

In addition to the challenges, many of the purported benefits of the proposal are overstated. The amount that the Fair Tax would reduce complexity in the tax code would be limited if states and localities kept their income taxes. Further, sales taxes themselves are complex to administer. Replacing the income, payroll, and estate and gift taxes with a consumption tax would eliminate the tax penalty on saving and investment. However, the impact of the proposal on saving and investment would be limited because current law exempts a meaningful amount of capital income from taxation. In addition, the proposal would maintain a penalty on work. We find that the marginal tax rate on labor would be slightly higher than it is under current law. Finally, the Fair Tax is, on net, progressive but would be notably less progressive

<sup>38</sup> President's Advisory Panel, *supra* note 3, at ch. 9; and Feenberg, Mitrusi, and Poterba, *supra* note 16.

<sup>39</sup> Daniel Hemel, "Beyond the Marriage Tax Trilemma," 54 *Wake Forest L. Rev.* 661 (2019).

than current law because it would reduce taxes significantly for high-income households and raise taxes on many low- and middle-income households.

Overall, the downsides of the proposal overwhelm the benefits, and given the required sales tax rate, the proposal is essentially unworkable.

Although the Fair Tax has significant issues, there are still virtues to well-structured consumption-based taxes. A broad-based consumption tax, such as a VAT, would raise a significant amount of revenue without distorting saving and investment decisions like an income tax would.<sup>40</sup> This revenue could be used to reform existing taxes, reduce the deficit, and pay for new federal programs. In addition, modest reforms to the income tax that move in the direction of a consumption tax could improve the tax code. For example, lawmakers have been converting the business tax into a consumption-based tax by expanding expensing and limiting interest deductions. This would allow the federal government to collect revenue from businesses without distorting investment decisions.

## X. Appendix I. The Required Rate Formula

### A. The Pre-Sales-Tax Economy

We begin by defining terms in the current, or pre-sales-tax, economy<sup>41</sup>:

- $R_s$  = current nominal revenue raised by federal taxes that would be replaced by the sales tax;
- $R_o$  = current nominal revenue raised by federal taxes that would not be replaced by the sales tax;
- $R_i$  = current nominal federal revenue from interest income;
- $B$  = current nominal federal borrowing;
- $G_s$  = current nominal expenditures on federal outlays for goods and services that would be subject to the sales tax;

- $G_o$  = current nominal expenditures on federal outlays for goods and services that would not be subject to the sales tax;
- $G_i$  = current nominal expenditures on federal interest payments; and
- $T$  = current nominal expenditures on federal transfer payments.

The federal government's annual budget constraint in the pre-sales-tax economy is given by:

$$(1) R_s + R_o + R_i + B = G_s + G_o + G_i + T.$$

This budget constraint implies that spending is financed by tax revenue, interest income, and gross borrowing. The primary deficit,  $D$ , is defined as federal borrowing less net interest payments:

$$(2) D = B - (G_i - R_i).$$

Using (2), (1) can be rewritten as:

$$(3) R_s + R_o + D = G_s + G_o + T,$$

which states that federal tax revenue ( $R_s + R_o$ ) plus the primary deficit ( $D$ ) must equal non-interest outlays ( $G_s + G_o + T$ ). We also define:

- $X$  = the sum, over all households, of the current nominal poverty income level (adjusted to remove marriage penalties as described below);
- $C_{\text{PRIV}}$  = current nominal expenditures on private consumption and household interest payments that would be subject to a national retail sales tax;
- $C_{\text{SL}}$  = current nominal expenditures on state and local government consumption and investment items that would be subject to a national retail sales tax; and
- $C = C_{\text{PRIV}} + C_{\text{SL}}$ .

### B. Price Level Adjustments

Replacing some or all current federal taxes with a sales tax introduces two potential sets of adjustments to prices. First, introducing a sales tax drives a wedge between producer prices (what the producer receives from a sale after paying sales tax but before paying any income or payroll taxes) and consumer prices (what the consumer pays, including the sales tax). The implication is that while the consumer and producer prices of a good are the same in the current federal tax

<sup>40</sup> Gale, "Raising Revenue With a Progressive Value-Added Tax," in *Tackling the Tax Code: Efficient and Equitable Ways to Raise Revenue* (Jan. 2020).

<sup>41</sup> This section builds on Gale et al., "Taxing Government in a National Retail Sales Tax," *Tax Notes*, Oct. 5, 1998, p. 97; Gale, "The Required Tax Rate in a National Retail Sales Tax," 52 *Nat'l Tax J.* 443 (Sept. 1999); and Gale 2005, *supra* note 3.

system (ignoring federal excise taxes and state and local sales taxes), they would be different by the amount of the federal sales tax under a national retail sales tax, so at least one of them would have to change from its current value.

Second, repealing income and payroll taxes could affect producer prices. If the reduction in taxes reduces nominal costs and if wages and prices are nominally flexible, nominal producer prices may fall. However, if prices and wages are nominally “sticky,” or if nominal wages are set by contract, producer prices may remain unchanged.<sup>42</sup>

Keeping track of those changes is crucial to estimating the required tax rate in the national retail sales tax.<sup>43</sup> We examine two possibilities: First, nominal wages and the producer price level stay constant after the sales tax is introduced, in which case nominal consumer prices (including the sales tax) would rise by the full amount of the tax; second, nominal wages and the producer price level fall by the full amount of the previous taxes, in which case nominal consumer prices (including the sales tax) would stay constant after the tax is imposed.

As shown below, each case generates identical results for the required tax rate. In fact, it is straightforward to show that *any* assumption about how much consumer prices change would not affect the required tax rate calculation — *as long as* the assumptions about nominal wages and producer prices, on the one hand, and consumer prices, on the other, are made in an internally consistent fashion. As shown in Section VI, the use of internally *inconsistent* assumptions plays a pivotal role in explaining why H.R. 25 mistakenly reports that a 23 percent tax-inclusive rate would be sufficient.

<sup>42</sup> For analysis of the effects of sales tax increases on the price level, see Poterba, Julio J. Rotemberg, and Lawrence H. Summers, “A Tax-Based Test for Nominal Rigidities,” 76 *Am. Econ. Rev.* 659 (Sept. 1986); Poterba, “Retail Price Reactions to Changes in State and Local Taxes,” 49 *Nat’l Tax J.* 169 (June 1996); and Timothy J. Besley and Harvey S. Rosen, “Sales Taxes and Prices: An Empirical Analysis,” 52 *Nat’l Tax J.* 157 (June 1999).

<sup>43</sup> For an early treatment of these issues, see George S. Tolley and C. Eugene Steuerle, “The Effects of Excises on the Taxation and Measurement of Income,” in *Compendium of Tax Research* (1978).

### C. Producer Prices Constant

When nominal wages and producer prices are constant after a switch to a sales tax, the consumer price level will rise by the full amount of the sales tax; that is, consumer prices, including the sales tax, will rise by  $t_1$  percent, where  $t_1$  is the required *tax-exclusive* national sales tax rate.

To solve for  $t_1$ , we begin by writing the federal government’s budget constraint, defining the variables in this scenario with a subscript of 1 to distinguish them from the corresponding variables in the pre-sales-tax economy (in equation (3)). We also add outlays for the demogrant,  $F_1(X)$ , to the equation:

$$(4) R_{S1} + R_{O1} + D_1 = G_{S1} + G_{O1} + T_1 + F_1(X).$$

Equation (4) states that in an economy with a sales tax, and with the producer price level the same as it was in the pre-sales-tax economy, the sum of federal tax revenue plus the primary deficit equals non-interest federal spending, including the demogrant. All the variables are in nominal terms. To solve for the required tax rate, we need formulas for each of the variables in (4):

- **$R_{S1}$ :** The statutory tax base is the sum of (a) nominal private consumption expenditures and household interest payments subject to sales tax, (b) state and local government spending on goods and services subject to tax, and (c) federal spending on goods and services subject to the tax. In the pre-sales-tax economy, the first two items are given by  $C$ , and the third by  $G_s$ . Because the producer price level is assumed not to change, each of those items takes on the same nominal value as in the pre-sales-tax economy. Thus, the nominal sales tax base is  $C + G_s$ , and nominal sales tax revenue is  $R_{S1} = t_1(C + G_s)$ .
- **$R_{O1}$ :** Nominal revenue collected from other federal taxes would rise from  $R_O$  in the pre-sales-tax economy to  $R_{O1} = R_O(1 + t_1)$  under the sales tax because consumer prices rise by the factor  $t_1$ .
- **$G_{S1}$ :** To maintain the real size of the federal government and its programs, any nominal federal outlays that are subject to the sales tax must rise in nominal terms by  $t_1$  percent to cover the tax payments that are due on that spending. Thus, nominal taxable



federal spending must rise from  $G_s$  in the pre-sales-tax economy to  $G_{s1} = (1 + t_1)G_s$ .

- $G_o$ : Federal outlays that are not subject to sales tax ( $G_o$ ) would not have to change in nominal terms because the producer price level has not shifted. Thus,  $G_{o1} = G_o$ .
- $T_1$ : To retain their real purchasing power, transfer payments need to be adjusted for the change in consumer prices. Thus, nominal transfer spending would have to rise from  $T$  in the pre-sales-tax economy to  $T_1 = (1 + t_1)T$  under the sales tax.
- $F_1(X)$ : The budgetary cost of the demogrant would be  $t_1X$ .<sup>44</sup>
- $D_1$ : The primary deficit reflects the balance between non-interest spending and non-interest revenues. To maintain the real size of the federal government, the real primary deficit should remain constant; that is, the nominal primary deficit should rise with consumer prices so that  $D_1 = (1 + t_1)D$ .

To explain the adjustment in transfer spending, we note that as a matter of theory, to maintain the real purchasing power of transfers, transfers that are taxed in the current system at the same rate as the required tax rate in a national retail sales tax should be adjusted according to changes in the producer price level, and transfers that are untaxed should be adjusted according to changes in the consumer price level.<sup>45</sup> In practice, however, that would be a very difficult standard to determine because the taxation depends in part on individual circumstances. H.R. 25, for example, stipulates that all Social Security benefits (some of which are taxable) should be adjusted in accordance with changes in the consumer price level. We thus make the simplifying assumption here that all federal transfers would be adjusted with the consumer price level. Because almost all non-Social-Security

transfers are either explicitly not subject to tax or are in-kind (such as Medicare and Medicaid) and hence effectively not subject to income tax, that assumption is reasonable, and making the alternative assumption that taxable transfers were adjusted according to the producer price level would have little effect on the results.<sup>46</sup>

Incorporating those changes into equation (4) yields the following budget constraint for the federal government under a sales tax (when producer prices stay constant and consumer prices rise by the full amount of the sales tax):

$$(5) (C + G_s)t_1 + R_o(1 + t_1) + D(1 + t_1) = G_s(1 + t_1) + G_o + T(1 + t_1) + X t_1.$$

Solving (5) for  $t_1$  yields:

$$(6) t_1 = (G_s + G_o + T - R_o - D)/(C - X - T + D + R_o).$$

Using (3) implies that:

$$(7) t_1 = R_s/(C - X - T + D + R_o).$$

Equation (7) is the central theoretical result in the report. The equation generates the tax-exclusive sales tax rate required to maintain real revenue and the real size of government. All the terms are defined based on the pre-sales-tax economy and are thus observable even if the sales tax does not exist.

The equation defines the required tax-exclusive sales tax rate as the ratio of the nominal revenue to be replaced ( $R_s$ ) divided by what might be called the nominal *effective* tax base, given by  $C - X - T + D + R_o$ . The key analytical points relate to (a) the differences between the nominal effective tax base and the nominal statutory tax base,  $C + G_s$ , and (b) the implications of those differences for the required tax rate.

One difference is that the effective tax base does not include any purchases by the federal government ( $G_s$ ). The reason is that adding federal spending to the statutory tax base raises the federal government's spending needs by the same amount as it raises federal revenue collection. The implication is that as long as the real size of the federal government is held constant, *the required tax rate does not depend at all*

<sup>44</sup> The demogrant is specified in H.R. 25 in tax-inclusive terms but specified here in tax-exclusive terms. Nevertheless, the specification in the report is the equivalent of the specification in H.R. 25. The demogrant in H.R. 25 would pay households the product of (1) the tax-inclusive sales tax rate and (2) the poverty guideline level of income. Because consumer prices rise in the example considered here, the poverty guideline would rise from  $X$  to  $X(1 + t_1)$ . Paying households the tax-inclusive rate  $\times X(1 + t_1)$  is the same as paying  $t_1X$ , because the tax-inclusive rate  $= t_1/(1 + t_1)$ , as discussed in Section II.A.

<sup>45</sup> Koenig, "Achieving Program Neutrality Under a National Retail Sales Tax," 52 *Nat'l Tax J.* 683 (Dec. 1999); Gale 1999, *supra* note 41.

<sup>46</sup> Gale 1999, *supra* note 41.



on whether federal purchases are subject to the sales tax.<sup>47</sup>

A second difference is that the effective tax base does not include all consumption that is subject to tax; in particular, consumption that households finance with either the demogrant or government transfers does not lead to a larger effective tax base and therefore does not reduce the required tax rate.

Third, the effective tax base is increased (and therefore the required tax rate is reduced) to the extent that the federal government would continue to collect other taxes or finance spending with borrowing.<sup>48</sup>

#### D. Producer Prices Fall

This section derives the required national sales tax rate when nominal wages and producer prices decline by the full amount of the repealed taxes, and consumer prices (including the sales tax) remain constant, after the sales tax is imposed, and proceeds in a parallel fashion relative to Section C above. To begin, we write the budget constraint, giving each variable the subscript of 2:

$$(8) R_{s2} + R_{O2} + D_2 = G_{s2} + G_{O2} + T_2 + F_2(X).$$

Equation (8) says that in the sales tax economy, with the consumer price level the same as it was in the pre-sales-tax economy, the sum of federal tax revenue plus the primary deficit equals non-interest federal spending, including the demogrant. We denote the required tax-exclusive rate in this scenario as  $t_2$ . To solve for the required tax rate, we need formulas for each of the variables in (8).

- **$R_{s2}$ :** The statutory tax base is the sum of nominal private consumption expenditures and household interest payments subject to sales tax, state and local government purchases subject to the tax, and federal purchases subject to the tax. Those items equal  $C + G_s$  in the pre-sales-tax economy.

Because the producer price level is assumed to fall by the full amount of the preexisting taxes, each of those items falls by  $(1 + t_2)$ , so the nominal tax base is  $(C + G_s)/(1 + t_2)$ , and the nominal revenue collected is  $R_{s2} = t_2(C + G_s)/(1 + t_2)$ .

- **$R_{O2}$ :** Revenue collected from other taxes would remain unchanged, because consumer prices do not change, so  $R_{O2} = R_O$ .
- **$G_{s2}$ :** To maintain the real size of the federal government and its programs, any federal outlays that are subject to the sales tax would remain constant in nominal terms because consumer prices do not rise in this example. Thus, taxable federal spending is  $G_{s2} = G_s$ .
- **$G_{O2}$ :** In contrast, government outlays that are not subject to sales tax ( $G_O$ ) would fall because producer prices have fallen. Thus,  $G_{O2} = G_O/(1 + t_2)$ .
- **$T_2$ :** To retain their real purchasing power, transfer payments need to be adjusted for the change in consumer prices. Thus, nominal transfer spending would remain constant:  $T_2 = T$ .
- **$F_2(X)$ :** The budgetary cost of the demogrant would be  $Xt_2/(1 + t_2)$ .<sup>49</sup>
- **$D_2$ :** As before, the real primary deficit should remain constant. Because consumer prices remain constant, the nominal primary deficit should also remain constant. Therefore,  $D_2 = D$ .

Incorporating those changes yields the following budget constraint for the federal government under a sales tax (when consumer prices stay the same under the sales tax as they were in the pre-sales-tax economy):

$$(9) (C + G_s)t_2/(1 + t_2) + R_O + D = G_s + G_O/(1 + t_2) + T + Xt_2/(1 + t_2).$$

Solving (9) for  $t_2$  yields:

$$(10) t_2 = (G_s + G_O + T - R_O - D)/(C - X - T + D).$$

Using (3), this implies that:

<sup>47</sup> If government purchases weren't subject to the sales tax,  $G_s$  would be zero in (1), (3), (4), (5), and (6), and the calculations leading to equation (7) would yield the same required tax rate.

<sup>48</sup> Deficit spending, of course, only postpones the need to make revenue or outlay adjustments. The analysis, however, holds the level of explicit government borrowing constant in comparing the income tax and the sales tax.

<sup>49</sup> The nominal poverty guidelines would stay the same after the sales tax was introduced, because consumer prices were the same as before the sales tax. The demogrant would pay each household that threshold times the tax-inclusive rate, which is given by  $t_2/(1 + t_2)$ , where  $t_2$  is the tax-exclusive rate (see sections I and II).

$$(11) \ t_2 = R_s / (C - X - T + D + R_o).$$

The right side of (11) is the same expression as the right side of (7). That confirms that as long as the real size of the federal government is held constant, the required tax rate (a) is not a function of what happens to the price level after a sales tax replaces existing taxes, and (b) does not depend on whether federal purchases are taxed.

### E. The Required Tax-Inclusive Rate

Equations (7) and (11) derive the same formula for the required tax-exclusive rate and show that the rate is invariant for whether government spending is taxed and whether the consumer price level rises.

The required tax-inclusive rate is simply the ratio of the tax-exclusive rate to the sum of 1 plus the tax-exclusive rate. Thus, it is given by either  $t_1 / (1 + t_1)$ , where  $t_1$  is defined by (7), or  $t_2 / (1 + t_2)$ , where  $t_2$  is defined by (11). Obviously, the same tax-inclusive rate would be derived using either formula, since the right-hand sides of (7) and (11) are identical.

It is also useful to derive here the precise formula for the required tax-inclusive rate in terms of observable quantities. Defining the required tax-inclusive rate as  $t_{\text{INCLUSIVE}} = t_2 / (1 + t_2)$ , plugging in the formula in (11), and using the formula for  $R_s$  embodied in (3) yields the result that:

$$(12) \ t_{\text{INCLUSIVE}} = R_s / (C - X + G_s + G_o).$$

Like the required tax-exclusive rate derived in (7) and (11), the required tax-inclusive rate derived in (12) does *not* depend on whether federal purchases are subject to the sales tax; that is, given total federal purchases of goods and services,  $G_s + G_o$ , the required rate does not depend on how much of those purchases is taxed.

Also, if all federal purchases were subject to sales tax, so  $G_o$  equals zero, the formula for the tax-inclusive rate becomes:

$$(13) \ t_{\text{INCLUSIVE}} = R_s / (C - X + G_s).$$

To see why the ratio of  $R_s / (C - X + G_s)$  is a tax-inclusive rate, consider a simple economy in which consumption expenditure equals \$80, net exports are \$0, government expenditure equals

\$20, and preexisting taxes are \$20, so that the government budget is in balance. Then suppose the government removes preexisting taxes and enacts a sales tax with a 20 percent tax-inclusive rate and that producer prices fall from the removal of the preexisting taxes. Then, under the sales tax, total consumer expenditure would still total \$80, with \$64 going to the producers of goods and services and \$16 going to taxes. Net exports remain \$0 (for simplicity, we omit  $X$  from further equations in this explanation). Government would still spend \$20, with \$16 going to producers of goods and services and \$4 going to taxes (that it paid to itself). Tax revenue would equal \$20, and government spending would equal \$20, so the budget would remain in balance. The tax-inclusive rate would be  $R_s / (C + G) = R_s / (CP + CR + GP + GR) = 0.2$ , where  $CP$  = total consumer payments to producers;  $CR$  = total consumer payments of sales tax;  $GP$  = total government payments to producers; and  $GR$  = total government payments of sales tax. The denominator,  $C + G$ , contains both expenditures going to producers and sales tax revenue. The fact that sales tax revenue is in both the numerator and the denominator is why the reported tax rate is tax inclusive rather than tax exclusive. The equivalent tax-exclusive rate (25 percent) can be derived from the ratio of  $R_s$  to  $(CP + GP)$  — that is, the ratio of revenue to private and government payments to producers. Similar calculations can be done under the assumption that after switching to a sales tax, the producer price level stays constant and the consumer price level rises.

This formula relates closely to the discussion of H.R. 25 in Section VI, where it is shown that making inconsistent assumptions about price level changes will incorrectly generate the right-hand side of (13) as the formula for the tax-exclusive rate.

### F. The Incorrect Tax-Inclusive Rate

As shown above, even under the assumptions of H.R. 25, the required federal rate in Table 1 — 31 percent tax-inclusive — is well over the 23 percent tax-inclusive rate that H.R. 25 assumes. A relevant question is how the sponsors could have

come up with a 23 percent federal sales tax rate in light of the findings above.<sup>50</sup>

To see how that rate can be (incorrectly) obtained, ignore revenue raised by taxes that would not be replaced by the sales tax,  $R_o$  (perhaps on the grounds that the sales tax would replace virtually all federal revenue); ignore the primary deficit,  $D$ ; and ignore federal spending that would not be subject to tax,  $G_o$  (because all government spending would be subject to tax). Now consider a candidate government budget constraint equating revenue (the left side) and outlays (the right side) as follows:

$$(14) \quad t_3(C + G_s) = G_s + T + t_3X,$$

where  $t_3$  is the *tax-exclusive* rate. We emphasize and will show below that this is not a valid budget constraint, but for now, simply assume that (14) is the budget constraint that the sponsors of H.R. 25 worked with. If so, (16) can be solved for  $t_3$  as follows:

$$(15) \quad t_3 = (G_s + T)/(C + G_s - X).$$

Because  $G_o$ ,  $R_o$ , and  $D$  equal zero, (15) can be rewritten, using (3), as

$$(16) \quad t_3 = R_s/(C + G_s - X).$$

Equation (16) appears to be the formula used in documents outlining and supporting a national sales tax.<sup>51</sup> Unlike (7), (11), or (18), it includes taxable government spending in the effective tax base and does not allow for adjustments to transfers ( $T$ ). Using data from Appendix Table A5 yields  $t_3 = 28$  percent for 2023-2032. The implied tax-inclusive rate would be roughly 21.9 percent.

We emphasize that although we have derived a rate close to a 23 percent tax-inclusive rate, the derivation is not valid, and therefore neither is the estimated 23 percent tax-inclusive rate. There are two ways to show this fact. First, equation (13) shows that the right-hand side of (16) is the correct formula for the *tax-inclusive* rate, whereas

(16) claims it is the correct formula for the *tax-exclusive* rate. (Note that the (incorrect) formula in equation (16) generates a required tax-exclusive rate of 28 percent, whereas Table 1, line 1, generates a required tax-inclusive rate of 28 percent.)

Second, a careful inspection shows that for the budget constraint in (14), and hence the required tax-exclusive rate in (16) to hold, one must make mutually inconsistent assumptions about how the consumer and producer price levels change. Equation (14) assumes that the sales tax generates revenue of  $t_3(C + G_s)$ . That assumption is valid if and only if *producer prices stay constant and consumer prices rise by the full amount of the sales tax* when a sales tax replaces the income tax (see equation (5)). Equation (14) also assumes that government purchases and transfers under the sales tax would be  $G_s + T$ . That assumption is valid if and only if *producer prices fall by the full amount of the removed taxes and consumer prices remain constant* when a sales tax replaces the income tax (see equation (8)).

Those assumptions are obviously inconsistent with each other. Thus, it appears that the sponsors of H.R. 25 made an error of logical inconsistency: When they estimated government revenue under the sales tax, they (implicitly) assumed that consumer prices would rise by the full amount of the sales tax; and when they estimated government spending needs, they (implicitly) assumed consumer prices would stay constant. Those assumptions cannot both be valid at the same time. As a result, the calculations in (14) and (16) either overstate revenue, understate spending needs, or both. As shown in the tables above, this inconsistency is neither minor nor inconsequential.

## XI. Appendix II. Calculating the Rate and Revenue

This appendix reports estimates of the required tax rate and the revenue loss from imposing a 23 percent tax-inclusive rate under the assumptions that 100 percent of the tax base used in H.R. 25 would be subject to tax and that there would be no avoidance or evasion of the tax. This appendix also reports analogous results after relaxing the assumptions.

<sup>50</sup> The Joint Committee on Taxation (Paull, *supra* note 3) estimated that a precursor to H.R. 25 would require a 37 percent tax-inclusive rate (59 percent tax-exclusive rate).

<sup>51</sup> Although the precise formula is never written down in David R. Burton and Mastromarco, "Emancipating America From the Income Tax: How a National Sales Tax Would Work," Cato Policy Analysis No. 272 (Apr. 15, 1997), or Americans for Fair Taxation, *supra* note 34, the text that describes the calculation of the required tax rate makes sense only if equations (14) and (16) were what the authors had in mind.

## A. Parameter Values

Equations (7) and (11) show that the required tax rate in a national retail sales tax can be estimated with information on six parameters of the *current* economic and tax system:  $R_s$ ,  $C$ ,  $X$ ,  $T$ ,  $D$ , and  $R_o$ .

We calculate parameter values using CBO data for 2021-2032.

Appendix Table A1 provides data on revenue and the primary deficit under current law.

Appendix Table A2 provides information on federal transfers and purchases. H.R. 25 would tax virtually all federal purchases, so  $G_o$  is set to zero.

Appendix Table A3 provides information on the proposed tax base for 2021. Because the inclusion of federal outlays in the statutory tax base has no effect on the required tax rate as long as the real size of the federal government is held constant, federal purchases are not reported. Our best estimate of the tax base for private consumption is shown in the table and includes all private consumption expenditures (a) less those on education, those on food consumed on farms, and those abroad and on foreign travel; (b) plus a series of adjustments to capture expenditures on new housing and remove imputed housing consumption; (c) plus expenditures in the United States by nonresidents; and (d) plus interest payments from households to businesses (including interest on mortgages and credit card balances) to the extent that the payments represent an interest rate higher than the benchmark Treasury rate. (If interest rates fell under a sales tax, the tax base would shrink, and the required tax rates would be higher than reported here.) State and local consumption and investment purchases are listed as well, with purchases for education subtracted.

Appendix Table A4 reports the data needed to calculate the cost of the demogrant in 2021. Exempted consumption is the product of the number of households in each marital status and family size category and the income level given by the poverty guideline for a family of that size and marital status.

Appendix Table A5 reports the values of the variables used in equations (7), (11), and (13) for 2021-2032. To calculate values of  $C$  and  $X$  in years beyond 2023, we assume that the ratio of each to

GDP is the same in future years as it is in 2023, and we use CBO projections of GDP. Table 1 reports the required tax rates.

## B. Adding Base Erosion

Let

$a$  = the share of the legislated private consumption tax base that is lost because of tax avoidance;

$e$  = the share of the legislated private consumption tax base that is lost because of tax evasion;

$p$  = the extent to which enacted legislation deviates from the pure consumption tax base ( $C_{\text{PRIV}}$ ) described in H.R. 25; and

$s$  = the share of state and local government consumption and investment purchases that is exempted from the tax base.

Then the actual tax base in a national retail sales tax is:

$$(17) C^* = (1 - a)(1 - e)(1 - p)C_{\text{PRIV}} + (1 - s)C_{\text{SL}}.$$

The required tax-exclusive sales tax rate is given by:

$$(18) t = R_s / (C^* - X - T + D + R_o).$$

The right side of (16) is identical to the right sides of (7) and (11), except that  $C^*$  substitutes for  $C$ . Also, H.R. 25 makes the very strong assumptions that  $a = e = p = s = 0$  — that is, there is no avoidance, no evasion, and no legislative erosion of the base. Under those assumptions, (16) generates the same required tax rate as (7) and (11). In the typical case, however,  $a$ ,  $e$ ,  $p$ , and  $s$  would all be greater than 0, which would imply that  $C^* < C$ , and that the required tax rate will be higher under (16) than under (7) and (11).

## XII. Appendix Tables



Table A1. Federal Government Sources of Financing, 2021-2032 (\$ billions)

Type of Receipt	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2023-2032
<b>Receipts to Be Replaced (<math>R_s</math>)</b>													
Personal current taxes	1,893	2,387	2,425	2,508	2,504	2,732	2,927	3,005	3,124	3,253	3,385	3,534	29,398
Corporate income taxes	258	325	419	428	421	443	452	455	465	474	485	499	4,541
Contributions for government social insurance	1,539	1,673	1,753	1,817	1,879	1,943	2,022	2,106	2,192	2,283	2,380	2,483	20,858
Estate tax	27	29	29	28	28	29	43	46	49	52	56	60	418
<b>Subtotal</b>	<b>3,717</b>	<b>4,415</b>	<b>4,625</b>	<b>4,781</b>	<b>4,832</b>	<b>5,147</b>	<b>5,444</b>	<b>5,612</b>	<b>5,830</b>	<b>6,062</b>	<b>6,306</b>	<b>6,576</b>	<b>55,215</b>
<b>Receipts Not to Be Replaced (<math>R_o</math>)</b>													
Taxes on production and imports	168	188	195	200	200	201	203	205	207	210	212	208	2,042
Taxes on rest of world	29	31	31	32	35	38	39	40	40	40	41	42	378
Current transfer receipts	60	57	67	76	79	83	87	89	93	93	96	91	853
Current surplus of government enterprises	-1	-9	-4	-7	-4	-3	-3	-1	-1	-1	*	-5	-30
Corporate income taxes	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Subtotal</b>	<b>257</b>	<b>266</b>	<b>288</b>	<b>302</b>	<b>310</b>	<b>319</b>	<b>325</b>	<b>332</b>	<b>339</b>	<b>342</b>	<b>349</b>	<b>336</b>	<b>3,243</b>
Income on assets ( $R_l$ )	129	163	85	76	89	107	117	129	141	155	179	211	1,289
<b><math>R_s + R_o + R_l</math></b>	<b>4,102</b>	<b>4,844</b>	<b>4,999</b>	<b>5,159</b>	<b>5,231</b>	<b>5,573</b>	<b>5,887</b>	<b>6,072</b>	<b>6,310</b>	<b>6,560</b>	<b>6,834</b>	<b>7,122</b>	<b>59,747</b>
Borrowing ( $G_s + T - R_s - R_o + (G_l - R_l)$ )	3,092	1,498	1,284	1,293	1,476	1,484	1,520	1,727	1,869	2,029	2,173	2,350	17,205
<b>Total (<math>B + R_s + R_o + R_l</math>)</b>	<b>7,194</b>	<b>6,342</b>	<b>6,283</b>	<b>6,452</b>	<b>6,707</b>	<b>7,057</b>	<b>7,406</b>	<b>7,799</b>	<b>8,179</b>	<b>8,589</b>	<b>9,007</b>	<b>9,472</b>	<b>76,952</b>
<b>Primary deficit (<math>D</math>) = (<math>B - (G_l - R_l)</math>)</b>	<b>2,713</b>	<b>1,026</b>	<b>681</b>	<b>596</b>	<b>708</b>	<b>648</b>	<b>613</b>	<b>739</b>	<b>808</b>	<b>893</b>	<b>963</b>	<b>1,071</b>	<b>7,720</b>
Interest payments ( $G_l$ )	507	635	688	773	857	943	1,024	1,116	1,203	1,291	1,388	1,490	10,774
<i>Source: Authors' calculations based on National Income and Product Accounts and CBO data.</i>													



Table A2. Federal Government Uses of Financing, 2021-2032 (\$ billions)

Type of Spending	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2023-2032
<b>Government Expenditures (G<sub>s</sub>)</b>													
Current consumption	1,197	1,203	1,285	1,337	1,376	1,413	1,452	1,487	1,524	1,560	1,599	1,640	14,673
Investment	368	396	375	376	385	394	402	415	424	436	444	452	4,103
Depreciation	-306	-327	-340	-350	-360	-370	-380	-391	-402	-413	-424	-435	-3,864
<b>Subtotal</b>	<b>1,259</b>	<b>1,272</b>	<b>1,320</b>	<b>1,363</b>	<b>1,401</b>	<b>1,437</b>	<b>1,474</b>	<b>1,511</b>	<b>1,546</b>	<b>1,583</b>	<b>1,619</b>	<b>1,657</b>	<b>14,912</b>
<b>Transfer Payments (T)</b>													
Social benefits to persons	3,605	2,911	2,958	3,103	3,266	3,463	3,646	3,858	4,070	4,299	4,532	4,803	37,998
Grants to state and local government	1,053	989	959	855	840	852	882	920	958	1,000	1,042	1,089	9,396
<b>To rest of world</b>													
Social	31	30	32	34	36	38	41	44	45	48	51	54	423
Other	58	62	63	62	63	64	65	66	68	69	71	72	662
Subsidies to business	568	184	135	112	103	102	102	103	103	105	107	107	1,079
Capital transfers	112	258	128	150	139	158	172	181	187	193	198	201	1,707
<b>Subtotal</b>	<b>5,427</b>	<b>4,434</b>	<b>4,275</b>	<b>4,316</b>	<b>4,448</b>	<b>4,678</b>	<b>4,909</b>	<b>5,171</b>	<b>5,431</b>	<b>5,714</b>	<b>6,000</b>	<b>6,325</b>	<b>51,265</b>
Interest payments (G <sub>I</sub> )	507	635	688	773	857	943	1,024	1,116	1,203	1,291	1,388	1,490	10,774
<b>Total (G<sub>s</sub> + T + G<sub>I</sub>)</b>	<b>7,194</b>	<b>6,342</b>	<b>6,283</b>	<b>6,452</b>	<b>6,707</b>	<b>7,057</b>	<b>7,406</b>	<b>7,799</b>	<b>8,179</b>	<b>8,589</b>	<b>9,007</b>	<b>9,472</b>	<b>76,952</b>
<i>Source: Authors' calculations based on National Income and Product Accounts and CBO data.</i>													

**Table A3. Proposed Tax Base for National Retail Sales Tax, 2021 (\$ billions)**

<b>Total Private Consumption Base (<math>C_{\text{PRIV}}</math>)</b>	
Personal Consumption Expenditures (PCEs)	15,902.6
Less: Education expenditure	-305.9
Less: Food produced and consumed on farms	-0.6
Plus: Purchase of new homes	508.8
Plus: Other structures	581.6
Less: Imputed rent on housing	-1,798.9
Less: Imputed rent on farm dwellings	-23.6
Less: Expenditure abroad by U.S. residents (nondurables)	-11.1
Less: Foreign travel by U.S. residents (services)	-88.1
Plus: Expenditure in U.S. by nonresidents	72.2
Plus: Taxable home mortgage interest	164.68
Plus: Taxable nonprofit interest	5.54
Plus: Taxable personal interest	207.83
Less: State sales taxes	-499.5
<b>Subtotal</b>	<b>14,715.55</b>
<b>Total State and Local Government Tax Base (<math>C_{\text{SL}}</math>)</b>	
State and local government consumption	2,321.1
Less: Capital consumption allowance	-368.9
Less: Current education spending	-922
Plus: State and local government gross investment	478.5
Less: Capital education spending	-135.2
<b>Subtotal</b>	<b>1,373.5</b>
<b>Tax Base: <math>C = C_{\text{PRIV}} + C_{\text{SL}}</math></b>	<b>16,089.05</b>
<i>Source: Authors' calculations based on National Income and Product Accounts and CBO data.</i>	

Table A4. Calculating Total Tax-Exempt Consumption Expenditure, 2021

Household Size	Number of Households (thousands)	Consumption Allowance (\$)	Total Tax-Exempt Consumption (\$ thousands)
<b>Single Households</b>			
1	36,972	\$12,880	476,199,360
2	16,637	\$17,420	289,816,540
3	7,852	\$21,960	172,429,920
4	3,914	\$26,500	103,721,000
5	1,909	\$31,040	59,255,360
6	700	\$35,580	24,906,000
7 or more	493	\$40,120	19,779,160
<b>(1) Subtotal</b>			<b>1,146,107,340</b>
<b>Married Households</b>			
2	28,878	\$25,760	743,897,280
3	11,671	\$30,300	353,631,300
4	12,184	\$34,840	424,490,560
5	5,668	\$39,380	223,205,840
6	1,935	\$43,920	84,985,200
7 or more	1,118	\$48,460	54,178,280
<b>(2) Subtotal</b>			<b>1,884,388,460</b>
<b>Total Tax-Exempt Consumption Expenditure (X) = (1) + (2)</b>			<b>3,030,495,800</b>
<i>Source:</i> Authors' calculations based on U.S. Census Bureau Current Population Survey (2021 ASEC Table H1) and 86 F.R. No. 19 data.			

Table A5. Elements of Retail Sales Tax Rate Calculation, 2021-2032 (\$ billions)

	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2023-2032
Elements of Tax-Exclusive Sales Tax Rate Calculation													
C <sub>PRIV</sub>	14,716	16,248	17,265	17,957	18,602	19,257	19,958	20,718	21,527	22,369	23,238	24,134	205,024
C <sub>SL</sub>	1,374	1,517	1,611	1,676	1,736	1,797	1,863	1,934	2,009	2,088	2,169	2,253	19,136
X	3,030	3,346	3,556	3,698	3,831	3,966	4,110	4,267	4,433	4,607	4,786	4,970	42,222
T	5,427	4,434	4,275	4,316	4,448	4,678	4,909	5,171	5,431	5,714	6,000	6,325	51,265
R <sub>S</sub>	3,717	4,415	4,625	4,781	4,832	5,147	5,444	5,612	5,830	6,062	6,306	6,576	55,215
R <sub>O</sub>	257	266	288	302	310	319	325	332	339	342	349	336	3,243
D	2,713	1,026	681	596	708	648	613	739	808	893	963	1,071	7,720
Elements of Tax-Inclusive Sales Tax Rate Calculation													
C <sub>PRIV</sub>	14,716	16,248	17,265	17,957	18,602	19,257	19,958	20,718	21,527	22,369	23,238	24,134	205,024
C <sub>SL</sub>	1,374	1,517	1,611	1,676	1,736	1,797	1,863	1,934	2,009	2,088	2,169	2,253	19,136
C <sub>FED</sub> (G0 + G5)	1,259	1,272	1,320	1,363	1,401	1,437	1,474	1,511	1,546	1,583	1,619	1,657	14,912
X	3,030	3,346	3,556	3,698	3,831	3,966	4,110	4,267	4,433	4,607	4,786	4,970	42,222
R <sub>S</sub>	3,717	4,415	4,625	4,781	4,832	5,147	5,444	5,612	5,830	6,062	6,306	6,576	55,215
GDP	22,365	24,694	26,240	27,291	28,271	29,266	30,332	31,487	32,716	33,996	35,318	36,680	311,596

Source: Authors' calculations based on National Income and Product Accounts and CBO data.

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