Methodology for Distributing a VAT

Executive Summary

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Given the current projections of growing U.S. federal debt, some economists and policy makers are discussing a national value-added tax (VAT) as part of the remedy for America's fiscal problems. VATs are major sources of revenue for all Organization for Economic Co-operation and Development (OECD) countries, except for the United States. In addition, Professor Michael Graetz of Columbia Law School has proposed a VAT as one part of a larger plan to simplify the U.S. income tax system.

One of the primary considerations when looking at any new consumption tax, such as a VAT, is how its burden would be distributed across age groups and income levels. Since neither Congress nor the executive branch has actively considered a VAT in recent years, the federal tax estimating agencies – the Congressional Budget Office (CBO), the Department of the Treasury's Office of Tax Analysis (OTA) and the Joint Committee on Taxation (JCT) – have not been required to estimate the distributional burden of a VAT for some time. In writing this paper the Tax Policy Center (TPC) and the Pew Fiscal Analysis Initiative (Pew) sought the input from the CBO, OTA, JCT and prominent economists to discuss what the necessary components and considerations are for a new proposed methodology. The methodology proposed in *Methodology for Distributing a VAT*, however, has been developed by TPC and does not necessarily represent the views of the agencies and economists who reviewed the paper.

The new methodology presented will be used in a series of papers to be written by the TPC and sponsored by Pew that analyze how a VAT could be used for deficit reduction and tax reform and how exempting certain types of consumption can impact the burden. Although currently there is no VAT proposal pending in Congress and the executive branch also has not proposed a new consumption tax, Rep. Paul Ryan's (R-WI) Roadmap for America's Future and the Domenici-Rivlin Bipartisan Policy Center deficit reduction plan both included proposals for a VAT. This new methodology and upcoming series of papers on the VAT will provide the analysis and facts to inform the debate as policy makers consider options for a new consumption tax over the next several years.

What is a VAT?

A VAT is levied on household consumption and is similar in concept to the retail sales taxes in many states, though different in implementation. A VAT is applied incrementally at each stage of the production process, whereas a sales tax is levied only at the final retail stage. For example, the production of a loaf of bread involves contributions from the farmer who grows the wheat, the baker who bakes the bread and the grocer who sells it to the consumer. Under a VAT, each party pays tax on the increase in the value of the bread resulting from each stage of the process, with the consumer paying a price which includes tax on the full value of the bread. By contrast, a retail sales tax does not apply to the intermediate stages of production. Consumers still pay a tax on the full value of the bread, but only the grocer makes tax payments.

One major concern with a VAT is that it could prove more burdensome as a share of income on low income households than it would on high income households. Analyzing the distributional burden of a VAT is challenging because the timing of its liability would be different from that of an income tax. A VAT also would impose transitional burdens on wealth accumulated before its enactment that standard distribution methodologies typically do not capture. The methodology employed by the estimating agencies matters tremendously because different methods of estimating the distributional burden of a VAT can significantly affect the assessments of impact.

Methodologies Overview

This paper evaluates alternative methodologies for measuring the distributional impact of a national VAT and proposes two separate approaches: one for estimating the long-run distributional impact of a VAT after its transitional effects have been fully realized and it has become a permanent part of the tax system, and another for estimating the transitional effects of a VAT when it is first imposed. The long-run methodology is designed to be consistent with existing practices for estimating the distributional effects of changes in the individual income, corporate income and payroll taxes so that a VAT can be directly compared with other taxes, while also making improvements on previous long-run methods. The methodology for estimating transitional burdens is designed to address policy makers' concerns about the short-term effects of introducing a national VAT on certain populations, particularly older individuals who might be spending down their wealth and are therefore paying VAT on consumption out of prior income that has already borne income tax.

Because proposals for a VAT have not been under active consideration recently by either the Executive Branch or the Congress, the federal tax estimating agencies – OTA, JCT and CBO – have not been required recently to estimate the distributional effects of a VAT. All the agencies have prepared such estimates in the past, but this previous work may not accurately reflect how the agencies would estimate the distributional effects of a national VAT today based on their current methodologies for performing distributional analyses.

TPC's proposed new methodology for distributing the impact of a VAT has key improvements over past methodologies:

- It separates the analysis between fully phased-in effects and transitional effects;
- In the transition, it provides a new way of estimating the burden on existing wealth that captures how it varies with an individual's age and the projected spend down of this wealth; and,
- It holds real government spending constant after a VAT is implemented so that the net effects of the VAT on the federal deficit are properly measured.

It also recognizes the fact that wage-indexed cash transfer payments, such as Social Security and unemployment compensation, bear a VAT burden in the long run.

TPC's simulations using its new proposed methodology show how it can be used for analysis on real-world VAT legislation. By clarifying the timing and level of the burden of a VAT on people with different incomes, the new methodology will help policy makers make more-informed decisions on legislation and will help them craft tax reform and deficit reduction plans that are consistent with their budgetary and distributional objectives.

Components of TPC's Proposed New VAT Methodology

The paper evaluates the different methodological assumptions necessary to analyze the distributional impact of a VAT, including the following:

Sources and Uses of Income

For the purposes of tax analysis, households differ among each other in two ways: how they allocate their income between consumption and saving ("uses"), and how they earn their income, such as from the wages earned from labor services or the interest, dividends and capital gains earned as a return on capital ("sources"). A pure uses approach would distribute the burden of a VAT in proportion to the amount of taxable goods and services a household consumed relative to its income. A sources approach instead would analyze a VAT as a tax on income that would exempt current saving, but also would tax net withdrawals from saving accounts. Because exempting saving is equivalent to exempting the "normal" (expected) return on saving, the sources approach distributes the burden of a VAT in proportion to the sum of labor compensation plus "supernormal" investment returns (profits above market expectations), but treats the normal return to saving as exempt.

In principle, the sources and uses approaches yield equivalent present value results over an individual's lifetime, but in reality they have major practical and conceptual differences, and in a given year the two approaches can produce significantly different estimates of burden. Thus, the choice between the sources and uses method is a fundamental modeling decision. Recently, OTA and TPC have used a sources method to analyze the burden of consumption taxes such as a VAT. A 1993 JCT pamphlet also recommended a sources approach, but JCT has not released any distributional estimates of a VAT since then. A 1992 CBO study relied on a uses approach, but CBO also has not performed any recent distributional estimates of a VAT.

In this proposed new methodology, TPC for several reasons relies on a sources approach to distribute the burden of a VAT. First, the income data available from the Internal Revenue Service for the sources method is of higher quality for this purpose than the data on the ratio of consumption to income reported in the Consumer Expenditure (CE) survey. Second, all three federal agencies already use a sources method for analyzing the distribution of income and payroll taxes, so a distributional analysis of a VAT performed under the sources method would be comparable to analyses already done for other federal taxes and also would allow for a comparison of competing tax proposals. Third, all three federal agencies and TPC use some form of current income to measure economic well-being, and therefore the sources method properly aligns measures of tax burden and its timing with measures of income. TPC does, however, apply a uses method for estimating the effects of exempting selected goods and services from a VAT. The data in the CE were designed for measuring the consumer price index and therefore provide a good basis for measuring the composition of consumption by households at different income levels.

Long-Run vs. Transitional Burdens

Standard distribution tables show estimates of the long-run burden of a tax or tax change – the burden after the tax or tax change has been in place for an extended period of time. Long-run estimates of the burden of a VAT would treat it as a tax on labor income (because it reduces real wages) and super-normal returns to capital, but not on normal returns to capital which are exempt. Cash transfer payments that are based on past earnings histories (e.g., Social Security benefits and unemployment compensation) also bear a long-run VAT burden.

Estimates of transitional burdens make two major modifications to the long-run estimates. First, current wealth holders bear a lump sum tax on their wealth because a VAT base includes returns and spending from old wealth. TPC measures the burden of this tax as the estimated annual annuity from the returns and spending down of old wealth over a tax unit's expected lifetime. The burden is higher for individuals who spend down a larger fraction of their wealth and for those with a shorter remaining life expectancy. Second, the transitional burden measure treats receipts of indexed cash transfer payments, in particular Social Security benefits, as exempt. The nominal value of these benefits would be unchanged if wages fall (see below). And the benefits are indexed to the Consumer Price Index (CPI) so the Social Security benefits of current retirees are also protected if the VAT causes the consumer price level to rise. The proposed new methodology includes separate estimates of the long-run and transitional burdens.

Price Level

A national VAT would introduce a gap between the prices consumers pay for goods and services and the prices producers receive. Depending on how the Federal Reserve reacts, either consumer prices could rise or producer prices could fall. If consumer prices rise, the nominal value of labor (wages) and income from capital would not change, but their real value (purchasing power) would fall. If instead consumer prices remain constant, then both the real and nominal values of wages would fall. The nominal value of equity capital (e.g. stocks and business assets that are not publicly traded) also would fall. Because contractual interest payments for debt capital are fixed in nominal terms, the entire transitional burden on old wealth would fall on equity owners.

All three federal agencies currently assume that real GDP and the overall price level remain constant in response to changes in tax law. However, in past work, both JCT and CBO have analyzed a VAT assuming it raises consumer prices. The assumption about the consumer price level mostly does not affect the real burden of a VAT. However, it does matter in the case of recipients of income that is fixed in nominal terms. Thus, in the transition, bond holders and recipients of un-indexed cash transfer payments bear no burden if consumer prices are unchanged, but do bear a VAT burden if consumer prices rise. The proposed new methodology assumes that consumer prices remain constant. It could be easily modified, however, to allow for an assumption that consumer prices rise when a VAT is introduced.

Government Spending, Revenues and Transfers

Reduction in Other Taxes
TPC follows the assumption used by the Treasury and JCT in revenue estimates that increases in sales and excise taxes reduce receipts from individual income, corporate income and payroll taxes. This assumption follows from the fact that, with prices and real GDP held fixed, sales and excise taxes must reduce wages and profits. TPC distributes to tax units the benefits from reducing income and payroll taxes that would accompany a VAT.

Federal Spending and Deficit
TPC explicitly assumes in its new methodology that real federal spending remains fixed after the introduction of a VAT. Since TPC also assumes that wages and producer prices decline and that the federal government is zero-rated – that is, it does not incur VAT on either its purchases of

labor or its purchases of goods and services from the private sector – nominal government spending must decline to hold real spending fixed. The decline in government spending reduces the deficit and means that the VAT rate need not be as high to accomplish a given fiscal policy goal as it would otherwise be. Currently, the federal agencies do not account for this decline in nominal spending under a VAT, so TPC's proposed new methodology would show a larger net effect on deficit reduction from a given VAT than the agencies. This results from the fact that the estimating agencies only address effects on federal receipts, and do not consider how a VAT might change nominal federal spending with real federal spending held fixed.

State and Local Spending and Revenues

If state and local governments are zero-rated under a national VAT, then the only net effect on state and local governments from a VAT if prices rise is from the higher cost of reimbursing purchases subject to a VAT (e.g. Medicaid spending if medical services were subject to a VAT). If the consumer price level is unchanged, as TPC assumes, then nominal sales, income and property tax revenues would fall – worsening state and local budget balances – but spending on employee compensation and purchases from business also would fall, improving state budget balances. Since employee compensation and purchases from business are a larger share of state and local spending than the share of revenues from sales, income and property taxes, the net effect would be improved state and local budget balances. TPC assumes in its proposed new methodology that federal grants to states will be adjusted to keep state and local real spending and budget balances unchanged. Any increase or decrease in federal grants is reflected in the required VAT rate to accomplish a fiscal objective and is therefore fully accounted for in measuring the burden imposed on taxpayers.

Cash Transfer Payments to Individuals

Government cash transfer benefit programs such as Social Security and unemployment insurance may be affected by a VAT. In the transition, if consumer prices remain unchanged after a VAT is enacted, as TPC assumes, Social Security benefits and other cash transfer payment benefits will stay constant. In the long run, however, Social Security and some other benefits will fall because their initial value is indexed to wages. Alternatively, if consumer prices rise, then benefits to existing Social Security recipients also will rise because they are indexed for changes in the CPI, but the long-run effect still will be a fall in real Social Security benefits.

New Methodology and Simulations

TPC used its tax microsimulation model as well as the Urban Institute's Dynamic Simulation of Income Model (DYNASIM) to show the distributional impact of a VAT based on the proposed new methodology. TPC's tax microsimulation model includes data from a sample of returns that represents every tax return filed in the U.S., while DYNASIM simulates the demographic and economic characteristics of U.S. individuals over their entire future lifetimes.

TPC's estimate of the revenue effects of a VAT is based on National Income and Product Accounts data and is methodologically similar to previous estimates. The one innovation is that TPC also estimates the decline in nominal federal spending associated with keeping real spending constant. Using the proposed new methodology, TPC estimates that a 5 percent VAT levied on all consumption (a "comprehensive" base) with no rebate would lower the federal deficit by $460 billion at 2015 levels, after accounting for the transitional burden on old capital and transitional relief for current transfer payment recipients. It would reduce the deficit by $555 billion at 2015 levels, if its effects were fully phased-in. In both cases, gross VAT revenues are partially offset by reductions in individual and corporate income taxes as well as payroll taxes.

TPC's proposed new methodology changes the estimated distributions of burdens from a national VAT. Under TPC's old methodology, a 5 percent VAT with a comprehensive base and no rebate would have lowered after-tax income by an average of 3.5 percent for the lowest cash income quintile of Americans and by 4.2 percent for the highest cash income quintile (including all other tax and spending offsets mentioned earlier), making such a VAT slightly progressive. The new methodology finds burdens of 4.2 percent for the lowest quintile and 5.0 percent for the highest quintile when accounting for transitional effects on current cohorts. However, when the VAT is fully phased-in, the new methodology finds that it is moderately regressive, lowering after-tax income by 5.8 percent for the lowest quintile and 4.9 percent for the highest quintile. The overall estimated VAT burden is higher under the new method because the new method takes account of the loss in private income associated with reduced payments to workers, retirees and business suppliers by the federal government. The paper also shows an illustrative simulation of a broad-base, but not fully comprehensive, national VAT with a rebate designed to offset the VAT burden for tax units with incomes up to the poverty level. When fully phased in, this illustrative VAT still is estimated to be moderately regressive without the rebate, but becomes progressive through nearly all of the income distribution with the rebate.

The insights from this TPC paper should prove useful to the agencies as they consider how methods of estimating the distributional burden of a national VAT may be updated.