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Value-Added Tax: A New U.S. Revenue Source?

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Summary

President George W. Bush has stated that tax reform is one of his Administration's top priorities. Some form of a value-added tax (VAT), a broad-based consumption tax, has been frequently discussed as a full or partial replacement for the U.S. income tax system. In the 109th Congress, five bills have been introduced that would levy some type of a VAT in order to reform the tax system: H.R. 1040, H.R. 4707, S. 812, S. 1099, and S. 1921. In addition, H.R. 15 would levy a VAT to finance national health insurance.

A VAT is imposed at all levels of production on the differences between firms' sales and their purchases from all other firms. For calendar year 2005, a broad-based VAT in the United States would have raised net revenue of approximately $50 billion for each 1% levied. Most other developed nations rely more on broad-based consumption taxes for revenue than does the United States. A VAT is shifted onto consumers; consequently, it is regressive because lower-income households spend a greater proportion of their incomes on consumption than higher-income households. This regression, however, could be reduced or even eliminated by any of three methods: a refundable credit against income tax liability for VAT paid, allocation of some of VAT revenue for increased welfare spending, or selective exclusion of some goods from taxation.

From an economic perspective, a major revenue source is better the greater its neutrality — that is, the less the tax alters economic decisions. Conceptually, a VAT on all consumption expenditures, with a single rate that is constant over time, would be relatively neutral compared to other major revenue sources. A VAT would not alter choices among goods, and it would not affect the relative prices of present and future consumption. But a VAT cannot be levied on leisure; consequently, a VAT would affect households' decisions concerning work versus leisure.

The imposition of a VAT would cause a one-time increase in this country's price level. But a VAT would not necessarily affect this country's future rate of inflation if the Federal Reserve offset the contractionary effects of a VAT with a more expansionary monetary policy. If the United States continued its policy of flexible exchange rates, then the imposition of a VAT would not significantly affect the U.S. balance-of-trade. There is no conclusive evidence that a VAT would change the rate of national saving more than another type of major tax increase.

The high revenue yield from a VAT would cause administrative costs to be low, measured as a percentage of revenue yield. In comparison to other broad-based consumption taxes, VATs have produced relatively good compliance rates. Whether or not a federal VAT would encroach on the primary source of state revenue, the sales tax, is subject to debate. A federal-state VAT could be collected jointly, but a state would lose some of its fiscal discretion.

This report will be updated as issues develop, new legislation is introduced, or as otherwise warranted.

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Introduction

President George W. Bush has stated that tax reform is one of his top priorities. His President's Advisory Panel on Federal Tax Reform analyzed different reform options including a "Partial Replacement VAT," or value-added tax. Although the Panel did not recommend the VAT option, it viewed this option as worthy of further discussion.[1] Some Members of Congress are expressing interest in examining the feasibility of levying some form of a value-added tax as a way to reform the tax code or finance national health care. Some Members have sponsored legislation levying a flat-rate tax, which is essentially a modified value-added tax, as a replacement for our income tax system.[2] One Member has introduced legislation that would replace our tax system with a national retail sales tax and a VAT.[3] Another Member proposed a bill that would replace our income tax system with a VAT and a tax on consumed income.[4] In the 109th Congress, five bills have been introduced that would levy some type of a VAT in order to reform the tax system: H.R. 1040, H.R. 4707, S. 812, S. 1099, and S. 1921.[5] In addition, H.R. 15 would levy a VAT to finance national health insurance. Furthermore, some advocates of a VAT argue that

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[1] The President's Advisory Panel on Federal Tax Reform, *Simple, Fair, & Pro-Growth: Proposals to Fix America's Tax System* (Washington: U.S. Department of the Treasury, Nov. 1, 2005), pp. 191-192. This report is available at [http://www.taxreformpanel.gov]. For an analysis of the Panel's proposals, see CRS Report RL33545, *The Advisory Panel's Tax Reform Proposals*, by Jane G. Gravelle.

[2] The combined individual and business taxes proposed by the typical flat tax can be viewed as a modified value-added tax (VAT). The individual wage tax would be imposed on wages (and salaries) and pension receipts. Part or all of an individual's wage and pension income would be tax-free, depending on marital status and number of dependents. The business tax would be a modified subtraction-method VAT with wages (and salaries) and pension contributions subtracted from the VAT base, in contrast to the usual VAT practice. For a comprehensive analysis of the flat tax, see CRS Report 98-529, *Flat Tax: An Overview of the Hall-Rabushka Proposal*, by James M. Bickley.

[3] For an overview of the economic effects of consumption tax proposals, see CRS Report RL32603, *The Flat Tax, Value-Added Tax, and National Retail Sales Tax: Overview of the Issues*, by Gregg A. Esenwein and Jane G. Gravelle.

[4] Under a consumed-income tax, individuals would keep their assets in an account equivalent to a current IRA (individual retirement account). Net contributions to this account (contributions less withdrawals) would be deducted from income to determine the level of consumed income, which would be taxed.

[5] For an overview of fundamental tax reform proposals, see CRS Report RL33443, *Flat Tax Proposals and Fundamental Tax Reform: An Overview*, by James M. Bickley.

this tax is needed to meet the long-term revenue requirements of the federal government.[6]

Arguably, the primary reason for congressional interest in the VAT is its high potential revenue yield. For calendar year 2005, a VAT imposed on most goods and services would have raised a net revenue of approximately $50 billion for each 1% rate levied.[7]

Other aspects of a VAT that often raise interest or concern include international comparison of composition of taxes, equity, neutrality, inflation, balance-of-trade, national saving, administrative cost, compliance, and intergovernmental relations. This report considers the experiences of the 29 nations with VATs in the 30 member Organization for Economic Cooperation and Development (OECD), relevant to the feasibility and operation of a possible U.S. VAT. Currently, the OECD consists of 22 European nations, Turkey, the United States, Canada, Australia, New Zealand, Japan, Mexico, and South Korea. In order to examine different aspects of a VAT, it is important to understand the concept of a value-added tax, including the types of VATs, the different methods of calculating VATs, and exemption versus zero-rating.

Concept of a Value-Added Tax

A value-added tax is a tax, levied at each stage of production, on firms' value added. The value added of a firm is the difference between a firm's sales and a firm's purchases of inputs from other firms. In other words, a firm's value added is simply the amount of value a firm contributes to a good or service by applying its factors of production (land, labor, capital, and entrepreneurial ability).[8] Another method of calculating a firm's value added is to total the firm's payments to its factors of production.

Types of VAT

There are three types of VATs that differ in their tax treatment of purchases of capital inputs (plant and equipment). Under the *consumption VAT*, capital purchases are treated the same way as the purchase of any other input: the purchase price is deducted at the time of purchase. This tax treatment of capital purchases is equivalent to expensing. Under the *income VAT*, the VAT paid on the purchases of capital inputs is amortized (credited against the firm's VAT liability) over the

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[6] For example, see Committee for Economic Development, *A New Tax Framework: A Blueprint for Averting a Fiscal Crisis* (Washington, 2005), 45 p.

[7] CRS figure derived from VAT revenue estimates in the following source: William G. Gale and C. Eugene Steuerle, "Tax Policy Solution," in Alice M. Rivlin and Isabel Sawhill, eds., *Restoring Fiscal Sanity — 2005* (Washington: Brookings Institution Press, 2005), p. 113.

[8] These factors of production have specific meanings to an economist. Labor consists of all employees hired by the firm. Land consists of all natural resources including raw land, water, and mineral wealth. Capital is anything used in the production process that has been made by man. The entrepreneur is the decision maker who operates the firm.

expected lives of the capital inputs. Under the *gross product VAT*, no deduction for the VAT on purchases of capital inputs is allowed against the firm's VAT liability.

All 29 OECD nations with VATs use the consumption type. The consumption VAT is the type usually advocated for this country. Indeed, most VAT advocates intend to shift tax burdens from capital income to consumption. Furthermore, a consumption VAT is simpler to compute because firms do not have to separate expenditures for capital from other expenditures.

Methods of Calculating VAT

There are three alternative methods of calculating VAT: the credit method, the subtraction method, and the addition method.[9] Under the *credit-invoice method*, a firm would be required to show VAT separately on all sales invoices.[10] Each sale would be marked up by the amount of the VAT. A sales invoice for a seller is a purchase invoice for a buyer. A firm would calculate the VAT to be remitted to the government by a three-step process. First, the firm would aggregate VAT shown on its sales invoices. Second, the firm would aggregate VAT shown on its purchase invoices. Finally, aggregate VAT on purchase invoices would be subtracted from aggregate VAT shown on sales invoices, and the difference remitted to the government. The credit-invoice method is calculated on a transactions basis.

Under the *subtraction method*, the firm calculates its value added by subtracting its cost of taxed inputs from its sales. Next, the firm determines its VAT liability by multiplying its value added by the VAT rate.[11] Most flat tax proposals are modified subtraction method VATs. Under the *addition method*, the firm calculates its value added by adding all payments for untaxed inputs (e.g., wages and profits). Next, the firm multiplies its value added by the VAT rate to calculate VAT to be remitted to the government.

The credit-invoice method is used by 28 of 29 OECD nations with VATs. Tax economists differ in their classifications of the Japanese VAT. Both the credit-invoice and the subtraction methods have been discussed for the United States. The prevailing view of economists is that the credit-invoice method is superior. This method requires registered firms to maintain detailed records that are cross indexed with supporting documentation. A VAT shown on the sales invoice of one firm is the same as the VAT shown on the purchase order of another firm. Hence, the credit-invoice method allows tax auditors to cross check the records of firms. Also, each firm has a vested interest in insuring that the VAT shown on its purchase orders is not understated so the firm can receive full credit against VAT liability for VAT

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[9] Numerical examples with explanations of these three methods of calculating VAT are shown in Appendix A.

[10] An exception is the final retail stage where policymakers have the option of including or excluding the VAT from the retail sales slip.

[11] For a comprehensive explanation and analysis of methods to calculate VAT, see *Value-Added Tax: Methods of Calculation*, by James M. Bickley, a CRS general distribution memorandum available from the author.

previously paid. Thus, the credit-invoice method would seem to be easier to enforce. Also, the credit-invoice method is probably the only feasible method if there are to be multiple tax rates.

Supporters of the subtraction method maintain that it would have low compliance costs because all necessary data could be obtained from records kept by a firm for other purposes. Still, a firm would have to make calculations based on these data. For example, deductible expenses would have to be separated from nondeductible expenses, and some data expressed on an accrual basis would have to be converted to a cash flow basis.

The credit-invoice method would have substantial compliance costs because the amount of VAT would have to be shown on every sales invoice (and, conversely, on every purchase invoice). On the plus side, however, the credit-invoice method would yield an additional data base to firms. Some firms might find these additional data useful in decision making. For example, records of purchase invoices and sales invoices may improve some firms' control over their inventories. Compliance costs of the credit-invoice method might be partially offset by the value of the VAT data base to firms, but this value has never been quantified.

The credit-invoice method would have greater administrative costs than the subtraction method because of its requirements for additional data, computations, and record-keeping. Although there are data on the administrative costs of a VAT calculated by the credit-invoice method, empirical data are not available on the subtraction method; consequently, a quantitative comparison of costs currently is not feasible. The subtraction method would not work administratively if many goods are exempt or if multiple tax rates are levied. Unless specified otherwise, this report will assume that the credit-invoice method is used and that the VAT is the consumption type.

Exemption Versus Zero-Rating

None of the VAT proposals would require all firms to collect the VAT. The two fundamental methods of giving special tax treatment to businesses in an industry under a VAT are exemption and zero-rating. An exempt business would not collect VAT on its sales and would not receive credit for VAT paid on its purchases of inputs. An exempt business would not register with tax authorities, and, consequently, would not be part of the VAT system. Hence, an exempt business would not have the usual VAT compliance costs and would not impose administrative costs on the government (except verification of its exemption, of course). An exempt business's costs, however, include any tax paid on inputs, because it receives no credit for previously paid taxes.

A zero-rated business would not collect VAT on its sales but would receive credit for VAT paid on its inputs. This is equivalent to the business being charged a zero tax rate. A zero-rated business would be a registered taxpayer, and, consequently, would involve the usual compliance and administrative costs. A zero-rated business, however, would receive a refund of any VAT paid on its inputs, so its costs would not include VAT paid at earlier stages. The effects on final prices and

total VAT collected by the government caused by exempting or zero-rating firms would vary with the stage of production.

An exempt retailer would not charge any VAT on its sales but it would not receive any credit for VAT previously paid on its inputs, so its price to the final consumer would include all VAT paid except that on its own value-added. The government would have collected a tax on all the value added in the product except the retailer's.

A zero-rated retailer would not charge any VAT on its sales, but it would receive credit for all VAT previously paid on its inputs. A zero-rated retailer would not remit VAT to the government, but it would receive a refund for VAT previously paid by suppliers. Hence, the price of the commodity would not include any VAT, and the government would receive no revenue.

Exempting or zero-rating a retailer would not affect the linkage (or chain) of VAT collections and credits between different stages of production because retailers are the final stage of production and distribution. But exempting or zero-rating an intermediate stage, such as manufacturing of wholesaling, would break the chain between firms at different stages of production.

Exempting, however, causes a far more serious break than zero-rating. For example, an exempt manufacturer would not collect VAT on sales to a wholesaler and would not receive credit for VAT paid on inputs. A nonexempt wholesaler would not receive credit for the VAT paid on the manufacturer's inputs included in the price it paid the manufacturer. But the wholesaler would remit VAT collected on all of its sales, so some of the value added in the product would be taxed twice. Consequently, exempting a manufacturer or any other intermediate producer would increase total VAT collected by the government and the final retail price of the commodity.

A zero-rated manufacturer would not collect VAT on sales but would receive credit for VAT paid on inputs. The price paid by the wholesaler, therefore, would contain no VAT. The nonexempt wholesaler would collect VAT on sales and would not be eligible for any VAT credits, but the total VAT at that point would exactly equal what it would have been had there been no untaxed stage. Subsequent stages of production would charge VAT on sales and would receive credit for VAT paid on inputs as though there had been no break in the chain. Hence, zero-rating a manufacturer or other intermediate stage would change neither total VAT remitted nor the retail price on the commodity.[12]

If both zero-rated firms and exempt firms operate at the same level of production in the same industry, the zero-rated firms would have a competitive advantage, because their costs are less by the amount of the VAT.

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[12] Table B1 in appendix B summarizes the selective economic effects of exemption and zero-rating, which were discussed in this section.

Policy makers may be faced with a decision to either zero-rate or exempt a particular product.

> [Z]ero-rating is desirable when the objective is to exclude the consumption of the product completely from tax, where an exemption is warranted when it is not regarded as feasible or desirable to tax the activity but some tax on final consumption is considered desirable....
>
> There are two major objections to exemption. First, cascading results as the exempt firms and their business customers cannot receive input tax credit. Secondly, firms producing both exempt and taxable (including zero-rated) items must allocate inputs between exempt and non-exempt categories, and this is difficult to accomplish in any non-arbitrary way and to control.[13]

Revenue Yield

In estimating a VAT's revenue yield, economists and public officials use the operating assumption that a VAT would be fully shifted to final consumers in the form of higher prices of goods. A VAT (or any other major tax increase) would have a contractionary effect on the economy unless offset by other economic policies. Consequently, a revenue estimate is generally made under the assumption that the Federal Reserve would use an expansionary monetary policy to neutralize the contractionary effects of a VAT. Also, a revenue estimate does not take into account the possible shifts in consumption patterns that might be expected if some items are taxed and others are excluded from taxation.

The potential revenue per 1% rate from a VAT would vary with the comprehensiveness of the tax base. A broad-based VAT would have limited exclusions, while a narrow-based VAT would have numerous exclusions. Obviously, the broader the tax base, the lower the tax rate necessary to raise a given amount of revenue.

Furthermore, the broader the VAT base, the more efficient it is. The exclusion of goods from taxation changes their prices relative to taxed goods. Changes in relative prices cause economic distortions. Consumers tend to substitute lower-priced goods for higher-priced goods.

There are three primary justifications for excluding specific items from taxation under a VAT.[14] First, the VAT would be difficult to collect because sellers of some types of goods and services could easily avoid reporting their sales. For example, VAT would be difficult to collect on expenditures for domestic services and expenditures abroad by U.S. residents. Second, some goods are excluded on equity

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[13] John F. Due, Some Unresolved Issues in Design and Implementation of Value-Added Taxes, *National Tax Journal*, vol. 43, no. 4, Dec. 1990, p. 385.

[14] This classification of justifications for exclusion from VAT taxation was derived from the following source: Alan A. Tait, *Value-Added Tax: International Practice and Problems* (Washington, International Monetary Fund, 1988), p. 56.

grounds, since these goods claim disproportionately large percentages of the incomes of lower-income families. (Data on spending patterns do not, however, suggest that exclusions can have a very powerful effect on the distribution of a VAT.)[15] Third, some goods may be excluded because they are merit goods, that is "goods the provision of which society (as distinct from the preferences of the individual consumer) wishes to encourage."[16] Some items may be justified for exclusion for more than one reason.

William G. Gale of the Brookings Institution and C. Eugene Steuerle of the Urban Institute estimate that each percentage point of a VAT with only a few exclusions could generate net revenue equivalent to 0.4% of gross domestic product (GDP).[17] For calendar year 2005, U.S. gross domestic product was $12.5 trillion.[18] For calendar year 2005, each 1.0% rate for a VAT could have raised net revenue of approximately $50 billion with a broad base. Thus, for 2005, according to the Gale/Steuerle estimate, a U.S. VAT of 5% would have generated $250 billion in revenue. In comparison, for fiscal year 2005, the individual income tax yielded $927 billion.[19]

The VAT's high revenue yield at a low tax rate not only makes it a possible source revenue for tax reform but also has generated concerns among some that VAT revenues may finance a larger public sector. The issue of VAT and the size of government is examined in a later section of this report.

International Comparison of Composition of Taxes

One argument frequently made for a U.S. VAT is the relatively heavy reliance on consumption taxes by other developed countries. For 2003, for taxes on general consumption (e.g., VATs and sales taxes), the United States (federal, state, and local governments) had a lower reliance (8.4%) of total tax revenues than any other OECD nation.[20] Also for 2003, the United States' (federal, state, and local governments)

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[15] U.S. Congressional Budget Office, *Effects of Adopting a Value-Added Tax* (Washington, U.S. Govt. Print. Off., Feb. 1992), pp. 22 — 26.

[16] Richard A. Musgrave and Peggy B. Musgrave, *Public Finance in Theory and Practice*. 4th ed. (New York: McGraw-Hill, 1984), p. 78.

[17] William G. Gale and C. Eugene Steuerle, p. 113.

[18] Bureau of Economic Analysis, U.S. Department of Commerce, [http://www.bea.gov/bea/dn/dpga.txt].

[19] U.S. Executive Office of the President, Office of Management and Budget, *Historical Tables, Budget of the United States Government, Fiscal Year 2007* (Washington: GPO, 2006), p. 30.

[20] OECD, *Revenue Statistics: 1965 — 2004* (Paris: OECD Publishing, 2005), p. 81. For data by country, see table C1 in appendix C.

general consumption taxes as a percentage of gross domestic product (2.1%) were lower than any other nation in the OECD.[21]

This lower reliance on consumption taxes may result from all other developed nations having a VAT at the national level. A VAT is a requirement for membership in the European Union (EU).[22] Sweden, Norway, Iceland, and Switzerland had retail sales taxes at the national level but eventually switched to a VAT.[23] According to the OECD:

> The spread of Value Added Tax (also called Goods and Services Tax — GST) has been the most important development in taxation over the last half-century. Limited to less than 10 countries in the late 1960s it has now been implemented by about 136 countries; and in these countries (including OECD member countries) it typically accounts for one-fifth of total tax revenue. The recognized capacity of VAT to raise revenue in a neutral and transparent manner drew all OECD member countries (except the United States) to adopt this broad based consumption tax.[24]

Policy insights can be obtained by examining the experiences of other nations; however, just because other nations exhibit a specific tax policy does not necessarily mean that it is appropriate for the United States to adopt this policy. Economic analysis of optimal taxation suggests that those choices depend on issues of efficiency, equity, and administrative and compliance costs, and should be made in the context of the overall tax and spending structure. These considerations may vary from one country to another.

Equity

A major topic concerning any proposed tax or tax change is the distribution or equity of the tax among households. There are two types of equity: vertical and horizontal. Vertical equity concerns the tax treatment of households with different abilities-to-pay. Horizontal equity concerns the degree to which households with the same ability-to-pay are taxed equally. Both vertical and horizontal equity may be affected by the measure of ability-to-pay and the tax period.

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[21] Ibid, p. 66. For data by country, see table C1 in Appendix C.

[22] Sijbren Cnossen, "VAT and RST: A Comparison," *Canadian Tax Journal*, vol. 35, no. 3, May/June 1987, p. 583.

[23] Cnossen, *VAT and RST: A Comparison*, p. 585 and OECD, *Consumption Tax Trends* (OECD, March 2005), p. 11.

[24] OECD, *International VAT/GST Guidelines* (OECD, Feb. 2006), p. 1. Available at [http://www.oecd.org].

Ability-to-Pay

The most common measure of ability-to-pay is income.[25] Proponents of income as a measure of ability-to-pay argue that saving yields utility by providing households with greater economic security. Federal data are more readily available on different measures of income than different levels of consumption. For example, the federal government reports levels of disposable income, which equals consumption plus saving. Thus, tax economists can more easily calculate tax incidence if income instead of consumption is the measure of ability-to-pay.

Some arguments for the consumption tax base suggest that personal consumption is the best measure of ability-to-pay because consumption is the actual taking of scarce resources from the economic system. Some economists argue that consumption may be a better proxy for permanent income than is current income (see discussion below).

Time Period

Tax incidence usually is measured by using a one-year period. Data on consumption and income are readily available in one-year increments and the concept of a one-year period is easily understood. But many economists believe tax incidence is more accurately determined by measuring consumption and income over a household's lifetime. Lifetime income and consumption are affected by the life cycle concept and transitional components of income. According to this life cycle concept, a household makes current consumption decisions based on its expected future flow of income, averaging its consumption over its lifetime.

For example, a common life cycle is low income in the household's early years, high income in the household's middle years, and low income in the household's retirement years. A young household may save a small percentage of its income in order to acquire consumer durables. In its middle years, this household may save a high percentage of its income while its income is highest. Finally, during its retirement years, this household may save a small percentage of its income in order to maintain its consumption level. Thus, annual consumption tends to be more stable than annual income over the household's life cycle.

Although many economists prefer the concept of lifetime income, federal data are not collected on a lifetime basis. Consequently, economists have developed life-cycle models in an attempt to measure equity, but the distributional results from these models are subject to widespread debate.

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[25] For an overview of the incidence of the VAT using income as a measure of ability-to-pay, see U.S. Congressional Budget Office, *Effects of Adopting a Value-Added Tax* (Washington: Feb. 1992), pp. 31-47.

Vertical Equity[26]

If disposable income over a one-year period is the measure of ability-to-pay, then a VAT would be viewed as extremely regressive; that is, the percentage of disposable income paid in VAT would decrease rapidly as disposable income increases. In most discussions of tax policy, both a one-year period and annual disposable income (or some other annual income measure) are used; consequently, the VAT is viewed as being extremely regressive. For example, CBO calculated the annual incidence of a 3.5% broad-based VAT for 1992. CBO found that all families would have paid 2.2% of their income in VAT. The burden on family income was 4.8% on the lowest quintile, 3.2% on the second quintile, 2.8% on the middle quintile, 2.3% on the fourth quintile, and 1.5% on the highest quintile.[27]

If disposable income over a lifetime is the measure of ability-to-pay, a VAT would be mildly regressive. For lower- and middle-income households, it appears that nearly all savings are eventually consumed.[28] Thus, it may be that for the vast majority of households, lifetime consumption and lifetime income are approximately equal. High-income households tend to have net savings over their lifetimes; consequently, they would pay a lower proportion of their disposable incomes in VAT than would lower-income groups. But these highly stylized life-cycle models are controversial.[29]

If consumption is used as a measure of ability-to-pay, a single-rate VAT with a broad base would be approximately proportional regardless of the time period. In other words, the percentage of consumption paid in VAT by households would be approximately constant as the level of household consumption rises.

Another equity issue concerns the burden of a VAT on different age groups. If older individuals on the average consume more out of savings than younger individuals, then a VAT would fall more heavily on the old than the young. Conversely, an increase in the personal income tax would fall more heavily on the young than the old.

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[26] For a comprehensive analysis of the vertical equity of a VAT, see Erik Caspersen and Gilbert Metcalf, "Is a Value-Added Tax Progressive? Annual Versus Lifetime Incidence Measures," *National Tax Journal*, vol. 47, no. 4, Dec. 1994, pp. 731-746; and U.S. Congressional Budget Office, *Effects of Adopting a Value-Added Tax*, pp. 31-47.

[27] U.S. Congressional Budget Office, *Effects of Adopting a Value-Added Tax*, p. 35.

[28] Franco Modigliani, a Nobel Laureate in economics, estimated that at least 80% of all savings by households are eventually spent on consumption. See Franco Modigliani, "The Role of Intergenerational Transfer and Life Cycle Saving in the Accumulation of Wealth," *Journal of Economic Perspectives*, vol. 2, no. 2, spring 1988, pp. 15-23.

[29] For examples of life-cycle models, see Don Fullerton and Diane Lim Rogers, "Lifetime Effects of Fundamental Tax Reform," in *Economic Effects of Fundamental Tax Reform*, Henry J. Aaron and William G. Gale, eds. (Washington: Brookings Institution Press, 1996), pp 321-352; and David Altig, Alan J. Auerbach, Laurence J. Kotlikoff, Kent A. Smetters, and Jan Walliser, "Stimulating Fundamental Tax Reform in the United States," *The American Economic Review*, vol. 91, no. 3, June 2001, pp. 574-595.

Policy Options to Alleviate Regressivity

Some supporters of progressive taxation oppose the VAT primarily because they believe that it is regressive. No mechanism is likely to introduce progressivity at higher income levels. But critics are especially concerned about the absolute burden of a VAT on low-income households. The degree of regressivity on lower-income households, however, can be reduced by government policy. Three often-mentioned policies are exclusions and multiple rates, income tax credits, and earmarking of some revenues for increased social spending (including indexed transfer payments).

Exclusions and Multiple Rates. The incidence of the VAT depends on its tax base; therefore, the regressivity of the VAT can be reduced or eliminated by excluding (zero-rating or exempting) those goods that account for a disproportionately high percentage of the incomes of lower-income households. The exclusion of many necessities on equity grounds from retail sales taxes has been politically popular at the state level. All members of the European Union (EU) exclude some goods from VAT on equity grounds. Also, most EU nations have multiple tax rates on equity grounds. Reduced rates are applied to necessities and premium rates are levied on luxuries.

Despite the existing policies in the EU, most tax economists oppose exclusions and multiple rates to reduce regressivity for three reasons. First, the administrative costs, compliance costs, and neutrality costs are substantial.[30] If a VAT is to raise a given amount of revenue, then revenue lost from excluding goods must be offset by higher VAT rates. These higher rates increase the distortion in relative prices, and consequently, reduce the neutrality of the tax system. Second, the possible reduction in regressivity from exclusion and multiple rates is declining because consumption patterns for different income levels are becoming more similar.[31] Third, for a one-year time period, the reduction in regressivity is limited, particularly for low-income households. Money saved for exclusions is largely offset by higher tax rates (needed for revenue neutrality) on taxed goods.[32]

Tax Credits. The federal government could allow either a flat tax credit or a credit that diminishes as income rises, in order to overcome the regressivity of a VAT. This credit method could be operated in two ways. First, an individual could apply the credit against his federal income tax liability, thus lowering his liability on a dollar-for-dollar basis. If the tax credit exceeded the individual's tax liability, he could apply for a refund of the excess credit. A taxpayer already due a tax refund could increase the size of his refund by the amount of the tax credit. A household not subject to income taxation could apply for a tax refund equal to the credit. An

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[30] For an examination of increased administrative and compliance costs resulting from exclusions and multiple rates, see Liam Ebrill, Michael Keen, Jean-Paul Bodin, and Victoria Summers, *The Modern VAT* (Washington, D.C.: International Monetary Fund, 2001), pp.78-79.

[31] Alan A. Tait, *Value-Added Tax: International Practice and Problems* (Washington, D.C.: International Monetary Fund, 1988), p. 218.

[32] Edith Brashares, Janet Furman Speyrer, and George N. Carlson, "Distributional Aspects of a Federal Value-Added Tax," *National Tax Journal*, vol. 41, no. 2, June 1988, p. 165.

income tax credit that declines as income increases could reduce regressivity more sharply than a flat income tax credit.

Second, a stand-alone credit system could be established which would not require an eligible household to file an income tax return in order to obtain a refund for VAT paid. An eligible household would have to submit a simple form in order to receive a refund. A stand-alone credit system may be more effective than the income tax credit in encouraging low-income households to file for a refund, but administrative and compliance costs would be higher.

As stated previously, the President's Advisory Panel on Federal Tax Reform examined a proposal for a partial replacement VAT. The Panel believed that compared to current law "it would be possible to develop an approximately distributionally neutral tax credit and rate structure."[33]

But a federal credit system would incur some administrative costs, which would increase the total administrative costs of a VAT. Furthermore, households incur implicit taxes if their credits are phased out (or income tested transfers reduced).

At the federal level, studies have concluded that the refundable earned-income tax credit (EITC) has had "a significant positive impact on participation in the labor force."[34] But compliance with EITC provisions has been an ongoing issue.[35]

Earmarking of VAT Revenues. A third option to reduce or eliminate regressivity is to earmark some of the revenue from a VAT to finance an increase in income tested transfers. Aaron estimated that an increase in benefits of approximately $5 billion for a VAT yielding $100 billion could fully protect low-income families from paying the VAT.[36]

> For example, a 10 percent increase in food stamp entitlements would approximately offset the effect on households eligible for the full food stamp allotment of a VAT that raised $100 billion in revenue. This estimate is based on the fact that $100 billion will be approximately three percent of consumption in 1989 and that food is estimated to absorb about 30 percent of the budget in estimates of poverty thresholds.[37]

Many households with low taxable incomes do not currently receive transfers and would not be protected by Aaron's proposal.

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[33] The President's Advisory Panel on Federal Tax Reform, *Simple, Fair, & Pro-Growth*, p. 194.

[34] CRS Report RL31768, *The Earned Income Tax Credit (EITC): An Overview*, by Christine Scott, pp. 14-15.

[35] Ibid., pp 16-17.

[36] Henry J. Aaron, "The Political Economy of a Value-Added Tax in the United States," *Tax Notes*, vol. 38, no. 10, March 7, 1988, p. 1,113.

[37] Ibid.

Horizontal Equity

If disposable income is the measure of ability-to-pay, the horizontal equity of a VAT would depend on the time period. For a one-year period, a VAT would be very inequitable because households with the same level of disposable income would have widely differing levels of consumption and, consequently, payments of VAT.

For a lifetime period, the VAT would have a high degree of horizontal equity. For low- and middle-income households, almost all income is consumed over these households' lifetimes; consequently, households with the same lifetime incomes would have the same levels of consumption and the same VAT payments.[38] Over their lifetimes, high-income households with equal incomes differ in their levels of consumption and, consequently, VAT payments. For example, assume that two households have $10 million in lifetime income, but the first household spends $4.5 million on consumption and the second household spends $9 million on consumption. The second household would pay twice as much in VAT as the first household. Thus, for a lifetime period, the VAT is not horizontally equitable for high-income households.

Neutrality

In public finance, the more *neutral* is a tax, the less the tax affects private economic decisions and, consequently, the more efficient is the operation of the economy. Conceptually, a VAT on all consumption expenditures, with a single rate that is constant over time, would be relatively neutral compared to other major revenue sources.

For households, two out of three major decisions would not be altered by this hypothetical VAT. First, this VAT would not alter choices among goods because all would be taxed at the same rate. Thus, *relative* prices would not change. In contrast, other taxes, such as excise taxes, which change relative prices, would distort household consumer choices by encouraging the substitution of untaxed goods for taxed goods. But a hypothetical income tax on all income would be neutral in this respect.

Second, a VAT does not affect the relative prices of present and future consumption. In contrast, the individual income tax affects the relative prices of present and future consumption because the income tax is levied on income which is saved, and then the returns on saving are taxed.

A household's work-leisure decision, however, would be affected by a VAT or any other tax on either consumption or income.[39] Since leisure would not be taxed, any tax increase would fall on the returns to work.

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[38] Henry J. Aaron, "The Value-Added Tax: Sorting Through the Practical and Political Problems," *The Brookings Review*, summer 1988, p. 13.

[39] In economics, leisure is any time spent not working.

A VAT would have conflicting effects on the number of hours worked by each household. A household would have an incentive to substitute leisure for work because of the relative rise in the value of leisure to work (substitution effect). Conversely, a household would have an incentive to increase its hours worked in an attempt to maintain its current living standards (income effect). Thus, a VAT could decrease, increase, or not change a household's hours worked.

For a firm, the VAT would not affect decisions concerning method of financing (debt or equity), choice among inputs (unless some suppliers are exempt or zero-rated), type of business organization (corporation, partnership, or sole proprietorship), or goods to produce. Other types of taxes may affect one or more of these types of decisions.

But a VAT cannot be levied on all consumer goods; consequently, prices of taxed goods will rise relative to untaxed goods. Furthermore, most nations with VATs have more than one rate.[40] Multiple VAT rates alter relative prices of taxed goods. Finally, VAT rates in most nations have tended to rise over time. Despite these deviations from a pure form of VAT, a broad-based VAT is relatively neutral compared to most other taxes. This neutrality is greater if the tax rate is relatively low. But the relative neutrality of a VAT compared to an increase in the personal income tax is uncertain.[41]

Inflation

If the Federal Reserve implemented an expansionary monetary policy to offset the contractionary effects of a VAT then there would be a one-time increase in the price level. For example, an expansionary monetary policy to accommodate a 5% VAT on 60% of consumer outlays might directly cause an estimated one-time increase in consumer prices of approximately 3%. There would also be some secondary price effects. Some goods would rise in price because their factors of production, especially labor, are linked to price indexes. Yet, if the Federal Reserve disregarded these secondary price increases in formulating monetary policy, these secondary price increases would tend to be offset by price reductions in other sectors of the economy.

An examination of VATs in the OECD has found only an initial effect of a VAT on the price level. But it is difficult to empirically isolate the effect of a VAT from other possible causes of a change in the price level.

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[40] For a list of standard and reduced VAT rates for selective countries, see Appendix D.

[41] See U.S. Congressional Budget Office, *Effects of Adopting a Value-Added Tax*, pp. 56-60; and Jane G. Gravelle, " Income, Consumption, and Wage Taxation in a Life-Cycle Model: Separating Efficiency from Redistribution," *American Economic Review*, vol. 81, no. 4, Sept. 1991, pp. 985-995.

It has been suggested that the federal government exclude the VAT from price indexes. Hence, existing indexing would not have an inflationary effect.[42] But such an approach might prove unpopular and it might be contested in court.

In summary, the proper monetary accommodation for a VAT would probably cause a one-time increase in the price level but not affect the subsequent rate of inflation (i.e., cause continual increases in the general price level).

Balance-of-Trade

Currently, all nations with VATs zero-rate exports and impose their VATs on imports. This procedure for taxing trade flows is referred to as the *destination principle* because a commodity is taxed at the location of consumption rather than production. An alternative would be to apply the *origin principle* by having all nations levy their VATs on exports but not imports.[43] All experts on the VAT recommend that nations adopting a VAT use the destination principle in order to be consistent with existing practices of other countries.

The destination principle creates a level playing field because imported commodities rise in price by the percentage of the VAT, but exported commodities do not increase in price. For a particular nation, the VAT rate on domestically produced and imported products would be the same. The VAT rate on a particular good would still vary among nations.

A simple example demonstrates this concept of a level playing field. Assume nation A has a 10% VAT and nation B has a 20% VAT. Exports from nation A to nation B would not be taxed by nation A. But nation B would levy a 20% VAT on imports from nation A. Thus, consumers in nation B would pay a 20% VAT regardless of whether their purchased goods were domestically produced or imported. Furthermore, exports from nation B to nation A would not be taxed by nation B. Nation A would levy a 10% VAT on imports. Hence, consumers in nation A would pay a 10% VAT on both domestically produced and imported commodities.

In 1962, the rules applicable to taxation were included in the General Agreement on Tariffs and Trade (GATT). Under these GATT rules, indirect taxes were rebatable on exports but direct taxes were not rebatable. Taxes which are not shifted but borne by the economic entity on which they are levied are classified as direct taxes. From 1962 through 1972, a fixed exchange rate system prevailed and the United States ran deficits in its balance-of-payments. U.S. officials complained that

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[42] Aaron, "The Political Economy of a Value-Added Tax in the United States," p. 1,113.

[43] Member States of the European Union (EU), agreed, (beginning January 1, 1997), to apply the origin principle to sales within the EU but to continue to apply the destination principle to sales between a member state and an external nation. For an explanation of this change, see Craig A. Hart, "The European Community's Value-Added Tax System: Analysis of the New Transitional Regime and Prospects for Further Harmonization," *International Tax and Business Lawyer*, vol. 12, no. 1, 1994, pp. 1-62.

the GATT rules favored nations with VATs because their exports were zero-rated. In contrast, corporate income taxes were not rebated on exports.

In early 1973, the United States and its major trading partners formally shifted to a flexible exchange rate system. Under this system, the supply and demand for different currencies determine their relative value. If a country has a deficit in its balance-of-trade, this deficit must be financed by a net importation of foreign capital. But net capital inflows cannot continue indefinitely. Thus, over time, this country's currency will tend to decline in value relative to the currencies of other nations. Consequently, this country's balance-of-trade deficit will eventually decline as its exports rise and imports fall. Hence, economic theory indicated that a VAT offers no advantage over other major taxes in reducing a deficit in the balance-of-trade. Thus, U.S. officials ended their complaints about the effects of GATT tax rules on international trade.

Since early 1973 there have been periods when exchange rates have been "managed" by mutual agreement among governments. Central banks have coordinated purchases and sales of different currencies in order to stabilize their relative values to promote international economic stability.

Even if there were a fixed exchange rate, a U.S. VAT would have slight impact on the balance-of-trade because the proposed VAT rate of 5% or less is a low tax rate. During the last 25 years the value of the dollar has fallen relative to an index of major currencies, yet a serious U.S. balance-of-trade deficit persists. In summary, a U.S. VAT offers no major advantage over other major tax increases in reducing the U.S. balance-of-trade deficit.

Any large U.S. tax increase, which reduces the federal deficit, could reduce the U.S. balance-of-trade deficit. The U.S. Treasury would reduce its borrowing on financial markets, interest rates would decline, and foreign capital would flow out of the United States. This capital outflow would reduce the demand for dollars relative to other currencies. This decline in the value of the dollar would raise exports, reduce imports, and, consequently, reduce the U.S. balance-of-trade deficit.

National Saving

National saving consists of government saving, business saving, and personal saving.[44] A VAT or any other tax that reduces the budget deficit would be expected to reduce government dissaving, and, consequently, raise national saving.

A second issue concerns the effect on the personal savings rate of levying a VAT compared to increasing income taxes. A VAT would tax savings when they are spent on consumption, allowing savings to compound at a pre-tax rate. But an income tax is levied on all income at the time it is earned, regardless of whether the

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[44] For an explanation of the components of national saving, see CRS Report RL30873, *Saving in the United States: How Has It Changed and Why Is It Important?*, by Brian W. Cashell and Gail Makinen.

income is consumed or saved. The income tax is also levied on the earnings from income saved. Consequently, some proponents of the VAT have argued that choosing a VAT, rather than an income tax, to raise revenue would increase the return from saving and, consequently, raise the savings rate.

The rate of return on savings, however, has never been shown to have a significant effect on the savings rate because of two conflicting effects. First, each dollar saved today results in the possibility of a higher amount of consumption in the future. This relative increase in the return from saving causes a household to want to substitute saving for consumption out of current income (substitution effect).

But a higher rate of return on savings raises a household's income; consequently, the household has to save less to accumulate some target amount of savings in the future (income effect). Thus, this income effect encourages households to have higher current consumption and lower current saving.

A CRS study compared the long-run effects on the capital stock and consumption of a $60 billion VAT and a $60 billion increase in individual income taxes. This study's results suggest that selecting a VAT instead of an increase in individual income taxes would raise the capital stock by less than 2% and consumption by only a quarter to a third of a percent after 50 years.[45]

An empirical study by the Congressional Budget Office analyzed the economic effects of replacing a quarter of the current income tax with a 6% VAT on all consumption. CBO estimated that this tax substitution would, in the long-run, increase the saving rate by 0.5%, raise the capital stock by 7.9%, increase output by 1.5%, and raise consumption by 1.2%.[46] These CBO findings of only slight economic effects in the long-run are consistent with the estimates of the CRS study.[47]

Administrative Costs

The value-added tax would require the expansion of the Internal Revenue Service. But the high revenue yield from a VAT could cause administrative costs to be low measured as a percentage of revenue yield. The administrative expense per dollar of VAT collected would vary with the degree of complexity of the VAT, the amount of revenue raised, the national attitude towards tax compliance, and the level of the small business exemption.

For tax year 1995, the Government Accountability Office (GAO) estimated the cost of administering a U.S. VAT at $1.221 billion if the VAT had a single rate, a

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[45] CRS Report 88-697 S, *Economic Effects of a Value-Added Tax on Capital Formation*, by Jane G. Gravelle, p. 2. (Archived report available on request).

[46] CBO, *Effects of Adopting a Value-Added Tax*, pp. 52-53.

[47] For a comprehensive analysis of the issue, see CRS Report RS22367, *Federal Tax Reform and Its Potential Effects on Savings*, by Gregg A. Esenwein and CRS Report RL30351, *Consumption Taxes and the Level and Composition of Savings*, by Steven Maguire.

broad base, and an exemption for businesses with gross receipts of less than $100,000.[48] For tax year 1995, Professor Sijbren Cnossen estimated that the overall administrative cost of a hypothetical single rate U.S. VAT at $1billion.[49] He assumed that "the administration of the VAT would be fully integrated with the administration of the federal income taxes."[50] The OECD found that evidence suggests "a lower cost per dollar on revenue collected for VAT than for income tax."[51]

Compliance

Although considerable research has been conducted over the past 15 years on income tax compliance, research on VAT compliance has been limited.[52] For tax year 1995, Professor Sijbren Cnossen estimates the compliance costs of a single rate U.S. VAT would equal approximately $5 billion.[53] He emphasizes that compliance costs "can be reduced by broadening the base of the VAT, imposing a single rate, and increasing the threshold for registration."[54] Agha and Haughton summarized estimates of VAT evasion for five European countries.[55] These five countries and their percentage of revenue lost through evasion were Belgium (8%), France (3%), Italy (40%), Netherlands (6%), and United Kingdom (2%-4%).[56] In comparison to other broad-based consumption taxes such as the retail sales tax, a VAT has produced relatively good compliance for four reasons.

First, a VAT collected using the credit-invoice method offers the opportunity to cross-check returns and invoices. For example, VAT shown on a sales invoice of a wholesaler will appear on the purchase invoice of a retailer. A tax auditor can examine both invoices to cross-check the accuracy of the tax returns of both the wholesaler and the retailer.

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[48] U.S. General Accounting Office, *Value-Added Tax: Administrative Costs Vary with Complexity and Number of Businesses*, Washington, May 1993, p. 63.

[49] Sijbren Cnossen, "Administrative and Compliance Costs of the VAT: A Review of the Evidence," *Tax Notes*, vol. 62, no. 12, June 20, 1994, p. 1,610.

[50] Ibid.

[51] Organization for Economic Co-Operation and Development, *Taxing Consumption* (Paris: OECD, 1988), p. 203.

[52] For a current examination of VAT compliance from the approach of behavior economics, see Paul Webley, Caroline Adams, and Henk Elffers, "Value Added Tax Compliance," in *Behavioral Public Finance*, eds. Edward J. McCaffery and Joel Slemrod (New York: Russell Sage Foundation, 2006), pp. 175-205.

[53] Sijbren Cnossen, "Administrative and Compliance Costs of the VAT: A Review of the Evidence," p. 1,609.

[54] Ibid., p. 1,615.

[55] Ali Agha and Jonathan Haughton, "Designing VAT Systems: Some Efficiency Considerations," *Review of Economics and Statistics*, vol. 78, no. 2, May 1996, pp. 304-305.

[56] Ibid., p. 305.

Second, each firm has an incentive not to allow suppliers to understate VAT on their sales invoices. A firm is able to credit VAT paid on inputs against VAT collected on sales; consequently, a firm's net VAT liability will increase if VAT shown on its purchase invoices was understated by suppliers.

Third, tax auditors can compare information about a VAT with information about business income taxation, which will increase compliance with both types of taxes. For example, the sales revenue figure reported on business income tax forms may be checked for consistency with gross VAT collected as shown on VAT forms. Also, a check of cash receipts during a VAT audit may identify the under reporting of sales. Firms may attempt not only to evade the VAT but also to evade the business income tax.[57]

Fourth, some firms legally required to remit VAT may not register. But these firms receive no credit for VAT paid on inputs. Hence, these firms are only partially able to evade the VAT because of the compliance with the VAT by suppliers.

Although compliance with a VAT is higher than other broad-based consumption taxes, the level of noncompliance is significant. As previously discussed, some firms legally required to remit VAT may not register.

Furthermore, firms may evade VAT by altering or omitting information as indicated in the following 10 major types of evasion. First, a registered firm may not record resales of goods purchased from unregistered suppliers. Second, a seller of both exempt and taxable goods may divert purchased inputs on which VAT is claimed against taxed sales to help produce and sell exempt goods. Third, a firm may claim credit for purchases that are not creditable. For example, a firm's owner may claim credit for VAT paid on an automobile but then use it for nonbusiness purposes. Fourth, a firm may illegally import goods, charge VAT on their sale, but not report this VAT. Fifth, a firm may simply under-report sales, which is the most common type of evasion. Retailers are the most frequent users of this type of evasion. Sixth, a firm may collect VAT on sales and then disappear. This type of evasion is particularly common to small firms in the construction industry. Seventh, in those nations with multiple rates, a firm may illegally reclassify goods into categories with lower tax rates. Eighth, the owners of some small firms, particularly retailers, may consume part of their firms' production but not record their consumption. Ninth, a firm may submit completely false export claims in order to obtain illegal VAT refunds. And tenth, two firms may barter goods in order to evade the VAT.[58]

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[57] Organization of Economic Co-Operation and Development, *Taxing Consumption*, pp. 199-200.

[58] For a detailed discussion of these 10 types of evasion, see Alan A. Tait, *Value-Added Tax: International Practice and Problems* (Washington: International Monetary Fund, 1988), pp. 308-314.

Intergovernmental Relations

For the United States, a federal VAT raises two primary intergovernmental issues: the federal encroachment of the state sales tax and the joint collection of a VAT.[59]

Encroachment on a State Tax Source

It has been claimed that broad-based consumption taxation has traditionally been a state source of revenue while income taxation has been a federal revenue source; consequently, a federal VAT would encroach on a primary source of tax revenue for the states.[60]

Most states, however, adopted their individual income taxes before they adopted their general sales taxes. Thirty-nine states levy both individual income taxes and general sales taxes. Twenty-three of these states adopted their individual income taxes in an earlier year then they adopted their general sales taxes. Three states adopted both taxes in the same year. Thirteen states adopted their general sales taxes in an earlier year than they adopted their individual income taxes.[61]

No constitutional restriction prevents the federal government from levying a VAT. Precedents exist for the federal government to levy a new tax that many states already levy. For example, the federal government levied the personal income tax after many states had already imposed this tax. Also, both the federal government and the states impose many of the same excise taxes.

The federal government relies primarily on income taxes, but taxation of income by states has risen steadily over the years.[62] For fiscal year 2003, 33.3% of state tax collections consisted of individual income taxes and 5.2% consisted of corporation income taxes.[63] Thus, total state taxes on income accounted for 38.5% of all state taxes collected. In comparison, for fiscal year 2003, general sales taxes accounted

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[59] For an overview of state tax officials' concerns related to the enactment of a broad-based federal consumption tax, see U.S. General Accounting Office, *State Tax Officials Have Concerns About a Federal Consumption Tax*, Washington, March 1990, 77 p.

[60] For an examination of this issue, see Robert P. Strauss, "Administrative and Revenue Implications of Federal Consumption Taxes for the State and Local Sector," *State Tax Notes*, vol. 16, March 15, 1999, pp. 831-868.

[61] For data on the dates of adoption of major state taxes by state, see Tax Foundation, *Facts and Figures on Government Finance*, 38th Edition (Washington: Tax Foundation, 2004), p. 215.

[62] For historical data on state tax collection by source, see Tax Foundation, *Facts & Figures on Government Finance*, 38th Edition (Washington: Tax Foundation, 2004), pp. 188-189. Historical data on federal receipts by source is available from the following source: Office of Management and Budget, *Budget of the U.S. Government, Historical Tables, Fiscal Year 2007* (Washington: GPO, 2006), pp. 31-32.

[63] Tax Foundation, *Facts & Figures on Government Finance*, p. 189.

for 33.8% of state taxes collected.[64] Hence, it can be argued that the states have encroached on the primary source of revenue of the federal government.

States could continue to levy their retail sales taxes while the federal government levies a VAT. In Canada, the federal government levies a VAT, and the provinces continue to collect their retail sales taxes.

Joint Collection

States could piggy-back on a federal VAT. To do this, states would have to replace their retail sales taxes with a VAT and adopt the federal tax base. Because a federal VAT would probably have a broader base than any state sales tax, more revenue would be yielded for each 1% levied. Also, the VAT would eliminate duplication of administrative effort, permit the taxation of interstate mail order sales, permit the taxation on Internet sales, and lower total compliance costs of firms.

But, states may decline the opportunity for joint collection because of their desire to maintain greater fiscal independence from the federal government. In 1972, federal legislation permitted states to adopt the federal individual income tax base and have the federal government collect its state income tax, without cost to the states.[65] No state delegated collection of its income tax to the federal government. The law was repealed in 1990.[66]

In Canada, differences in tax bases for retail sales taxes in the provinces and the federal VAT have resulted in unexpectedly high administrative and compliance costs. Different tax bases have caused products to fall in four different tax categories: taxed by both political jurisdictions, taxed at the provincial level but not at the federal level, taxed at the federal level but not at the provincial level, and not taxed by either political jurisdiction. The federal government has tried to persuade the provinces to adopt the same tax base but they have refused.[67]

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[64] Current data on sales tax rates by state are available at [http://www.taxfoundation.org/taxdata/show/245.html].

[65] The Federal-State Tax Collection Act was enacted as Title II of the legislation that created the federal revenue sharing program. U.S. Congress, Joint Committee on Internal Revenue Taxation. *State and Local Fiscal Assistance Act and the Federal-State Tax Collection Act of 1972, H.R. 14370, 92d Congress, Public Law 92-512*, JCS-1-73, Feb. 12, 1973, Washington, GPO, 1973, pp. 51-72.

[66] Provisions of the Federal-State Tax Collection Act of 1972 (subchapter 64(E), sec. 6361 through 6365 of the Internal Revenue Code) were repealed by the Omnibus Budget Reconciliation Act of 1990, P.L. 101-508, sec. 11801(a)(45).

[67] Michael Rushton, A Value-Added Tax for the United States: Lessons from Canadian Experience, *National Tax Association — Proceedings of the Eighty-Sixth Annual Conference*, 1993, p. 98.

Appendix A: Credit-Invoice, Subtraction, and Addition Methods

This appendix provides numerical examples of the three methods of calculating a VAT: credit-invoice, subtraction, and addition methods. The tax rate for a VAT may be *price inclusive* (included in the sales price) or *price exclusive* (added to the sales price). Most developed nations levy their VAT rates on a price exclusive basis.

The *credit-invoice method* of calculating a VAT is demonstrated in **Table A1**. The rate for the value-added tax is assumed to be 10% on a price-exclusive basis. The product manufactured and sold is a widget. The production of widgets involves firms at four different stages of production: raw material producer, manufacturer, wholesaler, and retailer. The operating assumption is that the VAT is fully shifted forward to the next stage of production; consequently, the consumer pays the entire VAT.[68] The seller indicates the amount of VAT on each sales invoice.

At the first stage of production, the simplifying assumption is made that the raw material producer provides all of his own inputs. The raw material producer has sales of $200 plus VAT on sales of $20 (10% of $200). Sales plus VAT equal $220 ($200 + $20). Because the raw material producer purchased no inputs, he receives no credit for prior VAT paid. Hence, the raw material producer remits $20 to the government.

At the second stage of production, the manufacturer has sales of $500 plus VAT on sales of $50 (10% of $500), which is shown separately on the sales invoice. Sales plus VAT equal $550 ($500 + $50). The manufacturer purchased $200 in raw material plus $20 was paid in VAT as listed on the purchase invoice. The manufacturer credits the $20 paid in VAT on inputs against the $50 in VAT collected on sales and remits the difference of $30 to the government.

At the third stage of production, the wholesaler has sales of $750 and adds a VAT of $75 (10% of $750). Sales plus VAT equal $825 ($750 + $75). The wholesaler purchased inputs for $500 and paid an additional $50 in VAT. Consequently, the wholesaler credits $50 in VAT paid on inputs against $75 in VAT collected on sales and remits $25 in VAT to the government.

Finally, the retailer has sales of $1,000 and adds VAT of $100 (10% of $1,000). Sales plus VAT equal $1,100 ($1,000 + $100). The retailer purchased $750 in inputs and paid an additional $75 in VAT. The retailer credits the $75 in VAT paid on inputs against the $100 in VAT collected on sales and remits $25 to the government.

The VAT remitted by the four firms was $100. The consumer paid $100 in VAT on top of $1,000 in retail sales. The last line of figures in **Table Al** indicates the value added at each stage of production. The sum of all firms' value added is $1,000, which equals the sales price exclusive of the VAT.

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[68] This simplifying assumption is based on the fact that the VAT is a broad-based consumption tax levied on most goods and services.

Table A1. Credit-Invoice Method

(Data in dollars, price-exclusive VAT rate assumed at 10%)

Transaction	Stage of Production of Widgets								
	Raw Material Producer[a]		Manu-facturer		Whole-saler		Retailer		Total VAT Remitted
Sales (Excluding VAT)	$200		$500		$750		$1,000		
VAT on Sales		20		50		75		100	
Purchases of Inputs	0		200		500		750		
(Excluding VAT)	0		200		500		750		
VAT on Inputs	0		20		50		75		
Credit, VAT on Inputs		-0		-20		-50		-75	
VAT to be Remitted		20		30		25		25	100
Value Added	200		300		250		250		

a. As a simplification, the raw material producer is assumed to provide all of his inputs.

The subtraction method is demonstrated in **Table A2**. In order to simplify a comparison with figures in **Table Al**, a tax inclusive VAT rate of 9.091% is assumed. This tax inclusive rate is equivalent to a tax exclusive rate of 10%.

Table A2. Subtraction Method

(Data in dollars, price-inclusive VAT rate assumed at 9.091%)

Transaction	Stage of Production of Widgets								
	Raw Material Producer[a]		Manu-facturer		Whole-saler		Retailer		Total VAT Remitted
Sales (Including VAT)	$220		$550		$825		$1,100		
Purchases	0		200		500		750		
(Including VAT)	0		220		550		825		
VAT Base	220		330		275		275		
VAT to Be Remitted		20		30		25		25	100

a. As a simplification, the raw material producer is assumed to provide all of his inputs.

The raw material producer has sales including VAT of $220. Because he has no purchases of inputs, his VAT base (sales including VAT less purchases of inputs) is $220. His VAT to be remitted is $20 (9.091% of $220).

The manufacturer has sales including VAT of $550 and purchases including VAT of $220. His VAT base is $330 ($550 less $220). His VAT to be remitted is $30 (9.091% of $330).

The wholesaler has sales including VAT of $825 and purchases including VAT of $550. His VAT base is $275 ($825 less $550). His VAT to be remitted is $25 (9.091% of $275).

Lastly, the retailer has sales including VAT of $1,100, purchases including VAT of $825, and his VAT base is $275 ($1,100 less $825). He remits VAT of $25 (9.091% of $275). The total VAT remitted to the government by all four firms is $100 ($20 + $30 + $25 + $25). This $100 in VAT equals 9.091% of $1,100.

The *addition method* is shown in **Table A3**. The raw material producer calculates its value added by adding all payments for factors of production which the firm owned and applied to the production process. Thus, the raw material producer had value added of $200 (wages of $100, rent of $50, interest of $30, and profit of $20). Next, the raw material producer calculates its VAT by multiplying its value added by the tax rate. Thus, the raw material producer must remit $20 ($200 x 0.1) to the government. This procedure applies to all other stages of production and total VAT remitted is $100.

Table A3. Addition Method

(Data in U.S. dollars, VAT rate assumed at 10%)

Return on Factors of VAT Production Remitted	Raw Material Producer[a]	Manufacturer	Wholesaler	Retailer	Total
Wages	$100	$150	$110	$80	
Rent	50	100	90	115	
Interest	30	25	35	30	
Profit	20	25	15	25	
Value added	200	300	250	250	
Value-added Tax	20	30	25	25	100

[a] As a simplification, the raw material producer is assumed to provide all of his inputs.

Appendix B. Economic Effects of a Special VAT Treatment

Table B1. Economic Effects of a Special VAT Treatment

Special VAT Treatment	Break in Chain of VAT Credits	Price of Commodity Plus VAT	Total VAT Remitted
Exempt Retailer	No	Decline Equal to a Fraction of Initial VAT	Decline
Zero-rated Retailer	No	Decline Equal to Eliminated VAT	Decline (VAT Eliminated)
Exempt Manufacturer	Yes	Rise	Rise
Zero-rated Manufacturer	Yes	No Change	No Change

Appendix C. General Consumption Taxes in OECD Countries

Table C1. Data on General Consumption Taxes in OECD

(All levels of government)

Country	Total tax revenue as a % of GDP[a] at market prices (2003)	General consumption taxes as a % of GDP (2003)	General consumption taxes as a % of total tax revenues (2003)
Australia	31.6%	4.3%	13.7%
Austria	43.1	7.9	18.4
Belgium	45.4	7.1	15.6
Canada	33.8	5.1	15.1
Czech Republic	37.7	6.4	17.1
Denmark	48.3	9.7	20.1
Finland	44.8	8.7	19.4
France	43.4	7.3	16.8
Germany	35.5	6.4	17.9
Greece	35.7	8.0	22.4
Hungary	38.5	10.1	26.1
Iceland	39.8	11.0	27.7
Ireland	29.7	7.3	24.5
Italy	43.1	6.1	14.2
Japan	25.3	2.4	9.5
Korea	25.3	4.6	18.2
Luxembourg	41.3	6.4	15.5
Mexico	19.0	3.7	19.4
Netherlands	38.8	7.7	19.7
New Zealand	34.9	9.1	26.1
Norway	43.4	8.7	20.0
Poland	34.2	7.4	21.7
Portugal	37.1	8.5	22.9

Country	Total tax revenue as a % of GDP[a] at market prices (2003)	General consumption taxes as a % of GDP (2003)	General consumption taxes as a % of total tax revenues (2003)
Slovak Republic	33.1	6.8	22.0
Spain	34.9	6.0	17.2
Sweden	50.6	9.3	18.4
Switzerland	29.5	4.0	13.4
Turkey	32.8	8.2	24.9
United Kingdom	35.6	7.0	19.8
United States	25.6	2.1	8.4

Source: Adapted by CRS from OECD, *Revenue Statistics 1965-2004*, Paris, 2005.

a. GDP is an abbreviation for gross domestic product, which is a measure of total domestic output of goods and services.

Appendix D. VAT Rates by Country

Table D1. Value-Added Tax Rates by Country

EU Countries

Country	Standard Rate	Reduced Rate
Austria	20%	12% or 10%
Belgium	21%	12% or 6%
Cyprus	15%	5%
Czech Republic	19%	5%
Denmark	25%	
Estonia	18%	5%
Finland	22%	17% or 8%
France	19.6%	5.5% or 2.1%
Germany	16%	7%
Greece	19%	8% or 4% (reduced by 30% to 13%, 6% and 3% on islands
Hungary	20%	15% or 5%
Ireland	21%	13.5%, 4.8%, or 0%
Italy	20%	10%, 6%, or 4%
Latvia	18%	5%
Lithuania	18%	9% or 5%
Luxembourg	15%	12%, 9%, 6%, or 3%
Malta	18%	5%
Netherlands	19%	6%
Portugal	21%	12% or 5%
Poland	22%	7% or 3%
Slovakia	19%	
Slovenia	20%	8.5%
Spain	16%	7% or 4%
Sweden	25%	12% or 6%
United Kingdom	17.5%	5% or 0%

Non- EU countries

Country	Standard Rate	Reduced Rate
Argentina	21%	10.5% or 0%
Australia	10%	
Bosnia and Herzegovina	17%	
Bulgaria	20%	
Canada[a]	6% or 14%	4.5%
Chile	19%	
People's Republic of China[b]	17%	6% or 3%
Croatia	22%	0%
Dominican Republic	6%	12% or 0%
Ecuador	12%	
El Salvador	13%	
Iceland	24.5%	14%
India[c]	12.5%	4%, 1%, or 0%
Israel	15.5%	
Japan	5%	
Kazakhstan	15%	
Lebanon	10%	
Republic of Macedonia	18%	5%
Malaysia[d]	5%	
Mexico	15%	0%
New Zealand	12.5%	
Norway	25%	13% or 8%
Paraguay	10%	5%
Peru	19%	
Philippines[e]	12%	

Romania	19%	9%
Russia	18%	10% or 0%
Serbia	18%	8% or 0%
Singapore	5%	
South Africa	14%	7% or 4%
Republic of Korea	10%	
Sri Lanka	15%	
Switzerland	7.6%	3.6% or 2.4%
Thailand	7%	
Turkey	18%	8% or 1%
Ukraine	20%	0%
Venezuela	16%	8%

Source: Adapted by CRS from Wikipedia, the free encyclopedia available at [http://en.wikipedia.org/wiki/VAT].

a. Some Canadian provinces collect 14% for harmonized sales tax, a combined federal/provincial VAT. In the rest, the federal GST is 6% and if the province charges sales tax it is separate and is not a VAT. No real "reduced rate" but rebates are generally available for new housing effectively reducing the tax to 4.5%.

b. these taxes do not apply in Hong Kong and Macau, which are financially independent as special administrative regions.

c. VAT is not implemented in 2 of India's 28 states.

d. In the 2005 Budget, the government announced that GST would be introduced in January 2007. Many details have not yet been confirmed but it has been stated that essential goods and small businesses would be exempted or zero rated. Rates have not yet been established.

e. The President of the Philippines has the power to raise the tax to 12% after January 1, 2006. The tax was raised 12% on February 1.

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